ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

BULLER DISTRICT COUNCIL
RAMM DATABASE
AND MERIDIAN ENERGY
NZBN: 9429041899960

Prepared by: Rebecca Elliot

Date audit commenced: 17 August 2021

Date audit report completed: 28 September 2021

Audit report due date: 01-Dec-21

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This audit of the **Buller District Council (BDC**) DUML, Buller Electricity's RAMM 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.

This audit report includes all the unmetered streetlights recorded in the BDC RAMM database across the Buller and Network Tasman networks. The field audit was undertaken of all 73 items of unmetered load items recorded in the RAMM database.

The LED replacement project is still being rolled out, and due the distance to be covered in the network, this work is fitted in amongst other work in the area. A number of LED lights have been installed in the field, but the details in the database do not match the lamp details in the field.

Meridian reconciles this DUML load using the RPS profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Buller District Council. This is multiplied by 11.5 burn hours per day to update the daily figure on the registry.

The full field audit found that the database was not accurate to within +/- 5% accuracy threshold. This will be resulting in an estimated annual over submission of 2,396 kWh p.a.

The audit found four non-compliances and makes no recommendations. The future risk rating of 11 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments. I recommend that the next audit be in 18 months.

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 field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	Low	3	Identified
Description and capacity of load	2.4	11(2)(c) of Schedule 15.3	27 lights with an unknown light type.	Moderate	Low	2	Cleared
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh.27 lights with an unknown light description.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	Low	3	Identified
Future Risk Rating						11	

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
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

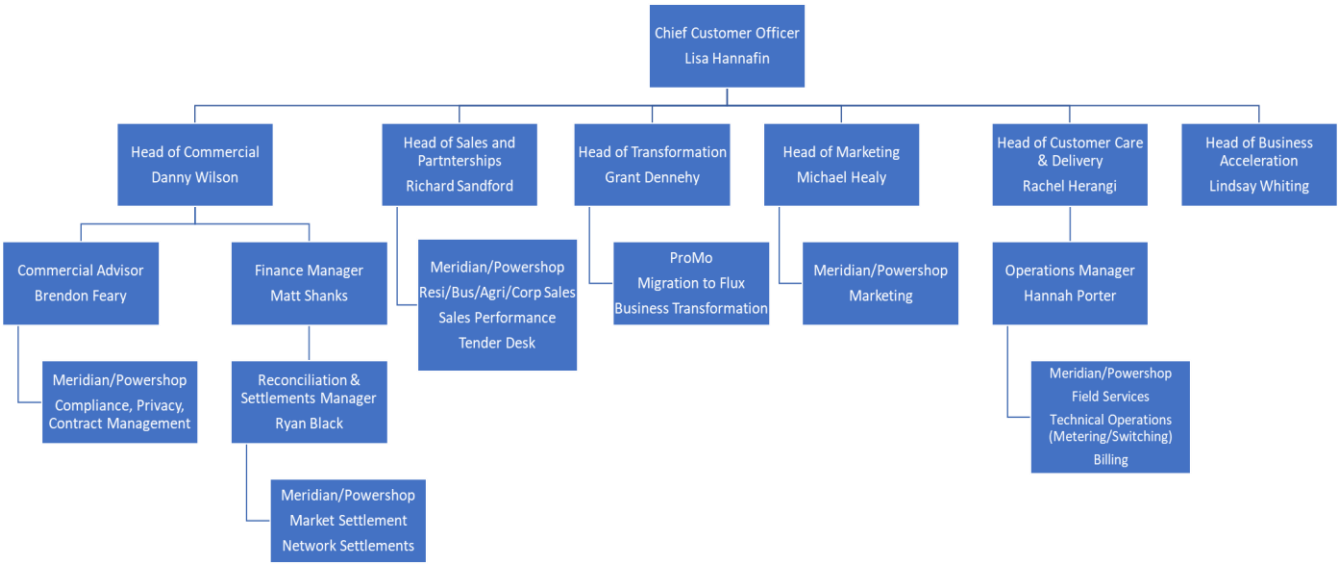
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided a copy of their organisational structure:



1.3. Persons involved in this audit

Auditor:

Name	Title
Rebecca Elliot	Lead Auditor
Claire Stanley	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Martin Dobson	Coordinator Asset Information	Buller District Council
Amy Cooper	Compliance Officer	Meridian
Daniel Lau	Energy Data Analyst	Meridian

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited. The database is commonly known as "RAMM" which stands for "Road Assessment and Maintenance Management". The specific data used for DUML is held in the Streetlight tables. thinkproject New Zealand Limited backs up the database and assists with disaster recovery as part of their hosting service.

