ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

TAUPO DISTRICT COUNCIL
AND MERIDIAN

Prepared by: Steve Woods

Date audit commenced: 19 March 2020

Date audit report completed: 2 April 2020

Audit report due date: 1 April 2020

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EXECUTIVE SUMMARY

This audit of the Taupo District Council (TDC) DUML database and processes was conducted at the request of Meridian Energy (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.

TDC use a RAMM database to manage this DUML load. New connection, fault and maintenance work is completed by Horizons. Monthly reports are received by Meridian on a monthly basis.

The database accuracy issues identified during the previous audit have been resolved.

The field audit found that in absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates, meaning that over submission is occurring. The main issue leading to this result is the timeliness of updates from the field for changes to LED.

The audit found four non-compliances and makes one recommendation. The future risk rating of 14 indicates that the next audit be completed in 12 months. I 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	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.	Moderate	Medium	4	Identified
All load recorded in the database	2.5	11(2A) of Schedule 15.3	All load is not recorded in the database.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.	Moderate	Medium	4	Identified
Future Risk Rating						14	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
Database Accuracy	3.1	TDC and the trader liaise with NZTA to ensure changes made in the field are updated in the database. Liaise with the networks to ensure that streetlight electrical connections are notified to TDC.

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

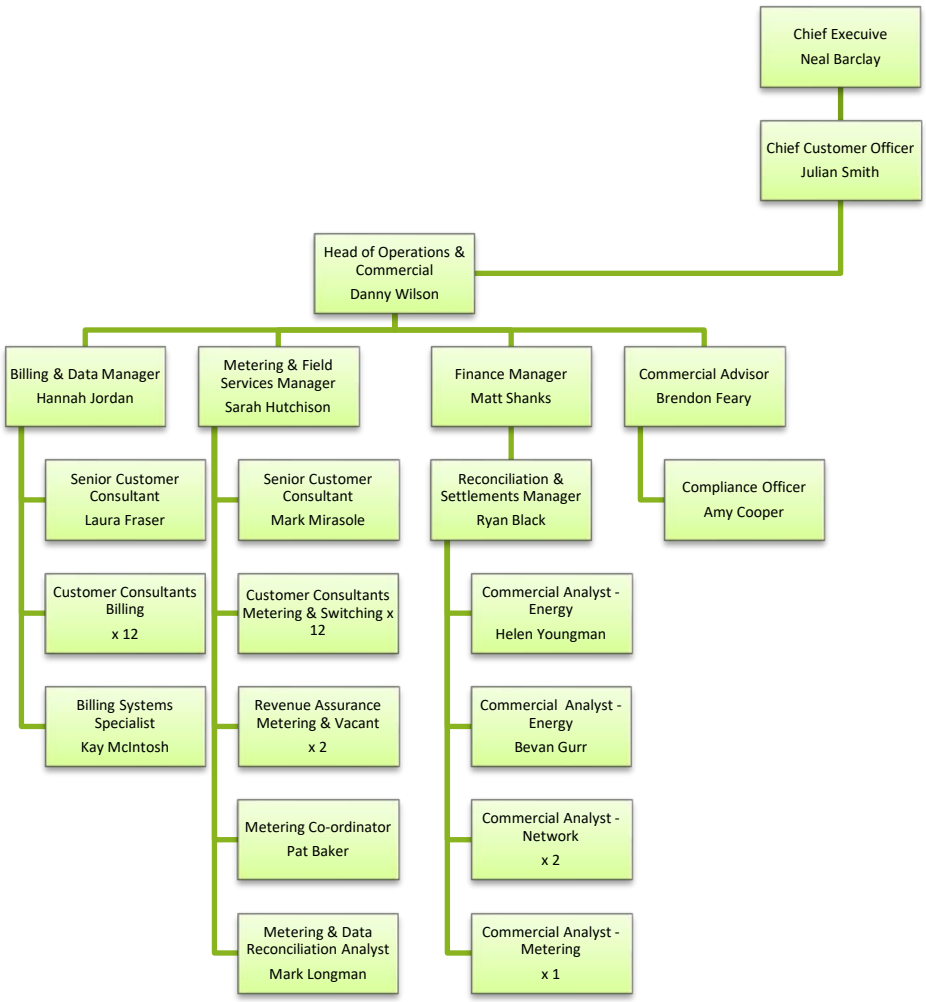
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian
Pip Cameron	Asset Information Officer	Taupo District Council

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". The specific module used for DUML is called RAMM Contractor.

