

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

KĀPITI COAST DISTRICT COUNCIL
AND MERIDIAN ENERGY (MERX)
NZBN 9429038056550

Prepared by: Bernie Cross

Date audit commenced: 10 March 2023

Date audit report completed: 27 May 2023

Audit report due date: 1 June 2023

TABLE OF CONTENTS

Executive summary	3
Audit summary	4
Non-compliances	4
Recommendations	5
Issues	5
1. Administrative	6
Exemptions from Obligations to Comply with Code	6
Structure of Organisation	6
Persons involved in this audit.....	7
Hardware and Software	7
1.1. Breaches or Breach Allegations.....	7
1.2. ICP Data	7
1.3. Authorisation Received	7
1.4. Scope of Audit	8
1.5. Summary of previous audit	8
1.6. Distributed unmetered load audits (Clause 16A.26 and 17.295F)	9
1.7. DUML database requirements	11
1.8. Deriving submission information (Clause 11(1) of Schedule 15.3)	11
1.9. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)	13
2.1. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)	14
2.2. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)	14
2.3. All load recorded in database (Clause 11(2A) of Schedule 15.3)	15
2.4. Tracking of load changes (Clause 11(3) of Schedule 15.3)	17
2.5. Audit trail (Clause 11(4) of Schedule 15.3).....	18
3.1. Accuracy of DUML database	19
3.2. Database accuracy (Clause 15.2 and 15.37B(b))	19
Volume information accuracy (Clause 15.2 and 15.37B(c))	24
Conclusion	27
Participant response	28

EXECUTIVE SUMMARY

This audit of the **Kāpiti Coast District Council (KCDC)** DUMML 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 DUMML audits version 1.1. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information.

KCDC switched to Meridian on 1 October 2022.

A RAMM database is held by KCDC. Fault, maintenance and upgrade work is managed by KCDC and is conducted by Fulton Hogan. Fulton Hogan enters database updates using Pocket RAMM.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	100.1	Wattage from survey is higher than the database wattage by 2.5%
R _L	94.6	With a 95% level of confidence, it can be concluded that the error could be between -5.4% and +2.9%
R _H	102.9	

The database accuracy could be between 5.4% lower and 2.9% higher than the wattage recorded in the DUMML database.

There is a 95% level of confidence that the annual consumption is between 40,200 kWh per annum lower and 21,700 kWh per annum higher than the database indicates.

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

There is a 95% level of confidence that the installed capacity is between 9.0 kW lower and 5.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 1,000 kWh higher than the DUMML database indicates.

The audit found four non-compliances and six recommendations are made.

The controls are strong for changes and new connections, once new areas have been vested. There is still a gap between light livening and vesting dates, where the responsibility for the consumption for the lights between these two milestones needs to be confirmed and accounted for.

Minor issues found are as follows:

- a small number of field discrepancies, and
- some items of load may need to be removed from the database if they are metered, and some may need to be added if it is confirmed they are Council owned.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian Energy'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	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a.</p> <p>The capacity used to calculate submission information does not match the database value for February 2023.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Livening dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.</p>	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Five additional lamps in the field were not recorded in the database from a sample of 248 items of load (2% error rate).	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Livening dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.</p>	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a.</p> <p>The monthly database extract provided does not track changes</p>	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			<p>at a daily basis and is provided as a snapshot.</p> <p>Livening dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs</p>				
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	Recommendation
Location of items of load	2.3	Populate GPS coordinates for 238 items of load.
Database accuracy	3.1	Check light ID 68077 to confirm if this is metered or unmetered and should be recorded against ICP 0016099024EL49F.
		Meridian to work with KCDC and the Greater Wellington Regional Council to confirm ownership of GWRC lights recorded against ICP 0016099024EL49F to ensure they are not being accounted for twice.
		Check 26 items of load to confirm if they should be recorded against ICP 0016099024EL49F.
		Recommend that Meridian and KCDC work with Electra to verify the correct status of each of these lights so that progress can be made in creating shared unmetered load ICPs where these are required.
		Recommend that Meridian and KCDC work closely with Waka Kotahi and their retailer in ensuring an adequate stocktake is undertaken to ensure all lights transition to KCDC as part of this revocation of the State highway status and transfer of responsibility of these roads to KCDC.

