ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

NAPIER CITY COUNCIL AND GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 5 May 2021

Date audit report completed: 28 May 2021

Audit report due date: 01-Jun-21

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This audit of the **Napier City Council Unmetered Streetlights** (**NCC**) DUML database and processes was conducted at the request of **Genesis Energy Limited** (**Genesis**), 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 NCC, and monthly reporting is provided to Genesis. The database is remotely hosted by RAMM Software Ltd. The database management has been bought in house from Power Solutions Limited since the last audit. They still produce the monthly report.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated under submission of 9,400 kWh per annum.

The last audit noted five main issues. I have updated the status of these in the table below:

Issue	2021 Findings
The load for two ICPs is only on for half of the night (turned off at midnight), but submission occurs using the NSP profile, which is a full night profile, therefore the load is spread over the whole night when it should not be.	Still existing
ICP 0000939920HB224 has consumption calculated based on "half night" but Power Solutions advised this ICPs is a "full night" ICP. Under submission of 442 kWh has occurred for March 2020 which could be approx. 5,000 kWh for the year.	Resolved and revisions have been processed.
ICP identifiers are linked to pole information not light information in RAMM, therefore PSL makes an adjustment in the monthly report to correct the ICP. Manual manipulation of the database output can lead to errors, and I strongly recommend the database is corrected and manual manipulation ceases as soon as possible.	Still existing
Submission is not occurring for 170 private lights recorded in the database, 49 of the 170 have NCC ICP identifiers.	Submission is not occurring for 159 private lights recorded in the database, 45 of these have NCC ICP identifiers recorded. NCC are investigating these lights to determine who should be paying for this load.

Issue	2021 Findings
12 of 25 discrepancies from the last audit were not corrected. Six new streets with streetlights are not recorded in the database.	All but two of these have been corrected in RAMM. Two of the new streets missing have been corrected. I found discrepancies were still present for the other four streets. This is detailed in section 2.5. I have recommended that the change management process is reviewed to ensure all additions or removals are captured from the correct date.

This audit found five non-compliance and makes two recommendations. The future risk rating of 23 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, particularly in the lack of engagement from the council and recommend that the next audit be in six months.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight. Two of the 25 errors from the 2019 audit still to be corrected. Errors still present for four of six new roads found in the 2020 audit. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh. In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Database reporting is a monthly snapshot and does not record historic changes.	Weak	Medium	6	Investigating
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP identifiers in the database are not correct.	Weak	Low	3	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
All load recorded in database	2.5	11(2A) of Schedule 15.3	Errors still present for four of six new roads found in the 2020 audit resulting in 11 items of load identified still not recorded in the database. Nine additional lights found in the field.	Moderate	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Some database discrepancies identified in the 2020 audit still to be corrected. Incorrect ICP identifiers because they are against the pole not the light. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 43 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 431 kWh. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.	Weak	Medium	6	Investigating

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)	NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight. Two of the 25 errors from the 2019 audit still to be corrected. Errors still present for four of six new roads found in the 2020 audit. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh. In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Database reporting is a monthly snapshot and does not record historic changes.	Weak	Medium	6	Investigating
Future Risk Rating						23	

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

RECOMMENDATIONS

Subject	Section	Description
Deriving submission information	2.1	Apply for profile to address the incorrect allocation of volume associated with the “half night” lights.
Database accuracy	3.1	Review the change management process to ensure that all changes are recorded in RAMM for the correct date.

