

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

GORE DISTRICT COUNCIL AND MERIDIAN
ENERGY

NZBN: 9429037696863

Prepared by: Steve Woods

Date audit commenced: 12 January 2023

Date audit report completed: 3 February 2023

Audit report due date: 08-Mar-23

TABLE OF CONTENTS

Executive summary	3
Audit summary	4
Non-compliances	4
Recommendations	5
Issues	5
1. Administrative	6
1.1. Exemptions from Obligations to Comply with Code	6
1.2. Persons involved in this audit.....	6
1.3. Structure of Organisation	7
1.4. Hardware and Software	8
1.5. Breaches or Breach Allegations.....	8
1.6. ICP Data	8
1.7. Authorisation Received	8
1.8. Scope of Audit	8
1.9. Summary of previous audit	9
1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)	10
2. DUML database requirements	11
2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)	11
2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)	12
2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)	13
2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)	13
2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)	14
2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)	15
2.7. Audit trail (Clause 11(4) of Schedule 15.3).....	16
3. Accuracy of DUML database	17
3.1. Database accuracy (Clause 15.2 and 15.37B(b))	17
3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))	21
Conclusion	24
Participant response	25

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.

The database is remotely hosted by thinkproject Ltd. WSP provide a monthly report to Meridian of this database. Meridian reconciles this DUML load using the DST profile.

The field work and asset data capture are conducted by PowerNet using Pocket RAMM.

The field audit was undertaken of a statistical sample of 213 items of load on 1st and 2nd February 2023.

This found that the database is not within the allowable +/-5% accuracy threshold and under submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 9 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 3 kW and 27 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 11,800 kWh and 114,600 kWh p.a. higher than the database indicates.

177 lamps with incorrect wattage are recorded in RAMM which will result in an estimated under submission of 39,498 kWh per annum (based on 4271 hours per annum).

This audit found five non-compliances and repeats two recommendations. The future risk rating of 30 indicates that the next audit be completed in three months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in six 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	Clause 11(1) of Schedule 15.3	In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates. 177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Weak	High	9	Identified
Description and capacity of load	2.4	Clause 11(2)(c) and (d) of Schedule 15.3	49 items of load with no lamp model description details populated.	Medium	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	One additional item of load found in the field of 213 items of load sampled.	Strong	Low	1	Identified
Database accuracy	3.1	Clause 15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates. 177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission.	Weak	High	9	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	Clause 15.2 and 15.37B(c)	In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates. 177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Weak	High	9	Identified
Future Risk Rating						30	

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	Update RAMM with the correct fluorescent lamp model and LED lamp values. Investigate and confirm the wattage for the Fairy lights is recorded accurately in RAMM.

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

Auditors:

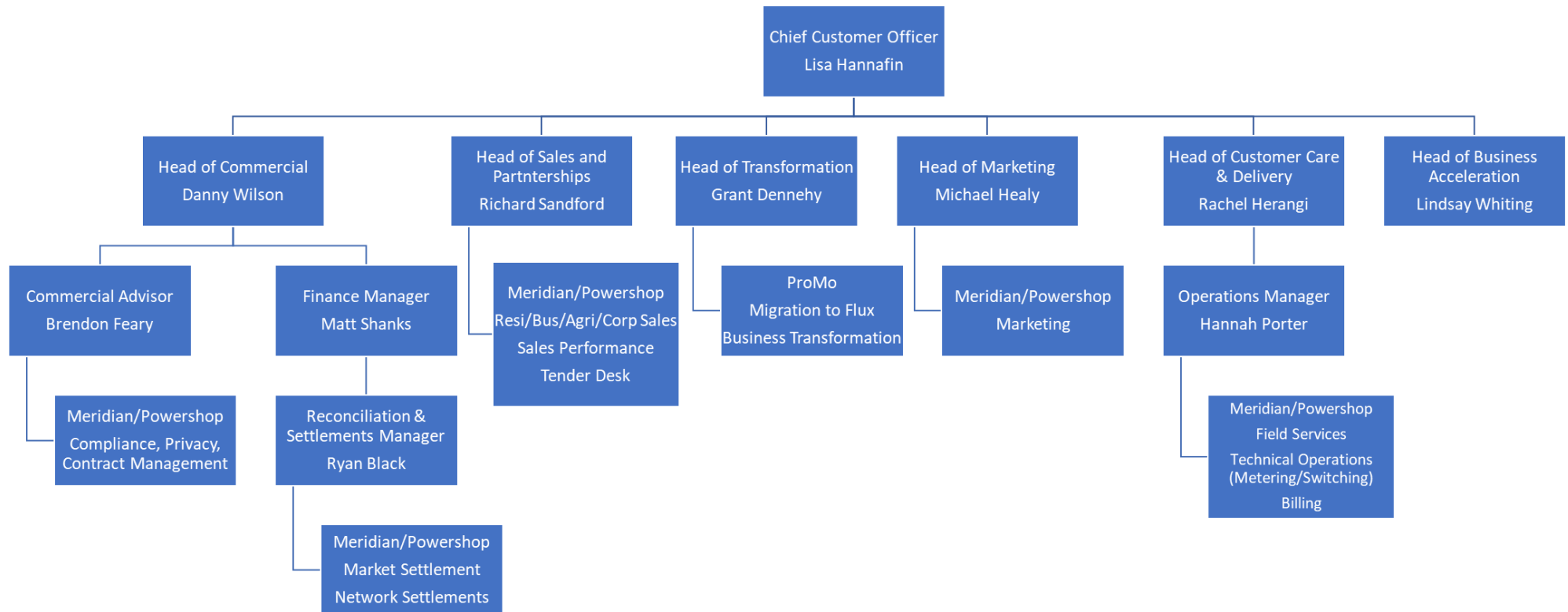
Name	Title	Company
Steve Woods	Lead Auditor	Veritek
Claire Stanley	Supporting Auditor	Veritek

Other personnel assisting in this audit were:

Name	Title	Company
Murray Hasler	Senior Roading Operations Officer	Gore District Council
Rehan Mehta	Graduate Engineer – Asset Management	WSP NZ
Daniel Lau	Energy Data Analyst	Meridian Energy
Melanie Mathews	Quality and Compliance Advisor	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 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 and their agent 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)
0008801002TP3AD	GDC LIGHTS - URBAN	GOR0331	174	4,176
0008801019TP7D4	GDC LIGHTS - NZTA	GOR0331	336	65,855
0008801020TPE7D	GDC LIGHTS - URBAN	GOR0331	44	1,028
0008801007TPEE2	GDC LIGHTS - URBAN	GOR0331	1,135	29,996
Total			1,689	101,055

1.7. Authorisation Received

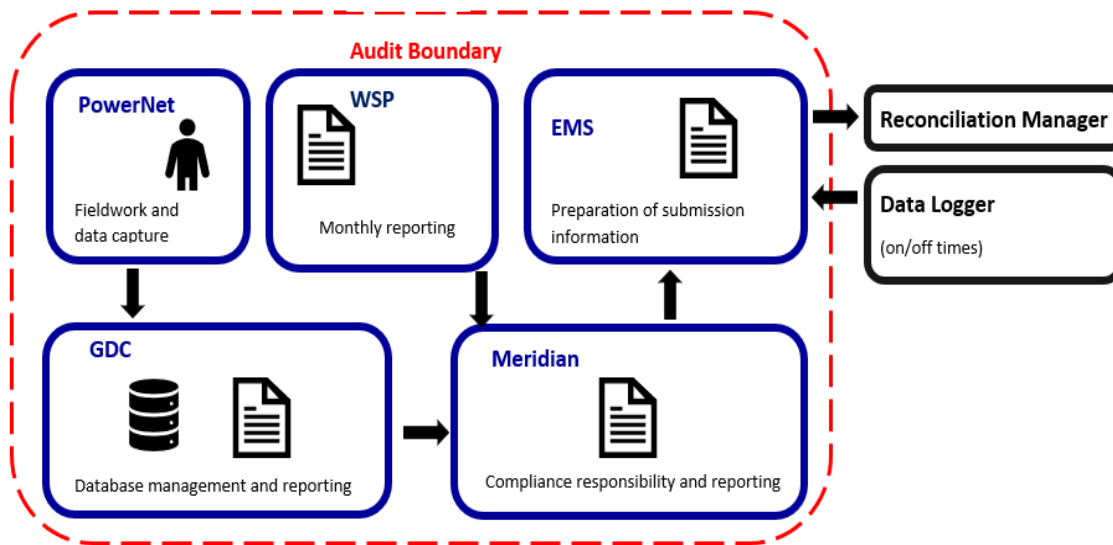
All information was provided directly by Meridian, WSP and GDC.