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

- 1.1. 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

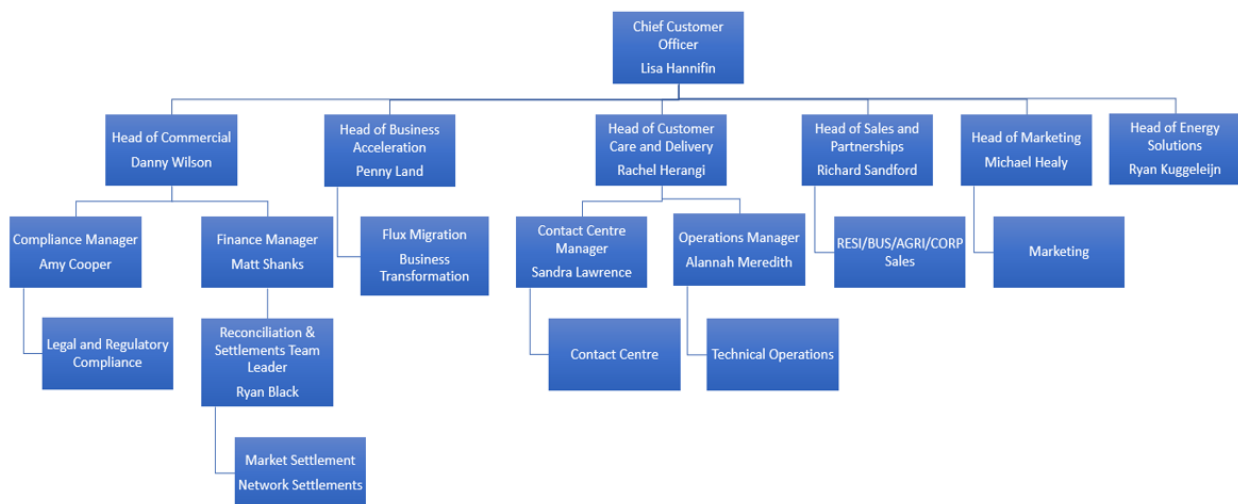
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

Structure of Organisation

- 1.2. Meridian Energy provided a copy of their organisational structure.



Persons involved in this audit

Auditor:

Bernie Cross

Veritek Limited

1.3. Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Ishan Bhagat	Roading Engineer	Kāpiti Coast District Council
Amy Cooper	Compliance Officer	Meridian
Melanie Matthews	Quality and Compliance Advisor	Meridian

Hardware and Software

- 1.4. The SQL database used for the management of DUML is remotely hosted by Thinkproject NZ Ltd. The database is commonly known as “RAMM” which stands for “Roothing Asset and Maintenance Management”. The specific module used for DUML is called RAMM Contractor.

Thinkproject NZ Ltd backs up the database and assists with disaster recovery as part of their hosting service. Nightly backups are performed. As a minimum, daily backups are retained for the previous five working days, weekly backups are retained for the previous four weeks, and monthly backups are retained for the previous six months.

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

- 1.5. reconciliation participant audits.

1.6. Breaches or Breach Allegations

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

ICP Data

1.7.

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0016099024EL49F	KCDC STREETLIGHTS	PRM0331	DST	4,882	73,327

Authorisation Received

All information was provided directly by Meridian Energy or KCDC.

