ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

TASMAN NZTA
AND CONTACT ENERGY LIMITED

Prepared by: Steve Woods

Date audit commenced: 15 July 2020

Date audit report completed: 14 January 2021

Audit report due date: 1 September 2020

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EXECUTIVE SUMMARY

This audit of the **Tasman NZTA** DUML database and processes was conducted at the request of **Contact Energy Limited (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.

Network Tasman hold an access database for the Tasman NZTA unmetered streetlights. Fault, maintenance and upgrade work is conducted by and W J Ashton, and the database is managed by Network Tasman. New streetlight connections are undertaken by Delta.

Contact reconciles the NZTA lights using the RPS profile. Submissions are based on Trader's kW figure populated on the registry. The burn hours for NZTA lights are calculated on 11.5 burn hours per day.

This audit found that database accuracy is not within the allowable +/- 5% threshold.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

Network Tasman update the database and then update the registry by ICP as changes occur. However, they are unable to effectively backdate changes on the registry as it will overwrite any changes made between the backdated event and the most recent update. Contact use the registry kW value. I have repeated the recommendation from the previous audit that reporting be provided from the database that includes the tracking of changes at a daily level.

The audit found six non-compliances and makes two recommendations. The future risk rating of 17 indicates that the next audit be completed in six months. I have considered this in conjunction with Contact's comments and recommend that the next audit be in 12 months as Contact has addressed the issues which resulted in the late submission of this audit report.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
DUML Audit	1.10	17.295F of part 17	Audit not completed within the required timeframe.	Moderate	Low	2	Cleared
Participants to give access	1.11	16A.4	Submission information not provided within 15 business days.	Moderate	Low	2	Cleared
Deriving submission information	2.1	11(1) of Schedule 15.3	Over submission of 1,246.49kWh for June 2020 due to incorrect Trader kW figure from registry being used. Database is not confirmed as accurate with a 95% level of confidence. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) &(d) of Schedule 15.3	One item of load with no light or wattage details populated.	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. One item of load missing lamp description and wattage. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	Over submission of 1,246.49kWh for June 2020 due to incorrect Trader kW figure from registry being used. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Future Risk Rating						17	

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	Recommendation
Deriving submission information	Monthly report tracking change at a daily level be provided from the database.
Database accuracy	Update database with lamp descriptions to confirm the correct wattage has been applied.

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.

