ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

TARARUA DISTRICT COUNCIL AND CONTACT ENERGY

Prepared by: Tara Gannon

Date audit commenced: 9 November 2018

Date audit report completed: 20 November 2018

Audit report due date: 1 December 2018

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EXECUTIVE SUMMARY

This audit of the **Tararua District Council (TDC)** DUML database and processes was conducted at the request of **Contact Energy (Contact)** 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 scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information. A RAMM database is managed by Tararua Alliance on behalf of TDC. The database is remotely hosted by RAMM Software Ltd.

New connection, fault, maintenance and upgrade work is completed by Scanpower for lights on the Scanpower Network, and Powerco on the Powerco Network. C & J Contractors complete the maintenance work.

Scanpower, Powerco, and C & J Contractors invoice Tararua Alliance and provide supporting information which includes details of any maintenance, replacements and new installations. Tararua Alliance uses this invoice information to update RAMM.

An LED upgrade project has been completed for TDC lights. TDC does not intend to use a centralised management system.

NZTA lights are recorded in the database, but NZTA does not provide information when lights are added or changed. During the audit period, TDC has tried to work with NZTA to:

- confirm the person at NZTA responsible for the Tararua NZTA lights
- update the memorandum of understanding, and negotiate hand over of responsibility for maintaining the database information to NZTA, or develop processes to communicate additions, removals and changes to lights so that Tararua Alliance can effectively maintain the database
- check the accuracy of NZTA ballast wattages
- check NZTA light details.

This audit found a considerable reduction in database incompleteness and inconsistency issues, with many of the remaining differences relate to NZTA lights. I saw evidence that Tararua Alliance and Contact have been working together to resolve accuracy issues, and Tararua Alliance intends to validate the database information against the lights in the field. Additional resources have been deployed in this area. After validation is complete, Tararua Alliance will investigate the use of Pocket RAMM by their contractors.

TDC has provided monthly reports from RAMM to Contact since June 2018, and these reports are used to calculate submission information.

The future risk rating of 32 indicates that the next audit be completed in three months. Five non-compliances were identified, and two recommendations were 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	Ten items with zero ballast recorded resulting in an estimated 717 kWh under submission per annum. 90 incorrect ballast wattages applied resulting in 5,018 kWh of under submission. Potential over submission calculated from the DUML accuracy tool of 58,100 kWh per annum.	Weak	High	9	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Ten items of load are expected to have a gear wattage recorded, but the gear wattage is blank or zero.	Weak	Low	3	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Two lamps in the sample were not recorded in the database. Less than 20 car park and park lights are not recorded in the database.	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 83.8% indicating potential over submission of 58,100 kWh per annum. 90 ballast wattages were inconsistent with the published standardised wattage table leading to estimated under submission of 5,018[1] kWh per annum.	Weak	High	9	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Ten items with zero ballast recorded resulting in an estimated 717 kWh under submission per annum. 90 incorrect ballast wattages applied resulting in 5,018 kWh of under submission. Potential over submission calculated from the DUML accuracy tool of 58,100 kWh per annum.	Weak	High	9	Identified
Future Risk Rating							32

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

[1] 1,175 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool

Subject	Section	Description	Recommendation
ICP data	1.6	ICPs included in database	Confirm whether this ICP 7012020000CH14D is standard or distributed unmetered load, and work with TDC to update the database if necessary.
Tracking of load changes	2.6	Tracking of load changes	Work with NZTA to either: 1. Hand over responsibility for maintaining a database of NZTA lights in the TDC area; or 2. Establish a process to ensure that NZTA light information is maintained in the TDC database.

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.

