ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

CLUTHA DISTRICT COUNCIL AND MERIDIAN ENERGY LIMITED

NBZN: 9429037696863

Prepared by: Rebecca Elliot

Date audit commenced: 9 June 2022

Date audit report completed: 27 June 2022

Audit report due date: 19 August 2022

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EXECUTIVE SUMMARY

This audit of the **Clutha District Council (CDC)** 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 New Zealand Ltd . The field work is conducted by Aronui Power Services Ltd, and asset data capture is conducted by Stantec. A monthly report from RAMM is provided to Meridian to calculate the kW value.

Meridian reconciles this DUML load using the DST profile. Submissions are based on the database information, with on and off times derived from data logger information.

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

The field audit was undertaken of a statistical sample of 201 items of load on 22nd June 2022. The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

This audit found six non-compliances and makes one recommendation. The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in 18 months.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Strong	Low	1	Identified
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	One item of load with no ICP recorded.	Strong	Low	1	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Four items of load do not have lamp model, wattage or gear wattage recorded. Two items of load do not have lamp make or lamp model recorded. 13 items of load have the incorrect gear model recorded.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional items of load found in the field of the sample examined.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. 13 items of load with the incorrect gear model recorded.	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Strong	Low	1	Identified
Future Risk Rating						8	

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	Recommendation
Database accuracy	3.1	Incorrect Gear Model recorded in RAMM	Update RAMM with the correct Gear Model description.

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

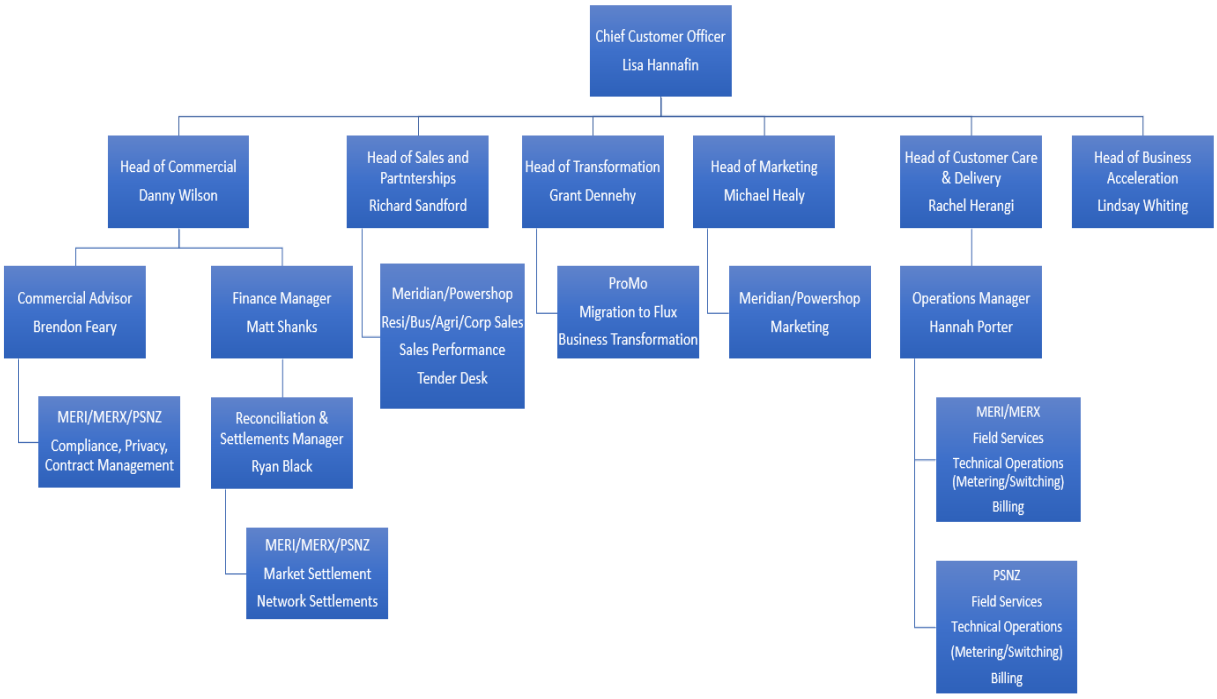
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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:

Name	Company	Role
Rebecca Elliot	Veritek Limited	Lead Auditor
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Melanie Mathews	Quality and Compliance Advisor	Meridian Energy
Rhonda Barlow	Transportation Technician	Stantec New Zealand
Chris Bopp	Senior Infrastructure Engineer	Clutha DC

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.

