ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

TAURANGA WAKA KOTAHI AND MANAWA ENERGY LIMITED

NZBN:**9429038917912**

Prepared by: Steve Woods

Date audit commenced: 15 July 2022

Date audit report completed: 16 August 2022

Audit report due date: 20 August 2022

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This audit of the **Tauranga Waka Kotahi** DUML database and processes was conducted at the request of **Manawa Limited (Manawa)** 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.

Tauranga City Council manages a RAMM database, including the Tauranga Waka Kotahi data. Tauranga City Council manages a RAMM database, including the Tauranga Waka Kotahi data. Waka Kotahi are working with TCC to mirror the Waka Kotahi RAMM data held by TCC into the Waka Kotahi RAMM database.

The field work and asset data capture is conducted by McKay Electrical and they provide updates to Tauranga City Council. As reported in the last audit, existing areas are largely correctly recorded but where roadworks are being undertaken these changes are not being updated in the RAMM database. The field variance represents an error rate of 5.04% which is greater than the allowable +/-5% threshold.

The main area where the database is inaccurate is the Bay Park Roundabout, where major works are being undertaken and many lights have been removed. New roading has lights, but it is unclear if these are electrically connected or if they are metered. TCC intends to seek permission from Waka Kotahi to send the maintenance contractor to do a “one off” mapping of removed and installed lights to enable the database to be corrected. A further update will be made when the works are complete.

The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Manawa’s responses and 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	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.	Moderate	Medium	4	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. One item of load has the incorrect ICP	Weak	Medium	6	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.	Moderate	Medium	4	Investigating
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	Clause	Recommendation
			Nil

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

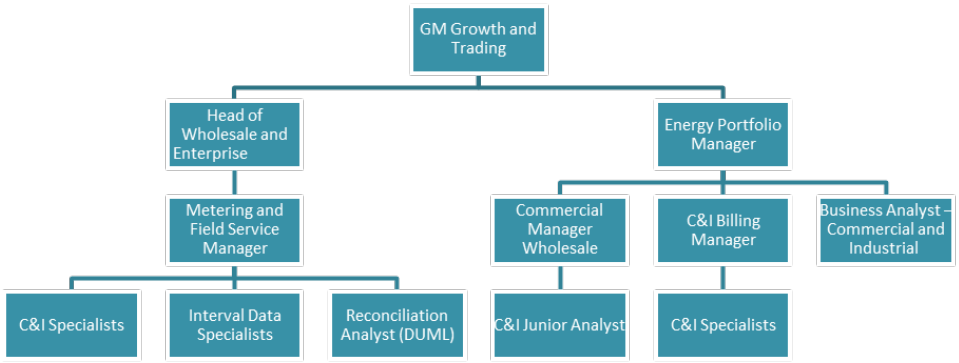
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Manawa 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
Robbie Diederen	Streetlighting Reconciliation Analyst	Manawa
Michael Jones	Traffic Systems Engineer	Tauranga City Council

1.4. Hardware and Software

The RAMM database used for the management of DUML is managed by TCC.

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

Systems used by the trader 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	Number of items of load	Database wattage (watts)
1000524102PCBD0	Tauranga District Council NZTA (TGA33)	TGA0331	266	66,881
1000524101PC710	Tauranga District Council NZTA (TGA11)	TGA0111	133	35,525
1000524103PC795	Tauranga District Council NZTA (KMO)	KMO0331	117	29,096
0001264706UNAD2	Tauranga District Council NZTA (MTM)	MTM0331	141	33,262
Total			**657**	**164,764**