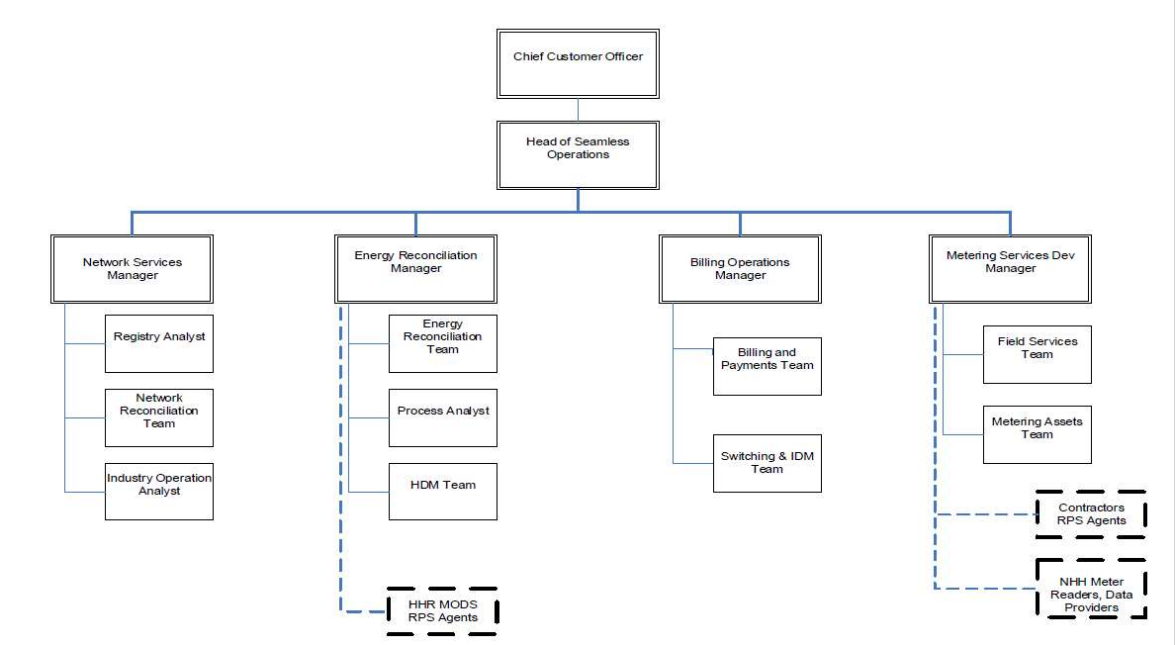
Audit commentary

There is one exemption in place relevant to the scope of this audit:

Exemption No. 177: Exemption to clause 8(g) of schedule 15.3 of the Electricity Industry Participation Code 2010 ("Code") in respect of providing half-hour ("HHR") submission information instead of non half-hour ("NHH") submission information for distributed unmetered load ("DUML"). This exemption expires at the close of 31 October 2023.

1.2. Structure of Organisation

Contact provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Buster Sandford	Asset Engineer	Tararua Alliance
Nicky Campbell	Asset Information Technician	Tararua Alliance
Allie Jones	External Operations Analyst	Contact Energy

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.

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)
0009100000CADDC	Dannevirke Street Lighting - Dannevirke Borough	DVK0111	HHR	774	33,080
0009101000CAC7C	Street Lighting - Rural Streetlighting	DVK0111	HHR	92	2757
0009102000CAE9C	Street Lighting - Woodville Borough	WDV0111	HHR	278	19498
1000554957PC423	TDC Master Streetlight	MGM0331	HHR	441	28,461

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
Total				**1,350**	**83,7965**

The previous audit noted that ICP 7012020000CH14D is recorded as standard unmetered load of 0.49 kW and RPS profile and is not recorded in the DUML database. Submission information is based on the values recorded in the registry. Contact Energy confirmed that the ICP relates to Herbertville streetlights.

I repeat the recommendation that Contact determine whether this ICP is standard or distributed unmetered load, and work with TDC to update the database if necessary.

Description	Recommendation	Audited party comment	Remedial action
ICPs included in database	Confirm whether this ICP 7012020000CH14D is standard or distributed unmetered load, and work with TDC to update the database if necessary	Contact Energy has engaged with Tararua Alliance on this and confirmed that these lights are in RAMM, they have just been on the wrong ICP. This has now been corrected and the ICP 7012020000CH14D has been added to RAMM for these ICP's. They are DUML for the purposes of this audit.	Cleared

1.7. Authorisation Received

All information was provided directly by Contact and Tararua Alliance.

1.8. Scope of Audit

This audit of the TDC DUML database and processes was conducted at the request of Contact 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.