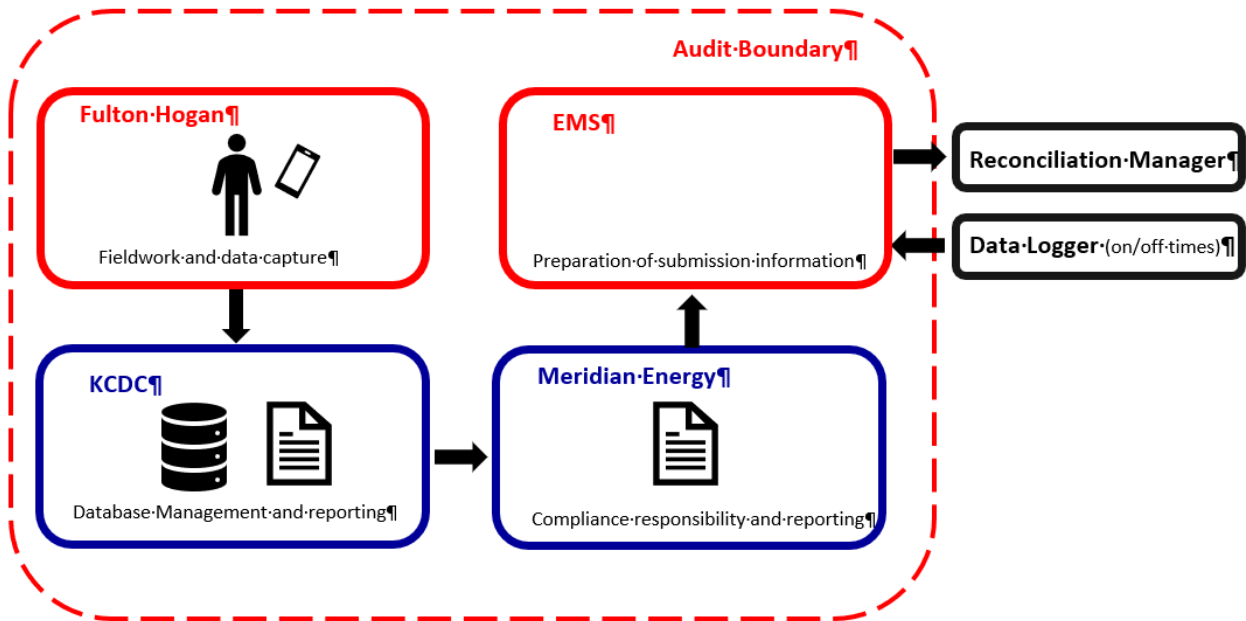
Scope of Audit

This audit of the KCDC 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.

- 1.8. A RAMM database is held by KCDC. Fault, maintenance and upgrade work is managed by KCDC and is conducted by Fulton Hogan. Fulton Hogan enters database updates using Pocket RAMM.

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.



- 1.9. The field audit was undertaken of a statistical sample of 248 items of load on 3rd April 2023.

Summary of previous audit

The previous audit of this database was undertaken by Steve Woods of Veritek Limited in May 2021 for Contact Energy. The summary table below shows the statuses of the non-compliances and recommendations raised in the previous audit. Further comment is made in the relevant sections of this report.

Table of Non-compliances

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Livening dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.</p>	Still existing

Subject	Section	Clause	Non-compliance	Status
			One item of load does not have the wattage recorded.	
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	One item of load with blank model and wattage.	Cleared
Database accuracy	3.1	15.2 and 15.37B(b)	The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Living dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. One item of load with zero wattage and no lamp model	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. Living dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. One item of load does not have the wattage recorded	Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
Location of items of load	2.3	Populate GPS coordinates for 20 items of load.	Repeated
Database accuracy	3.1	Check 39 items of load to confirm if they should be recorded against ICP 0016099024EL49F.	Repeated

1.10.

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

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

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

Audit observation

Meridian have requested Veritek to undertake this streetlight audit.

Audit commentary

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

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

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

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

2.1. *The retailer must ensure the:*

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

Audit observation

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

Audit commentary

Meridian reconciles this DUML load using the DST profile. The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the “burn time” which is sourced from data loggers. 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 capacities supplied to EMS for February 2023 were checked and the values used for the calculation of submission information did not match the database extract provided on 10 March 2023 by 1.85 kW. Meridian investigated the reason for this difference and confirmed it was related to timing differences as the extract provided to Meridian for submission purposes was from 01 March 2023.

The field audit found that the database accuracy was not confirmed as accurate with a 95% level of confidence resulting in an estimated annual under submission of 1,000 kWh. This is detailed in **section 3.1**.

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 and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

The RAMM database records an installation date, which typically records the original installation date for the light. There is no separate liveness date.

