

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

For

**NZTA NELSON AREA AND TRUSTPOWER
LIMITED**

Prepared by: Rebecca Elliot

Date audit commenced: 28 October 2020

Date audit report completed: 5 January 2021

Audit report due date: 1 September 2019

TABLE OF CONTENTS

Executive summary	3
Audit summary	4
Non-compliances	4
Recommendations	4
Issues	4
1. Administrative	5
1.1. Exemptions from Obligations to Comply with Code	5
1.2. Structure of Organisation	5
1.3. Persons involved in this audit.....	6
1.4. Hardware and Software	6
1.5. Breaches or Breach Allegations.....	6
1.6. ICP Data	6
1.7. Authorisation Received	6
1.8. Scope of Audit	7
1.9. Summary of previous audit	8
1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)	8
2. DUML database requirements	10
2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)	10
2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)	10
2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)	11
2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)	11
2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)	12
2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)	13
2.7. Audit trail (Clause 11(4) of Schedule 15.3).....	14
3. Accuracy of DUML database	15
3.1. Database accuracy (Clause 15.2 and 15.37B(b))	15
3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))	15
Conclusion	17
Participant response	18

EXECUTIVE SUMMARY

This audit of the **NZTA Nelson Unmetered Streetlights** 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.

This ICP was created by Nelson Electricity to take account of the NZTA streetlights on their network. These lights were previously recorded in the Nelson City Council RAMM under ICP 0000200190CTC63 but as these don't belong to the City Council, they were excluded from submission and therefore weren't being reconciled. Trustpower liaised with Nelson Electricity, Nelson City Council and NZTA to get the new ICP created and mutually agreed to backdate the ICP start date to 01/06/19 which was 14 months prior to the ICP creation date so that revisions could be made within the reconciliation cycle.

The database is remotely hosted by RAMM Software Ltd. The field work is carried out by Tasman Journeys and the asset data capture is conducted by WSP Ltd (formerly Opus Consulting) directly into RAMM. A monthly report is provided to Trustpower by WSP.

A full field audit was undertaken which found a minor number of variances resulting in the database being 101.5% of the recorded wattage. This is within the +/-5% accuracy threshold therefore the database is considered accurate.

This audit found two minor non-compliances and one recommendation is made. The future risk rating of three indicates that the next audit be completed in 24 months. I have considered this in conjunction with Trustpower's comments and recommend that the next audit be in 24 months.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
DUML audit	1.10	11(1) of Schedule 15.3	Audit not completed within three months of the new DUML load.	Strong	Low	1	Cleared
All load recorded in database	2.5	11(2A) of Schedule 15.3	One additional light found in the field.	Moderate	Low	2	Identified
Future Risk Rating						3	

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

RECOMMENDATIONS

Subject	Section	Recommendation
Location of each item of load	2.3	Record GPS co-ordinates for the 14 items of load on Queen Elizabeth Drive.

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

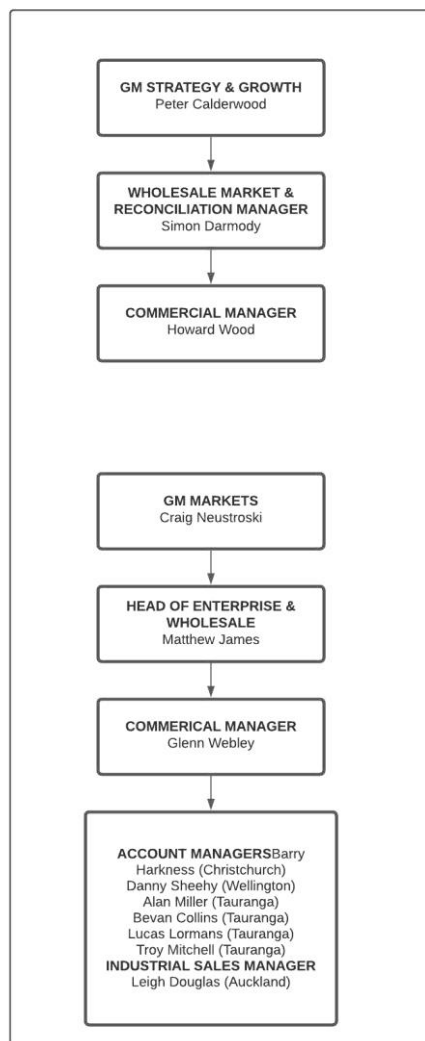
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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

Auditors:

Name	Company	Role
Rebecca Elliot	Veritek Limited	Lead Auditor
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Robbie Diederer	Reconciliation Analyst	Trustpower
Phil Hamblin	Senior Network Manager Nelson/Tasman	NZTA

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".

NZTA confirmed that 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	Profile	Number of items of load	Database wattage (watts)
0000202024CT59F	NZTA SH6 Streetlights	STK0331	UML	112	19,013

1.7. Authorisation Received

All information was provided directly by Trustpower and NZTA.