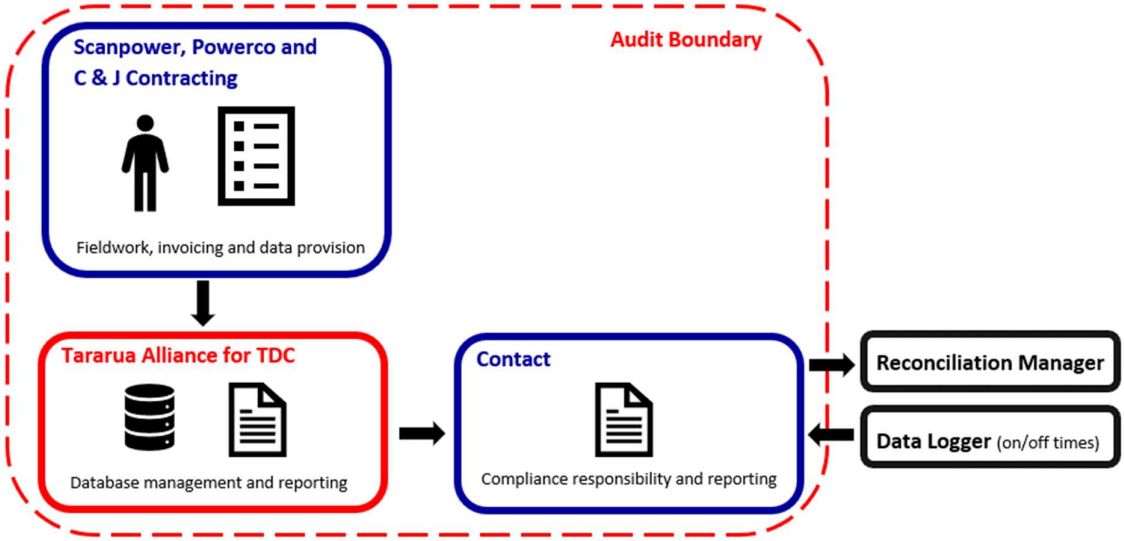
A RAMM database is managed by Tararua Alliance on behalf of TDC. The database is remotely hosted by RAMM Software Ltd.

New connection, fault, maintenance and upgrade work is completed by Scanpower for lights on the Scanpower Network, and Powerco on the Powerco Network. C & J Contractors complete maintenance work.

Scanpower, Powerco, and C & J Contractors invoice Tararua Alliance and provide supporting information which includes details of any maintenance, replacements and new installations. Tararua Alliance uses this invoice information to update RAMM.

Contact base their submissions on a monthly report from RAMM provided by Tararua Alliance and on and off times derived from data logger information.

The scope of the audit encompasses the collection, security, and accuracy of the data, including the preparation of submission information based on the monthly reporting. The diagram below shows the flow of information and the audit boundary for clarity.



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

The field audit was undertaken of a statistical sample of 163 items of load on 9 November 2018. The sample was selected from three strata:

- Dannevirke
- Woodville and rural
- TDC master ICP.

1.9. Summary of previous audit

The previous audit was completed in May 2018 by Tara Gannon of Veritek Limited. Seven non-compliances were identified, and three recommendations were made. The statuses of the non-compliances and recommendations are described below.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database used to prepare submissions is out of date.	Cleared. Submissions are now based on RAMM information.
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP number is not recorded for 208 items of load.	Cleared. ICP is now recorded for all items of load.

Subject	Section	Clause	Non-compliance	Status
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Six items of load do not have complete and accurate description and load information recorded. 168 items of load are expected to have a gear wattage recorded, but the gear wattage is blank.	Cleared. Still existing but improved. Eight items of load have missing gear wattages.
All load recorded in database	2.5	11(2A) of Schedule 15.3	Eight lamps were not recorded in the database.	Still existing.
Tracking of load changes	2.6	11(3) of Schedule 15.3	Updates to the database can be delayed.	Improved, as discussed in **section 2.6**, but non-compliance is recorded in **section 2.5**.
Database accuracy	3.1	15.2 and 15.37B (b)	The database contains some incorrect and missing information.	Still existing.
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database used to prepare submissions is out of date.	Still existing, but the timeliness of database updates has improved.