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

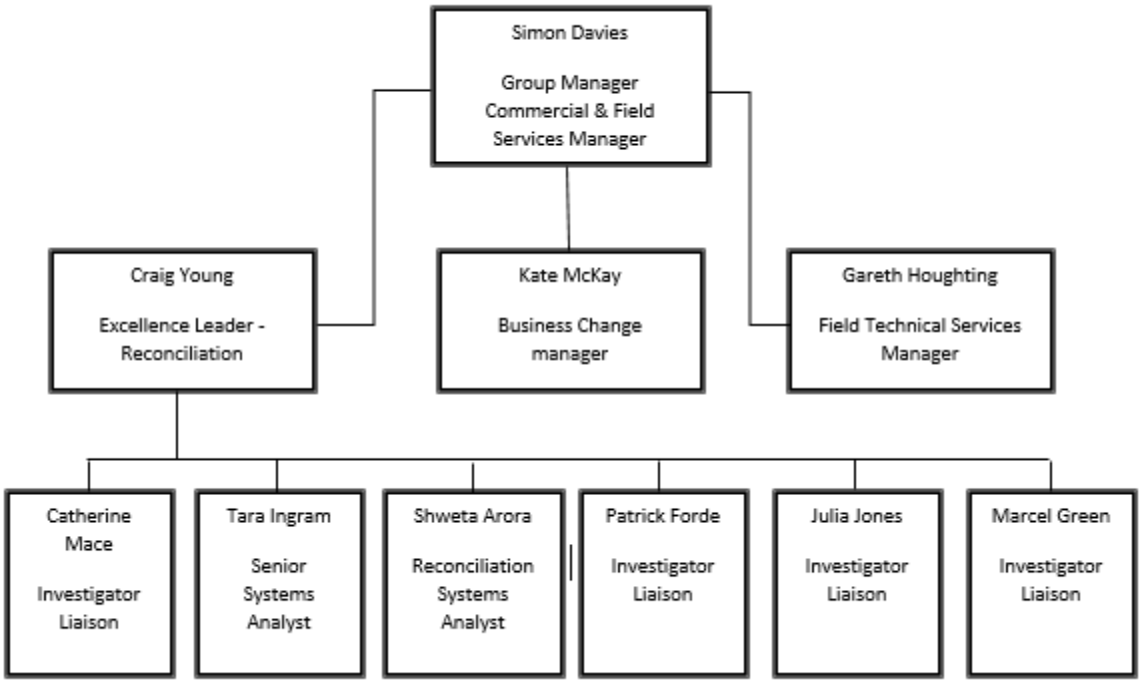
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

There are no exemptions in place relevant to the scope of this audit.

1.2. Structure of Organisation

Genesis provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Name	Title
Rebecca Elliot	Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader- Reconciliation	Genesis Energy
Jon Stevens	Projects Engineer	Power Solutions

1.4. Hardware and Software

A Roading Asset and Maintenance Management database, commonly known as RAMM continues to be used the management of DUML. This is remotely hosted by RAMM Software Ltd. The specific module used for DUML is called "SLIMM" which stands for "Streetlighting Inventory Maintenance Management".

Power Solutions 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)
0000939920HB224	Marine Parade Lighting	RDF0331	NST	19	1,840
0000939921HBE61	Carriageway Lighting	RDF0331	NST	162	19,621
0000939923HBEE4	Amenity Lighting	RDF0331	NST	82	5,419
0000939906HBEFE	Road Lighting	RDF0331	NST	7,529	529,061
0000939908HBD65	Amenity Lighting	RDF0331	NST	1,171	89,274
Total				8,963	645,215

As reported in the last audit report there are 159 lights where the ICP is reported as private. This has reduced from 170 lamps recorded in the last audit. 45 of these have one of the NCC unmetered load ICP recorded. This is discussed in **section 2.2**.

1.7. Authorisation Received

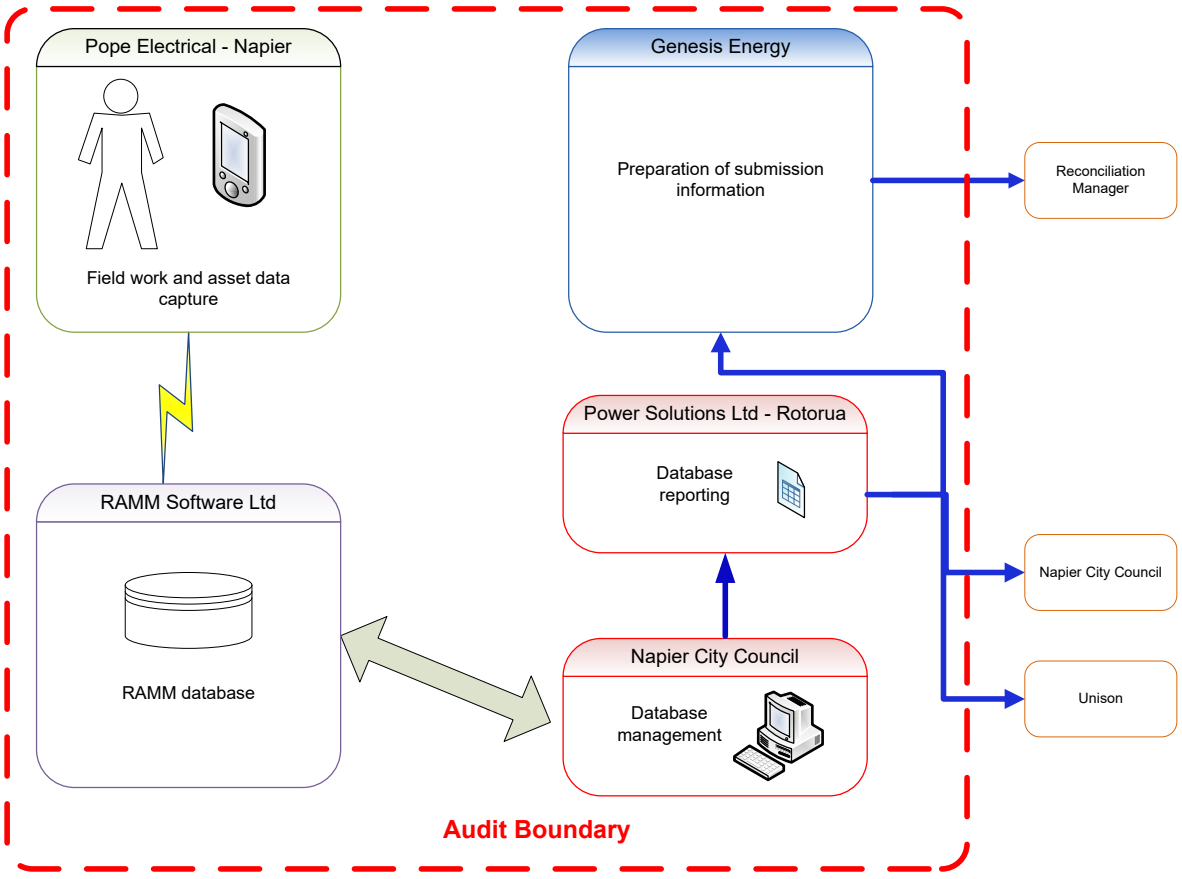
All information was provided directly by Genesis or Power Solutions.