1.8. Scope of Audit

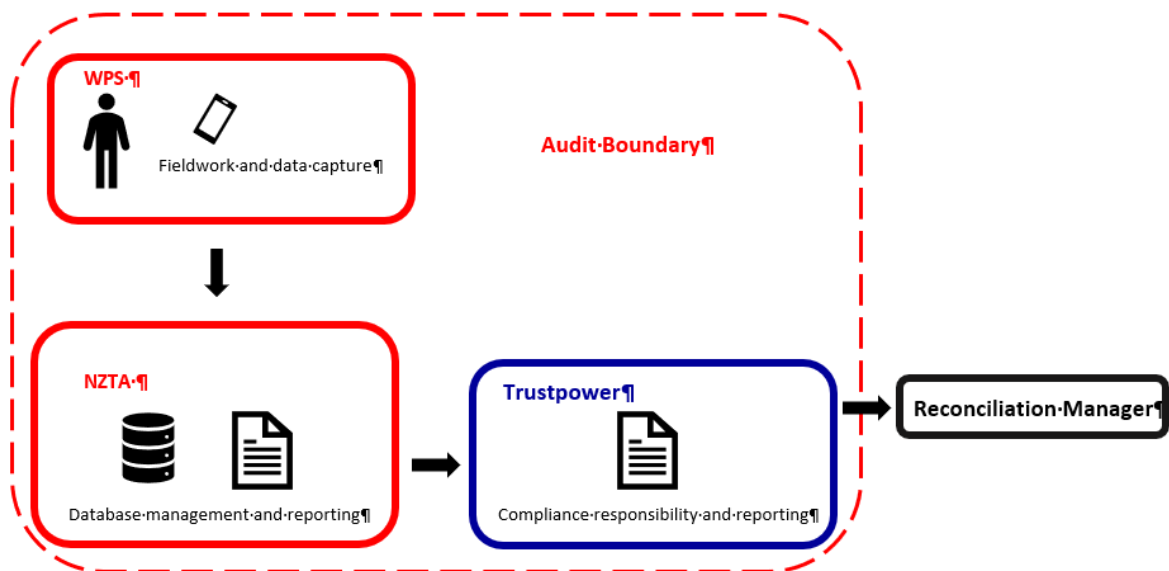
This audit of the **NZTA Nelson Unmetered Streetlights** DUML database and processes was conducted at the request of **Trustpower Limited (Trustpower)**, in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

The database is remotely hosted by RAMM Software Ltd. The asset data capture and database population are conducted by WSP. The maintenance field work is carried out by Tasman Journeys.

New project work is carried out by Tasman Journeys who pass the information to WSP to load directly into RAMM once the work is complete.

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.



1.9. Summary of previous audit

This is the first audit to be completed for NZTA Nelson, therefore there is no previous non-compliance.

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

The ICP for these lights was backdated 14 months to ensure that reconciliation could occur for these lights. According to the code the audit must be completed within three months of the reconciliation occurring, therefore the audit technically should have been completed by 01/09/19. This is a technical non-compliance and I note Trustpower made every effort to get this audit completed as soon as possible.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 1.10 With: Clause 16A.26 From: 01-Sep-19 To: 28-Oct-20	Audit not completed within three months of the new DUMML load. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as strong. The impact is assessed to be none as Trustpower initiated the audit at the earliest opportunity.		
Actions taken to resolve the issue		Completion date	Remedial action status
No action required			Cleared
Preventative actions taken to ensure no further issue will occur		Completion date	

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 UML profile. The on and off times are derived from data logger information. Trustpower request a database extract each month. A monthly report is provided if there have been changes made to the database. If no changes have been made, then the existing data set is used. If changes are made, then Trustpower have requested that the date of the change is supplied so that submission can be calculated accordingly. No database updates have been received since submission commenced for this ICP, therefore no changes have been made in the field. As detailed in **section 3.1**, a small number of errors were found in the field audit. It is not clear if these are as a result of changes made or errors from when the database was last updated. I recalculated the submissions for August 2020 for the one ICP associated with the NZTA Nelson database using the data logger and database information. I confirmed that the calculation method was correct.

The full field audit confirmed that the database is accurate within +/- 5 % allowable threshold and is therefore compliant.

Audit outcome

Compliant

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 have an ICP number recorded.

Audit outcome

Compliant

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

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

Audit commentary

The database contains fields for the street name, pole number, area and GPS coordinates which are populated for most items of load. 14 lamps do not have GPS co-ordinates populated. These were all on SH6 Queen Elizabeth Drive and therefore were able to be confirmed based on the pole numbers, but I recommend that the GPS co-ordinates are added to assist in their location.

