ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

Provera

For

ASHBURTON DISTRICT COUNCIL AND MERIDIAN ENERGY LIMITED

NZBN: 9429037696863

Prepared by: Tara Gannon

Date audit commenced: 23 June 2023

Date audit report completed: 30 August 2023

Audit report due date: 1 September 2023

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EXECUTIVE SUMMARY

This audit of the **Ashburton District Council (ADC)** 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 ADC, who is Meridian's customer. **Electricity Ashburton (EA Networks)** are responsible for new connections, fault, maintenance, and upgrade work, and maintain the database.

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 the EMS agent audit.

A field audit was conducted of a statistical sample of 216 items of load. Discrepancies were identified in five of the 31 sub-units (roads) included in the field audit. The "database auditing tool" was used to analyse the results. The analysis confirmed that the database potential error could be greater than +/- 5.0% and therefore non-compliance is recorded.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

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

The current monthly report is provided as a snapshot. Meridian completes revision submissions where corrections are required but they are not yet being provided with changes made to the database during the month.

Four non-compliances were identified. The future risk rating of seven indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's responses and agree with this recommendation.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	Database is not confirmed as accurate with a 95% level of confidence as recorded in section 3.1. One item of load with the incorrect ballast recorded resulting in an estimated minor under submission of 4.27 kWh per annum. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Identified
All load recorded in the database	2.5	11(2A) of Schedule 15.3	One additional light found in the field audit sample.	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. 24 lights with the incorrect light description. The correct wattage is recorded so this has no impact on reconciliation. One light with the incorrect ballast recorded. The impact on submission is negligible.	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not confirmed as accurate with a 95% level of confidence as recorded in section 3.1. One item of load with the incorrect ballast recorded resulting in an estimated minor under submission of 4.27 kWh per annum. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Identified
Future Risk Rating						7	

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
ICP identifier and items of load	2.2	Remove two items of load recorded under ICP 0000000000EAZZ from the database.
Database Accuracy	3.1	Adopt the EA Standardised wattage format where the total wattage is recorded in the lamp value.

