

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

For

NZTA TAUPO AND TRUSTPOWER

Prepared by: Rebecca Elliot

Date audit commenced: 12 November 2018

Date audit report completed: 26 November 2018

Audit report due date: 1 December 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.

The RAMM database used for submission is managed by Opus. McKay Electrical carry out the field maintenance. Opus have applied to NZTA to get funding to undertake a 100% field audit, but this has not been granted. The database has not been maintained.

The database extract provided has 234 items of load, but only five items of load have a wattage recorded against them, no ICP is recorded and Trustpower only reconcile 23 items of load. This is reconciled against the Unison unmetered ICP using a wattage report which is at least seven months old. Trustpower have requested a more up to date wattage report but none have been provided. This DUML load needs to be investigated to determine where and if the additional lights are being reconciled. The lights recorded in the database provided are on both the Unison and The Lines Company networks. It is unclear whether there are ICPs for the lights on the Lines Company network and I recommend that this be investigated.

The field audit was undertaken to ascertain the wattage of 49 items of load with no load recorded against them. All items were present, and all were 150W HPS lights. Assuming that all items of load are 150W HPS (the field audit found these in all instances) and these are part of the DUML unmetered load, there is potentially 151,398 kWh of under submission occurring per annum.

The future risk rating of 60 indicates that the next audit be completed in three months. 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 a potential estimated under submission of 151,398 kWh per annum.	None	High	12	Identified
ICP identifier	2.2	11(2)(a) and (aa) of Schedule 15.3	The ICP is not recorded in the database extract provided.	None	High	12	Identified
Description and capacity of load	2.4	11(2)(c) & d) of Schedule 15.3	Ballast not recorded in the database extract provided. Wattage was recorded as zero or blank for 229 items of load. 54 items of load with no lamp description.	None	High	12	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database is not being maintained. Potentially there is an estimated under submission of 151,398 kWh per annum.	None	High	12	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database extract used for submission is not up to date resulting in a potential estimated under submission of 151,398 kWh per annum.	None	High	12	Identified
Future Risk Rating						60	

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	Description	Remedial Action
ICP identifier	2.2	Trustpower to liaise with the relevant parties to where and if the additional lights are being reconciled.	We are working with relevant parties to ensure that this is addressed as a priority.

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
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	234	950

Opus provided a database extract with 234 items of load recorded but only five of these have wattage details recorded. This needs to be investigated to determine how and if the additional items of load are being reconciled. Some of the items of load are on The Lines Company network and it is likely that this load is connected to more than one NSP. This is discussed in **section 2.2**.

