ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

CLUTHA DISTRICT COUNCIL AND MERIDIAN ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 16 June 2021

Date audit report completed: 29 June 2021

Audit report due date: 11 August 2021

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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.

A RAMM database is held by CDC, who is Meridian's customer. A new contractor Aronui Power Services Ltd has just been appointed for maintenance. Work will be issued to the field contractor via a service request from the CRM system, this will be returned for the Transportation Technician at Stantec to then update RAMM.

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.

Five non-compliances were identified. The future risk rating of 16 indicates that the next audit be completed in 6 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in nine months' time.

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	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.	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Nine items of load do not have lamp model, wattage or gear wattage recorded.	Moderate	Low	2	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	Six additional items of load found in the field of the sample examined.	Moderate	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	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.	Moderate	Medium	4	Investigating

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)	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.	Moderate	Medium	4	Investigating
Future Risk Rating						16	

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
			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

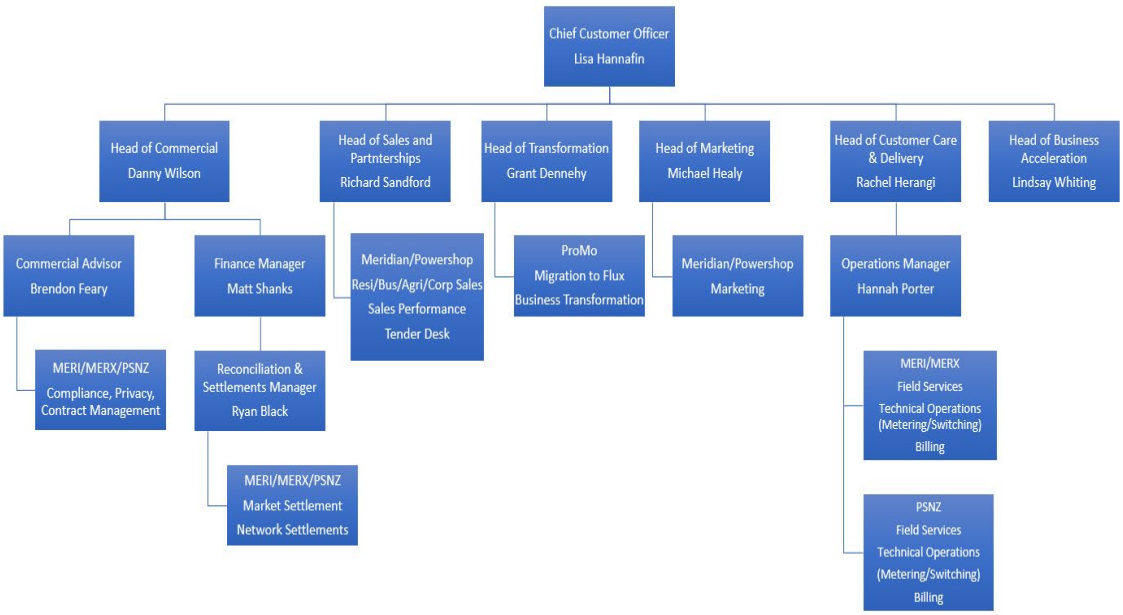
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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
Amy Cooper	Compliance Officer	Meridian Energy
Rhonda Barlow	Transportation Technician	Stantec New Zealand
Chris Bopp	Senior Infrastructure Engineer	Clutha DC
Niko Trbuhovic	Roading Asset Management Officer	Clutha DC

1.4. Hardware and Software

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

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

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000207893DE37B	Waipori Falls	WPV0661	DST	10	240
0001982479TGE75	CDC Streetlights	BAL0331	DST	1,602	89,354
0008801005TPE67	CDC Lights Urban	GOR0331	DST	120	5,435
0008801015TP4CA	CDC Lights Rural	GOR0331	DST	49	4,239
TOTAL				1,781	99,268

1.7. Authorisation Received

All information was provided directly by Meridian and CDC.