The 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)
0000029279HR82A	Atiamuri Streetlights	ROT0111	DST	34	799
0000031514WEC89	Wharewaka Streetlights	WRK0331	DST	64	5,482
0001264720UN608	Taupo Streetlights	WRK0331	DST	3,295	210,475
0008807420WM161	Turangi Streetlights	TKU0331	DST	813	34,427
0008808341WM4B6	Mangakino Streetlights	HTI0331	DST	225	7,379
Total				4,431	258,562

I note that the overall volume of lights is similar, but the wattage values have reduced as the LED rollout progresses.

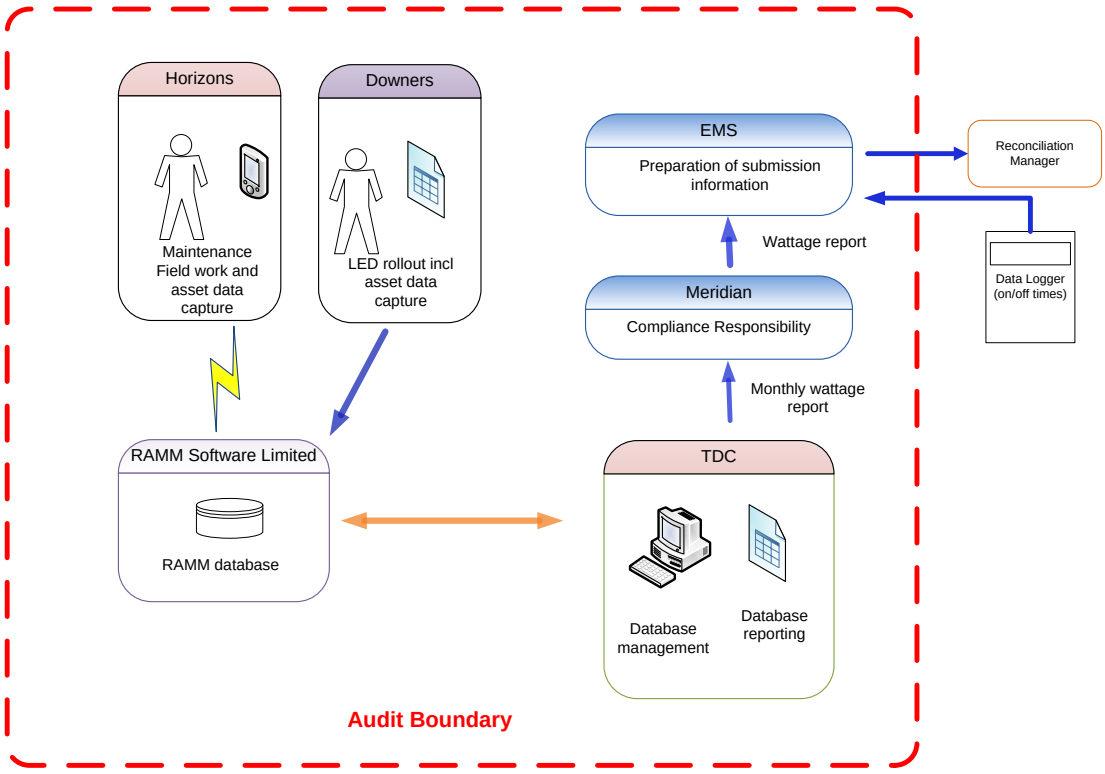
1.7. Authorisation Received

All information was provided directly by Meridian and TDC.

1.8. Scope of Audit

TDC use a RAMM database to manage this DUML load. New connection, fault and maintenance work is completed by Horizons. The LED roll out is being carried out by Downer. Monthly reports are received by Meridian.

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

The field audit was undertaken of a statistical sample of 358 items of load on 22 March 2020.

