

**ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT**

For

**TAURANGA NZTA AND TRUSTPOWER
LIMITED**

Prepared by: Rebecca Elliot

Date audit commenced: 22 October 2020

Date audit report completed: 20 November 2020

Audit report due date: 1 December 2020

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EXECUTIVE SUMMARY

This audit of the **Tauranga NZTA** DUML database and processes was conducted at the request of **Trustpower Limited (Trustpower)** 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 NZTA data. NZTA are working with TCC to mirror the NZTA RAMM data held by TCC into the NZTA RAMM database. TCC is expected to continue to manage the NZTA database going forward.

As reported in the last audit, existing areas are 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 18% which is greater than the allowable +/-5% threshold.

The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Trustpower'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	<p>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.</p> <p>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.</p>	Moderate	Medium	4	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>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.</p> <p>18 items of load have the incorrect ICP.</p>	Weak	Medium	6	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)	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.	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	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

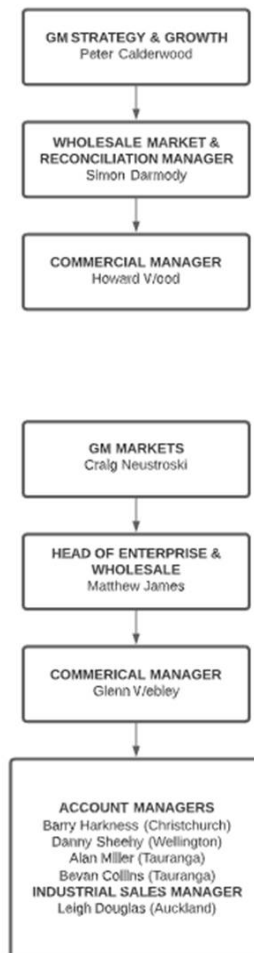
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Trustpower provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Robbie Diederer	Reconciliation Analyst	Trustpower
Alan Miller	Commercial Account Manager	Trustpower
Michael Jones	Traffic Systems Engineer	Tauranga City Council
Frankie Evans	Network Manager, System Management	NZTA

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 City State H/Way TGA 0331	TGA0331	260	65,311
1000524101PC710	SH 2 & SH 29 SH 36 Outgoing TGA0111	TGA0111	127	34,221
1000524103PC795	Tauranga Eastern SH's KMO0331	KMO0331	113	29,689
0001264706UNAD2	Mt Maunganui/Papamoa area MTM0331	MTM0331	191	41,828
Total			691	171,049

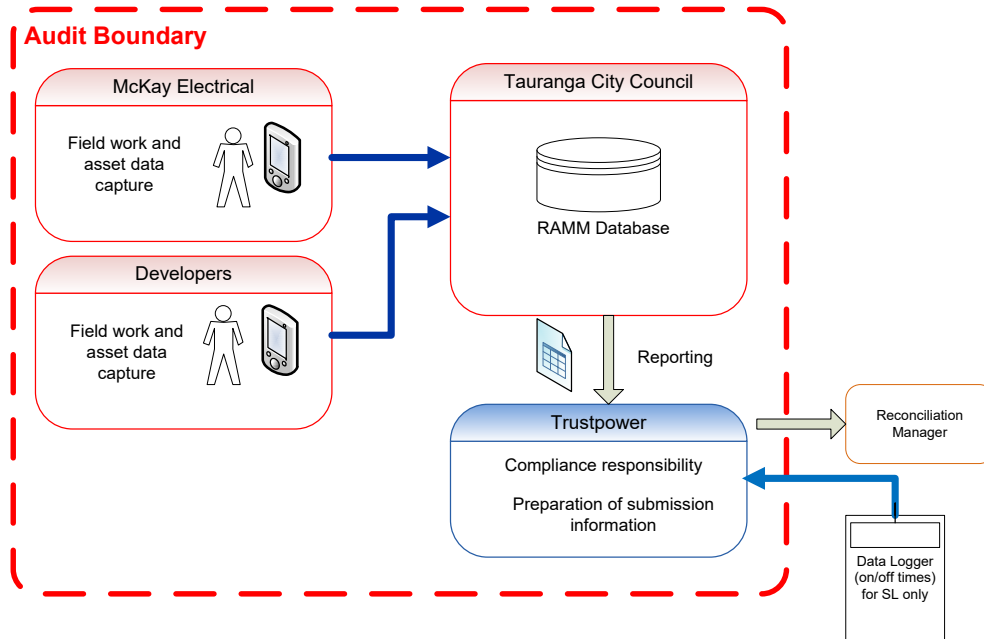
1.7. Authorisation Received

All information was provided directly by Trustpower 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 DUMML audits version 1.1.

A field audit of 179 items of load was carried out on 6th November 2020.