1.8. Scope of Audit

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.

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 field audit was undertaken of a statistical sample of 213 items of load on 1st and 2nd February 2023.

1.9. Summary of previous audit

The previous audit was completed in May 2022 by Steve Woods of Veritek Limited. Three non-compliances were identified, and no recommendations were made. The current statuses of the non-compliances recorded are detailed below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	Clause 11(1) of Schedule 15.3	In absolute terms, total annual consumption is estimated to be 15,300 kWh higher than the DUML database indicates. 171 lamps not recorded correctly in the database, resulting in approximately 37,704 kWh of under submission. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing Still existing Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional items of load found in the field of 222 items of load sampled.	Still existing different lamps
Database accuracy	3.1	Clause 15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 15,300 kWh higher than the DUML database indicates. 171 lamps not recorded correctly in the database, resulting in approximately 37,704 kWh of under submission.	Still existing Still existing

Subject	Section	Clause	Non-Compliance	Status
Volume information accuracy	3.2	Clause 15.2 and 15.37B(c)	In absolute terms, total annual consumption is estimated to be 15,300 kWh higher than the DUML database indicates.	Still existing
			171 lamps not recorded correctly in the database, resulting in approximately 37,704 kWh of under submission.	Still existing
			The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
Database accuracy	3.1	Update RAMM with the correct fluorescent lamp model and LED lamp values.	Still existing
		Investigate and confirm the wattage for the Fairy lights is recorded accurately in RAMM.	Still existing

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

- 1. by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
- 2. within three months of submission to the reconciliation manager (for new DUML)*
- 3. within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

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.

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 the EMS agent audit. Compliance was confirmed for both parties.

I compared the database provided to the capacity information Meridian supplied to EMS for the month of December 2022 and I confirm the submission is accurate.

The field audit found that the database was not within the allowable +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates.

177 lamps with incorrect wattage are recorded in RAMM which will result in an estimated under submission of 39,498 kWh per annum (based on 4271 hours per annum).

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 04-May-22 To: 11-Jan-23	In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates. 177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 9		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as weak because historic errors have not been corrected. The impact is assessed to be high, based on the kWh differences described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian has advised Gore DC of the inaccuracies identified and has requested for corrections to be made.		09/02/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Meridian will continue to follow up with Gore DC to have the inaccuracies corrected. We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission.		08/09/2023 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

An ICP is recorded for all items of load.

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 DUMML database must contain the location of each DUMML 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 name, Pole number, and Global Positioning System (GPS) coordinates. GPS coordinates and street name are recorded for all items of load.

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 DUMML 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 model which records the lamp wattage . The lamp notes field records the total wattage for the lamp including wattage and ballast.

There were no missing or invalid zero lamp wattages. 49 items of load did not have a lamp model description recorded.

The accuracy of the recorded wattages and lamp descriptions is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(c) &(d) of Schedule 15.3 From: 04-May-22 To: 11-Jan-23	49 items of load with no lamp model description details populated. 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 because they ensure most information is accurate. The impact is assessed to be low as overall volume of load is small.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian has advised Gore DC of the inaccuracies identified and has requested for corrections to be made.		09/02/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Meridian will continue to follow up with Gore DC to have the inaccuracies corrected.		08/09/2023	

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 213 items of load on 1st and 2nd February 2023.

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
BROUGHTON ST	36	36		4	2 x 24W LED recorded in the database but 2 x 22W LED located in the field. 1 x 24W LED recorded in the database but 1 x 20W LED located in the field. 1 x 24W LED recorded in the database but 1 x 130W LED located in the field.