Change dates are automatically generated by RAMM when records change but cannot be selected by the user. Where a change is entered using Pocket RAMM at the time of the change, this date will reflect the date on which the change occurred. If a correction or change is processed at a later date, the change date may be incorrect.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-May-21 To: 28-Feb-23	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a. The capacity used to calculate submission information does not match the database value for February 2023. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Liveness dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. Potential impact: Low Actual impact: Low Audit history: Twice 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 to an acceptable level but there is still room for improvement. The audit risk rating is low based on kWh variances.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian has advised KCDC of the inaccuracies and their responses are recorded in the following non compliances.		25/5/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Meridian will continue to work with KCDC in amending the inaccuracies in the database. 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.		24/12/2023 Ongoing	

2.2.

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

Code reference

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

Code related audit information

The DUMML database must contain:

- each ICP identifier for which the retailer is responsible for the DUMML,

- *the items of load associated with the ICP identifier.*

Audit observation

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

Audit commentary

All items of load have an ICP recorded.

Audit outcome

Compliant

Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

2.3. *Clause 11(2)(b) of Schedule 15.3*

Code related audit information

The DUMML database must contain the location of each DUMML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for light ID, pole ID, road name, house address, location number, and pole number. All items of load have a light ID and pole ID recorded, and this can be used to map the location of each light using RAMM.

GPS coordinates are populated for all but 238 items of load. The last audit found 20 items of load without GPS co-ordinates recorded. Whilst all items of load could be located, I repeat the last audit's recommendation that the coordinates are populated for these 238 items of load.

Recommendation	Description	Audited party comment	Remedial action
Regarding clause 11(2)(b) of Schedule 15.3	Populate GPS coordinates for 238 items of load.	KCDC advise that the RAMM form was sent in with Carriageway Co-ordinates. The correct co-ordinates are now in place.	Identified

2.4. **Audit outcome**

Compliant

Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUMML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that:

- it contained a field for 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

The database contains fields for lamp make and model, lamp wattage and gear wattage. All items of load have a lamp make and model, lamp wattage, and gear wattage populated.

Audit outcome

Compliant

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

Code reference

2.5. 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 248 items of load on 3rd April 2023. The sample was selected from four strata, as follows:

- Otaki,
- Paekakariki and Raumati,
- Paraparaumu, and
- Waikanae.

Audit commentary

The field audit discrepancies are detailed in the table below:

Street	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
ANDERSON PARK DR	1	1	-	1	1 x L16 LED lights incorrectly recorded as L17 LED light.
CHILTON DR	4	4	-	1	1 x L17 LED lights incorrectly recorded as L27 LED light.
CONSORT CL	6	6	-	1	1 x L46 LED lights incorrectly recorded as L40 LED light.
DALE RD	11	12	+2,-1	0	2 x estimated 150w HPS navigation lights found in the field and not recorded in the database. 1 x L17 LED not found in the field.
HINEMOA ST	21	20	-1	1	1 x 150w HPS illuminating Metlink carpark recorded in database as

Street	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
					belonging to GWRC but assigned to the KCDC ICP. 1 x Italo Urban LED light recorded as 56w but does not match the specification sheet – estimated as 48w.
KNIGHTS GR	2	3	+1	0	1 x L17 LED not recorded in the database.
KOTARE ST	15	15	-	1	1 x L17 LED lights incorrectly recorded as L27 LED light.
MATENE ST (SOUTH)	15	14	-1	0	1 x L17 LED not found in the field.
NGAIO RD CARPARK (WAIKANAE)	2	2	-	1	1 x L17 LED lights incorrectly recorded as L23 LED light.
THE ESPLANADE	15	15	-	1	1 x L17 LED lights incorrectly recorded as L23 LED light.
VICTOR GR (WAIKANAE)	3	3	-	1	1 x L27 LED lights incorrectly recorded as L17 LED light.
W - MARINE GAARDENS #2	6	8	+2	1	2 x 20w LED not recorded in the database. 1 x L20 LED lights incorrectly recorded as L26 LED light.
WILLOW GR	3	3	-	1	1 x L46 LED lights incorrectly recorded as L40 LED light.
Grand Total	248	250	8 (+5, -3)	10	

The field audit found five additional lights. This is recorded as non-compliance below.