Subject	Section	Clause	Recommendation	Status
ICP data	1.6	ICP data	Confirm whether this ICP 7012020000CH14D is standard or distributed unmetered load, and work with TDC to update the database if necessary.	In progress.
All load recorded in the database	2.5	Inclusion of under verandah lights.	Check under the verandah lights in Pahiatua and add them to the database if they are unmetered.	Completed, these lights are metered and do not need to be added to the database.

Subject	Section	Clause	Recommendation	Status
Tracking of load changes	2.6	Maintaining NZTA lights in the database	Work with NZTA to either: 1. Hand over responsibility for maintaining a database of NZTA lights in the TDC area; or 2. Establish a process to ensure that NZTA light information is maintained in the TDC database.	In progress.
Tracking of load changes	2.6	Timeliness of updates.	Ensure that all database changes are processed prior to providing database reports to Contact each month.	Completed. An extract is provided monthly and database updates are more timely.

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

Contact 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

Contact reconciles this DUML load using the HHR profile, in accordance with exemption number 177. This exemption is discussed further in **section 1.1**.

Until May 2018, regular reports from the database were not provided. Submissions were based on historic information provided in May 2017, with on and off times derived from data logger information. Contact filled gaps in the data like missing ICPs (based on location) and missing and incorrect wattage information (based on the light makes and models recorded).

From June 2018 onwards, Tararua Alliance has provided monthly reports from RAMM to Contact Energy. Submissions are calculated from the database information, with on and off times derived from data logger information.

I recalculated the submissions for September 2018 for all four ICPs using the RAMM database report and data logger on hours for September 2018, and found that the submission data for all four ICPs was calculated correctly.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Ten items of load are expected to have a gear wattage recorded, but the gear wattage is blank or zero.	718[2] kWh per annum of under submission
90 ballast wattages were inconsistent with the published standardised wattage table.	5,018[3] kWh of under submission
Potential over submission due to database inaccuracy.	58,100[4] kWh of over submission

[2] 168 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool.
[3] 1,175 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool.
[4] The field data was 83.8% of the database data for the sample checked. This will result in potential over submission of 58,100 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Jun-18 To: 09-Nov-18	Ten items with zero ballast recorded resulting in an estimated 717 kWh under submission per annum. 90 incorrect ballast wattages applied resulting in 5,018 kWh of under submission. Potential over submission calculated from the DUML accuracy tool of 58,100 kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Three times Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls over the database are rated as weak, due to the large proportion of discrepancies identified during the field count. The audit risk rating is high based on kWh variances detailed above.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact Energy and Tararua DC have been working on ensuring this data is accurate. Tararua have made great progress since the previous audit and continue to progress their achievements. Contact will continue to work with Tararua DC to correct the data in their database and correct submissions.	March 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Contact will complete quarterly checks on Tararua's database to check that their data is continuing to improve. We will also work with Tararua Alliance to upskill their knowledge on Streetlighting.	March 2019	

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 the correct ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP recorded against them.

Audit outcome

Non-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 databases were checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for location number, street address, and GPS coordinates. GPS coordinates are populated for 1583 (99.9%) of the 1585 lights in the database.

The two lights which did not have GPS coordinates were able to be located using their street address and location number information.

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 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 a description for each lamp, lamp wattage, and gear wattage.

All lights have a description and lamp wattage recorded. Missing description and lamp wattage information identified during the previous audit has been updated.

8 (0.5%) of the 1585 lights do not have a gear wattage recorded, and 2 lights have a zero gear wattage incorrectly recorded. This is a significant improvement from 168 lights with blank ballast wattages in the previous audit.