Access to the database is secure by way of password protection.

Systems used by the trader to calculate submissions are assessed as part of their reconciliation participant audits.

1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.6. ICP Data

ICP Number	Description	NSP	Number of items of load	Database wattage (watts)
0003970474BUE6B	DUML Streetlights	ORO1102	64	2,911
0000090008NT5BE	BULLER CC STREETLIGHTING MURCHISON GXP	MCH0111	9	1,270
TOTAL			73	4,181

The bulk of the Buller DC lights are on metered circuits. Buller Network confirmed this by undertaking a complete field audit prior to the last audit.

1.7. Authorisation Received

All information was provided directly by Meridian and Buller District Council.

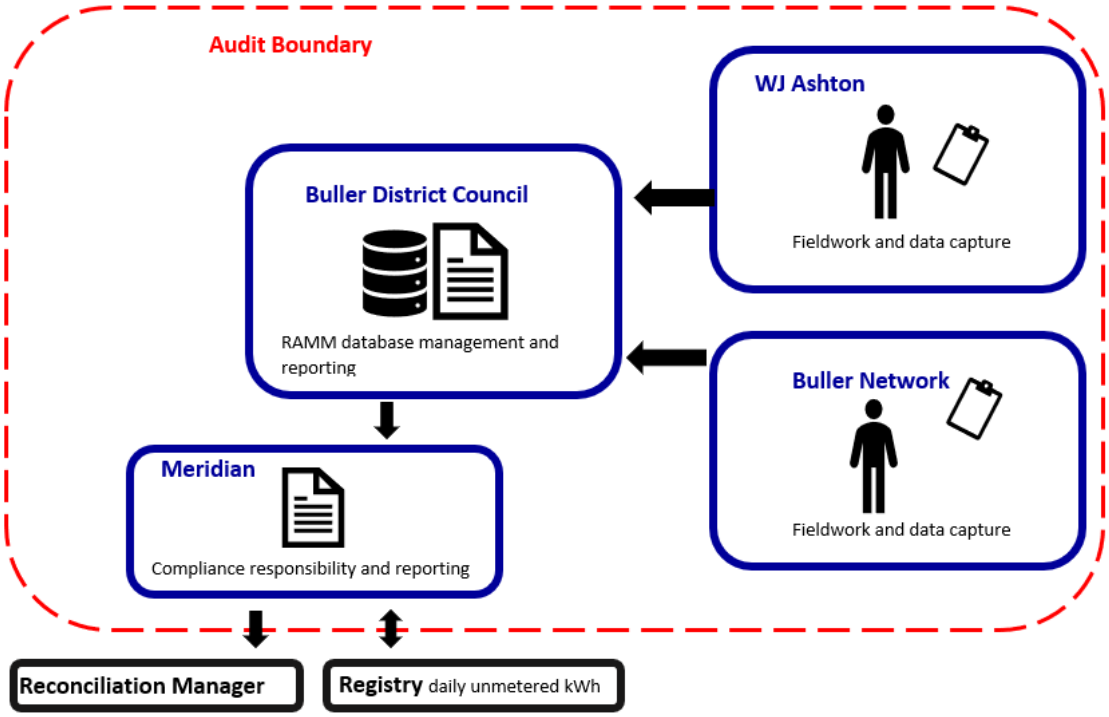
1.8. Scope of Audit

This audit of the BDC DUML, Buller Electricity's RAMM database and processes was conducted at the request of Meridian Energy 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.

This audit report includes all the unmetered streetlights recorded in the RAMM database. This covers lights on both the Buller and Network Tasman networks.

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

The diagram below shows the audit boundary for clarity.



The field audit was undertaken of all 73 unmetered load items recorded in the RAMM database on the 13th September 2021.

1.9. Summary of previous audit

Meridian provided a copy of the last audit report undertaken by Steve Woods of Veritek Limited in November 2019. The current status of the non-compliances found in the last audit are detailed below:

Table of Non-Compliances

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database did not meet the accuracy threshold resulting in an estimated annual over submission of 5,813 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Still existing
Description and capacity of load	2.4	11(2)(c) of Schedule 15.3	Four lights with an unknown light type.	Still existing
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Two additional lights identified by the field audit.	Cleared
Database accuracy	3.1	15.2 and 15.37B(b)	Assessment of the database found that an estimated annual over submission of 5,813 kWh. Four lights with an unknown light description.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database did not meet the accuracy threshold resulting in an estimated annual over submission of 5,813 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Still existing

Recommendations

Subject	Section	Description	Action
Description and capacity of load	2.4	Remove the record for the lamp that did not have description or wattage recorded. Field audit confirmed that lamp has been removed.	Cleared
Database accuracy	3.1	Update lamp descriptions to detail light make and model in sufficient detail to confirm that the correct wattage has been applied.	Cleared

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 RPS profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Buller District Council. This is multiplied by 11.5 burn hours per day to update the daily figure on the registry.