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

Audit outcome

Non-compliant

Non-compliance	Description
----------------	-------------

Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-May-21 To: 28-Feb-23	Five additional lamps in the field were not recorded in the database from a sample of 248 items of load (2% error rate). 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 to an acceptable level but there is still room for improvement. The audit risk rating is low based on the small volume of lights affected in relation to the sample examined.		
Actions taken to resolve the issue	Completion date	Remedial action status	
Meridian advised KCDC of the inaccuracies and they have advised below: Dale Road x2 lights - These are old Airport Navigation lights these lights do not work. Knights Grove and W - Marine Gardens #2 – database now updated	25/5/2023	Identified	
Preventative actions taken to ensure no further issues will occur	Completion date		
KCDC has advised an Asset Audit is taking place internally on all Cycle Paths and paths between Road to Road and plans to be completed by end of 2024.	31/12/2024		

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

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

2.7. *The DUMML 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

Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

- 3.1. *Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.*

Audit observation

Meridian's submissions are based on a monthly extract from the RAMM database. A RAMM database extract was provided on 10 March 2023, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Kāpiti Coast City Council Street Lights
Strata	<p>The database contains the KCDC items of load for DUML ICPs in the Kāpiti Coast region.</p> <p>The processes for the management of all KCDC items of load are the same, but I decided to place the items of load into four strata:</p> <ul style="list-style-type: none"> • Otaki, • Paekakariki and Raumati, • Paraparaumu, and • Waikanae.
Area units	I created a pivot table of the roads, and I used a random number generator in a spreadsheet to select a total of 55 sub-units.
Total items of load	248 items of load were checked, which made up approx. 5% of the total database wattage.

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

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

Audit commentary

Field audit findings

A field audit was conducted of a statistical sample of 248 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	100.1	Wattage from survey is higher than the database wattage by 0.1%
R _L	94.6	With a 95% level of confidence, it can be concluded that the error could be between -5.4% and +2.9%
R _H	102.9	

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 5.4% lower and 2.9% 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 the same as the database indicates.

There is a 95% level of confidence that the installed capacity is between 9.0 kW lower and 5.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 1,000 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 40,200 kWh per annum lower and 21,700 kWh per annum higher than the database indicates.

Scenario	Description
<p>A - Good accuracy, good precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 <p>The conclusion from this scenario is that:</p> <ul style="list-style-type: none"> (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
<p>B - Poor accuracy, demonstrated with statistical significance</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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. <p>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level</p>
<p>C - Poor precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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 <p>The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %</p>

ICP number accuracy

All ICP numbers are recorded. One item of load is recorded as metered but is against the 0016099024EL49F ICP. I recommend KCDC check to see if this should be recorded as unmetered.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 15.2 and 15.37B(b)	Check light ID 68077 to confirm if this is metered or unmetered and should be recorded against ICP 0016099024EL49F.	The streetlight has been handed over to Local Authority. KCDC has changed in RAMM against Asset to reflect this.	Identified

11 Items are recorded as belonging to Greater Wellington Regional Council and these relate to carpark lighting at Epiha Street/Hinemoa Street (Metlink carpark) and QE II Paekakariki entrance carpark. I recommend Meridian work with KCDC and the Greater Wellington Regional Council to confirm ownership of these light to ensure they are not being accounted for twice.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 15.2 and 15.37B(b)	Meridian to work with KCDC and the Greater Wellington Regional Council to confirm ownership of GWRC lights recorded against ICP 0016099024EL49F to ensure they are not being accounted for twice.	KCDC have been in contact with Greater Wellington Lighting. In Oct 2023, AMDS is being introduced and this will be resolved. In the meantime, the ICP is recorded against the pole; they have removed the GW light from the pole asset.	Identified

The previous audit identified that there are 26 items of load with "Non_Roading Owner" in the ICP field, but the owner field has community services, parks local authority or other recorded. I repeat the previous audits recommendation that these are checked to determine if they should be against the Council ICP.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 15.2 and 15.37B(b)	Check 26 items of load to confirm if they should be recorded against ICP 0016099024EL49F.	KCDC have investigated what they can and have adjusted 19 items to their KCDC Streetlight ICP. KCDC advise that 1 light is private, 2 lights have been removed from the database and 3 lights have their own ICP number.	Identified

Change management process findings.