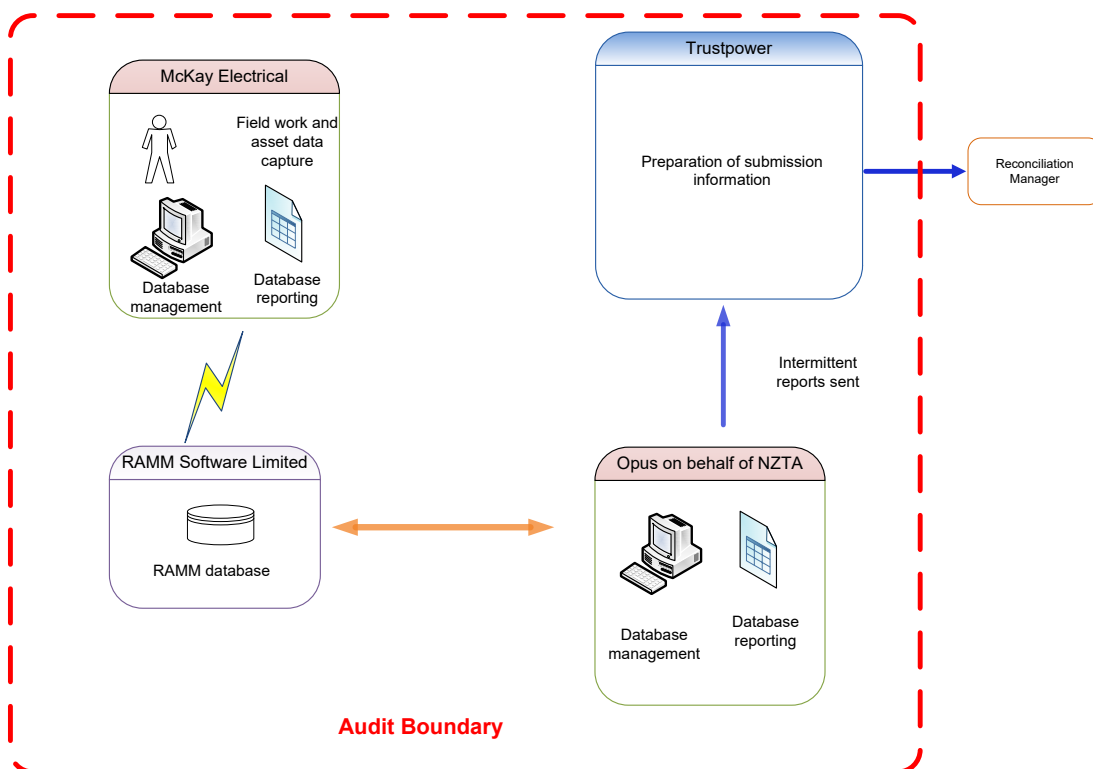
1.7. Authorisation Received

All information was provided directly by Trustpower and Opus.

1.8. Scope of Audit

The RAMM database used for submission is managed by Opus. McKay Electrical carry out the field maintenance. Opus have applied to NZTA to get funding for the new contractor McKay Electrical to do a 100% field audit, but this has not been granted. No monthly reports have been received since the last audit despite requests from 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 DUMML audits version 1.1.

A field audit was undertaken of a random selection of 49 items of load to determine what type of lamps were present in the field on November 12th, 2018. The results of this are discussed in **section 3.1**.

1.9. Summary of previous audit

The previous audit was completed in May 2018 by Rebecca Elliot of Veritek Limited. The current status of that audit's findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
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.	Still existing
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.	Still existing
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.	Still existing
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.	Still existing

Table of Recommendations

Subject	Section	Recommendation for Improvement	Status
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.	Still existing but recorded against section 2.2

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. DUMML 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:

- *DUMML 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 DUMML 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. The last database report was received at least seven months ago. This is recorded as non-compliance.

I recalculated the submissions for October 2018 using the data logger and the last RAMM report provided and confirmed that the calculation method was correct.

The database contains 234 items of load. Trustpower are reconciling 23 of these items. Assuming that all items of load are 150W HPS (the field audit found these in all instances) and these are part of the DUMML unmetered load, there is potentially 151,398 kWh of under submission occurring per annum. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-May-18 To: 31-Oct-18	Database extract used for submission is not up to date resulting in a potential estimated under submission of 151,398 kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Once Controls: None Breach risk rating: 12		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as none as the database is not being maintained. The impact is assessed to be high due to the potential under submission if the load is unmetered.		
Actions taken to resolve the issue		Completion date	Remedial action status
Trustpower will work with NZTA/Opus Taupo in getting all values and attributes updated within their database.		Feb 19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Trustpower has no control over the client's lack of action but we recognise the importance of finding a way forwards. We will continue to work proactively with the customer towards reconciling this issue.		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.*