I checked the values being submitted and confirmed the calculations are correct.

The full field audit found that the database had a 12% error rate. This will be resulting in an estimated annual over submission of 2,396 kWh p.a. and is recorded as non-compliance below.

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 data supplied to Meridian each month is based on a snapshot and does not achieve compliance with the requirements above.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 28-Nov-20 To: 27-Aug-21	The field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Multiple times previously Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as changes in the field are not being reflected in the database. The impact is assessed to be low due to the estimated amount of over submission described above.

Actions taken to resolve the issue	Completion date	Remedial action status
All missing and incorrect information identified has been resolved in the database.	29 Sept 2021	Identified
Preventative actions taken to ensure no further issue will occur	**Completion date**	
The majority of inaccuracy was caused by incorrect LED wattages. This was caused by the light manufacturer had upgraded the LED efficiency, so as to produce the same output of light with less energy required. The manufacturer apparently had not communicated this to Buller Networks therefore data capture for the lights was incorrect. Buller network is now aware of this so recording of wattages for future changes should be accurate.	29 Sept 2021	
We are considering the impact the provision and use of database changes at a daily level will have on our processes and tools.	Ongoing	

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

Code reference

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

Code related audit information

The DUML database must contain:

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

Audit observation

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

Audit commentary

All items of load have an ICP recorded against them.

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 RAMM database has fields for make, model and wattage.

Nine lamps were identified with a description of Unknown for make and model. 18 lights have Unknown for the light model. The wattage and ballast for these lights appears to be correct so there is no impact on settlement.

The accuracy of these are discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) of Schedule 15.3 From: 29-Nov-19 To: 25-Sep-20	27 lights with an unknown light type. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as light descriptions are required to be provided when changes are made. The impact is assessed to be low due to the small number of lights affected. They were updated during the audit period.

Actions taken to resolve the issue	Completion date	Remedial action status
All unknown light types have been updated with the relevant information.	29 Sept 2021	Cleared
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

A field audit was undertaken of the all the unmetered 73 items of load on 13th September 2021.

Audit commentary

The field audit discrepancies are detailed in the table below:

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Caledonian Rd	2	2		1	1x 27W LED recorded in the database but 22W LED found in the field
Beach Rd (Charleston)	1	1		1	1 x 100W HPS recorded but 70WHPS found
McIntyre Rd (West)	1	1		1	1x 27W LED recorded in the database but 22W LED found in the field
Collins Rd	1	1		1	1x 27W LED recorded in the database but 22W LED found in the field
Newcastle St	3	3		3	3 x 27W LED recorded in the database but 3 x 22W LED found in the field
Nine Mile Road	4	4		4	3 x 27W LED recorded in the database but 3 x 22W LED found in the field 1 x 70W HPS recorded in the database but 1 x 22W LED found in the field
Powell Pl	1	1		1	1x 70W Gough 500 recorded in the database but 22W LED found in the field
Princes St	1	1		1	1x 70W Gough 500 recorded in the database but 22W LED found in the field
Reedys Rd	1	1		1	1x 70W HPS recorded in the database but 27W LED found in the field
Sunderland St	2	2		2	2 x 27W LED recorded in the database but 2 x 22W LED found in the field
SH 67 Waimangaroa	10	10		9	9 x 27W LED recorded in the database but 9 x 22W LED found in the field
Kew Rd	4	4		4	2 x 27W LED recorded in the database but 2 x 23W LED found in the field 2 x 27W LED recorded in the database but 2 x 22W LED found in the field
Charming Creek Rd	1	1		1	27W LED recorded in the database but 22W LED found in the field
SH 67A ACCESSWAY 430	1	1	-1		1x 150W UNKN not located in the field
Grand Total	33	33	1	30	

The field audit found did not find any additional lights in the field.

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

Audit outcome

Compliant

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The RAMM database functionality achieves compliance with the code.

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 field audit was undertaken of all 73 items of unmetered load items recorded in the RAMM database on the 13th September 2021.

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

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

Audit commentary

Database accuracy

The field audit found a large number of errors. These are detailed in **section 2.5**. I calculated an error rate across the database of 12%. This will be resulting in an estimated annual over submission of 2,396 kWh p.a. This is not within the allowable database accuracy threshold of +/- 5% and is recorded as non-compliance below.