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

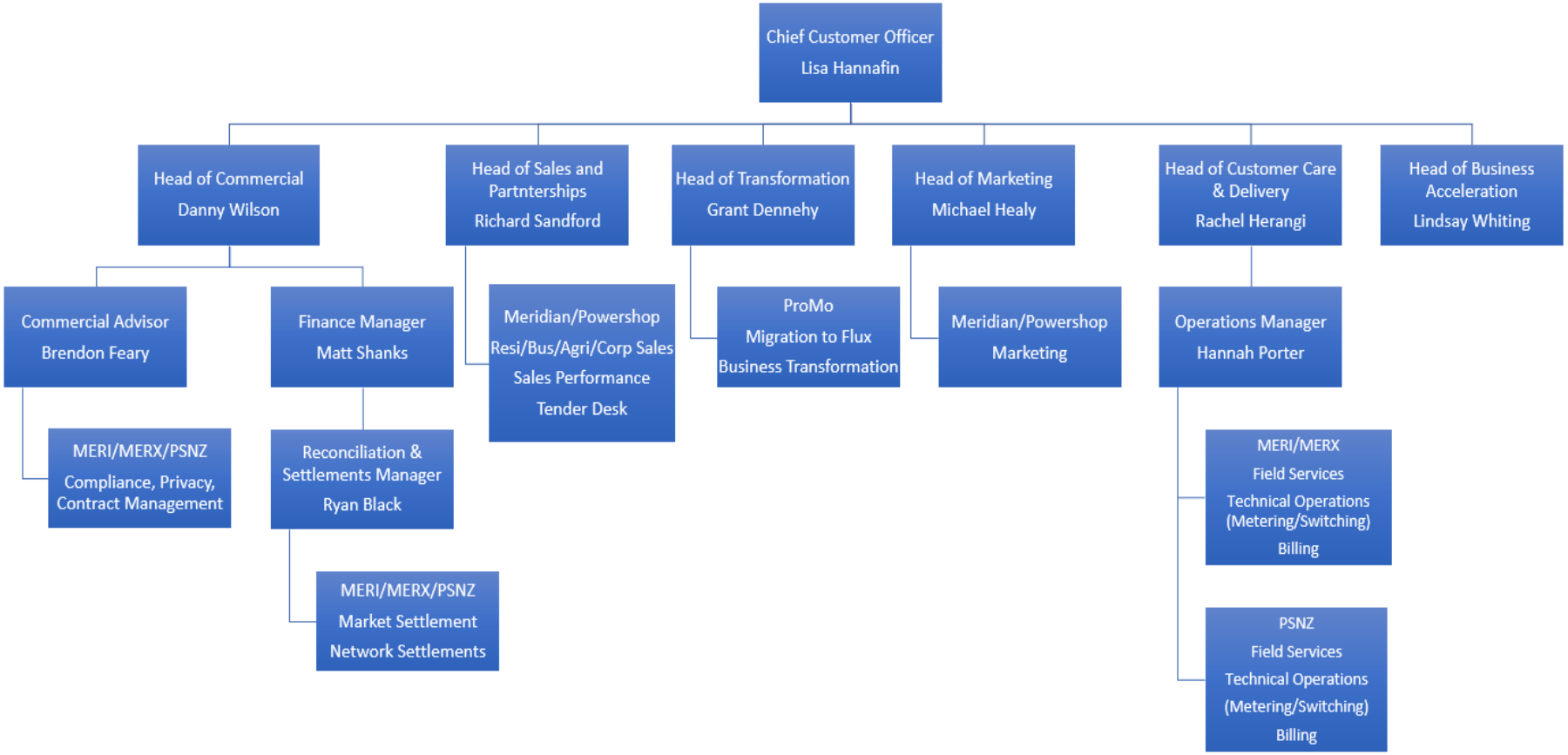
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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
Tara Gannon	Provera	Lead Auditor
Brett Piskulic	Provera	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Tayla Hampton	Data Management Officer	Ashburton DC
Mark Chamberlain	Roading Manager	Ashburton DC
Wayne Watson	Overhead Manager	Electricity Ashburton Network
Yvonne Gilmore	Consultant to Ashburton DC	Ashburton DC
Melanie Matthews	Quality and Compliance Advisor	Meridian Energy Limited

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	Profile	Number of items of load	Database wattage (watts)
0000010559EAD7C	280 East St, Ashburton	ASB0661	DST	34	18,507
0000025163EA218	ADC Streetlights, Ashburton	ASB0661	DST	3,154	146,951
0000025164EAFD2	Open Spaces - Parks and Amenities, Ashburton	ASB0661	DST	93	6,606
0000030218EA553	Open Spaces - Methven Town Centre, Methven	ASB0661	DST	27	961
Total				3,308	173,025

1.7. Authorisation Received

All information was provided directly by Meridian, ADC or EA Networks.