Database back-up is in accordance with standard industry procedures. 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	Profile	Number of items of load	Database wattage (watts)
0000207893DE37B	Waipori Falls	WPV0661	DST	10	240
0001982479TGE75	CDC Streetlights	BAL0331	DST	1,604	89,205
0008801005TPE67	CDC Lights Urban	GOR0331	DST	120	5,443
0008801015TP4CA	CDC Lights Rural	GOR0331	DST	49	4,239

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
TOTAL				1,783	99,127

1.7. Authorisation Received

All information was provided directly by Meridian and CDC.

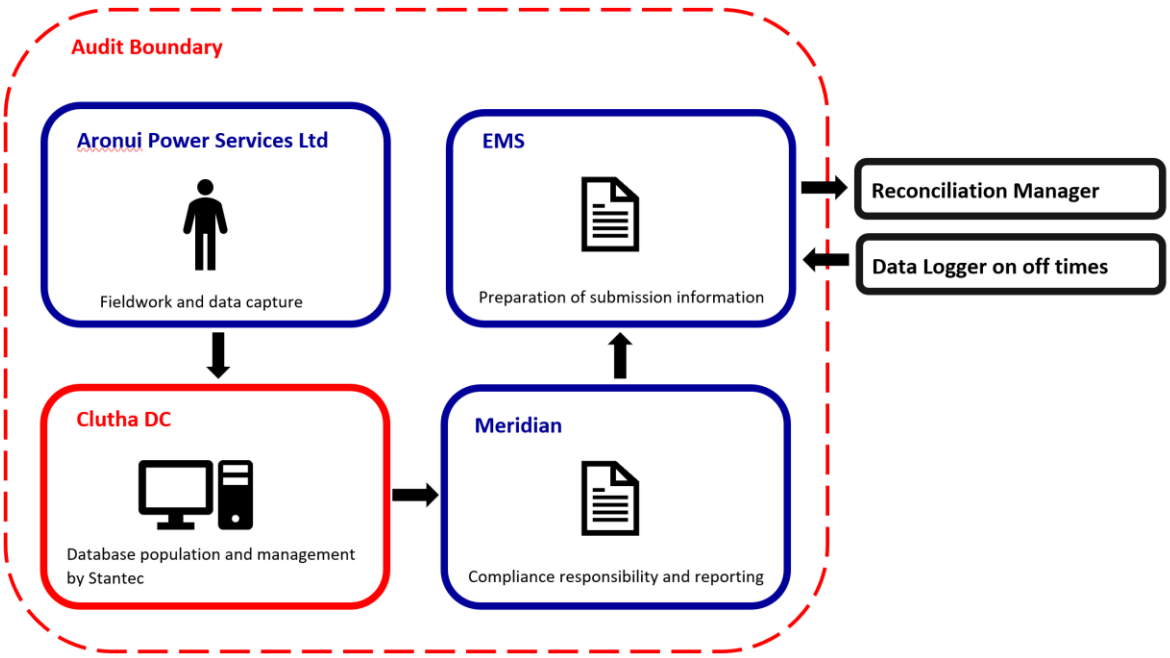
1.8. Scope of Audit

This audit of the CDC DUML database and processes was conducted at the request of 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.

A RAMM database is held by CDC, who is Meridian's customer. Aronui Power Services Ltd is the maintenance contractor. Work is issued to Aronui Power Services via email, the details are returned for the Transportation Technician at Stantec to update RAMM.

Meridian submits the DUML load as NHH 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.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the monthly reporting. The diagram below shows the flow of information and the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 201 items of load on the 22nd June 2022.

1.9. Summary of previous audit

The previous audit was conducted in August 2021 by Rebecca Elliot of Veritek. The summary table below shows the statuses of the non-compliances raised in the previous audit. Further comment is made in the relevant sections of this report.

Subject	Section	Non-Compliance	Status
Deriving submission information	2.1	In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates. The database contains incorrect wattage and ballast wattage leading to under submission of 9,603.34 kWh per annum. Submission is based on a snapshot and does not consider historic adjustments.	Cleared Cleared Still existing
Description and capacity of load	2.4	Nine items of load do not have lamp model, wattage or gear wattage recorded.	Still existing
All load recorded in database	2.5	Six additional items of load found in the field of the sample examined.	Still existing for different lamps
Database accuracy	3.1	In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates. The database contains incorrect wattage and ballast wattage leading to an estimated under submission of 9,603.34 kWh per annum.	Cleared Cleared
Volume information accuracy	3.2	In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates. The database contains incorrect wattage and ballast wattage leading to under submission of 9,603.34 kWh per annum. Submission is based on a snapshot and does not consider historic adjustments.	Cleared Cleared 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 demonstrates that the audit was conducted as required by this clause.