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
KANA ST	33	33		3	2 x 24W LED recorded in the database but 2 x 82W LED located in the field. 1 x 24W LED recorded in the database but 1 x 130W LED located in the field.
OAKLAND ST	14	14		6	6 x 24W LED recorded in the database but 6 x 82W LED located in the field.
WAI AU ST	2	3	1		1 additional 24W LED located in the field, not recorded in the database.
TOTALS	1689	1690	+1	13	

One additional item of load found in the field of 213 items of load sampled.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 04-May-22 To: 11-Jan-23	One additional item of load found in the field of 213 items of load sampled. Potential impact: Low Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong because they mitigate risk to an acceptable level. The impact is assessed to be low due to one additional light 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
Meridian has advised Gore DC of the inaccuracies identified and has requested for corrections to be made.		09/02/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Meridian will continue to follow up with Gore DC to have the inaccuracies corrected.		08/09/2023	

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 RAMM database was checked for audit trails.

Audit commentary

RAMM records audit trail information of changes made.

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: <ol style="list-style-type: none"> 1. A -I, 2. J – MA, and 3. MC – W.
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 28 sub-units.
Total items of load	213 items of load were checked.

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

Audit commentary

Field Audit Findings

A field audit was conducted of a statistical sample of 213 items of load. The “database auditing tool” was used to analyse the results, which are shown in the table below.

Result	Percentage	Comments
The point estimate of R	109.3	Wattage from survey is higher than the database wattage by 9.3%
R _L	102.7	With a 95% level of confidence, it can be concluded that the error could be between 2.7% and 26.5%.
R _H	126.5	

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 and the table below shows that Scenario B (detailed below) applies.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 2.7% and 26.5% higher 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 9 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 3 kW and 27 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 11,800 kWh and 114,6 00 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

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority and found the issue is still existing as identified in the previous audits for incorrect under verandah light wattages recorded. The following discrepancies were identified, and I recommend that these are corrected.

Lamp Make	Lamp Model	Database Wattage	Expected wattage	Variance	Database quantity	Estimated annual kW effect on consumption	Comments
Fluorescent	120W	25W	120W	95W	2	190	Lamp wattage recorded incorrectly
Fluorescent	15W	25W	15W	-10W	1	-10	Lamp wattage recorded incorrectly
Fluorescent	2x 28W	25W	36W	11W	2	22	Lamp wattage recorded incorrectly
Fluorescent	2x 31.5W	25W	74W	49W	8	392	Lamp wattage recorded incorrectly
Fluorescent	2x 36W	25W	72W	47W	102	4794	Lamp wattage recorded incorrectly
Fluorescent	2x 40W	25W	80W	19W	19	361	Lamp wattage recorded incorrectly
Fluorescent	2x 58W	25W	116W	91W	31	2821	Lamp wattage recorded incorrectly
LED Lamps	2 x 30W LED	25W	60W	35W	2	70	Lamp wattage recorded incorrectly
LED Lamps	58 W LED	25W	58W	33W	1	33	Lamp wattage recorded incorrectly
LED Lamps	70 W LED	25W	70W	45W	1	45	Lamp wattage recorded incorrectly
LED Lamps	80 W LED	25W	80W	55W	2	110	Lamp wattage recorded incorrectly
LED Lamps	80 W LED	10W	80W	70W	6	420	Lamp wattage recorded incorrectly
TOTALS					177	9,248	

This will result in an estimated under submission of 39,498 kWh per annum (based on 4271 hours per annum). This is recorded as non-compliance below. This was also recorded in the previous audit.

As noted in **section 2.4** 49 items of load do not have make or model details recorded, therefore the wattages cannot be confirmed. Of these 10 are identified as Fairy Lights in the database, the wattage recorded in the lamp notes appears to be high.

Most of these were also identified in the previous audit. I repeat the recommendation to investigate these lamps to ensure the wattage is recorded accurately.