1.9. Summary of previous audit

The previous audit was completed in May 2019 by Rebecca Elliot of Veritek Limited. The current status of that audit's findings are detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Incorrect figures used in the previous retailer's internal database for reconciliation is potentially resulting in an estimated over submission of 262,000 kWh per annum. Unknown impact on reconciliation for 351 items of load where a TDC DUML ICP is recorded against them but are excluded from reconciliation. Three items with no ICP recorded resulting in an estimated under submission of 2,153 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 29 items of load with the incorrect ballast recorded resulting in an estimated over submission of 3,724kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 33 items of load with zero ballast applied where a ballast should be recorded resulting in an estimated minor annual under submission of 884 kWh.	The issues raised are largely resolved. Non-compliance is still existing for database inaccuracy.
ICP Identifier	2.2	11(2)(a) and (aa) of Schedule 15.3	Three items with no ICP recorded resulting in an estimated under submission of 2,153 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).	Cleared
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	Three items of load with insufficient details recorded to locate them.	Cleared
Description and capacity of each item of load	2.4	11(2)(c) of Schedule 15.3	33 items of load with zero ballast applied where a ballast should be recorded resulting in an estimated minor annual under submission of 884 kWh.	Cleared
All load recorded in the database	2.5	11(2A) of Schedule 15.3	All load is not recorded in the database.	Still existing

Subject	Section	Clause	Non-compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	29 items of load with the incorrect ballast recorded resulting in an estimated over submission of 3,724kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 33 items of load with zero ballast applied where a ballast should be recorded resulting in an estimated minor annual under submission of 884 kWh.	The issues raised are largely resolved. Non-compliance is still existing for database inaccuracy.
Volume information accuracy	3.2	15.2 and 15.37B(c)	Incorrect figures used in the previous retailer's internal database for reconciliation is potentially resulting in an estimated over submission of 262,000 kWh per annum. Unknown impact on reconciliation for 351 items of load where a TDC DUML ICP is recorded against them but are excluded from reconciliation. Three items with no ICP recorded resulting in an estimated under submission of 2,153 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 29 items of load with the incorrect ballast recorded resulting in an estimated over submission of 3,724kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). 33 items of load with zero ballast applied where a ballast should be recorded resulting in an estimated minor annual under submission of 884 kWh.	The issues raised are largely resolved. Non-compliance is still existing for database inaccuracy.

Table of Recommendations

Subject	Section	Recommendation	Status
Deriving submission information	2.1	TDC, the trader and NZTA to liaise and determine which ICP these lights are to be reconciled against.	Cleared
		Pass private light details to Unison to progress.	Cleared
		If static dimming is confirmed work with the Trader to ensure the correct wattages are recorded in the database and confirm how long this has been present and liaise with	Cleared

		Meridian and new trader to conduct revisions if necessary.	
Tracking of load change	2.6	TDC and the trader liaise with NZTA to ensure changes made in the field are updated in the database.	Still existing
		Liaise with the networks to confirm process understanding of new streetlight circuit.	Still existing
Database Accuracy	3.1	Confirm that correct wattage has been recorded and update lamp descriptions against 96 LED lights	Cleared

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

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

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

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

Audit observation

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

Audit commentary

Meridian reconciles this DUML load using the DST profile. The 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 a data logger. 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 February 2020 were checked and confirmed to be the same as the database.

The previous audit recorded inaccurate submission for three reasons. These issues are all now resolved, as discussed below:

1. The incorrect wattage figure from the monthly wattage report was used for submission since January 2019. Meridian uses the monthly RAMM extract and does not have their own separate database, so this issue is not present.
2. The monthly wattage report provided by TDC contained incorrect ballasts. Previously these were being corrected outside of RAMM. Meridian receives a report with a complete database extract and the ballast wattages are correct apart from one light, which is mentioned in Section 3.1.
3. TDC were excluding 351 items of load. 348 items of load had a TDC DUML ICP recorded against them even though the owner was recorded as NZTA, private or council amenities. All lights are now included in the report to Meridian and submission is occurring for them all.

The issue of static dimming raised in the last audit was checked again. TDC stated that the dimming functionality is not yet being used. If it is used in the future, there will need to be a different set of reporting to cater for this.

The database accuracy check identified one item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

The field audit found that in absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-May-19 To: 26-Mar-20	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate because TDC has identified and resolved many discrepancies identified in the last audit. The processes for field notification still require some improvement before controls can be recorded as strong. The impact is assessed to be medium due to the potential kWh variances found.

Actions taken to resolve the issue	Completion date	Remedial action status
The incorrect ballast wattage identified will be corrected in the database	30 April 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will liaise with TDC regarding field audit findings and corrections required. Some discrepancies can be attributed to timing of updates following LED roll out which should be completed by the next audit.	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 that an ICP is recorded for each item of load.