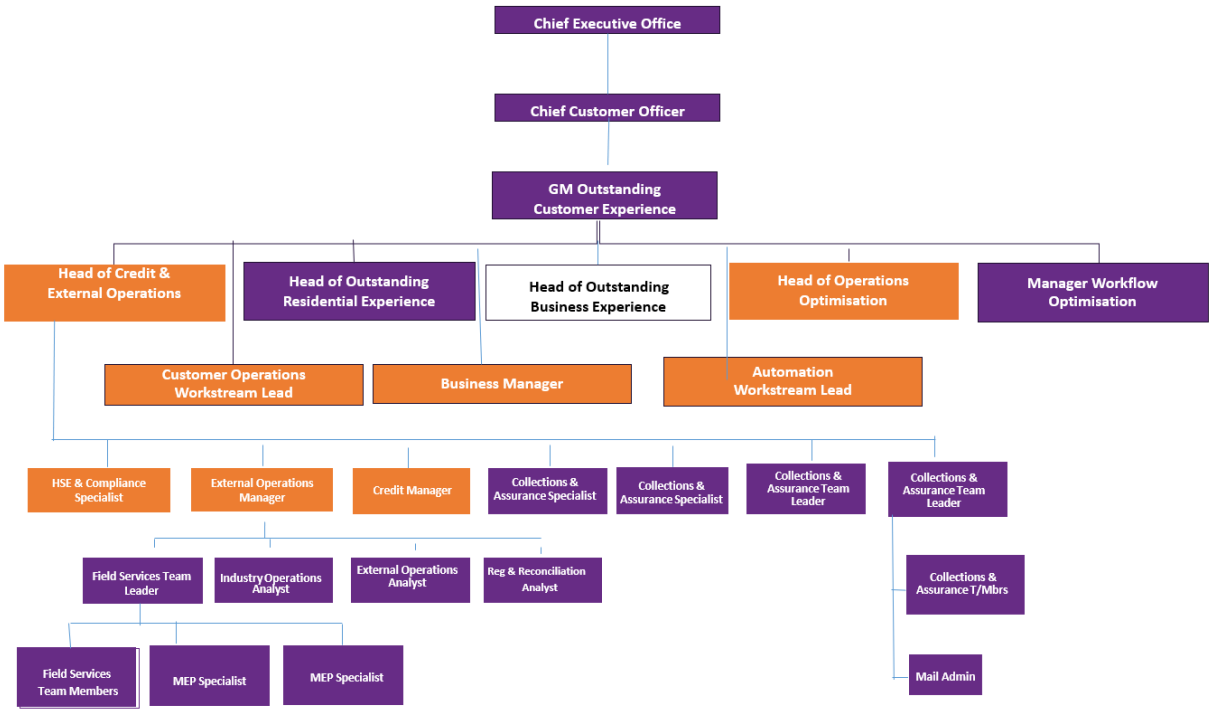
Audit commentary

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 Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Supporting Auditor:

Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Kerryn Little	Easement Officer	Network Tasman
Wendy Hartshorne	Revenue Protection Officer/Registry Analyst	Network Tasman
Aaron Wall	Reconciliation Analyst	Contact Energy
Luke Cartmell-Gollan	Commercial Operations Manager Generation & Development	Contact Energy

1.4. Hardware and Software

The Access database used by Network Tasman is backed-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)
0000090007NTA60	TRANSIT NZ STREETLIGHTING STOKE POC	STK0331	RPS	390	75,215
0000090009NT9FB	TRANSIT STREETLIGHTING MOTUEKA	STK0661	RPS	120	14,542
0000090010NTD07	TRANSIT STREETLIGHTING MOTUPIPI	STK0661	RPS	55	6,640
0000090012NTD82	TRANSIT STREETLIGHTING MURCHISON	MCH0111	RPS	45	5,982
0000090011NT142	NZTA STREETLIGHTING KIKIWA	KIK0111	RPS	11	881
TOTAL				**621**	**103,260**

1.7. Authorisation Received

All information was provided directly by Contact or Network Tasman.

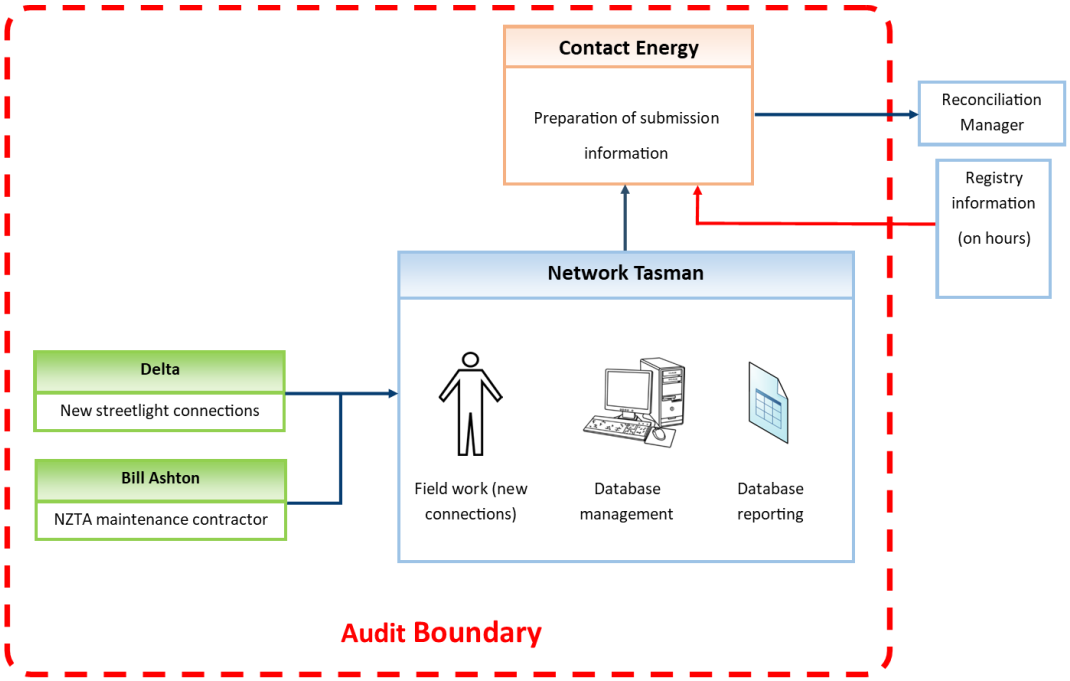
1.8. Scope of Audit

This audit of the Tasman NZTA DUML database and processes was conducted at the request of Contact Energy Limited (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.