1.9. Summary of previous audit

The previous audit was completed in November 2019 by Steve Woods of Veritek. Four 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	In absolute terms, total annual consumption is estimated to be 35,500 kWh lower than the DUML database indicates.	Still existing
ICP identifier	2.2	11(2)(a) and (aa)	20 metered items of load are recorded against the unmetered ICPs.	Recorded in section 3.1 in this report as all ICPs had an ICP recorded.
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 35,500 kWh lower than the DUML database indicates. 20 items of load have the incorrect ICP.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	In absolute terms, total annual consumption is estimated to be 35,500 kWh lower than the DUML database indicates.	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

Trustpower 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

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

I recalculated the submissions for September 2020 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 18% which is 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: 26-Nov-19 To: 22-Oct-20	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. 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
TCC are updating the database with the correct information		01/01/2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Most of the issues involve one major project in Tauranga City involving NZTA. TCC have discussed with the contractor and reinforced with them the expectation that they are informed when changes are occurring. The new process involving Powerco and their contractors around livening information should assist with this issue		01/0202021	

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 NZTA 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 DUMML database must contain the location of each DUMML 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 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 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 179 lights using the statistical sampling methodology.

Audit commentary

The field audit findings are detailed in the table below.

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 unlabelled.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
002-0155-R5 (MARSH STREET)	1	1	-	1	1 x 85W LED recorded as 121W LED
002-0157 (MAUNGANUI RD: FLYOVER TO BAYPARK)	101	89	-12	8	12 x lights not found 5x 150W LED recorded as 150W HPS in the database 3x 117 LED estimate (no label) recorded in the database as 150W HPS
002-0161-W	4	2	-2	-	2 x 250W HPS not found
002-0163-W	2	0	-2	-	2 x 250W HPS not found
002-0164-R1	3	0	-3	-	3 x 250W HPS not found
29A-0000/00.16-D	4	2	-2	-	2 x 250W HPS not found
29A-0000/00.19-I	3	2	-1	-	1 x 250W HPS not found
29A-0000-D	3	2	-1	-	1 x 250W HPS not found
29A-0001-W	6	2	-4	-	3 x 250W HPS not found 1x 400W HPS not found
TOTAL	179	152	-27	9	

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 DUMML 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 DUMML database is complete and accurate.

Audit observation

The DUMML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Tauranga NZTA
Strata	The database contains items of NZTA 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 179 lights where it was possible to count these as this is not possible for all NZTA lights due to health and safety risks
Area units	I selected seven area units.
Total items of load	179 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 179 items of load. This found 27 less lights in the field than recorded in the database. 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 6,853W less found in the field. This will be resulting in an estimated annual over submission of 29,629 kWh per annum (based on 4,271 annual burn hours from the DUMML tool) just for the sample checked. The field variance represents an error rate of 18% 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 20 metered items of load are recorded against the unmetered ICPs, in this audit I found 18 metered items of load recorded against unmetered ICPs. 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: 26-Nov-19 To: 22-Oct-20	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. Potential impact: Medium Actual impact: Medium Audit history: Once 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. 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
TCC are updating the database with the correct information		01/01/2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Most of the issues involve one major project in Tauranga City involving NZTA. TCC have discussed with the contractor and reinforced with them the expectation that they are informed when changes are occurring. The new process involving Powerco and their contractors around livening information should assist with this issue		01/02/2021	

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

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

I recalculated the submissions for September 2020 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 18% which is 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		
<p>Audit Ref: 3.2 With: 15.2 and 15.37B(c)</p> <p>From: 26-Nov-19 To: 22-Oct-20</p>	<p>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.</p> <p>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.</p> <p>Potential impact: Medium Actual impact: Medium</p> <p>Audit history: Multiple times Controls: Moderate Breach risk rating: 4</p>		
Audit risk rating	Rationale for audit risk rating		
<p>Medium</p>	<p>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.</p> <p>The audit risk rating is indicated to be medium based on the estimated over submission.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
TCC are updating the database with the correct information		01/01/2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Most of the issues involve one major project in Tauranga City involving NZTA. TCC have discussed with the contractor and reinforced with them the expectation that they are informed when changes are occurring. The new process involving Powerco and their contractors around livening information should assist with this issue</p>		01/02/2021	

CONCLUSION

Tauranga City Council manages a RAMM database, including the Tauranga NZTA data. Tauranga City Council manages a RAMM database, including the Tauranga NZTA data. NZTA are working with TCC to mirror the NZTA RAMM data held by TCC into the NZTA RAMM database. TCC is expected to continue to manage the NZTA database going forward.

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 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 18% which is greater than the allowable +/-5% threshold.

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

PARTICIPANT RESPONSE

Most of the issues involve one major project in Tauranga City involving NZTA. TCC and NZTA have discussed with the contractor and reinforced with them the expectation that they are informed when changes are occurring. The new process involving Powerco and their contractors around livening information should assist with this issue. Our expectations are that the robust process used by TCC in managing their database will also be applied to this data base going forward.