ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

MATAMATA PIAKO DISTRICT COUNCIL AND MERIDIAN ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 22 October 2019

Date audit report completed: 11 December 2019

Audit report due date: 20-Dec-19

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EXECUTIVE SUMMARY

This audit of the Matamata Piako District Council Unmetered Streetlights (**MPDC**) DUML database and processes was conducted at the request of Meridian Energy (**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.

MPDC has switched retailers from Mercury NZ Limited to Meridian Energy on 1/07/2019.

Meridian reconciles this DUML load using the DST profile. Wattages are derived from reports of database information provided by MPDC. On and off times are derived from a data logger read by EMS and are used to create a shape file. Power Solutions Limited (PSL) manages the database on behalf of MPDC. The field work is carried out by McKay Electrical.

The monthly wattage report is calculated using RAMM data, but the wattage report is calculated outside of the database. The monthly wattage reports exclude lights which have the MPDC ICP allocated to them. This includes:

- "not yet connected"- these will be included once they are confirmed as electrically connected and the light install date is populated.
- 15 private lights that have been confirmed by the network as being reconciled against other ICPs
- 124 unmetered NZTA rural lights. These lights have been checked with the NZTA trader for the area and they do not appear to be reconciled elsewhere. These items of load are only recorded in the MPDC RAMM database for clarity of asset ownership, and not for submission. Whilst they have the MPDC ICP recorded against them, they are technically not expected to be reconciled against this ICP. MPDC and NZTA are working to resolve this issue.

The field audit found a high level of accuracy and is within the expected tolerance of +/- 5%. Processes to manage the database are robust.

This audit found five non-compliances and makes one recommendation. The future risk rating of 16 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments and I agree with the 12-month 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	NZTA rural lights recorded against the MPDC ICP not reconciled resulting in an estimated annual under submission of 96,093kWh. Festive lights included in the September 2019 monthly wattage report resulting in an estimated over submission of 414kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	High	6	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	One item of load with no lamp mode, make, wattage or ballast.	Strong	Low	1	Identified
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Three items of load missing from the database.	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Six items of load with missing or incorrect wattages/ballasts recorded.	Moderate	Low	2	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)	NZTA rural lights recorded against the MPDC ICP not reconciled resulting in an estimated annual under submission of 96,093kWh. Festive lights included in the September 2019 monthly wattage report resulting in an estimated over submission of 414kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	High	6	Identified
Future Risk Rating						16	

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	Action
Database Accuracy	3.1	LED light specifications to be provided for next audit to confirm the correct wattage is recorded in the database.	Identified