Network Tasman hold an access database for the Tasman NZTA unmetered streetlights. Fault, maintenance and upgrade work is conducted by W J Ashton, and the database is managed by Network Tasman. New streetlight connections are undertaken by Delta.

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 field audit was undertaken of a statistical sample of 110 items of load on 2nd & 3rd September 2020.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Rebecca Elliot of Veritek Limited in November 2019. The summary table below shows the statuses of the non-compliances raised in the previous audit.

Subject	Section	Clause	Non-compliance	Status
Deriving Submission Information	2.1	11(1) of Schedule 15.3	Incorrect kW value calculations resulting in a combined over submission of (16,524.84 + 10,212.64) 26,737.48kWh from March 2019 - October 2019. Calculation methodology does not meet the code requirements. Database is not confirmed as accurate with a 95% level of confidence. Incorrect wattages for 31 items of load resulting in an estimated minor under submission of 442.5kWh per annum.	Cleared Still existing
Location of load	2.3	11(2)(b) of Schedule 15.3	73 items of load with insufficient details to locate these.	Cleared
Description and capacity of load	2.4	11(2)(c)&(d) of Schedule 15.3	One item of load with no light or wattage details populated.	Still existing

Subject	Section	Clause	Non-compliance	Status
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Three additional lights found in the field.	Cleared
Database accuracy	3.1	15.2 & 15.37(b)	Database is not confirmed as accurate with a 95% level of confidence. One item of load missing lamp description and wattage. Incorrect wattages for 31 items of load resulting in an estimated minor under submission of 442.5kWh per annum.	Still existing
Volume information accuracy	3.2	15.2 & 15.37(c)	Incorrect kW value calculations resulting in a combined over submission of (16,524.84 + 10,212.64) 26,737.48kWh from March 2019 - October 2019. Calculation methodology does not meet the code requirements. Database is not confirmed as accurate with a 95% level of confidence. Incorrect wattages for 31 items of load resulting in an estimated minor under submission of 442.5kWh per annum.	Cleared Still existing

Table of recommendations

Subject	Recommendation	Status
Deriving submission information	I recommend validation processes are reviewed to ensure such errors are identified and corrected.	Cleared
	Monthly report tracking change at a daily level be provided from the database.	Still existing
Location of each item of load	Add GPS co-ordinates to items of load with insufficient info.	Cleared, this related to TDC lights which are no longer included in this database.
	Restore the “Area” field to contain “area” details only and not street level detail.	Cleared, this related to TDC lights which are no longer included in this database.
Database accuracy	Update database with lamp descriptions to confirm the correct wattage has been applied.	Still existing

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

1. *by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
2. *within three months of submission to the reconciliation manager (for new DUML)*
3. *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

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. The audit was not able to be completed by the required timeframe as Contact did not provide the submission information requested within time to complete the audit by the due date.

Audit outcome

Non-compliant

<table>
<tr><th>Non-compliance</th><th colspan="3">Description</th></tr>
<tr><td>Audit Ref: 1.10
Clause 17.295F of part 17

From: 01-Sep-20
To: 28-Sep-20</td><td colspan="3">Audit not completed within the required timeframe.

Potential impact: Low
Actual impact: Low
Audit history: Once
Controls: Moderate
Breach risk rating: 2</td></tr>
<tr><th>Audit risk rating</th><th colspan="3">Rationale for audit risk rating</th></tr>
<tr><td>Low</td><td colspan="3">The controls are rated as moderate, as Contact’s failure to provide submission information caused the delay caused this report to be late.
The impact is assessed to be low, as this has no direct impact on reconciliation.</td></tr>
<tr><th colspan="2">Actions taken to resolve the issue</th><th>Completion date</th><th>Remedial action status</th></tr>
<tr><td colspan="2">Tardiness was caused due to a change in staffing and roles during 2020; we do not expect this to continue being an issue</td><td>Complete</td><td rowspan="3">Cleared</td></tr>
<tr><th colspan="2">Preventative actions taken to ensure no further issues will occur</th><th>Completion date</th></tr>
<tr><td colspan="2">New team now in place to manage DUML compliance moving forward</td><td>Complete</td></tr>
</table>

1.11. Participants to give access (Clause 16A.4)

Code reference

Clause 16A.4

Code related audit information

(1) A participant must give the Authority or an auditor full access to all information that may be required for the purposes of carrying out an audit.