Fault, maintenance and upgrade work is managed by KCDC and was conducted by Fulton Hogan. Database updates are made directly via Pocket RAMM.

Photos are required to be provided when work is completed. The photos and claims for work completed submitted by Fulton Hogan are checked against the database records. Any discrepancies are followed up with Fulton Hogan.

I walked through the new connection process.

- For subdivisions, the developer is responsible for providing a plan for streetlighting to KCDC for approval which includes approved luminaires as set out in the Kāpiti Coast District Council Standard Details and Specifications for Road Lighting Infrastructure (30 December 2018). The approved lights are then installed. As part of the section 224C process, the developer is

required to arrange for a qualified person to complete a RAMM inventory including taking photos, and also provide the Electra network’s approval of the connection and certification. The RAMM information is checked against the “as built” plans and photos, and any discrepancies are investigated. Field checks are carried out if deemed necessary. The database is not updated until vesting has occurred, therefore there can be a gap between livening and the database update date.

- For new connections initiated by KCDC, Fulton Hogan completes the field work, and updates the database using Pocket RAMM.

The current monthly report is provided as a snapshot and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

The RAMM database records an installation date, which typically records the original installation date for the light. There is no separate livening date.

Change dates are automatically generated by RAMM when records change; but cannot be selected by the user. Where a change is entered using Pocket RAMM at the time of the change, this date will reflect the date on which the change occurred. If a correction or change is processed at a later date, the change date may be incorrect.

Outage patrols are conducted every three months, and Fulton Hogan directly update their findings into RAMM from the field.

Festive lights

KCDC have advised that new festive lights have been installed since January 2023 and have been added to the database.

Private lights

120 unmetered private lights are recorded in the database. One is included in the extract provided to Meridian Energy but the other 119 do not have an ICP recorded against them. They were previously recorded against the KCDC ICP but following a previous complete field audit, they are now recorded as “NON_ROADING_OWNER” and not reported to Meridian Energy. This list has been provided to Electra previously however no progress has been made to confirm the status of each light and create shared unmetered load ICPs where these are required. I recommend that Meridian and KCDC work with Electra to verify the correct status of each of these lights so that progress can be made in creating shared unmetered load ICPs where these are required.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 15.2 and 15.37B(b)	Recommend that Meridian and KCDC work with Electra to verify the correct status of each of these lights so that progress can be made in creating shared unmetered load ICPs where these are required.	KCDC have been in contact with Electra Lighting. In Oct 2023, AMDS is being introduced and this will be resolved. KCDC is still waiting to have a meeting with Electra.	Identified

Waka Kotahi lights

NZTA lights are now separately recorded against NZTA ICPs. These have previously been confirmed with the retailer for Waka Kotahi that the affected ICPs are metered; or are allocated to a DUMI ICP.

There have been extensive changes to State Highway One within the KCDC boundaries with the opening of both the Mackays to Peka Peka and the Peka Peka to Otaki Expressways becoming operational during

this audit period. Waka Kotahi is making progress to transition the ownership of the old parts of State Highway One to KCDC which will also include the responsibility for the streetlights. I recommend that Meridian and KCDC work closely with Waka Kotahi and their retailer in ensuring an adequate stocktake is undertaken to ensure all lights transition to KCDC as part of this revocation of the State highway status and transfer of responsibility of these roads to KCDC.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 15.2 and 15.37B(b)	Recommend that Meridian and KCDC work closely with Waka Kotahi and their retailer in ensuring an adequate stocktake is undertaken to ensure all lights transition to KCDC as part of this revocation of the State highway status and transfer of responsibility of these roads to KCDC.	KCDC will take over the Waka Kotahi network when the roads are vested to them. They will not be accepted until all RAMM data is correct. KCDC has advised the ICP is already against some of the new local roads that come on /off the expressway.	Identified