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

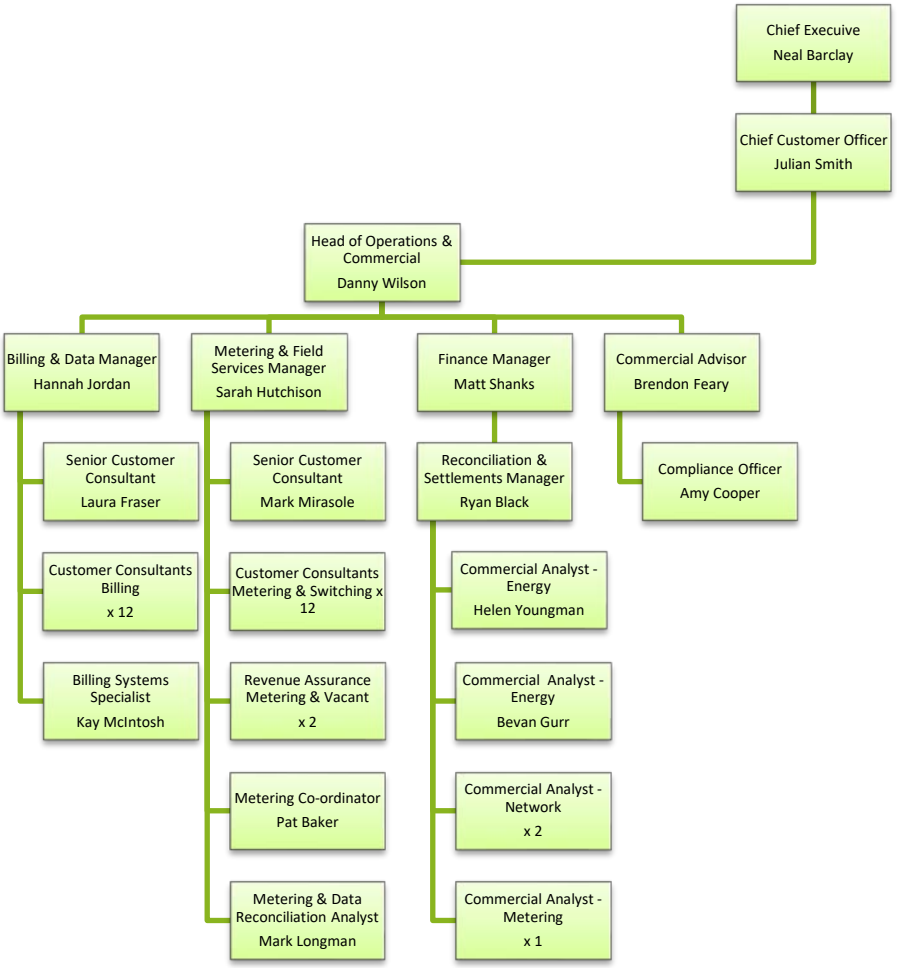
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Helen Youngman	Energy Data Analyst	Meridian Energy
Amy Cooper	Compliance Officer	Meridian Energy
Edwin de Beun	Projects Engineer	Power Solutions

1.4. Hardware and Software

Section 1.8 records that Roading Asset and Maintenance Management database, commonly known as RAMM continues to be used the management of DUML. This is remotely hosted by RAMM Software Ltd. The specific module used for DUML is called "SLIMM" which stands for "Streetlighting Inventory Maintenance Management".

Power Solutions 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	Profile	Number of items of load	Database wattage (watts)
1000510806PC47F	Matamata-Piako District Council	WHU0331	DST	3,508	235,474

I note the MPDC ICP is recorded against items of load not yet connected, privately owned and the NZTA unmetered rural lights (170 total lights). These lights are all excluded manually outside of the database as these are not billed to MPDC. This is discussed in **sections 2.1, 2.4, 3.1** and **3.2**.

1.7. Authorisation Received

All information was provided directly by Meridian or Power Solutions.

1.8. Scope of Audit

This audit of the Matamata Piako District Council Unmetered Streetlights (**MPDC**) DUML database and processes was conducted at the request of Meridian Energy (**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.