(2) The participant must provide the information—

(a) at no charge; and

(b) no later than 15 business days after receiving a request for the information from the Authority or an auditor, as the case may be.

Audit observation

Submission information was initially requested from Contact for this audit on 11/08/2020, subsequent requests were made on 21/08/2020, 26/08/2020 and 11/09/2020.

Audit commentary

Contact provided the submission information requested on 29/09/20.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 1.11 Clause: 16A.4 From: 01-Sep-20 To: 28-Sep-20	Submission information not provided within 15 business days. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, as Contact's failure to provide submission information caused the delay caused this report to be late. The impact is assessed to be low, as this has no direct impact on reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
Tardiness was caused due to a change in staffing and roles during 2020; we do not expect this to continue being an issue	Complete	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	

New team now in place to manage DUML compliance moving forward	Complete	

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 and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Contact reconciles the NZTA load using the RPS profile. Burn hours are based on 11.5 hours per day.

Contact use the Trader kW figure populated in the registry multiplied by the burn hours to calculate the monthly kWh figures. Network Tasman updates the distributor kW figure in the registry when changes are made in the database. The total kW figures for each ICP in the database extract provided by Network Tasman matched the Distributor kW figure populated in the registry. I checked the submission values used for June 2020 against the database extract and found discrepancies with two ICPs. The discrepancies are due to the Trader kW figure not being updated to match the Distributor kW figure. This is detailed in the table below:

ICPs	kWh value submitted	Calculated kWh value from database	Differences
0000090007NTA60	26,885.00	25,949.00	936.33
0000090009NT9FB	5,327.00	5,016.00	310.16
Total month kWh difference			1,246.49

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current process of using the registry figure does not meet the code requirements. This is recorded as non-compliance. I repeat the recommendation from the previous that a report from the database that tracks changes at a daily level be provided from the database to Contact on a monthly basis.

Recommendation	Description	Audited party comment	Remedial action
Deriving submission information	Monthly report tracking change at a daily level be provided from the database.	Contact will continue to work with NZTA and their agents to improve the amount of information provided that will allow daily volumes to be derived	Identified

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**.

A check of the wattages applied identified a small number of lights with the incorrect wattage applied resulting in an estimated minor under submission of 482.6 kWh as detailed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 31-Aug-17 To: 31-Oct-19	Over submission of 1,246.49kWh for June 2020 due to incorrect Trader kW figure from registry being used. Database is not confirmed as accurate with a 95% level of confidence. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. The registry data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: Medium Audit history: Three times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time, but there is room for improvement. The audit risk rating is medium based on the estimated kWh volume impact of the database inaccuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with NZTA and agents to improve the quality of data provided, including a transition to a daily tracking of assets. Pending above changes, Contact will update and tighten process in the interim to ensure we identify changes to the distributor UML as they occur and reflect this in the trader UML.	Ongoing 31/1/2020	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
We will request and review the database asset schedule quarterly to proactively manage the data set	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 the correct ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP assigned.

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 light ID, location description, area and GPS co-ordinates. The database contains GPS co-ordinates recorded for 42 of the 622 lights. The database information is sufficient to locate the items of load.

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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

The database contains fields for lamp type, lamp size and total wattage (this includes ballast where required). All but one item of load (item#30433) have a lamp type, size and total wattage figure populated.

The accuracy of the recorded wattages and lamp descriptions is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c)&(d) of Schedule 15.3 From: 31-Aug-17 To: 15-Jul-20	One item of load with no light or wattage details populated. Potential impact: Low Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as the processes in place ensure that this detail is captured, and there was only one light that had no wattage or light type recorded. The audit risk rating is recorded as low to none as there was only one light with no wattage recorded.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with NZTA and agents to update the associated item of load	28/2/2021	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will request and review the database asset schedule quarterly to proactively manage the data set	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

The field audit was undertaken of a statistical sample of 110 items of load on 2nd & 3rd September 2020. The sample was selected from three strata, as detailed in **section 3.1**.