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.

Audit commentary

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information.

A monthly report from the database is provided to Meridian and is used to calculate submissions. Meridian submits the DUML load as NHH 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.

The capacities supplied to EMS for April 2022 were checked and confirmed to be accurate.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

As detailed in **section 3.1**, there are eight items of load with incorrect wattage recorded for the lamp model recorded. The incorrect wattage and ballasts being applied will be resulting in an estimated annual under submission of 2,665 kWh 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: 18-Jun-21 To: 09-Jun-22	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. 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: Three times previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, the small number of exceptions indicated that controls are sufficient to ensure that all lamps are recorded in the database most of the time. The impact is assessed to be low as there are very few changes made to this database.

Actions taken to resolve the issue	Completion date	Remedial action status
Clutha District Council has advised that the incorrect wattage and ballast wattage has been corrected in the database since the audit was performed. We are assessing what changes are required to our processes and tools to account for database changes at a daily level. Once confirmed we will request that monthly data extracts include the detail of changes.	12/08/2022 31/10/2022 30/11/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

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 whether an ICP is recorded for each item of load.

Audit commentary

The analysis found that all items of load had an ICP number recorded except for one item of load that was blank.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 18-Jun-21 To: 09-Jun-22	One item of load with no ICP recorded. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because they mitigate risk to an acceptable level. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The Clutha District Council has advised that these are not in operation. The circuit fuse is out. There is a possibility they may be reconnected in the future and will update the database if they are.	12/08/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

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 street addresses, pole numbers and GPS coordinates.

Six items of load do not have GPS co-ordinates recorded, however there is sufficient information recorded in the address field to be able to locate these lamps.

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.

Audit commentary

All items of load have the lamp make, model and associated wattages populated except the following:

- four items of load do not have the lamp make, lamp model, wattage or gear wattage recorded,
- two items of load do not have lamp make or lamp model recorded, and
- 13 items of load have the incorrect gear model recorded.

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 18-Jun-21 To: 09-Jun-22	Four items of load do not have lamp model, wattage or gear wattage recorded. Two items of load do not have lamp make or lamp model recorded. 13 items of load have the incorrect gear model recorded. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The Clutha District Council has advised that these are not in operation. The circuit fuse is out. There is a possibility they may be reconnected in the future and will update the database if they are. Meridian has advised the Clutha District Council about the inaccuracies of the 13 items of load and has advised that they database will be corrected in the next month.	12/08/2022 16/09/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

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 201 items of load on the 22nd June 2022.

Audit commentary

The following differences were identified during the field audit.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
CHARLOTTE STREET (BALCLUTHA)	29	31	+2		1 additional 57W LED not recorded in the database but located in the field 1 additional 52W LED not recorded in the database but located in the field
HASBOROUGH PLACE	15	13	-2		1 x 70W SON recorded in the database but not located in the field 1 x 24W LED recorded in the database but not located in the field
RENFREW STREET	19	18	-1		1 x 24W LED recorded in the database but not located in the field
SHAKESPEARE STREET	4	4		1	1 x 24W LED recorded in the database but 1 x 57W LED located in the field
SPENSER STREET	10	11	+1		1 additional 24W LED not recorded in the database but located in the field
SPRINGFIELD ROAD	7	7		1	1 x 70W SON recorded in the database but 1 x 24W LED located in the field
GRAND TOTAL	**1783**	**1783**	**6 (+3, -3)**	**2**	

The field audit found three more lamps in the field of the 201 items of load sampled. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 18-Jun-21 To: 09-Jun-22	Three additional items of load found in the field of the 201 items of load sampled. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Meridian has advised Clutha District Council of the inaccuracies and have requested for them to be corrected.	16/09/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

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

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	Streetlights in the Clutha region
Strata	The database contains items of load located in the Clutha region owned by CDC. The management process is the same for all lights. The total population was divided into four strata: • roads starting with A-E, • roads starting with F–N, • roads starting with O-Z, and • NZTA.
Area units	I created a pivot table of the roads in the stratum, and I used a random number generator in a spreadsheet to select a total of 26 sub-units.
Total items of load	201 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority, and the manufacturer's specifications.

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 201 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	100.0	Wattage from survey matches the database wattage.
R_L	97.4	With a 95% level of confidence, it can be concluded that the error could be between -2.6% and +3.3%
R_H	103.3	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 1 February 2019. The table below shows that Scenario A (detailed below) applies, and the best available estimate indicates that the database is accurate within ± 5.0%.