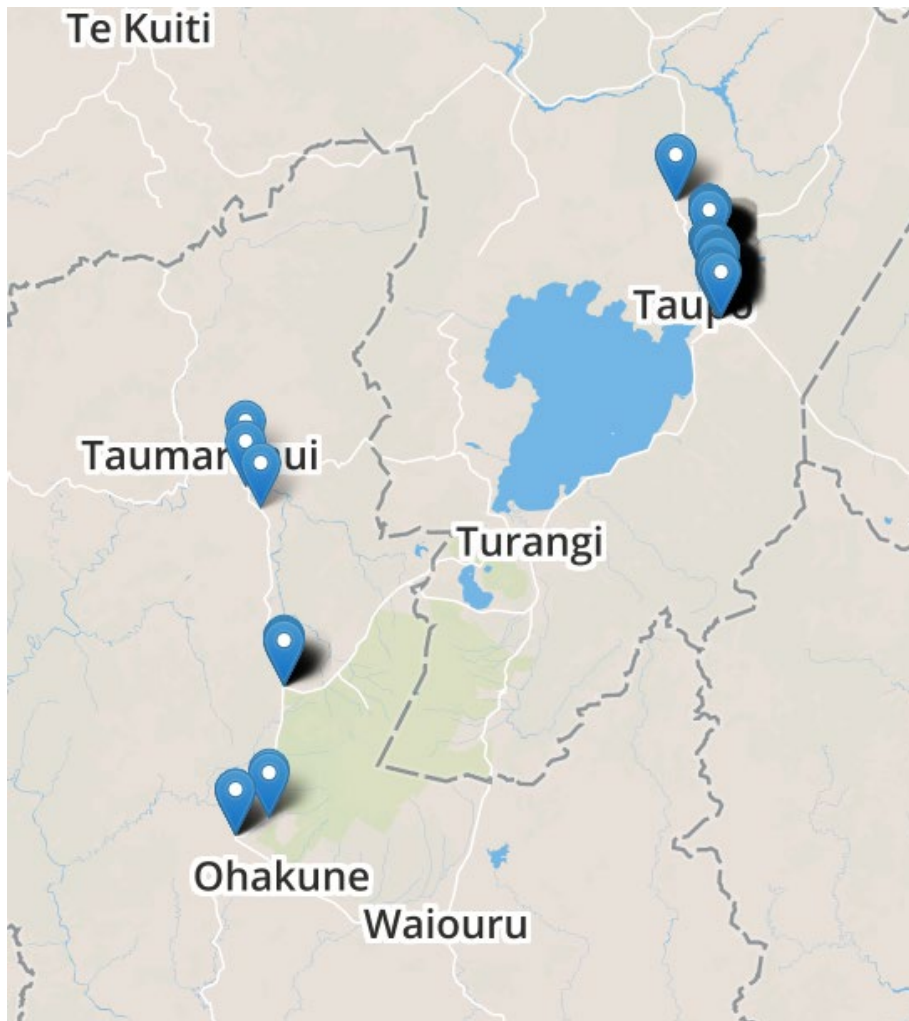
Audit observation

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

Audit commentary

The database extract provided had no ICP recorded and has 234 items of load recorded. This is recorded as non-compliance below.

Trustpower reconcile 23 items of load on the Unison network ICP for this load. I identified 22 lights in the database on State Highways 4, 32 and 47. These lights are located on the Lines Company network. These can be seen in the picture below:



I recommend that Trustpower liaise with the relevant parties to determine where and if the additional lights are being reconciled.

Description	Recommendation	Audited party comment	Remedial action
ICP identifier	Trustpower to liaise with the relevant parties to where and if the additional lights are being reconciled.	We are working with relevant parties to ensure that this is addressed as a priority.	Investigating

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.2 With: Clause 11(2)(a) &(aa) of Schedule 15.3 From: 01-May-18 To: 31-Oct-18	The ICP is not recorded in the database extract provided. Potential impact: High Actual impact: Unknown Audit history: None Controls: None Breach risk rating: 12		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as none as the database is not being maintained. The impact is assessed to be unknown therefore the impact is recorded as high.		
Actions taken to resolve the issue		Completion date	Remedial action status
Trustpower will work with NZTA/Opus Taupo in getting all values and attributes updated within their database.		Feb 19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Trustpower has no control over the client's lack of action but we recognise the importance of finding a way forwards. We will continue to work proactively with the customer towards reconciling this issue.		Ongoing	

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 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 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 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. The database was examined and found:

- ballast was not recorded in the database extract provided
- wattage was recorded as zero or blank for 229 items of load
- 54 items of load have no lamp description.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(c) &(d) of Schedule 15.3 From: 01-May-18 To: 31-Oct-18	Ballast not recorded in the database extract provided. Wattage was recorded as zero or blank for 229 items of load. 54 items of load with no lamp description. Potential impact: High Actual impact: Unknown Audit history: None Controls: None Breach risk rating: 12		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as none as the database is not being maintained. The impact is assessed to be high due to the potential under submission if the load is unmetered.		
Actions taken to resolve the issue		Completion date	Remedial action status
Trustpower will work with NZTA/Opus Taupo in getting all values and attributes updated within their database.		Feb19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Trustpower has no control over the client's lack of action but we recognise the importance of finding a way forwards. We will continue to work proactively with the customer towards reconciling this issue.		Ongoing	

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 field audit was undertaken of a random selection of 49 items of load to determine what type of lamps were present in the field

Audit commentary

The database extract provided contained 234 items of load with wattages recorded for only five of those lights. The database did not contain sufficient information to determine whether all of the load was recorded in the database or not. The 49 items of load checked were found to be present with 150W HPS lamps.