Lamp description and capacity accuracy

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority or LED light specifications and found to be correct.

As detailed in **section 2.4**, 27 lamps were identified with a description of Unknown. The light descriptions for make and model have been updated from 'Unknown' to include sufficient detail to confirm the correct lamp wattage has been applied, these were updated during the audit.

Tracking of load change

The processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance. Fault, maintenance and LED upgrade work is completed by Buller Electricity on the Buller Network lights and by WJ Ashton for the Network Tasman NZTA lights in Murchison.

Any new streetlight connections are metered therefore the volume of unmetered lights is not expected to increase.

Buller Electricity update RAMM directly as maintenance is performed. The LED replacement project is still being rolled out; the funding has been extended for this project. The work is on-going, and due the distance to be covered in the network this work is fitted in amongst other work in the area.

Private lights are on their own metered ICPs.

Christmas lights in the Buller district are connected to metered circuits. Currently they are only in the Palmerston Street area.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 28-Nov-20 To: 27-Aug-21	The field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh. 27 lights with an unknown light description. Potential impact: Low Actual impact: Low Audit history: Once previously Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as changes in the field are not being reflected in the database. The impact is assessed to be low due to the estimated amount of over submission described above.

Actions taken to resolve the issue	Completion date	Remedial action status
All missing and incorrect information identified has been resolved in the database.	29 Sept 2021	Identified
Preventative actions taken to ensure no further issue will occur	**Completion date**	
The majority of inaccuracy was caused by incorrect LED wattages. This was caused by the light manufacturer had upgraded the LED efficiency, so as to produce the same output of light with less energy required. The manufacturer apparently had not communicated this to Buller Networks therefore data capture for the lights was incorrect. Buller network is now aware of this so recording of wattages for future changes should be accurate.	29 Sept 2021	
We are considering the impact the provision and use of database changes at a daily level will have on our processes and tools.	Ongoing	

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

- checking the registry to confirm that 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 RPS profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Buller District Council. This is multiplied by 11.5 burn hours per day to update the daily figure on the registry.

I checked the values being submitted and confirmed the calculations are correct.

The full field audit found that the database had a 12% error rate. This will be resulting in an estimated annual over submission of 2,396 kWh p.a. and is recorded as non-compliance below.

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 data supplied to Meridian each month is based on a snapshot and does not achieve compliance with the requirements above.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 28-Nov-20 To: 27-Aug-21	The field audit found a 12% error rate resulting in an estimated annual over submission of 2,396 kWh. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as changes in the field are not being reflected in the database. The impact is assessed to be low due to the estimated amount of over submission described above.

Actions taken to resolve the issue	Completion date	Remedial action status
All missing and incorrect information identified has been resolved in the database.	29 Sept 2021	Identified
Preventative actions taken to ensure no further issue will occur	**Completion date**	
The majority of inaccuracy was caused by incorrect LED wattages. This was caused by the light manufacturer had upgraded the LED efficiency, so as to produce the same output of light with less energy required. The manufacturer apparently had not communicated this to Buller Networks therefore data capture for the lights was incorrect. Buller network is now aware of this so recording of wattages for future changes should be accurate.	29 Sept 2021	
We are considering the impact the provision and use of database changes at a daily level will have on our processes and tools.	Ongoing	

CONCLUSION

This audit report includes all the unmetered streetlights recorded in the BDC RAMM database across the Buller and Network Tasman networks.

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

This audit report includes all the unmetered streetlights recorded in the BDC RAMM database across the Buller and Network Tasman networks. The field audit was undertaken of all 73 items of unmetered load items recorded in the RAMM database.

The LED replacement project is still being rolled out, and due the distance to be covered in the network, this work is fitted in amongst other work in the area. A number of LED lights have been installed in the field, but the details in the database do not match the lamp details in the field.

Meridian reconciles this DUML load using the RPS profile and the daily unmetered figures for both ICPs. Meridian Energy receive a monthly wattage report from Buller District Council. This is multiplied by 11.5 burn hours per day to update the daily figure on the registry.

The full field audit found that the database was not accurate to within +/- 5% accuracy threshold. This will be resulting in an estimated annual over submission of 2,396 kWh p.a.

The audit found four non-compliances and makes no recommendations. The future risk rating of 11 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Meridian's comments. I recommend that the next audit be in 18 months.

PARTICIPANT RESPONSE

Meridian has reviewed this report and their comments are contained within the report.