Light ID	Road ID	Road Name	Location	Lamp Make Model	Gear wattage recorded
392	5069	MAIN ST NORTH (SH2)	212	UNK (150S, 150 watts)	Blank
393	5069	MAIN ST NORTH (SH2)	136	UNK (150S, 150 watts)	Blank
394	5069	MAIN ST NORTH (SH2)	92	UNK (150S, 150 watts)	Blank
395	5069	MAIN ST NORTH (SH2)	176	UNK (150S, 150 watts)	Blank
396	5069	MAIN ST NORTH (SH2)	218	UNK (150S, 150 watts)	Blank
397	5069	MAIN ST NORTH (WEST ACCESS)	46	UNK (150S, 150 watts)	Blank
398	5070	MAIN ST NORTH (WEST ACCESS)	148	UNK (150S, 150 watts)	Blank
2559	1026	MAIN ST WEST (SH2)	1	UNK (300H, 300 watts)	Blank
1379	2056	HIGH ST (SH2)	213	UNK (100S, 100 watts)	0
430	5066	MAIN ST EAST (SH2)	508	UNK (250S, 250 watts)	0

The expected combined gear wattage for the affected lamps is 168 W, leading to under submission of 718 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

All the affected lights are owned by NZTA. Tararua Alliance had not updated the records because they were awaiting confirmation of the correct wattages. They now intend to update the wattages to the expected values for the recorded light type until they receive confirmation of the correct wattages from NZTA.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 01-Jun-18 To: 09-Nov-18	Ten items of load are expected to have a gear wattage recorded, but the gear wattage is blank or zero. Potential impact: Low Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak because they are not sufficient to ensure that wattage and gear information is consistently recorded for NZTA lights. Tararua Alliance is working with NZTA to resolve this. The potential impact is low based on missing ballast wattage of 168 W or approximately 718 kWh per annum of under submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact Energy and Tararua DC have been working on ensuring this data is accurate. Tararua have made great progress since the previous audit and continue to progress their achievements. Contact will continue to work with Tararua DC to correct the data in their database and correct submissions Tararua Alliance will continue to work with NZTA to correct this data	March 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Contact will complete quarterly checks on Tararua's database to check that their data is continuing to improve. We will also work with Tararua Alliance to upskill their knowledge on Streetlighting	March 2019	

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 a statistical sample of 163 items of load on 9 November 2018. The sample was selected from three strata:

- Dannevirke
- Woodville and rural
- TDC master ICP.

Audit commentary

The field audit findings are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Dannevirke					
ALLAN ST	7	7	-	4	4 x incorrect wattages recorded in the database as 1 x 40L (40W) and 3 x L27 (27W), but were labelled L23 (23W) in the field .
EDWARDS ST	4	4	-	-	
FRASER-COLLINS CRES	5	5	-	2	2 x incorrect wattages recorded in the database as L27 (27W) but were labelled L23 (23W) in the field.
GREY ST (D)	2	2	-	1	1 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field.
HOSPITAL ST	16	14	-2	8	2 x L27 (27W) were duplicated in the database. 8 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field..
LONDON ST	5	5	-	5	5 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field..
MADRID ST	4	4	-	-	
MAINE ST	4	4	-	3	3 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field..
MCCALLUM ST	6	6	-	5	5 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field.
NEPTUNE ST	5	5	-	2	2 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field.
RANSOM ST	7	7	-	3	3 x incorrect wattages recorded in the database as L27 (27W) but labelled L23 (23W) in the field.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
RUAHINE ST	14	14	-	-	
Woodville and rural					
ATKINSON ST	7	7	-	7	7 x incorrect wattages recorded in the database as 6 x 40L (40W) and 1 x L80 (80W). All were found to be labelled L27 (27W).
FOX ST	14	14	-	-	
MATAMAU-ORMONDVILLE RD	7	0	-7	-	7 x L27 (27W) were recorded in the database, but not present on the street.
ODIN ST	1	1	-	-	
TAY ST	9	9	-	8	8 x incorrect wattages recorded in the database as 40L (40W) but labelled L27 (27W) in the field.
TDC Master					
ALBERT ST (P)	13	13	-	7	7 x incorrect wattages recorded in the database as 40L (40W) but labelled L27 (27W) in the field.
DAWSON ST (P)	6	6	-	-	
EDWARD ST	7	9	2	-	2 lamps were missing from the database; 1 x L107 and 1 x L27.
LAWSON ST	1	1	-	-	
TITOKI ST	2	2	-	-	
TYNDALL ST	17	17	-	16	16 x incorrect wattages recorded in the database as 40L (40W) but labelled L27 (27W) in the field.
Total	**163**	**156**	**11**	**71**	

This clause relates to lights in the field that are not recorded in the database. The field audit found two lights on Edward St, Pahiatua that were not recorded in the database. This is recorded as non-compliance below.