Audit commentary

All items of load have an ICP 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 the nearest street address, displacement from end of road and/or Global Positioning System (GPS) coordinates for each item of load. 119 items of load do not have GPS coordinates but still have a street name and number to allow them to be located.

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

The database contains two fields for wattage, firstly the manufacturers rated wattage and secondly the "ballast wattage". The ballast wattage is expected to be a calculated figure which accounts for any variation from the input wattage and includes losses associated with ballasts. Examination of the database against the items of load with an ICP associated found:

- all items of load have a gear wattage recorded
- all items of load have a lamp description recorded
- Light ID 64164 is a 53 watt LED but has an HPS70 gear wattage

The accuracy of the ballast wattages used for submission are discussed in **sections 2.1, 3.1** and **3.2.**

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 a statistical sample of 358 items of load on 22 March 2020.

Audit commentary

The field audit findings were correct with the exception of the lights detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
MAHOE STREET	6	7	+1	0	1x extra 23.5W LED found
MAYFLY GROVE	7	7	0	1	1x incorrect wattage recorded as 70W HPS but 45W LED found in the field
OMORI ROAD	9	10	+1	1	1x extra 23.5W LED found 1x incorrect wattage recorded as 70W HPS but 27W LED found in the field
ROBERTS STREET	25	28	+3	0	3x extra 70W HPS found
TAMAMUTU STREET	44	44	0	5	5x incorrect wattage recorded as 400 or 150 HPS or MV but 37W LED found in the field
TE WAAKA TERRACE	6	4	-2	0	2x 23.5W LED not found
TERENCE STREET	8	9	+1	0	1x extra 37W LED found
Total			**+4 (net)**	**7**	

Six additional lights were found in the field. This is recorded as non-compliance.

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-19 To: 26-Mar-20	All load is not recorded in the database. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as the processes to capture change will mitigate risk most of the time. The impact is assessed to be low as the majority of the volume of additional lighting found in the sample was small.

Actions taken to resolve the issue	Completion date	Remedial action status
We will liaise with TDC regarding field audit findings and corrections required.	30 April 2020	Choose an item.
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Some discrepancies can be attributed to timing of updates following LED roll out which should be completed by the next audit.	Ongoing	

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 database tracks additions and removals as required by this clause.

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

A complete audit trail of all additions and changes to the database information.

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	Taupo district
Strata	The database contains items of load in Taupo area. The area has three distinct sub groups of urban, rural, NZTA. The processes for the management of TDC items of load are the same, but I decided to place the items of load into four strata, as follows: 1. Rural 2. Turangi 3. A-H Council Roading 4. I-M Council Roading 5. N-Z Council Roading
Area units	I created a pivot table of the roads in each area and I used a random number generator in a spreadsheet to select a total of 50 sub-units or 7.0% of the database wattage.
Total items of load	358 items of load were checked.

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

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 545 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	96.4	Wattage from survey is lower than the database wattage by 3.6%
R_L	87.7	With a 95% level of confidence it can be concluded that the error could be between -12.3% and +2.7%
R_H	102.7	

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 12.3% lower and 2.7 % higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 9.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 32 kW lower to 7.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 136,200 kWh p.a. lower to 30,200 kWh p.a. higher than the database indicates.

Scenario	Description
A - **Good accuracy, good precision**	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - **Poor accuracy, demonstrated with statistical significance**	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level
C - **Poor precision**	This scenario applies if:

	(a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Lamp description and capacity accuracy

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority and found the ballasts recorded have been corrected in RAMM. Only one error was found; light ID 64164 is a 53 watt LED but has an HPS70 gear wattage, resulting in an additional 13 watts being added. This is only a very small impact of 55 kWh per annum.

NZTA lighting

Some NZTA lighting is included in the database.

ICP accuracy

All items of load appear to have the correct ICPs recorded.

Location accuracy

The location details are accurate and complete.

Change management process findings

TDC use a RAMM database to manage this DUML load. New connections, fault and maintenance work is completed by Horizons. Nightly patrols are included in this contract and the whole network is expected to be covered every three months.