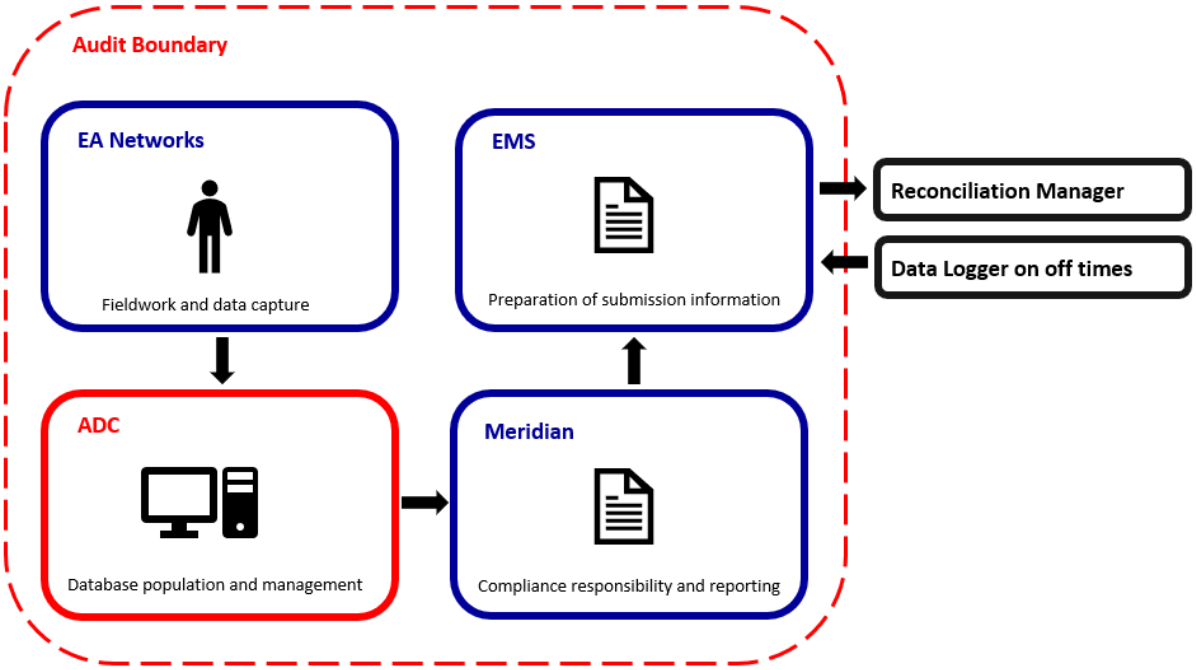
1.8. Scope of Audit

This audit of the ADC 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.

A RAMM database is held by ADC, who is Meridian's customer. EA Networks are responsible for new connections, fault, maintenance, and upgrade work, and maintain the database.

Meridian reconciles the DUML load for ADC ICPs 0000010559EAD7C, 0000025163EA218, 0000025164EAFD2 and 0000030218EA553 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 the 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 database reporting. The diagram below shows the audit boundary for clarity.



The field audit was undertaken of 216 items of load in Ashburton on carried out on 14th August 2023.

1.9. Summary of previous audit

The previous audit was undertaken by Rebecca Elliot of Veritek Limited in August 2021. The summary table below shows the statuses of the non-compliances and recommendation raised in the previous audit.

Table of Non-compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Four additional lights found in the field of the sample audited.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	20 lights with the incorrect light description. The correct wattage is recorded so this has no impact on reconciliation. One light with the incorrect ballast recorded. The impact on submission is negligible.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	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	Description	Recommendation	Status
Database Accuracy	3.1	Lamp Wattage	Adopt the EA Standardised wattage format where the total wattage is recorded in the lamp value.	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 Provera to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

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 the EMS agent audit. Compliance was confirmed.

The capacities supplied to EMS for May 2023 were checked and confirmed to be accurate.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**.

One item of load has the incorrect wattage applied in the DUML database resulting in an estimated minor under submission of 4.27 kWh per annum. This is detailed in **section 3.1**.

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

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

The current data used is a snapshot and this practice is non-compliant. There are very few changes being made in the database so the impact on reconciliation is expected to be small.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-21 To: 14-Aug-23	Database is not confirmed as accurate with a 95% level of confidence as recorded in section 3.1. One item of load with the incorrect ballast recorded resulting in an estimated minor under submission of 4.27 kWh per annum. 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: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact on settlement and participants is low; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Ashburton District Council has been advised of the discrepancies identified. Ashburton District Council has advised, they will be investigated and corrected where required.	29/08/2023	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridan will continue to follow up with Ashburton District Council to have the inaccuracies corrected.	30/09/2023	
Ashburton District Council advise the EA standardized wattage format is to be adopted.	30/09/2023	
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.	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

The analysis found that all items of load had an ICP number recorded.

There are two lights in the database assigned to ICP 0000000000EAZZZ, which is used to track lights with unknown owners. In the last audit it was confirmed that these lights are metered and can be removed from the database. Details of these lights are recorded in the table below.