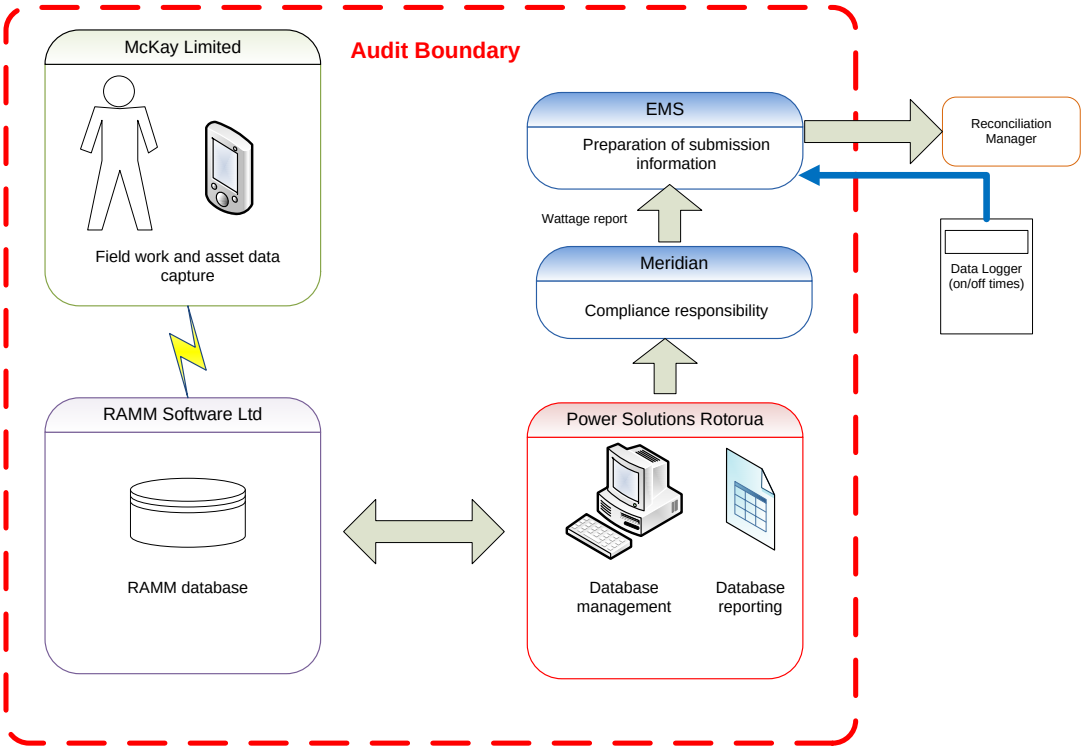
MPDC switched to Meridian effective 1/07/19.

Meridian reconciles this DUML load using the DST profile. Wattages are derived from reports of database information provided by MPDC. On and off times are derived from a data logger read by EMS and are used to create a shape file.

The database is remotely hosted by RAMM Software Ltd and is managed by PSL, on behalf of MPDC, who is Meridian's customer. McKay Limited is engaged by MPDC and conducts the fieldwork and asset data capture. Reporting is provided to Meridian on a monthly basis by PSL.

The database records all Matamata Piako lights and the NZTA urban and rural lighting for the Matamata Piako area. The urban NZTA lights are included in the MPDC reporting to Meridian, but the NZTA rural unmetered lights recorded in the MPDC RAMM database are not and are only recorded in the database for clarity of asset ownership, and not for submission. However, these items of load have the MPDC ICP recorded against them, therefore they are included in the scope of this audit. MPDC and NZTA are working to resolve this.

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 field audit was undertaken of a statistical sample of 177 items of load or 10% of the total database wattage on 31st October 2019.

1.9. Summary of previous audit

The previous audit was undertaken by Rebecca Elliot of Veritek Limited in March 2018 for Mercury NZ Limited. Five non-compliances were identified, and no recommendations were made. The statuses of the non-compliances are described 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 101.8% indicating an estimated under submission of 25,300 kWh per annum. Incorrect profile recorded on the registry for ICP 1000510806PC47F.	Still existing but for different issues to those recorded last time
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	15 items of load with an unknown light type recorded.	Still existing for 1 item
All load recorded in the database	2.5	11(2A) of Schedule 15.3	One item of load missing from the database.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 101.8% indicating an estimated over submission of 25,300 kWh per annum. The database is not complete as ballasts are not recorded in the RAMM database.	Cleared Still existing for a minor number of incorrect ballasts
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 101.8% indicating an estimated under submission of 25,300 kWh per annum. Incorrect profile recorded on the registry for ICP 1000510806PC47F.	Still existing but for different issues to those recorded last time

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. 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 September 2019 and found it matched.

The monthly wattage report is calculated using RAMM data, but the wattage report is calculated outside of the database. The following lights are excluded from the monthly wattage report as detailed:

- "not yet connected"- these will be included once they are confirmed as electrically connected and the light install date is populated. The reporting of such changes is detailed below.
- 15 privately owned lights - these have been confirmed by the network as being billed to other ICPs. The MPDC ICP should be removed from these items and the correct ICP be recorded or "private" be recorded.
- 124 NZTA rural lights – These lights have been checked with the NZTA trader for the area and they do not appear to be reconciled elsewhere. These items of load are only recorded in MPDC RAMM database for clarity of asset ownership, and not for submission. Whilst they have the MPDC ICP recorded against them, they are technically not expected to be reconciled against this ICP. This will be resulting in an estimated annual under submission of 96,093 kWh and is recorded as non-compliance below.