Tararua Alliance has identified some carpark and park lights, including lights around park benches which are unmetered and have not been recorded in the database. Less than 20 lights are affected, and Tararua Alliance is currently confirming the details of the lights installed so that the database can be updated.

The count differences where lights were present in the database but not recorded in the field, and wattage differences are discussed in **section 3.1**.

The previous audit recommended that under verandah lights in Pahiatua should be checked to confirm whether they are metered or unmetered. Tararua Alliance have confirmed that these lights are metered, and do not need to be included in the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: unknown To: 09-Nov-18	Two lamps in the sample were not recorded in the database. Less than 20 car park and park lights are not recorded in the database. Potential impact: Low Actual impact: Unknown Audit history: Three times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are not sufficient to ensure most lights are recorded in the database. The impact is unknown but is rated as low, as less than 22 lights were missing from the database. Tararua Alliance had already identified 20 of these lights, and was in the process of confirming and updating the details at the time of the audit.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact Energy and Tararua DC have been working on ensuring this data is accurate. Tararua have made great progress since the previous audit and continue to progress their achievements. Contact will continue to work with Tararua DC to correct the data in their database and correct submissions	March 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Contact will complete quarterly checks on Tararua's database to check that their data is continuing to improve. We will also work with Tararua Alliance to upskill their knowledge on Streetlighting	March 2019	

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

On 20th September 2012 the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required as long as 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.

The process to add new streetlights was examined. New connections for network extensions are initiated by TDC, and the new connection is completed by Scanpower or Powerco. When a new subdivision is created, an application is sent to TDC and planning approval is provided. Tararua Alliance monitors construction. Once a code of compliance and "as built" plans are provided, the lights are vested in Council and added to the RAMM database. There has been one new subdivision at Pongoroa since the previous audit. Solar LED lights were installed, and the lights did not need to be added to the database.

Scanpower, Powerco, and C & J Contractors invoice Tararua Alliance and provide supporting information which includes details of any maintenance, replacements and new installations. Tararua Alliance uses this invoice information to update RAMM. At the asset team's discretion, inspections are carried out to confirm that the light installed matches the installation or maintenance details provided with the invoice.

The previous audit found update was sometimes delayed due to delays in the asset team receiving the invoice information. The delays have been reduced by providing a copy of the invoice to the asset team on receipt, and the conclusion of the LED replacement project. Non-compliance is recorded in **sections 2.5** and **3.1** in relation to delays in tracking load changes.

NZTA lights are recorded in the database, but NZTA does not provide information when lights are added or changed. During the audit period, TDC has tried to work with NZTA to:

- confirm the person at NZTA responsible for the Tararua NZTA lights
- update the memorandum of understanding, and negotiate hand over of responsibility for maintaining the database information to NZTA, or develop processes to communicate additions, removals and changes to lights so that Tararua Alliance can effectively maintain the database
- check the accuracy of NZTA ballast wattages
- check NZTA light details.

I repeat last year's recommendation to maintain visibility of this issue.

Description	Recommendation	Audited party comment	Remedial action
Tracking of load changes	Work with NZTA to either: 1. Hand over responsibility for maintaining a database of NZTA lights in the TDC area; or 2. Establish a process to ensure that NZTA light information is maintained in the TDC database.	Contact Energy are not the retailer for NZTA in this area. We will help where we can. We continue to work with Tararua to help them to maintain a relationship with NZTA.	Investigating

Festive lighting is used in Woodville and Dannevirke. The festive lights are connected to the shops' electricity supplies not streetlight circuits, and do not need to be included in the database. No private unmetered streetlights have been identified.

Tararua Alliance completes checks of database accuracy and updates the database once any work required is complete.

- If a light is visited or inspected due to any event (e.g. customer comment, accident, request for service) the details are checked against RAMM and updated as necessary.
- In the towns, lights are checked for outages as part of the daily road sweeping process if they are on when road sweeping is completed.
- Each summer, lenses are cleaned and the lights are inspected.
- Each winter, lights are checked to confirm they are working.