TDC record the NZTA load for all lights within the 70km speed zone. NZTA carry out the maintenance of these lights. There is no mechanism for TDC to be advised of changes to the field. I recommend that TDC, the trader liaise with NZTA to ensure changes made to the database are passed to TDC.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy	TDC and the trader liaise with NZTA to ensure changes made in the field are updated in the database.	We'll discuss formalisation of a notification process with TDC to manage changes to NZTA lights.	Identified

Downer are the contractor for the LED upgrade. The updating of these changes is carried out by the contractor into RAMM. All changes made during a month are included in the monthly report provided to Meridian for submission. The LED roll out is in progress and is 70% complete.

The TDC Engineer is responsible to check all claims for work carried out prior to the claim by the contractor being approved for payment. The field audit findings found seven examples of HPS lights being recorded in the database but LED lights were found in the field suggesting the notification process may have timing issues.

The process for the connection of streetlights in new subdivisions has not changed during the audit period. TDC have strict requirements for all relevant asset information to be provided prior to the signing off the section 224C that is required before the subdivision is vested to council. This includes a check of all of the "as-builts". The sign off will not be granted before the council is satisfied that the information required is complete. Once the subdivision is vested the assets are added to RAMM. This is expected to happen

promptly after the 224C has been issued. Titles cannot be issued prior to this therefore the building of houses is unlikely to occur (and this is the usually the trigger for street lights to go on). TDC do not receive any notification from Unison or the Lines Company of streetlights being connected, therefore there is a possibility that streetlight assets are added to RAMM prior to being electrically connected. I recommend that the trader and TDC liaise with the Unison and the Lines Company to ensure that the process is well mapped between the parties.

Description	Recommendation	Audited party comment	Remedial action
Tracking of load change	Liaise with the networks to ensure that streetlight electrical connections are notified to TDC.	We'll discuss formalisation of a notification process with TDC and network companies to manage connection of new lights	Identified

Festive lights are connected into the unmetered circuits and these are added and removed for the relevant months.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-May-19 To: 26-Mar-20	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be medium based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
The incorrect ballast wattage identified will be corrected in the database	30 April 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

We will liaise with TDC regarding field audit findings and corrections required. Some discrepancies can be attributed to timing of updates following LED roll out which should be completed by the next audit.	Ongoing	

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

- checking the registry to confirm that 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

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 a data logger. 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 February 2020 were checked and confirmed to be the same as the database.

The previous audit recorded inaccurate submission for three reasons. These issues are all now resolved, as discussed below:

1. The incorrect wattage figure from the monthly wattage report was used for submission since January 2019. Meridian uses the monthly RAMM extract and does not have their own separate database, so this issue is not present.
2. The monthly wattage report provided by TDC contained incorrect ballasts. Previously these were being corrected outside of RAMM. Meridian receives a report with a complete database extract and the ballast wattages are correct apart from one light, which is mentioned in Section 3.1.
3. TDC were excluding 351 items of load. 348 items of load had a TDC DUML ICP recorded against them even though the owner was recorded as NZTA, private or council amenities. All lights are now included in the report to Meridian and submission is occurring for them all.

The database accuracy check identified one item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

The field audit found that in absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-May-19 To: 26-Mar-20	1 item of load with the incorrect ballast recorded resulting in an estimated over submission of 55kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). In absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as moderate because TDC has identified and resolved many discrepancies identified in the last audit. The processes for field notification still require some improvement before controls can be recorded as strong. The impact is assessed to be medium due to the potential kWh variances found.

Actions taken to resolve the issue	Completion date	Remedial action status
The incorrect ballast wattage identified will be corrected in the database	30 April 2020	Choose an item.
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will liaise with TDC regarding field audit findings and corrections required. Some discrepancies can be attributed to timing of updates following LED roll out which should be completed by the next audit.	Ongoing	

CONCLUSION

TDC use a RAMM database to manage this DUML load. New connection, fault and maintenance work is completed by Horizons. Monthly reports are received by Meridian on a monthly basis.

The database accuracy issues identified during the previous audit have been resolved.

The field audit found that in absolute terms, total annual consumption is estimated to be 39,300 kWh lower than the DUML database indicates, meaning that over submission is occurring. The main issue leading to this result is the timeliness of updates from the field for changes to LED.

The audit found four non-compliances and makes one recommendation. The future risk rating of 14 indicates that the next audit be completed in 12 months. I agree with this recommendation.

PARTICIPANT RESPONSE