Examination of the September 2019 report included Festive lights which are not connected. This will be resulting in an estimated over submission for the month of September of 414kWh. This is recorded as non-compliance.

The RAMM database includes the lamp wattages and ballasts, but the ballasts are added outside of the database to create the monthly wattage report. The accuracy of the lamp ballasts in the database and those being added is discussed in **section 3.1**.

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 monthly report is provided as a snapshot and is created outside of RAMM. This practice is non-compliant. The database contains a "light install date". This is populated once the light has been electrically connected. When a wattage is changed or added 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.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Jul-19 To: 31-Oct-19	NZTA rural lights recorded against the MPDC ICP not reconciled resulting in an estimated annual under submission of 96,093kWh. Festive lights included in the September 2019 monthly wattage report resulting in an estimated over submission of 414kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be high, based on the under submission detailed above.

Actions taken to resolve the issue	Completion date	Remedial action status
We will attempt to confirm who is responsible for the NZTA rural lights recorded in the council database and provide information to them regarding these lights. In our view this should be the Trader has the contractual relationship with NZTA for the lights in the district.	28 Feb 2020	Identified
We will review all submissions from when these lights switched in to confirm whether the festive lights have been included and revise submissions where needed.	28 Feb 2020	
Preventative actions taken to ensure no further issue will occur	**Completion date**	

We will clarify with the council their process for creating the monthly wattage report and make changes where required to mitigate the risk of future issues.	30 April 2020	

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

All items of load had an ICP recorded as required by this clause. The accuracy of the ICP allocation is discussed in **sections 2.1, 3.1** and **3.2**.

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 the nearest street address, pole numbers and Global Positioning System (GPS) coordinates for each item of load and users in the office and field can view these locations on a mapping system.

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

The database contains the lamp make, model, wattage and the ballast wattage. All were populated with the exception of one item of load (item #23838) with no lamp description, wattage or ballast recorded.

The MPDC database has the lamp wattage recorded in both the lamp and gear wattage fields. All were populated. As discussed in **section 3.1**, the ballast in RAMM is not used for submission. The correct wattages are added in the monthly report. The correct ballasts are applied but this needs to be in the database. This is recorded as non-compliance in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2A) of Schedule 15.3 From: 01-Jun-18 To: 31-Oct-19	One item of load with no lamp mode, make, wattage or ballast. Potential impact: Low Actual impact: Low Audit history: Once previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong as checks are in place to accurately record these details. The impact is assessed to be low as only one item of load is affected.

Actions taken to resolve the issue	Completion date	Remedial action status
We will raise this with the council for resolution.	28 Feb 2020	Identified
Preventative actions taken to ensure no further issue 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

The field audit was undertaken of a statistical sample of 177 items of load or 10% of the total database wattage on 31st October 2019.

Audit commentary

The field audit findings for the sample of lamps was accurate with the exception of the streets detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
BURGESS ST	14	12	-2		2 x privately owned lights not present in the field
MANAWARU RD	7	7		1	1x 150W HPS found in the field recorded as 60W LED
STATE HIGHWAY 24	27	29	+3 -1		3x 58.1 LED found in the field 1x 70W HPS not found in the field
Grand Total	**177**	**177**	**6**	**1**	

I found three additional lamps in the field than was recorded in the database. 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-Jun-18 To: 31-Oct-19	Three additional lights found in the field. Potential impact: Low Actual impact: Low Audit history: Once previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**

Low	The controls are rated as strong as the processes in place to manage the database are robust. The impact is assessed to be low due to the small number of additional lights found in the field in relation to the overall count of the items of load.