Tararua Alliance are currently reviewing their streetlight maintenance plans, and are investigating moving to quarterly inspection and maintenance.

Tararua Alliance intends to conduct internal audits to inspect all the streetlights and validate the data stored in RAMM. After validation is complete, Tararua Alliance will investigate the use of Pocket RAMM by their contractors.

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 has a complete audit trail.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

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

Plan Item	Comments
Area of interest	TDC region
Strata	The database contains 1,585 items of load in Tararua area. The processes for the management of all TDC items of load is the same. I selected the following strata: • Dannevirke • Woodville and rural • TDC master ICP
Area units	I created a pivot table of the roads and I used a random number generator in a spreadsheet to select a total of 23 sub-units.
Total items of load	163 items of load were checked.

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 field data was 83.8% of the database data for the sample checked. The statistical sampling tool reported with 95% confidence the precision of the sample was 29.7%, and the true load in the field will be between 71.1% to 100.8% of the load recorded in the database. The sample is not sufficiently precise to be able to determine the database accuracy but indicates that the database is likely to be over submitting.

There is potentially 58,100 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence the possible impact will be between 103,300 kWh per annum over submission and 2,900 kWh per annum under submission. As detailed in **section 2.5** this variance is largely due to lights in the field differing from the lights recorded in the database. Tararua Alliance intends to audit all lights on the network to ensure that they are recorded correctly, this is discussed further in **section 2.6**.

The database extract provided did not include light installation dates, so new lights could not be easily identified. I note that all lights in the sample were LEDs, which had recently been replaced as part of the LED upgrade project.

Wattage accuracy

The database was checked against the published standardised wattage table. Lamp wattages were found to be consistent with the lamp make and model description, but 90 ballast wattages were inconsistent as shown in the table below. Ten lights with blank or invalid zero gear wattages are recorded as non-compliance in **section 2.4**. The differences appear to be caused by inconsistencies between the lamp model and gear model chosen in RAMM.

Lamp Make Model	13	14	18	Expected ballast wattage
PHIL (88W, 88 watts)		1		0
UNK (100S, 100 watts)				14
UNK (135S, 135 watts)	21	2	1	36
UNK (150S, 150 watts)		5		18
UNK (250S, 250 watts)			56	28
UNK (300H, 300 watts)				0
UNK (90S, 90 watts)		4		30
Total	21	12	57	

The lights with missing or inconsistent ballast wattages above had 1,175 W less ballast recorded than expected, leading to under submission of 5,018 kWh (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

All the affected lights are owned by NZTA. Tararua Alliance had not updated the records because they were awaiting confirmation of the correct wattages. They now intend to update the wattages to the expected values for the recorded light type until they receive confirmation of the correct wattages from NZTA.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-18 To: 09-Nov-18	The database accuracy is assessed to be 83.8% indicating potential over submission of 58,100 kWh per annum. 90 ballast wattages were inconsistent with the published standardised wattage table leading to estimated under submission of 5,018[5] kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Once Controls: Weak Breach risk rating: 9

[5] 1,175 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool

Audit risk rating	Rationale for audit risk rating		
High	The controls over the database are rated as weak, due to the large proportion of discrepancies identified during the field count. The audit risk rating is high based on kWh variances detailed above.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Contact Energy are not the retailer for NZTA in this area. We will help where we can. We continue to work with Tararua to help them to maintain a relationship with NZTA Contact Energy and Tararua DC have been working on ensuring this data is accurate. Tararua have made great progress since the previous audit and continue to progress their achievements.		March 2019	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	
Contact will complete quarterly checks on Tararua's database to check that their data is continuing to improve. We will also work with Tararua Alliance to upskill their knowledge on Streetlighting		March 2019	

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 the ICP has the correct profile and submission flag
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Contact reconciles this DUML load using the HHR profile, in accordance with exemption number 177. This exemption is discussed further in **section 1.1**. Profiles are correctly recorded on the registry.