Light Make	Lamp Model	Lamp Notes	Bracket Notes	Count
Unknown	Blank	148	Fairy Lights	1
Unknown	Blank	214	Fairy Lights	1
Unknown	Blank	608	Fairy Lights	1
Unknown	Blank	164	Fairy Lights	1
Unknown	Blank	324	Fairy Lights	1
Unknown	Blank	120	Fairy Lights	1
Unknown	Blank	180	Fairy Lights	1
Unknown	Blank	656	Fairy Lights	1
Unknown	Blank	328	Fairy Lights	1
Unknown	Blank	156	Fairy Lights	1
Blank	Blank	39	Blank	39

Recommendation	Description	Audited party comment	Remedial action
Database accuracy	<p>Update RAMM with the correct fluorescent lamp model and LED lamp values.</p> <p>Investigate and confirm the wattage for the Fairy lights is recorded accurately in RAMM.</p> <p>Update RAMM with the make and model details for the Fairy lights.</p>	<p>Meridian has advised Gore DC of the recommendations.</p> <p>Meridian will follow up Gore DC regularly to see if any of the recommendations are implemented and offer assistance.</p>	Identified

NZTA lighting

NZTA lighting is included in the database and was checked as part of the field audit.

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 not had any new subdivisions completed during the audit period, there is a new subdivision that is currently under development. GDC advised that they are formalising the processes for new subdivisions and changes made in the field.

The fault and maintenance work continues to be undertaken by PowerNet contracting division. PowerNet provide GDC with details of all changes made in the field and these are updated in RAMM.

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: 04-May-22 To: 11-Jan-23	<p>In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates.</p> <p>177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission.</p> <p>Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9</p>		
Audit risk rating	Rationale for audit risk rating		
High	<p>The controls are rated as weak because historic errors have not been corrected.</p> <p>The impact is assessed to be high, based on the kWh differences described above.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian has advised Gore DC of the inaccuracies identified and has requested for corrections to be made.		09/02/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Meridian will continue to follow up with Gore DC to have the inaccuracies corrected.		08/09/2023	

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, 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 the EMS agent audit. Compliance was confirmed for both parties.

I compared the database provided to the capacity information Meridian supplied to EMS for the month of December 2022 and I confirm the submission is accurate.

The field audit found that the database was not within the allowable +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates.

177 lamps with incorrect wattage are recorded in RAMM which will result in an estimated under submission of 39,498 kWh per annum (based on 4271 hours per annum).

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description	
<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)</p> <p>From: 04-May-22 To: 11-Jan-23</p>	<p>In absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUMML database indicates.</p> <p>177 lamps not recorded correctly in the database, resulting in approximately 39,498 kWh of under submission.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 9</p>	
Audit risk rating	Rationale for audit risk rating	
<p>High</p>	<p>The controls are rated as weak because historic errors have not been corrected.</p> <p>The impact is assessed to be high, based on the kWh differences described above.</p>	
Actions taken to resolve the issue	Completion date	Remedial action status
<p>Meridian has advised Gore DC of the inaccuracies identified and has requested for corrections to be made.</p>	<p>09/02/2023</p>	<p>Identified</p>
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Meridian will continue to follow up with Gore DC to have the inaccuracies corrected.</p> <p>We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission.</p>	<p>08/09/2023</p> <p>Ongoing</p>	

CONCLUSION

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

The database is remotely hosted by thinkproject Ltd. WSP provide a monthly report to Meridian of this database. Meridian reconciles this DUML load using the DST profile.

The field work and asset data capture are conducted by PowerNet using Pocket RAMM.

The field audit was undertaken of a statistical sample of 213 items of load on 1st and 2nd February 2023.

This found that the database is not within the allowable +/-5% accuracy threshold and under submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 9 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 3 kW and 27 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 40,100 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 11,800 kWh and 114,600 kWh p.a. higher than the database indicates.

177 lamps with incorrect wattage are recorded in RAMM which will result in an estimated under submission of 39,498 kWh per annum (based on 4271 hours per annum).

This audit found five non-compliances and repeats two recommendations. The future risk rating of 30 indicates that the next audit be completed in three months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in six months.

PARTICIPANT RESPONSE

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