Audit commentary

The field audit discrepancies are detailed in the table below:

Street	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
Main Rd, St Arnaud	6	6	0	1	1 x 27W LED light recorded as 75W LED in the database.
SH 6 Kohatu/ Motueka Valley Highway corner	1	1	0	1	1 x 107W LED light recorded as 250W SON in the database.
Willow St, Takaka	4	4	0	1	1 x 27W LED light recorded as 70W SON in the database.
Atawhai Drive, Atawhai	5	5	0	1	1 x 27W LED light recorded as 70W SON in the database.
Waimea Rd, Stoke	7	7	0	1	1 x 82W LED light recorded as 250W SON in the database.
Annesbrook Roundabout, Stoke	4	4	0	4	4 x 82W LED lights recorded as 250W SON in the database.
Kidsons Nayland Area	5	5	0	1	1 x 154W LED light recorded as 250W SON in the database.
Appleby Highway, Hope	2	0	-2	0	1 x 51w LED and 1 x 149W LED lights recorded in database are no longer in the field.
Grand Total	**110**	**108**	**-2**	**10**	

This clause relates to lights in the field that are not recorded in the database. There were no additional items of load found in the field audit.

The database accuracy is discussed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The access database functionality achieves compliance with the code.

The change management process and the compliance of the database reporting provided to Contact is detailed in **sections 3.1** and **3.2**.

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

Contact's submissions are based on the Distributor's registry UML ICP values. Network Tasman update this as the database is updated. This process is discussed in more detail below. A database extract was provided in July 2020 and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Tasman NZTA Street Lights
Strata	The database contains the items of load for DUML ICPs on the Network Tasman network. The processes for the management of all items of load are the same, but I decided to place the items of load into three strata based on geographic area: 1. Takaka, Motueka, Riwaka & St Arnaud, 2. Atawhai, Stoke, Hope & Tahuanui, and 3. Richmond, Wakefield, Mahana & Appleby
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 39 sub-units.
Total items of load	110 items of load were checked, which made up over 17% of the total database wattage.

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

The change management process and timeliness of database updates was evaluated.

Audit commentary

Field audit findings

A field audit was conducted of a statistical sample of 110 items of load. The "database auditing tool" was used to analyse the results, which are shown in the table below.

Result	Percentage	Comments
The point estimate of R	92.1	Wattage from survey is lower than the database wattage by 7.9%
R_L	83.3	With a 95% level of confidence it can be concluded that the error could be between -16.7% and -3.0%
R_H	97.0	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario B (detailed below) applies.

The conclusion from Scenario B is that in statistical terms, the inaccuracy is statistically significant at the 95% level. The sample results across the strata means that the true wattage (installed in the field) could be between 3.0% and 16.7% lower than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 8 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 3 kW and 17 kW than the database.

In absolute terms, total annual consumption is estimated to be 34,700 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 13,000 kWh p.a. to 73,600 kWh p.a. lower than the database indicates.

Scenario	**Description**
A - **Good accuracy, good precision**	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - **Poor accuracy, demonstrated with statistical significance**	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level
C - **Poor precision**	This scenario applies if: (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Light description and capacity accuracy

As discussed in **section 2.4**, all but one item of load has a lamp and gear wattage recorded. Lamp and gear wattages were compared to the expected values. This found a minor number of discrepancies. These are detailed in the table below:

Lamp make model	Quantity	Database lamp wattage	Expected lamp wattage	Variance
HPS (100W)	3	111	114	-9
HPS (400W)	8	425	438	-104
			TOTAL	-113

This will result in an estimated annual under submission of 482.6 kWh per annum (based on 4,271 burn hours). This is recorded as non-compliance below.

There are 10 lights recorded with a light type of "Various". The details are insufficient to determine if the correct wattage has been recorded. I recommend below that these light descriptions are updated.

The database records all 189 LED lights as "LED" lights only. There are 18 different LED wattages recorded. I recommend that all LED light descriptions are reviewed to ensure that they contain enough detail to confirm that the correct wattage has been applied.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Update database with lamp descriptions to confirm the correct wattage has been applied.	Contact will work with NZTA and Network Tasman to populate this information within the database	Identified

Change management process findings

Fault, maintenance and upgrade work is managed by W J Ashton. All changes made require a "streetlight advice form" to be supplied to Network Tasman. The database assigns a unique identifier per light. Each item of load has a "UML start date" and "UML end date". The "UML start date" relates to the installation date for the light. The "UML end date" defaults to 2099 and is updated to the date of removal when the light is replaced. As changes are made the ICP kW value is calculated on the day of updating. This is updated on a daily basis in the Network Tasman ICP database.

