ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NZTA TAUPO AND TRUSTPOWER

Prepared by: Rebecca Elliot

Date audit commenced: 23 April 2018

Date audit report completed: 18 May 2018

Audit report due date: 1 June 2018

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EXECUTIVE SUMMARY

This audit of the NZTA Taupo (NZTA) DUML database and processes was conducted at the request of Trustpower (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, which became effective on 1 June 2017.

The RAMM database used for submission is managed by Opus. The field contractor is in the process of changing but has been Broadspectrum for the audit period. The database has not been maintained and Opus have applied to NZTA to get funding to do a 100% field audit to get the database up to date.

The database extract provided had 30 lights recorded but Opus have a spreadsheet of 200 lights that they maintain. This needs to be investigated to determine if the additional lights are part of the unmetered load or are metered.

The assessment of the database extract to that used by Trustpower found some differences resulting in an estimated under submission of 5,452.25 kWh per annum.

The field audit was assessed against the items of load recorded in the database and this found one inaccuracy in the database resulting in an estimated over submission of 358.76 kWh per annum.

The future risk rating of 12 indicates that the next audit be completed in 12 months, but I recommend that the next audit be within six months after the full field audit is undertaken and to confirm that the database accuracy and. Four non-compliances were identified, and one recommendations was raised. The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	Database extract used for submission is not up to date resulting in an estimated under submission of 5,452.25 kWh per annum. The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh.	Weak	Low	3	Identified
Tracking of load change	2.6	11(3) of Schedule 15.3	Monthly reports not provided regularly. Tracking of load changes not provided by the existing contractor.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database extract used for submission is not up to date resulting in an estimated under submission of 5,452.25 kWh per annum. The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh.	Weak	Low	3	Identified
Future Risk Rating						12	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Remedial Action
All load recorded in the database	2.5	Determine if the 200 lights in the Opus spreadsheet are part of this unmetered load or not.	Investigating

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
Alan Miller	Corporate Account Manager	Trustpower
Delwyn Jeffrey	Commercial and Industrial Billing Manager	Trustpower
Kieran Head	Project Information Manager	Opus

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)
0000381313TUB52	Taupo	TMU0111	STL	30	5,150

Opus provided a spreadsheet of 200 items of load that they maintain. This needs to be investigated to determine if the additional lights are part of the unmetered load or are metered. This is discussed in **section 2.5**.