Road Name	ICP Code	Lamp Model	Lamp and gear wattage	Comment 2020	Comment 2021
TINWALD DOMAIN ROAD3	PRIVATE	SON 100W	114	These lights are located at the Tinwald Domain camping ground. Investigation has been completed and these lights could be metered through the camping ground's main switchboard. EA Networks intends to arrange this with the trader. Once metered they will be removed from the RAMM data.	Advised by EA Networks that these lights are on a metered circuit and are included on ICP0000023713EA483. EA confirmed they are being reconciled as part of the metered load.
TINWALD DOMAIN ROAD3	PRIVATE	SON 100W	114		

I recommend that these two lights are removed from the database.

Recommendation	Description	Audited party comment	Remedial action
ICP identifier and items of load	Remove two items of load recorded under ICP 0000000000EAZZ from the database.	Ashburton District Council was advised of the recommendation. Ashburton District Council advises both private lights have been removed from the database.	Cleared

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 RAMM database contains house numbers, road names, road IDs, location numbers, and GPS coordinates.

All items of load have GPS coordinates recorded and are locatable.

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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

A description of each light is recorded in the make and model fields, wattages are recorded in the lamp wattage and gear wattage fields. All items of load have a lamp model and lamp wattage populated.

The accuracy of the lamp description, capacity and ballasts recorded is discussed in **section 3.1**.

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

Audit outcome

Compliant

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 216 items of load on 14th August 2023.

Audit commentary

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

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Cass St	38	38	-	2	2 x 55W LED recorded in the database found to be 25W LED in the field.
Hakatere Drive Extension	3	3	-	3	3 x 25W LED recorded in the database found to be 16W LED in the field.
Harland Street South	6	6	-	1	1 x 25W LED recorded in the database found to be 55W LED in the field.
Methven Chertsey Road	20	21	+1	1	1 x additional 55W LED found in the field. 1 x 150W SON recorded in the database was found to be a 100W LED in the field.
Westcott place	2	2	-	2	2 x 70W SON recorded in the database found to be 27W LED in the field.
GRAND TOTAL	**216**	**217**	**+1**	**9**	

The field audit found one additional light in the field. This is recorded as a non-compliance below.

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

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: Unknown To: 14-Aug-23	One additional light found in the field audit sample. 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 rated as strong overall as there are robust processes in place ensure that the database is kept up to date. 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**

Ashburton District Council has been advised of the discrepancies identified. Ashburton District Council has advised, they will be investigated and corrected where required.	30/08/2023	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridan will continue to follow up with Ashburton District Council to have the inaccuracies corrected.	30/09/2023	

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 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 Ashburton DC region
Strata	The database contains items of load located in the Ashburton area owned by Ashburton DC. 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, and • Roads starting with O-Z.
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 31 sub-units making up 5% of the total database wattage.
Total items of load	216 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 or in the case of LED lights against the LED light specification.

Audit commentary

Database accuracy

A field audit was conducted of a statistical sample of 216 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	98.2	Wattage from survey matches the database wattage.
R_L	92.7	With a 95% level of confidence, it can be concluded that the error could be between -7.3% and -0.1%
R_H	99.9	

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 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 0.1% and 7.3% lower 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 lower than the database indicates.

There is a 95% level of confidence that the installed capacity is up to 13 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 13,300 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 500 kWh and 54,200 kWh p.a. lower 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) RL is less than 0.95 and/or RH 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 %

Light description and capacity accuracy

As discussed in **section 2.4**:

All items of load have a lamp model and lamp wattage populated, and no items of load had invalid zero lamp wattages.

Lamp and gear wattages were compared to the expected values and two discrepancies were found as detailed in the table below:

Lamp Model	Database Gear Wattage	EA standardised gear wattage	Database Total Wattage	EA Standardised Total Wattage	Quantity	Comment
LED 36w	7	0	43	43	24	I repeat the recommendation below that the EA standardised wattage LED format is used where the total wattage.
MV 125W	10	11	135	136	1	Incorrect ballast wattage recorded for one light resulting in an estimated under submission of 4.27 kWh per annum.

The Electricity Authority standardised wattage table indicates that the total LED wattage is recorded rather than the lamp + gear wattage:

LED	Various	Use the total system power (eg 26 watt lamp = 26 watts)

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Adopt the EA Standardised wattage format for LED lights where the total wattage is recorded in the lamp value.	Ashburton District Council advises that the EA standardized wattage format is to be adopted	Identified

Change management process findings

EA Networks are responsible for new connections, fault, maintenance, and upgrade work, and maintain the database. Details of changes made in the field are provided by the field staff and recorded in a spreadsheet which is then used to update RAMM on a monthly.