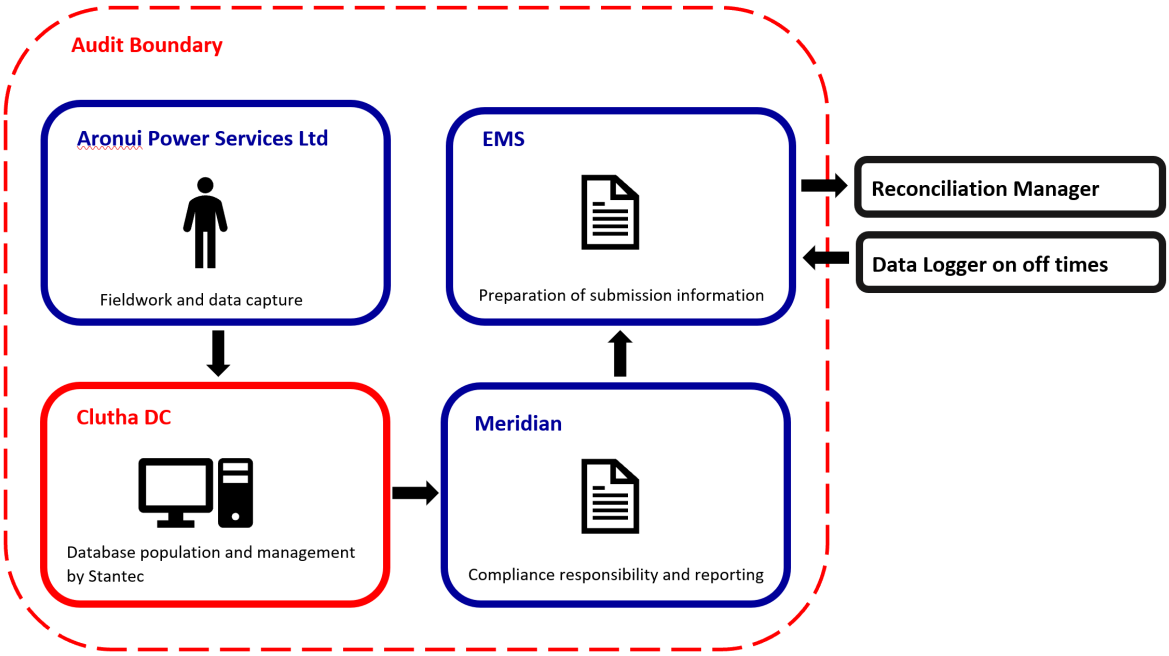
1.8. Scope of Audit

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. A new contractor Aronui Power Services Ltd has just been appointed for maintenance. Work will be issued to the field contractor via Service Request from the CRM system, this will be returned for the Transportation Technician at Stantec to update RAMM.

Meridian submits the DUML load as HHR 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 306 items of load on the 24th of June 2021.

1.9. Summary of previous audit

The previous audit was conducted in August 2020 by Steve Woods 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 29,900 kWh higher than the DUML database indicates. Submission is based on a snapshot and does not consider historic adjustments. The database contains incorrect ballast wattage leading to under submission of 2,300 kWh per annum.	Still existing
Database accuracy	3.1	In absolute terms, total annual consumption is estimated to be 29,900 kWh higher than the DUML database indicates. The database contains incorrect ballast wattage leading to under submission of 2,300 kWh per annum.	Still existing
Volume information accuracy	3.2	In absolute terms, total annual consumption is estimated to be 29,900 kWh higher than the DUML database indicates. Submission is based on a snapshot and does not consider historic adjustments. The database contains incorrect ballast wattage leading to under submission of 2,300 kWh per annum.	Still existing

Recommendations

Subject	Section	Recommendation	Status
Location of items of load	2.3	Populate GPS coordinates for 42 items of load.	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 HHR 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 May 2021 were checked and confirmed to be accurate.