This is recorded as non-compliance in **section 3.1**. No additional items of load were found therefore compliance is recorded.

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 DUMML 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 production of a monthly “snapshot” report is sufficient to achieve compliance.

The database tracks additions and removals as required by this clause.

Opus manages the database and McKay Electrical carry out all fault and maintenance work. Opus conduct a field audit every three months and NZTA audit them, but this data is not required to be updated to the RAMM database. The accuracy of the database is discussed in other sections of this report.

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

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 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 database contained only five items of load with lamp wattages recorded. Due to the lack of database information I undertook a field audit of 49 items of randomly selected load to determine if the lights were present and what wattage they were.

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

Audit commentary

As detailed in **section 2.1**, Trustpower are reconciling 23 items of load but the RAMM database contains 234 items of load. The field audit of 49 items of load found all were present and were 150W HPS. The database quality is so poor I am unable to utilise the DUMML statistical sampling tool but based on the field audit finding, assuming that all items of load are 150W HPS and these are part of the DUMML unmetered load, there is potentially 151,398 kWh of under submission occurring per annum across two different networks and potentially more than one GXP. This is recorded as non-compliance below and in **sections 2.1** and **3.2**. In **section 2.5**. I recommend that the DUMML load is investigated to determine what ICP these items of load are associated with and where they are being reconciled.

No evidence was found of LED lights in the sample selected.

As discussed in **section 2.4**, no ballast or gear wattages were populated. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-May-18 To: 31-Oct-18	The database is not being maintained. Potentially there is an estimated under submission of 151,398 kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Once Controls: None Breach risk rating: 12		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as none as the database is not being maintained. The impact is assessed to be high due to the potential under submission if the load is unmetered.		
Actions taken to resolve the issue		Completion date	Remedial action status
Trustpower will work with NZTA/Opus Taupo in getting all values and attributes updated within their database.		Feb19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Trustpower has no control over the client's lack of action but we recognise the importance of finding a way forwards. We will continue to work proactively with the customer towards reconciling this issue.		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 October 2018 using the data logger and the last RAMM report provided and confirmed that the calculation method was correct.

The database contains 234 items of load. Trustpower are reconciling 23 of these items. Assuming that all items of load are 150W HPS (the field audit found these in all instances) and these are part of the DUML unmetered load, there is potentially 151,398 kWh of under submission occurring per annum. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-May-18 To: 31-Oct-18	Database extract used for submission is not up to date resulting in a potential estimated under submission of 151,398 kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Once Controls: None Breach risk rating: 12		
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Trustpower has no control over the client's lack of action but we recognise the importance of finding a way forwards. We will continue to work proactively with the customer towards reconciling this issue.		Ongoing	

CONCLUSION

The RAMM database used for submission is managed by Opus. McKay Electrical carry out the field maintenance. Opus have applied to NZTA to get funding to undertake a 100% field audit, but this has not been granted. The database has not been maintained.

The database extract provided has 234 items of load, but only five items of load have a wattage recorded against them, no ICP is recorded and Trustpower only reconcile 23 items of load. This is reconciled against the Unison unmetered ICP using a wattage report which is at least seven months old. Trustpower have requested a more up to date wattage report but none have been provided. This DUMML load needs to be investigated to determine where and if the additional lights are being reconciled. The lights recorded in the database provided are on both the Unison and The Lines Company networks. It is unclear whether there are ICPs for the lights on the Lines Company network and I recommend that this be investigated.

The field audit was undertaken to ascertain the wattage of 49 items of load with no load recorded against them. All items were present, and all were 150W HPS lights. Assuming that all items of load are 150W HPS (the field audit found these in all instances) and these are part of the DUMML unmetered load, there is potentially 151,398 kWh of under submission occurring per annum.

The future risk rating of 60 indicates that the next audit be completed in three months.

PARTICIPANT RESPONSE

Trustpower have reviewed this report. Their comments are recorded in the body of the report and no further comments were provided.