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1</p> <p>With: Clause 15.2 and 15.37B(b)</p> <p>From: 01-May-21</p> <p>To: 28-Feb-23</p>	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Livening dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Twice</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are recorded as moderate because they mitigate risk to an acceptable level but there is still room for improvement. The differences resulting from using a monthly snapshot instead of daily data are not expected to be significant based on the volume of changes and new connections occurring.</p> <p>The audit risk rating is low based on kWh variances</p>		
Actions taken to resolve the issue		Completion date	Remedial action status

KCDC advises that new streetlights are picked up monthly from the time the subdivider enters the lights into RAMM. These are going against KCDC ICP at this stage, not when road is officially vested over to them.	25/5/2023	Identified
KCDC advises that in October 2023, RAMM is being upgraded to AMDS. This will resolve most database inaccuracies.	31/10/2023	
Preventative actions taken to ensure no further issues will occur	Completion date	
Meridian will continue to work with KCDC in amending the inaccuracies in the database.	24/12/2023	
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	

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

3.2. Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

- checking the registry to confirm that the ICP has the correct profile and submission flag, and
- checking the database extract combined with the on hours against the submitted figure to confirm accuracy.

Audit commentary

Meridian Energy reconciles this DUML load using the DST profile.

The capacities supplied to EMS for February 2023 were checked and the values used for the calculation of submission information did not match the database by 1.85 kW. Meridian is investigating the reason for this difference.

The field audit found that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 2.5% lower and 13.5% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

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 and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes. Meridian completes revision submissions where corrections are required; and have not yet updated their processes to be consistent with the Authority's memo.

The RAMM database records an installation date, which typically records the original installation date for the light. There is no separate living date.

Change dates are automatically generated by RAMM when records change; but cannot be selected by the user. Where a change is entered using Pocket RAMM at the time of the change, this date will reflect the date on which the change occurred. If a correction or change is processed at a later date, the change date may be incorrect.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-May-21 To: 28-Feb-23	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,000 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Living dates are not recorded for new connections; and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. Potential impact: Low Actual impact: Low Audit history: Twice 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 to an acceptable level but there is still room for improvement. The audit risk rating is low based on kWh variances.		
Actions taken to resolve the issue		Completion date	Remedial action status
KCDC advises that new streetlights are picked up monthly from the time the subdivider enters the lights into RAMM. These are going against KCDC ICP at this stage, not when road is officially vested over to them.		25/5/2023	Identified
KCDC advises that in October 2023, RAMM is being upgraded to AMDS. This will resolve most database inaccuracies.		31/10/2023	

Non-compliance	Description	
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Meridian will continue to work with KCDC in amending the inaccuracies in the database.</p> <p>We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission.</p>	<p>24/12/2023</p> <p>Ongoing</p>	

CONCLUSION

KCDC switched to Meridian on 1 October 2022.

A RAMM database is held by KCDC. Fault, maintenance and upgrade work is managed by KCDC and is conducted by Fulton Hogan. Fulton Hogan enters database updates using Pocket RAMM.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	100.1	Wattage from survey is higher than the database wattage by 2.5%
R _L	94.6	With a 95% level of confidence, it can be concluded that the error could be between -5.4% and +2.9%
R _H	102.9	

The database accuracy could be between 5.4% lower and 2.9% higher than the wattage recorded in the DUML database.

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 5.4% lower and 2.9% higher than the wattage recorded in the DUML database.

There is a 95% level of confidence that the annual consumption is between 40,200 kWh per annum lower and 21,700 kWh per annum higher than the database indicates.

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

There is a 95% level of confidence that the installed capacity is between 9.0 kW lower and 5.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 1,000 kWh higher than the DUML database indicates.

The audit found four non-compliances and six recommendations are made.

The controls are strong for changes and new connections, once new areas have been vested. There is still a gap between light livening and vesting dates, where the responsibility for the consumption for the lights between these two milestones needs to be confirmed and accounted for.

Minor issues found are as follows:

- a small number of field discrepancies, and
- some items of load may need to be removed from the database if they are metered, and some may need to be added if it is confirmed they are Council owned.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian Energy's responses and agree with this recommendation.

PARTICIPANT RESPONSE