In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

As detailed in **section 3.1**, there are 26 items of load with either mismatched lamp descriptions and wattages or are blank. This will be resulting in an estimated 9,603.34 kWh of under submission per annum.

The lamp install date is used as the date lights are installed or changed, but submission is based on a snapshot and does not consider historic adjustments.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 17-Aug-20 To: 16-Jun-21	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. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is moderate; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
The discrepancies identified in this audit are being investigated by Clutha District Council and the database will be corrected as required. Where we are aware of significant retrospective changes to database quantities historic submissions are revised accordingly. Processes and reporting to manage minor retrospective/mid month changes (e.g. bulb changes/removals/additions) are being considered	30 Sept 2021	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED rollout in the Clutha DC region is complete so future changes are expected to be reduced. Processes are in place for changes in the field to b advised to the council from the new contractor and there is dedicated resource at the council to manage database updates.		

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.

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 street addresses, pole numbers and GPS coordinates.

Eight items of load do not have GPS coordinates but there is sufficient detail in the address field to locate them. This is an improvement from the last audit. I recommend the GPS coordinates are plotted and added to the database for the remaining items.

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, nine items of load do not have the lamp model, wattage or gear wattage 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: 17-Aug-20 To: 16-Jun-21	Nine items of load do not have lamp model, wattage or gear wattage recorded. 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 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
Clutha DC are investigating these items of load. They advise it is likely these are lights that are not presently operating.	31 Aug 2021	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of a statistical sample of 306 items of load on the 24th of June 2021.

Audit commentary

The following differences were identified during the field audit.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
BURNS STREET (MILTON)	4	3	-1		1 x 24W LED recorded in the database but not found in the field
CONSTITUTION AVENUE	6	6		1	1 x 46W LED recorded in the database but 1 x 24W LED found in the field
CROSSLEIGH CRESCENT	8	13	+5		Additional 5 x 24W LED found in the field
HOSPITAL ROAD	20	20		1	1 x70W SON recorded in the database but 24W LED found in the field
MOIR STREET	12	13	+1		Additional 1 x 24W LED found in the field
RENFREW STREET	19	18	-1		1 x 24W LED recorded in the database but not found in the field
RONGAHERE ROAD	2	2		2	1 x 70W SON recorded in the database but 1 x 24W LED found in the field 1 x 46W LED recorded in the database but 1 x 24W LED found in the field
WILSON ROAD	14	14		1	1 x 250 SON recorded in the database, but 102W* LED found in the field
KAKAPUAKA ROAD	4	4		2	2 x 150 SON recorded in the database, but 102W* LED found in the field
GRAND TOTAL	**89**	**93**	**8**	**7**	

*There were no labels on the new LEDs installed at Wilson Road and Kakapuaka Road. Clutha DC has not been notified by NZTA of the recent change. I have assumed these are 102W LEDs based on similar lights recorded in the database.

The field audit identified six lights which were present in the field but not recorded in the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 17-Aug-20 To: 16-Jun-21	Six additional items of load found in the field of the sample examined. 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 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
Clutha DC are investigating these items of load and will correct the database once details have been confirmed. Information regarding the changes to NZTA lights has been received and database updates are in progress. LEDs were confirmed to be of varying wattages (not all 102W as assumed)	30 Sept 2021 31 Aug 2021	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The RAMM database functionality achieves compliance with the code.

The change management process and the compliance of the database reporting provided to Meridian is detailed in **sections 3.1** and **3.2**.

Audit outcome

Compliant

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database*

Audit observation

The database was checked for audit trails.

Audit commentary

The database has a complete audit trail.