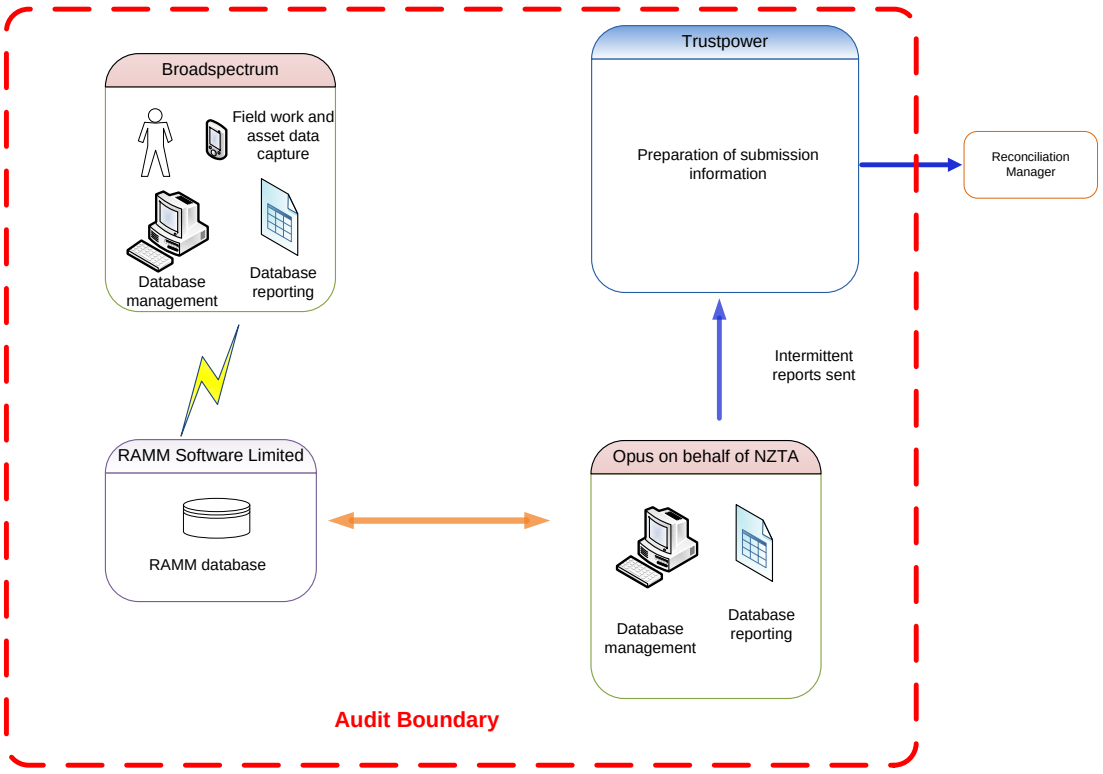
1.7. Authorisation Received

All information was provided directly by Trustpower and Opus.

1.8. Scope of Audit

The RAMM database used for submission is managed by Opus. The field contractor is in the process of changing but has been Broadspectrum for audit period. The database has not been maintained and Opus have applied to NZTA to get funding for the new contractor McKay Electrical to do a 100% field audit. Monthly reports are received intermittently by Trustpower.

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.

A 100% field audit was completed on 23rd April 2018.

1.9. Summary of previous audit

The previous audit was completed in September 2016 by Allan Miller of Trustpower. The current status of that audit's findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Database contents	2.2.2 refer **section 2.4**	11(2)(d) of Schedule 15.3	Gear wattage not shown in database.	Cleared

Table of Recommendations

Subject	Section	Clause	Recommendation for Improvement	Status
			Nil	

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 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. Compliance is confirmed.

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 receive intermittent database reports, therefore submission cannot be calculated from an up to date database extract. This is recorded as non-compliance.

I recalculated the submissions for March 2018 using the data logger and the database information. I confirmed that the calculation method was correct, but due to the out of date database being used I have calculated under submission of 454.35 kWh for the month of March. Annualised this equates to an estimated under submission of 5,452.25 kWh. As detailed in **section 2.5**, there are additional items of load that need to be investigated to confirm if these should be part of this unmetered load or not.

The field audit found one incorrect wattage recorded causing a minor inaccuracy within the database used to calculate submissions. This is recorded as non-compliance and discussed in **3.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: unknown To: 30-Apr-18	Database extract used for submission is not up to date resulting in an estimated under submission of 5,452.25 kWh per annum. The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as they are unlikely to mitigate risk and remove errors. The impact is assessed to be low, based on the kWh differences.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS will work with Opus to review and correct the database Monthly reporting to TRUS to be set up	31/10/18 31/10/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Maintenance and validation processes to be reviewed.	31/10/18	

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

Code reference

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

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

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

Audit commentary

All items of load had an ICP recorded as required by this clause.

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 either the nearest street address, pole numbers, metres from the end of the carriageway or Global Positioning System (GPS) coordinates for each item of load and users in the office and field can view these locations on a mapping system.

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. This was correctly recorded for all items of load.

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

A 100% field audit was undertaken of 30 items of load on 23 April 2018.

Audit commentary

The database extract provided contained 30 lights, but Opus have a spreadsheet of 200 lights that they maintain. I recommend this is investigated to determine if the additional lights are part of the unmetered load or are metered.

Description	Recommendation	Audited party comment	Remedial action
All load recorded in database	Determine if the 200 lights in the Opus spreadsheet are part of this unmetered load or not.	TRUS agrees with this recommendation and will work with Opus to arrange it	Investigating

All items of load were recorded correctly with the exception of one item which is recorded in the database as HPS, but an LED light was found in the field. This is recorded as non-compliance 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 process for tracking of changes in the database was examined.

Audit commentary

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. On 20 September 2012, the Authority sent a memo to retailers and auditors advising that tracking of load changes at a daily level was not required if the database contained an audit trail. I have interpreted this to mean that the provision of a copy of the report to Trustpower each month is sufficient to achieve compliance. Monthly reports are being provided intermittently and this is recorded as non-compliance.

Opus manages the database and Broadspectrum were the contractor for the field work. Broadspectrum have not provided Opus with update. Opus conduct a field audit every three months and NZTA audit them.