Recommendation	Description	Audited party comment	Remedial action
Location of each item of load	Record GPS co-ordinates for the 14 items of load on Queen Elizabeth Drive.	We have asked NZTA to obtain the GPS co-ordinates for those lights added to the Database. We will monitor to ensure that this occurs.	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 and that each item of load had a value recorded in these fields.

Audit commentary

The database records light type and total wattage, including ballast.

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 the entire database.

Audit commentary

The field audit discrepancies are detailed in the table below:

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
241 HAVEN ROAD	1	1		1	1 x L213 found in the field but recorded as L203 in the database.
MAITAI TO ROCKS ROAD CYCLEWAY - COLLINS STREET TO ROCKS ROAD	5	5		2	1 x L150 found in the field but recorded as L201 in the database.
SH 6 HAVEN ROAD (SOUTHBOUND)	13	14	1		1 additional L150 found in the field (double headed light, not single).
SH 6 WAKEFIELD QUAY	28	28		3	1 x L150 found in the field but recorded as L201 in the database. 1 x L103 found in the field but recorded as 150W HPS in the database. 1 x L150 found in the field but recorded as 150W HPS in the database.
GRAND TOTAL	112	113	1	6	

The field audit found one additional light in the field; this was part of a double-headed light. This is recorded as non-compliance below. The accuracy of the database is detailed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: Unknown To: 28-Oct-20	One additional light found in the field. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
Low	The controls are rated as moderate, because they are sufficient to ensure that lamp information is correctly recorded most of the time. The impact is assessed to be low as only one additional item of load was found in the field audit.	
Actions taken to resolve the issue	Completion date	Remedial action status
We have requested that NZTA make these changes to the Database and we are expecting to see that this has occurred by 31st Jan 2021. We will monitor to ensure that this happens.	13/1/2021	Identified
Preventative actions taken to ensure no further issue will occur	Completion date	
NA		

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

The RAMM database functionality achieves compliance with the code.

The database tracks additions and removals as required by this clause. The “light install date” is used to identify the date lights are installed and the date lights are changed.

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 RAMM database has 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 field audit was conducted of all 112 lights.

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

Audit commentary

Database accuracy based on the field audit

The full field audit found a small number of errors. This resulted in a database accuracy of 101.5% which is within the +/-5% accuracy threshold therefore the database is deemed to be accurate.

Wattage and ballast accuracy findings

The database was checked against the published standardised wattage table and confirmed that ballasts applied, and lamp descriptions were correct.

Change management process findings

Processes to track changes to the database were reviewed.

All fault and maintenance work is controlled by Tasman Journeys on behalf of NZTA, the information is passed to WSP who update RAMM directly. Quarterly Outage Patrols are completed by Tasman Journeys.

A partial roll-out of LED lighting has been completed. NZTA advise it is unknown if this will be completed due to unconfirmed funding.

There are no private or festive lights associated with the NZTA lights.

Audit outcome

Compliant

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 UML profile. The on and off times are derived from data logger information. Trustpower request a database extract each month. A monthly report is provided if there have been changes made to the database. If no changes have been made, then the existing data set is used. If changes are made, then Trustpower have requested that the date of the change is supplied so that submission can be calculated accordingly. No database updates have been received since submission commenced for this ICP, therefore no changes have been made in the field. As detailed in **section 3.1**, a small number of errors were found in the field audit. It is not clear if these are as a result of changes made or errors from when the database was last updated. I recalculated the submissions for August 2020 for the one ICP associated with the NZTA Nelson database using the data logger and database information. I confirmed that the calculation method was correct.

The full field audit confirmed that the database is accurate within +/- 5 % allowable threshold and is therefore compliant.

Audit outcome

Compliant

CONCLUSION

This ICP was created by Nelson Electricity to take account of the NZTA streetlights on their network. These lights were previously recorded in the Nelson City Council RAMM under ICP 0000200190CTC63 but as these don't belong to the City Council they were excluded from submission, and therefore weren't being reconciled. Trustpower liaised with Nelson Electricity, Nelson City Council and NZTA to get the new ICP created and mutually agreed to backdate the ICP start date to 01/06/19 which was 14 months prior to the ICP creation date so that revisions could be made within the reconciliation cycle.

A full field audit was undertaken which found a minor number of variances resulting in the database being 101.5% of the recorded wattage. This is within the +/-5% accuracy threshold therefore the database is considered accurate.

This audit found two minor non-compliances and one recommendation is made. The future risk rating of three indicates that the next audit be completed in 24 months. I have considered this in conjunction with Trustpower's comments and recommend that the next audit be in 24 months.

PARTICIPANT RESPONSE

This is a good example of Trustpower taking responsibility, on behalf of the wider industry, in resolving a situation of unmetered load that was a gap between existing DUML's. We have updated the database with the minor issue identified by the Auditor and have full confidence that both NZTA and their contractor will maintain the data accurately for this new DUML.