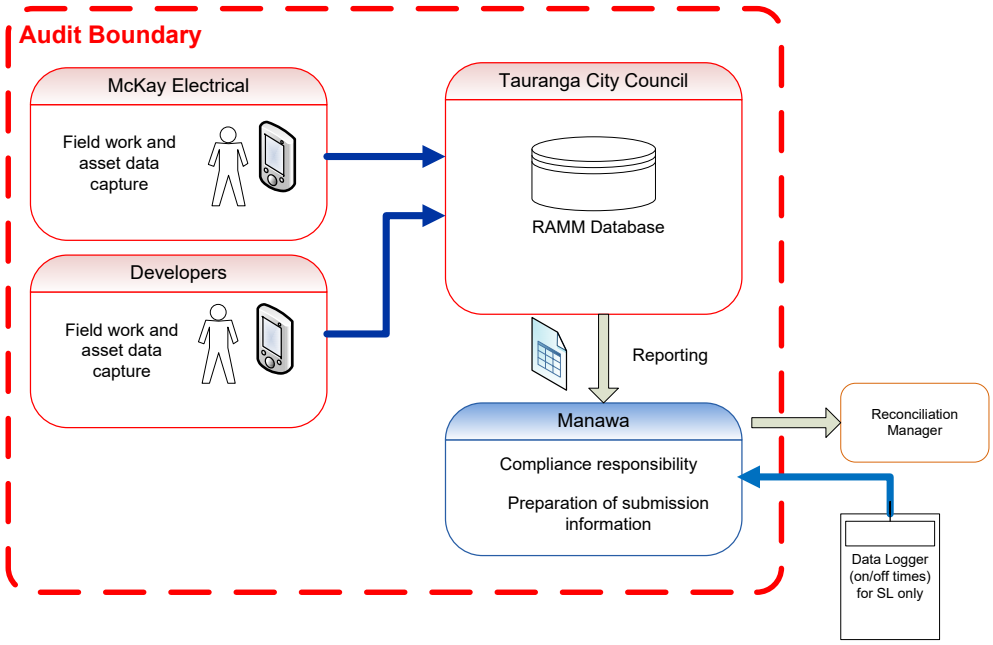
1.7. Authorisation Received

All information was provided directly by Manawa and TCC.

1.8. Scope of Audit

The database used for submission is managed by TCC. The field work and asset data capture is conducted by McKay Electrical and they update the TCC RAMM database using "Pocket RAMM".

The diagram below shows the current flow of information and the audit boundary for clarity.



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

A field audit of 128 items of load was carried out on 22nd July 2022.

1.9. Summary of previous audit

The previous audit was completed in November 2020 by Rebecca Elliot of Veritek. Three non-compliances were identified, and no recommendations were made. The statuses of the non-compliances are described below.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 29,629 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 29,629 kWh per annum for the sample checked. 18 items of load have the incorrect ICP.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 29,629 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.	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

Manawa have requested Veritek to undertake this DUML 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.

Audit commentary

Manawa reconciles this DUML load using the STL profile. The on and off times are derived from data logger information. Manawa uses the wattage figures recorded in RAMM.

I recalculated the submissions for June 2022 using the data logger and database information. I confirmed that the calculation method and result was correct.

The field sample checked found less lights in the field than recorded in the database and the variance represents an error rate of 5.04 % which is just greater than the allowable +/-5% threshold. This is recorded as non-compliance below.

Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: 01-Nov-20 To: 25-Jul-22	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database. 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 recorded as moderate overall. The existing load is accurate but where changes made in the field these are not being provided to TCC in a timely manner to ensure that the database contents are up to date. The audit risk rating is indicated to be medium based on the estimated over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Tauranga City Council have made significant progress in improving the accuracy of the DUML database since the last audit in December 2020. At that time a variance of greater than 18% was recorded. Not withstanding the challenges associated with the ongoing infrastructure upgrade at Baypark, the council has proactively sought to improve its systems and processes which is demonstrated in these results.	ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Tauranga City Council to work with Waka Kotahi to update infrastructure changes specifically at the Baypark interchange.	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 RAMM database was checked to confirm an ICP is recorded for each item of load.

Audit commentary

The database contains the Waka Kotahi ICPs, and all items of load have an ICP recorded. The accuracy of these is discussed in **section 3.1**.

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

Audit commentary

The database contains GPS coordinates for the location of items of load, along with road names. No blanks or errors were identified.

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 a field for lamp wattage, and these were confirmed as correct in relation to the description.

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 128 lights. A statistical sample was not used, because many of the lights are on motorways or main thoroughfares where it's unsafe to stop and check lights. The sample was taken from lights where it's possible to safely stop and check lights.

Audit commentary

The field audit findings are summarised in the table below. A detailed spreadsheet of findings has been provided to TCC and Manawa.

Wattages for lamps found in the field but not the database were based on lamp label information where available and estimated based on physical characteristics and other surrounding lamps where they are unlabelled.

Discrepancy	Quantity
Lights in the database not in the field	17
Lights in the field not in the database	0
Incorrect wattages recorded in the database	7

This clause relates to items of load in the field not recorded in the database. No additional items of load were found. The database accuracy is discussed in **section 3.1**.

Audit outcome

Compliant

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 ability of the database to track changes was assessed and the process for tracking of changes in the database was examined.

Audit commentary

The 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 contains a complete audit trail of all additions and changes.

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	Tauranga Waka Kotahi
Strata	The database contains items of Waka Kotahi load in the Tauranga region. The processes for the management of all items of load are the same, but I selected a field audit of 128 lights where it was possible to count these as this is not possible for all Waka Kotahi lights due to health and safety risks
Area units	I selected seven area units.
Total items of load	128 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database or in the case of LED lights against the LED light specification.