Until May 2018, regular reports from the database were not provided. Submissions were based on historic information provided in May 2017, with on and off times derived from data logger information. Contact filled gaps in the data like missing ICPs (based on location) and missing and incorrect wattage information (based on the light makes and models recorded).

From June 2018 onwards, Tararua Alliance has provided monthly reports from RAMM to Contact Energy. Submissions are calculated from the database information, with on and off times derived from data logger information.

I recalculated the submissions for September 2018 for all four ICPs using the RAMM database report and data logger on hours for September 2018, and found that the submission data for all four ICPs was calculated correctly.

Volume inaccuracy is present as follows:

Issue	Estimated volume information impact (annual kWh)
Ten items of load are expected to have a gear wattage recorded, but the gear wattage is blank or zero.	718[6] kWh per annum of under submission
90 ballast wattages were inconsistent with the published standardised wattage table.	5,018[7] kWh of under submission
Potential over submission due to database inaccuracy	58,100[8] kWh of over submission

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jun-18 To: 09-Nov-18	Ten items with zero ballast recorded resulting in an estimated 717 kWh under submission per annum. 90 incorrect ballast wattages applied resulting in 5,018 kWh of under submission. Potential over submission calculated from the DUML accuracy tool of 58,100 kWh per annum. Potential impact: High Actual impact: Unknown Audit history: Three times Controls: Weak Breach risk rating: 9

[6] 168 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool.
[7] 1,175 W with annual burn hours of 4,271 as detailed in the DUML database auditing tool.
[8] The field data was 83.8% of the database data for the sample checked. This will result in potential over submission of 58,100 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Audit risk rating	Rationale for audit risk rating
High	The controls over the database are rated as weak, due to the large proportion of discrepancies identified during the field count. The audit risk rating is high based on kWh variances detailed above.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact Energy and Tararua DC have been working on ensuring this data is accurate. Tararua have made great progress since the previous audit and continue to progress their achievements. Contact will continue to work with Tararua DC to correct the data in their database and correct submissions	March 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Contact will complete quarterly checks on Tararua's database to check that their data is continuing to improve. We will also work with Tararua Alliance to upskill their knowledge on Streetlighting	March 2019	

CONCLUSION

New connection, fault, maintenance and upgrade work is completed by Scanpower for lights on the Scanpower Network, and Powerco on the Powerco Network. C & J Contractors complete the maintenance work.

Scanpower, Powerco, and C & J Contractors invoice Tararua Alliance and provide supporting information which includes details of any maintenance, replacements and new installations. Tararua Alliance uses this invoice information to update RAMM.

An LED upgrade project has been completed for TDC lights. TDC does not intend to use a centralised management system.

NZTA lights are recorded in the database, but NZTA does not provide information when lights are added or changed. During the audit period, TDC has tried to work with NZTA to:

- confirm the person at NZTA responsible for the Tararua NZTA lights
- update the memorandum of understanding, and negotiate hand over of responsibility for maintaining the database information to NZTA, or develop processes to communicate additions, removals and changes to lights so that Tararua Alliance can effectively maintain the database
- check the accuracy of NZTA ballast wattages
- check NZTA light details.

This audit found a considerable reduction in database incompleteness and inconsistency issues, with many of the remaining differences relate to NZTA lights. I saw evidence that Tararua Alliance and Contact have been working together to resolve accuracy issues, and Tararua Alliance intends to validate the database information against the lights in the field. Additional resources have been deployed in this area. After validation is complete, Tararua Alliance will investigate the use of Pocket RAMM by their contractors.

TDC has provided monthly reports from RAMM to Contact since June 2018, and these reports are used to calculate submission information.

The future risk rating of 32 indicates that the next audit be completed in three months. Five non-compliances were identified, and two recommendations were raised.

PARTICIPANT RESPONSE

Contact believes that Tararua DC have made great leaps in the quality of their DUML data.

We continue to work with TDC to ensure that their submission data is accurate. We will ensure that quarterly checks are completed on the data that they send to Contact.

We encourage the Authority to take into account the work that this Council is putting into their Streetlighting, the size of this DUML database and that they have recently completed a LED rollout. The relationships they are forming with external parties to ensure their data is accurate.