In absolute terms the installed capacity is estimated to be the same as the database.

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

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

There is a 95% level of confidence that the annual consumption is between 11,200 kWh p.a. lower to 14,100 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

The database was checked against the published standardised wattage table, and manufacturer's specifications where available:

Lamp Model	Database wattage	Expected wattage	Variance	Expected gear wattage	Count	Wattage difference
SON 150	76	150	74	18	2	184
SON 150	102	150	48	18	1	66
SON 150	146	150	4	18	3	66
SON 250	102	250	148	28	1	176
SON 250	146	250	104	28	1	132
Total					**8**	**624**

The incorrect wattage and ballasts being applied will be resulting in an estimated annual under submission of 2,665 kWh per annum (based on 4271 hours per annum).

13 items of load were identified in the database with the incorrect Gear Model recorded.

Gear Model	Lamp Make	Lamp Model	Lamp Wattage	Gear Wattage
Sodium Vapour	Osram	Osram LED	24	0
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Osram Gear LED	Sodium Vapour SON	SON 70	70	13
Luma gear LED	Sodium Vapour SON	SON 150	150	18
Sodium Vapour	AEC Italo LED	STW 4000K 700mA 2M) 52W LED	52	0

I recommend that the above discrepancies are corrected in the database.

Recommendation	Description	Audited party comment	Remedial action
Database accuracy	Update RAMM with the correct Gear Model description.	The Clutha District Council has advised that they will be adding a "new look up" section in RAMM over the next month	Identified

NZTA lighting

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

Change management process findings

Processes to track changes to the database were reviewed. The contractor is Aronui Power Services Ltd for maintenance. Work is issued to Aronui Power Services via email, the details are returned for the Transportation Technician at Stantec to update RAMM.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 18-Jun-21 To: 09-Jun-22	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. 13 items of load with the incorrect gear model recorded. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, the small number of exceptions indicated that controls are sufficient to ensure that all lamps are recorded in the database most of the time. The impact is assessed to be low as there are very few changes made to this database.

Actions taken to resolve the issue	Completion date	Remedial action status
Clutha District Council has advised that the incorrect wattage and ballast wattage has been corrected in the database since the audit was performed. Meridian has advised the Clutha District Council about the inaccuracies of the 13 items of load and has advised that they database will be corrected in the next month.	12/08/2022 16/09/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

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

Submission data was checked for accuracy, including:

- checking the registry to confirm that all ICPs have 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

The process for calculation of consumption was examined.

Audit commentary

Audit commentary

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information.

A monthly report from the database is provided to Meridian and is used to calculate submissions. Meridian submits the DUML load as NHH 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.

The capacities supplied to EMS for April 2022 were checked and confirmed to be accurate.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

As detailed in **section 3.1**, there are eight items of load with incorrect wattage recorded for the lamp model recorded. The incorrect wattage and ballasts being applied will be resulting in an estimated annual under submission of 2,665 kWh 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: 3.2 With: Clause 15.2 and 15.37B(c) From: 18-Jun-21 To: 09-Jun-22	The database contains incorrect wattage and ballast wattage for eight items of load, resulting in under submission of 2,665 kWh per annum. 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: Three times previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, the small number of exceptions indicated that controls are sufficient to ensure that all lamps are recorded in the database most of the time. The impact is assessed to be low as there are very few changes made to this database.

Actions taken to resolve the issue	Completion date	Remedial action status
Clutha District Council has advised that the incorrect wattage and ballast wattage has been corrected in the database since the audit was performed. We are assessing what changes are required to our processes and tools to account for database changes at a daily level. Once confirmed we will request that monthly data extracts include the detail of changes.	12/08/2022 31/10/2022 30/11/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridian will continue to follow up with Clutha District Council to complete the required corrections and to maintain the installation updates and changes to the database.	16/11/2022	

CONCLUSION

The database is remotely hosted by thinkproject New Zealand Ltd . The field work is conducted by Aronui Power Services Ltd, and asset data capture is conducted by Stantec. A monthly report from RAMM is provided to Meridian to calculate the kW value.

Meridian reconciles this DUML load using the DST profile. Submissions are based on the database information, with on and off times derived from data logger information.

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

The field audit was undertaken of a statistical sample of 201 items of load on 22nd June 2022. The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

This audit found six non-compliances and makes one recommendation. The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in 18 months.

PARTICIPANT RESPONSE

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