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 three strata: Roads starting with A-E Roads starting with F–N Roads starting with O-Z 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 76 sub-units making up 10% of the total database wattage.
Total items of load	306 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 306 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	96.5	Wattage from survey is lower than the database wattage by 3.5%
R_L	91.5	With a 95% level of confidence, it can be concluded that the error could be between -8.5% and 1.4%
R_H	101.4	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 8.5% lower and 1.4% 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 3 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 8 kW lower to 1 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 36,100 kWh p.a. lower to 6,000 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	Wattage recorded in database	Expected wattage	Expected Ballast	Count	Wattage difference
LED 46	75	46	0	1	-29
SON 150	24	150	18	2	288
SON 150	70	150	18	1	98
SON 70	24	70	13	5	295
STW 4000K 525mA 2M) 39.5W LED	24	39.5	0	1	15.5
STW 4000K 525mA 3M) 58W LED	52	58	0	2	12
STW 4000K 525mA 4M) 75W LED	46	75	0	1	29
STW 4000K 525mA 4M) 75W LED	52	75	0	1	23
STW 4000K 525mA 4M) 75W LED	58	75	0	1	17
STW 4000K 700mA 2M) 52W LED	58	52	0	2	-12
Blank	blank	150	18	9	1512
TOTAL				**26**	**2248.5**

Note the expected wattage where the lamp model is blank is based on the lamp or gear make, where it is populated in the database.

The incorrect wattage and ballasts being applied will be resulting in an estimated annual under submission of 9,603.34 kWh per annum.

NZTA lighting

NZTA lighting is now in the database and was included as a stratum.

Location accuracy

Eight items of load do not have GPS coordinates but there is sufficient detail in the address field to locate them**.**

Change management process findings

Processes to track changes to the database were reviewed. A new contractor Aronui Power Services Ltd has just been appointed for maintenance. Work will be issued to the field contractor via Service Request from the CRM system, this will be returned for the Transportation Technician at Stantec to update RAMM. Ten percent of work completed by the contractor will be audited. The LED rollout engagement with McKay Electrical is complete.

The lamp install date is used as the date lights are installed or changed. The replaced date field is used to capture any changes to the lamps, and this is advised to the trader in the monthly report.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 17-Aug-20 To: 16-Jun-21	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. Potential impact: Medium Actual impact: Medium Audit history: Once Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	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 moderate; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
The discrepancies identified in this audit are being investigated by Clutha District Council and the database will be corrected as required. Refer to previous sections for comment on specific discrepancies.	31 Oct 2021	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED rollout in the Clutha DC region is complete so future changes are expected to be reduced. Processes are in place for changes in the field to b advised to the council from the new contractor and there is dedicated resource at the council to manage database updates.		

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

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 HHR 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 May 2021 were checked and confirmed to be accurate.

In absolute terms, total annual consumption is estimated to be 14,600 kWh lower than the DUML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

As detailed in **section 3.1**, there are 26 items of load with either mismatched lamp descriptions and wattages or are blank. This will be resulting in an estimated 9,603.34 kWh of under submission per annum.

The lamp install date is used as the date lights are installed or changed. The replaced date field is used to capture any changes to the lamps, and this is advised to the trader in the monthly report, but submission is based on a snapshot.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 17-Aug-20 To: 17-Jun-21	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. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is moderate; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
The discrepancies identified in this audit are being investigated by Clutha District Council and the database will be corrected as required. Where we are aware of significant retrospective changes to database quantities historic submissions are revised accordingly. Processes and reporting to manage minor retrospective/mid month changes (e.g. bulb changes/removals/additions) are being considered	30 Sept 2021	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The LED rollout in the Clutha DC region is complete so future changes are expected to be reduced. Processes are in place for changes in the field to b advised to the council from the new contractor and there is dedicated resource at the council to manage database updates.		

CONCLUSION

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. A new contractor Aronui Power Services Ltd has just been appointed for maintenance. Work will be issued to the field contractor via Service Request from the CRM system, this will be returned for the Transportation Technician at Stantec to update RAMM.

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.

Five non-compliances were identified. The future risk rating of 16 indicates that the next audit be completed in 6 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in nine months time.

PARTICIPANT RESPONSE

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