Actions taken to resolve the issue	Completion date	Remedial action status
Discrepancies will be passed on to the council for review and resolution	28 Feb 2020	Identified
Preventative actions taken to ensure no further issue 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 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 database was checked for audit trails.

Audit commentary

The RAMM 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

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	Matamata Piako district
Strata	The database contains items of load in Matamata Piako area. The area has three distinct sub-groups of urban, rural and NZTA. The processes for the management of MPDC items of load are the same, but I decided to place the items of load into four strata, as follows: 1. A-J 2. K-R 3. S-Y 4. State Highway
Area units	I created a pivot table of the roads by strata and used a random number generator in a spreadsheet to select a total of 36 sub-units.
Total items of load	177 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 against the RAMM database.

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

Audit commentary

Field audit findings

A statistical sample of 177 items of load was checked. I note that due to the allocation of the MPDC ICP this includes private lights. I have assessed the accuracy of this database firstly with these lights included and secondly without these included. Technically they should be included in the sample based on the ICP assigned, but the private lights have been confirmed as being recorded against other ICPs by the network. The assessment of database accuracy without the private lights included confirmed that the database does fall within in the accuracy thresholds and this is what I have recorded.

Assessment **including** Private Lights

The field data was 99.7% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	99.7%	Wattage from survey is less than the database wattage by 03%
R_L	94.9%	With a 95% level of confidence it can be concluded that the error could be between -5.1% and +2.8%
R_H	102.8%	

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 5.1% lower to 2.8% higher than the wattage recorded in the DUML database. As this includes the incorrectly assigned private lights, I have recorded compliance as confirmed below

Assessment **excluding** Private Lights

The field data was 101.9% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	101.9%	Wattage from survey is less than the database wattage by 03%
R_L	100.0%	With a 95% level of confidence it can be concluded that the error could be between +4.0%
R_H	104.0%	

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 A (detailed below) applies. Compliance is recorded because the best estimate indicates that the database is accurate within ±5.0%.

In absolute terms the installed capacity is estimated to be 4.0 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is up to 9 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 19,100 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between up to 40,300 kWh p.a. higher than the database indicates.

Scenario	Description
A - **Good accuracy, good precision**	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that:

	(a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - **Poor accuracy, demonstrated with statistical significance**	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level
C - **Poor precision**	This scenario applies if: (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Lamp description and capacity accuracy

I checked the wattages being applied in the RAMM database and found:

- 4x 35W MH lights with a ballast of 6W applied instead of 10W;
- 1x 50W MV light with a ballast of 9W applied instead of 11W; and
- one item of load (item #23838) with no lamp description, wattage or ballast recorded. This is detailed in **section 2.4**.

This will be resulting in a very minor amount of under submission for the light with the missing wattage. The incorrect ballasts applied to the five items of load above is recorded as non-compliance below.

- The check of LED wattages found 21 different LED models installed. The light descriptions have been populated in the model fields in RAMM but have been populated inconsistently i.e. lamp models recorded in various fields. This made it difficult to determine whether the correct wattage has been applied. I recommend that the LED light specifications be provided for the next audit to confirm the correct wattage.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	LED light specifications to be provided for next audit to confirm the correct wattage is recorded in the database.	We will suggest this to the council to assist future audits.	Identified

Change management process findings

The processes were reviewed for ensuring that changes in the field are notified through to PSL and there have been no changes to these processes since the last audit. McKay Electrical enters all field data via "Pocket RAMM" directly into RAMM Contractor. "As built" plans are also provided and PSL then conduct a field check to ensure the database has been populated accurately. The high level of accuracy found in the field audit confirms the process has robust controls.

Monthly "outage patrols" are conducted, and this process is used to check database accuracy.

Festive lights are connected in the Matamata Piako district and these are recorded in the database. The reporting of this in the monthly wattage report is discussed in **sections 3.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-18 To: 31-Oct-19	Six items of load with missing or incorrect wattages/ballasts recorded. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be low due to the small number of incorrect wattages/ballasts found.