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

Audit commentary

Field audit findings

A field audit was conducted of a sample of 128 items of load. This found 17 less lights in the field than recorded in the database and there were seven lamp wattage discrepancies. The "database auditing tool" was not used as the sample was not randomly selected. I have instead calculated the variance based on the sample and found that there was 7,669 watts less found in the field. This will be resulting in an estimated annual over submission of 32,753 kWh per annum (based on 4,271 annual burn hours from the DUML tool) just for the sample checked. The field variance represents an error rate of 5.04% which is greater than the allowable +/-5% threshold. This is recorded as non-compliance below.

Lamp description and capacity accuracy

There were no lamp description and capacity discrepancies found.

ICP accuracy

In the last audit there were 18 metered items of load are recorded against the unmetered ICPs, in this audit I found one metered item of load recorded against an unmetered ICP. These are in the process of being corrected but require some SQL coding to correct this. They are excluded from submission so there is no effect on reconciliation. This is recorded as non-compliance.

Location accuracy

The database contains fields for the street address and also GPS coordinates.

Change management process findings

McKay Electrical has the maintenance contract for streetlights and data is entered directly into the RAMM database via pocket RAMM. McKay Electrical submits Service Orders immediately after the work has been completed and this is in turn checked by Tauranga City Council to validate the claims. As reported in the last audit, it doesn't appear that changes due to major roadworks are being populated in a timely fashion.

Regular outage patrols are undertaken to check for lights out.

An LED rollout is planned but has been deferred for the foreseeable future. LED lights are being installed where existing older light fixtures fail and for new developments.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Nov-20 To: 25-Jul-22	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. One item of load has the incorrect ICP. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Weak Breach risk rating: 6		
Audit risk rating	**Rationale for audit risk rating**		
Medium	The controls are recorded as weak as changes made in the field are not being provided to TCC in a timely manner to ensure that the database contents are up to date, mainly where roading changes are occurring The audit risk rating is indicated to be medium based on the estimated over submission.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Refer earlier comments		ongoing	Investigating
Preventative actions taken to ensure no further issues will occur		**Completion date**	
Refer earlier comments		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

Manawa reconciles this DUML load using the STL profile. The on and off times are derived from data logger information. Manawa uses the wattage figures recorded in RAMM.

I recalculated the submissions for June 2022 using the data logger and database information. I confirmed that the calculation method and result was correct.

The field sample checked found less lights in the field than recorded in the database and the variance represents an error rate of 5.04 % which is just greater than the allowable +/-5% threshold. This is recorded as non-compliance below.

Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: 15.2 and 15.37B(c) From: 01-Nov-20 To: 25-Jul-22	The data base error is indicated to be outside the allowable +/-5% threshold resulting in an estimated over submission of 32,753 kWh per annum for the sample checked. Submission is based on a snapshot of the database at the end of the month and does not consider historic adjustments or the fact that lights can be livened before they are entered into the database. 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 recorded as moderate overall. The existing load is accurate but where changes made in the field these are not being provided to TCC in a timely manner to ensure that the database contents are up to date. The audit risk rating is indicated to be medium based on the estimated over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Refer earlier comments	ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Refer earlier comments	ongoing	

CONCLUSION

Tauranga City Council manages a RAMM database, including the Tauranga Waka Kotahi data. Tauranga City Council manages a RAMM database, including the Tauranga Waka Kotahi data. Waka Kotahi are working with TCC to mirror the Waka Kotahi RAMM data held by TCC into the Waka Kotahi RAMM database.

The field work and asset data capture is conducted by McKay Electrical and they provide updates to Tauranga City Council. As reported in the last audit, existing areas are largely correctly recorded but where roadworks are being undertaken these changes are not being updated in the RAMM database. The field variance represents an error rate of 5.04% which is greater than the allowable +/-5% threshold.

The main area where the database is inaccurate is the Bay Park Roundabout, where major works are being undertaken and many lights have been removed. New roading has lights, but it is unclear if these are electrically connected or if they are metered. TCC intends to seek permission from Waka Kotahi to send the maintenance contractor to do a “one off” mapping of removed and installed lights to enable the database to be corrected. A further update will be made when the works are complete.

The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Manawa’s responses and I agree with this recommendation.

PARTICIPANT RESPONSE

Tauranga City Council have proactively sought to reduce the level of non-compliance which is demonstrated in the significant improvement over the previous audit. As such the level of non-compliance falls just outside the threshold by a very low margin (1 decimal place).