For new subdivisions, the developer liaises with EA Networks to arrange a new connection. Streetlight design is approved by ADC on EA Networks' recommendation. EA Networks completes the connection once it is approved by ADC and EA Networks, and updates RAMM. ICP 0000000000EAXXX is used to track lights which are not livened, and once the lights are livened, they are moved to the correct ICP. ICP 0000000000EAXXX is correctly excluded from submission data.

Ashburton DC has approx. 85% of LED lights installed in the field. Further LED upgrades are occurring as power is undergrounded and new streetlight poles are installed.

Outage patrols are conducted on an ad hoc basis when staff are working in an area at night. Outages are also reported by residents within the ADC region and work orders are raised with EA Networks as required.

The database records light installation and replacement dates.

Private lights

As detailed in **section 2.2**, two lights recorded in the last audit under ICP 0000000000EAZZZ have been confirmed as metered. I have recommended that these lights be removed from the database.

Festival and festive lights

The Methven festival lights, and other festive lights connected to the streetlight circuits when operating are recorded in RAMM.

The lights are only included in the database extracts when connected. ADC ensures that the lights are added to the database extract for the dates they are connected.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-21 To: 14-Aug-23	Database is not confirmed as accurate with a 95% level of confidence. 24 lights with the incorrect light description. The correct wattage is recorded so this has no impact on reconciliation. One item of load with the incorrect ballast recorded resulting in an estimated minor under submission of 4.27 kWh per annum. Potential impact: Medium Actual impact: Low Audit history: Twice previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be low due to the estimated kWh volume variances.

Actions taken to resolve the issue	Completion date	Remedial action status
Ashburton District Council has been advised of the discrepancies identified. Ashburton District Council has advised, they will be investigated and corrected where required.	30/08/2023	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Meridan will continue to follow up with Ashburton District Council to have the inaccuracies corrected.	30/09/2023	
Ashburton District Council advise the EA standardized wattage format is to be adopted.	30/09/2023	

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 process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

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 the EMS agent audit. Compliance was confirmed.

The capacities supplied to EMS for May 2023 were checked and confirmed to be accurate.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**.

One item of load has the incorrect wattage applied in the DUML database resulting in an estimated minor under submission of 4.27 kWh per annum. This is detailed in **section 3.1**.

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

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

The current data used is a snapshot and this practice is non-compliant. There are very few changes being made in the database so the impact on reconciliation is expected to be small.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Sep-21 To: 14-Aug-23	Database is not confirmed as accurate with a 95% level of confidence as recorded in section 3.1. One item of load with the incorrect ballast recorded resulting in an estimated minor under submission of 4.27 kWh per annum. 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: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating		
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be low due to the estimated kWh volume variances.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Ashburton District Council has been advised of the discrepancies identified. Ashburton District Council has advised, they will be investigated and corrected where required.		30/08/2023	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	
Meridan will continue to follow up with Ashburton District Council to have the inaccuracies corrected.		30/09/2023	
Ashburton District Council advise the EA standardized wattage format is to be adopted.		30/09/2023	
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.		Ongoing	

CONCLUSION

A RAMM database is held by ADC, who is Meridian's customer. **Electricity Ashburton (EA Networks)** are responsible for new connections, fault, maintenance, and upgrade work, and maintain the database.

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 the EMS agent audit.

A field audit was conducted of a statistical sample of 216 items of load. Discrepancies were identified in five of the 31 sub-units (roads) included in the field audit. The "database auditing tool" was used to analyse the results. The analysis confirmed that the database potential error could be greater than +/- 5.0% and therefore non-compliance is recorded.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

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

The current monthly report is provided as a snapshot. Meridian completes revision submissions where corrections are required but they are not yet being provided with changes made to the database during the month.

Four non-compliances were identified. The future risk rating of seven indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's responses and agree with this recommendation.

PARTICIPANT RESPONSE

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