The new connection process follows the same process as changes made in the field. This work is undertaken by Delta. A "streetlight service form" is completed and an "as built" drawing is provided. GPS co-ordinates are not provided as part of this process and often there are lot numbers at this time resulting in lights that have insufficient information to locate them.

Festive lights

Network Tasman confirmed that there is no festive lighting used on the Network Tasman network.

Private lights

Private lights are recorded as either standard unmetered load or shared unmetered load as required by the code. No private lights are recorded in the database.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 31-Aug-17 To: 15-Jul-20	Database is not confirmed as accurate with a 95% level of confidence. One item of load missing lamp description and wattage. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. Potential impact: High Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time, but there is room for improvement. The audit risk rating indicates that the impact of database inaccuracy is medium based on the estimated kWh of over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with NZTA and agents to update the associated item of load. Contact will work with NZTA and agents to correct the wattages of the incorrectly listed lights	28/2/2021	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will request and review the database asset schedule quarterly to proactively manage the data set	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 the ICP has the correct profile and submission flag, and
- checking the database extract combined with the on hours against the submitted figure to confirm accuracy.

Audit commentary

Contact reconciles the NZTA load using the RPS profile. Burn hours are based on 11.5 hours per day.

Contact use the Trader kW figure populated in the registry multiplied by the burn hours to calculate the monthly kWh figures. Network Tasman updates the distributor kW figure in the registry when changes are made in the database. The total kW figures for each ICP in the database extract provided by Network Tasman matched the Distributor kW figure populated in the registry. I checked the submission values used for June 2020 against the database extract and found discrepancies with two ICPs. The discrepancies are due to the Trader kW figure not being updated to match the Distributor kW figure. This is detailed in the table below:

ICPs	kWh value submitted	Calculated kWh value from database	Differences
0000090007NTA60	26,885.00	25,949.00	936.33
0000090009NT9FB	5,327.00	5,016.00	310.16
Total month kWh difference			1,246.49

One item of load missing lamp description and wattage. This is detailed in **section 2.4**.

Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. This is detailed in **section 3.1**.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence. This is detailed in **section 3.1.**

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current process of using the registry figure does not meet the code requirements. This is recorded as non-compliance. I recommend in **section 2.1**, that a report from the database that tracks changes at a daily level be provided from the database to Contact on a monthly basis.

Audit outcome

Non-compliant

Non-compliance	Description

Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 31-Aug-17 To: 15-Jul-20	Over submission of 1,246.49kWh for June 2020 due to incorrect Trader kW figure from registry being used. One item of load missing lamp description and wattage. Incorrect wattages for 11 items of load resulting in an estimated minor under submission of 482.6kWh per annum. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The registry data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: Medium Audit history: Three times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time, but there is room for improvement. The audit risk rating is medium based on the estimated kWh volume impact of the database inaccuracy.

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Contact will work with NZTA and agents to update the associated item of load. Contact will work with NZTA and agents to correct the wattages of the incorrectly listed lights	28/2/2021	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Quarterly reviews of the asset schedules provided will be completed to proactively manage the data set	Date	

CONCLUSION

Network Tasman hold an access database for the Tasman NZTA unmetered streetlights. Fault, maintenance and upgrade work is conducted by W J Ashton and the database is managed by Network Tasman. New streetlight connections are undertaken by Delta.

Contact reconciles the NZTA lights using the RPS profile. Submissions are based on Trader's kW figure populated on the registry. The burn hours for NZTA lights are calculated on 11.5 burn hours per day.

This audit found that database accuracy is not within the allowable +/- 5% threshold.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

Network Tasman update the database and then update the registry by ICP as changes occur. However, they are unable to effectively backdate changes on the registry as it will overwrite any changes made between the backdated event and the most recent update. Contact use the registry kW value. I have repeated the recommendation from the previous audit that reporting be provided from the database that includes the tracking of changes at a daily level.

The audit found six non-compliances and makes two recommendations. The future risk rating of 17 indicates that the next audit be completed in six months. I have considered this in conjunction with Contact's comments and recommend that the next audit be in 12 months as Contact has addressed the issues which resulted in the late submission of this audit report.

PARTICIPANT RESPONSE

Contact would like to take this opportunity to apologise for their role in causing this audit to be submitted late. This is no fault of the customer and we hope that this non-compliance and 4 extra points in the audit score, will not directly affect the customer and their required next audit.