Opus have just engaged McKay Electrical to carry out all fault and maintenance work. Opus have applied to NZTA to get funding to do a 100% field audit to get the database up to date. It is expected that McKay Electrical will update changes into the RAMM database going forward. Outage patrols are also expected to be part of the contractor's responsibility.

Opus advised there have been no new connections made during the audit period. An LED rollout is in the planning stages but no firm dates for this have been set.

No festive lighting is connected to the Taupo NZTA unmetered streetlight network.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.6 With: Clause 11(3) of Schedule 15.3 From: unknown To: 30-Apr-18	Monthly reports not provided regularly. Tracking of load changes not provided by the existing contractor Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, as the changes are not well tracked, and regular monthly reports are not provided, but I note that this is expected to be rectified with the appointment of a new field contractor. The impact is assessed to be low, as the volume lights associated with this load is small.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS will follow up with Opus to ensure all updates are provided monthly	31/10/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Opus have a new contractor and expect that updates will be entered into RAMM going forward	Ongoing	

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

A 100% field audit was undertaken

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

Audit commentary

As noted in **section 2.5**, there are potentially 200 additional items of load associated with the DUML database and I recommend that this is investigated to determine if these are on the unmetered circuits or are part of a metered supply.

The field audit was undertaken of the items of load in the database and found all items of load and only one wattage discrepancy. One 150W HPS lamp has been replaced by an LED light which I have assumed for the purposes of this audit to be 84W. This will result in an estimated annual over submission of 358.76 kWh. This is recorded as non-compliance.

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority and confirmed to be correct.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 30-Apr-18	The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as they are unlikely to mitigate risk and remove errors. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS will work with Opus to correct any database anomalies	31/10/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Opus have a new contractor and expect that updates will be entered into RAMM going forward	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
- 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 receive intermittent database reports, therefore submission cannot be calculated from an up to date database extract. This is recorded as non-compliance.

I recalculated the submissions for March 2018 using the data logger and the database information. I confirmed that the calculation method was correct, but due to the out of date database being used I have calculated under submission of 454.35 kWh for the month of March. Annualised this equates to an estimated under submission of 5,452.25 kWh. As detailed in **section 2.5**, there are additional items of load that need to be investigated to confirm if these should be part of this unmetered load or not.

The field audit found one incorrect wattage recorded causing a minor inaccuracy within the database used to calculate submissions. This is recorded as non-compliance and discussed in **2.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: unknown To: 30-Apr-18	Database extract used for submission is not up to date resulting in an estimated under submission of 5,452.25 kWh per annum. The field audit found one wattage discrepancy resulting in an estimated over submission of 358.76 kWh. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as they are unlikely to mitigate risk and remove errors. The impact is assessed to be low, based on the kWh differences.

Actions taken to resolve the issue	Completion date	Remedial action status
TRUS will follow up with Opus to ensure all updates are provided monthly	31/10/18	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Opus have a new contractor and expect that updates will be entered into RAMM going forward	Ongoing	

CONCLUSION

The RAMM database used for submission is managed by Opus. The field contractor is in the process of changing but has been Broadspectrum for the audit period. The database has not been maintained and Opus have applied to NZTA to get funding to do a 100% field audit to get the database up to date.

The database extract provided had 30 lights recorded but Opus have a spreadsheet of 200 lights that they maintain. This needs to be investigated to determine if the additional lights are part of the unmetered load or are metered.

The assessment of the database extract to that used by Trustpower found some differences resulting in an estimated under submission of 5,452.25 kWh per annum.

The field audit was assessed against the items of load recorded in the database and this found one inaccuracy in the database resulting in an estimated over submission of 358.76 kWh per annum.

The future risk rating of 12 indicates that the next audit be completed in 12 months, but I recommend that the next audit be within six months after the full field audit is undertaken and to confirm that the database accuracy and. Four non-compliances were identified, and one recommendations was raised.

PARTICIPANT RESPONSE

Trustpower agrees with the recommendation to investigate the 200 lights Opus maintains to confirm as to whether they are metered or unmetered, included in Taupo District Council's ICPs, or another retailer's ICPs.

Trustpower will also reiterate the importance of receiving timely updates of any database changes.