Actions taken to resolve the issue	Completion date	Remedial action status
We will pass on details of the missing and incorrect wattages for correction. We will also confirm why the ballasts recorded in RAMM are not being used but are being applied manually as these appear to be populate and (aside from the 5 mentioned in this section) largely accurate.	28 Feb 2020 28 Feb 2020	Identified
Preventative actions taken to ensure no further issue 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; 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. 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 September 2019 and found it matched.

The monthly wattage report is calculated using RAMM data, but the wattage report is calculated outside of the database. The following lights are excluded from the monthly wattage report as detailed:

- "not yet connected"- these will be included once they are confirmed as electrically connected and the light install date is populated. The reporting of such changes is detailed below.
- 15 privately owned lights - these have been confirmed by the network as being billed to other ICPs. The MPDC ICP should be removed from these items and the correct ICP be recorded or "private" be recorded.
- 124 NZTA rural lights – These lights have been checked with the NZTA trader for the area and they do not appear to be reconciled elsewhere. These items of load are only recorded in MPDC RAMM database for clarity of asset ownership, and not for submission. Whilst they have the MPDC ICP recorded against them, they are technically expected to be reconciled against this ICP. This will be resulting in an estimated annual under submission of 96,093 kWh and is recorded as non-compliance below.

Examination of the September 2019 report included Festive lights which are not connected. This will be resulting in an estimated over submission for the month of September of 414kWh. This is recorded as non-compliance.

The RAMM database includes the lamp wattages and ballasts but the ballasts are added outside of the database to create the monthly wattage report. The accuracy of the lamp ballasts in the database and those being added is discussed in **section 3.1**.

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 monthly report is provided as a snapshot and is created outside of RAMM. This practice is non-compliant. The database contains a "light install date". This is populated once the light has been electrically connected. When a wattage is changed or added 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.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jul-19 To: 31-Oct-19	NZTA rural lights recorded against the MPDC ICP not reconciled resulting in an estimated annual under submission of 96,093kWh. Festive lights included in the September 2019 monthly wattage report resulting in an estimated over submission of 414kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be high, based on the under submission detailed above.

Actions taken to resolve the issue	Completion date	Remedial action status
We will attempt to confirm who is responsible for the NZTA rural lights recorded in the council database and provide information to them regarding these lights. In our view this should be the Trader has the contractual relationship with NZTA for the lights in the district.	28 Feb 2020	Identified
We will review all submissions from when these lights switched in to confirm whether the festive lights have been included and revise submissions where needed.	28 Feb 2020	
Preventative actions taken to ensure no further issue will occur	**Completion date**	
We will clarify with the council their process for creating the monthly wattage report and make changes where required to mitigate the risk of future issues.	30 April 2020	

CONCLUSION

MPDC switched to Meridian effective 1/07/19.

Meridian reconciles this DUML load using the DST profile. Wattages are derived from reports of database information provided by MPDC. On and off times are derived from a data logger read by EMS and are used to create a shape file. Power Solutions Limited (PSL) manages the database on behalf of MPDC. The field work is carried out by McKay Electrical.

The monthly wattage report is calculated using RAMM data, but the wattage report is calculated outside of the database. The monthly wattage reports exclude lights which have the MPDC ICP allocated to them. This includes:

- "not yet connected"- these will be included once they are confirmed as electrically connected and the light install date is populated.
- 15 private lights that have been confirmed by the network as being reconciled against other ICPs.
- 124 unmetered NZTA rural lights. These lights have been checked with the NZTA trader for the area and they do not appear to be reconciled elsewhere. These items of load are only recorded in MPDC RAMM database for clarity of asset ownership, and not for submission. Whilst they have the MPDC ICP recorded against them, they are technically not expected to be reconciled against this ICP. MPDC and NZTA are working to resolve this issue.

The field audit found a high level of accuracy and is within the expected tolerance of +/- 5%. Processes to manage the database are robust.

This audit found five non-compliances and makes one recommendation. The future risk rating of 16 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments and I agree with the 12-month recommendation.

PARTICIPANT RESPONSE