1.8. Scope of Audit

This audit of the Napier City Council Unmetered Streetlights (NCC) DUML database and processes was conducted at the request of Genesis Energy Limited (Genesis), 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. NCC have brought the management of the database in house. Power Solutions who previously managed the database now only produce the monthly report. The fieldwork and asset data capture is conducted by Pope Electrical. Reporting is provided to NCC, Unison and Genesis on a monthly basis. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagram below shows the audit boundary for clarity.



The audit was carried out in Napier on 22nd May 2021. A field audit was conducted of 396 items of load.

1.9. Summary of previous audit

I reviewed that last audit report undertaken by Steve Woods of Veritek Limited in May 2020. The current statuses of that audit's findings are shown in the tables below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	NSP profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.	Still existing
			Under submission for ICP 0000939920HB224 due to the use of "half night" hours instead of "full night" hours.	Cleared
			Six new roads missing from the database.	Still existing
			Corrections not made for 12 of 25 discrepancies identified during the last audit.	Still existing
			Database reporting is a monthly snapshot and does not record historic changes.	Still existing
			49 private lights with ICP identifiers are excluded from monthly reporting.	Still existing
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP identifiers in the database are not correct.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	24 items of load not recorded in the database.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	Incorrect ICP identifiers because they are against the pole not the light.	Still existing
			Six new roads missing from the database.	Still existing
			Database reporting is a monthly snapshot and does not record historic changes.	Still existing but recorded in section 2.1 &3.2 only
			49 private lights with ICP identifiers are excluded from monthly reporting.	Still existing

Subject	Section	Clause	Non-Compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	NSP profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.	Still existing
			Under submission for ICP 0000939920HB224 due to the use of "half night" hours instead of "full night" hours.	Cleared
			Six new roads missing from the database.	Still existing
			Corrections not made for 12 of 25 discrepancies identified during the last audit.	Still existing
			Database reporting is a monthly snapshot and does not record historic changes.	Still existing
			49 private lights with ICP identifiers are excluded from monthly reporting.	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

Genesis 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.

Audit outcome

Compliant

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

Genesis reconciles this DUML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers installed on the Unison network.

As reported in the last audit, the methodology is compliant for the "full night" items of load but there are 244 items of load subject to "half night" switching. These lights are turned off at midnight, but the kWh is allocated over the entire night period. This does not achieve compliance with the rules of the profile and there is no approved profile that will meet this requirement. I recommend that a new profile be applied for to address this.

Recommendation	Description	Audited party comment	Remedial action
Regarding: Clause 11.1 of schedule 15.3	Apply for profile to address the incorrect allocation of volume associated with the "half night" lights.	Genesis Energy will require data to be provided alongside the profile application to validate/support any potential profile shape application. It will require the customer to assist the trader with installing a check meter to enable data validations to occur.	Investigating

In the last audit it was noted that ICP 0000939920HB224 had its consumption calculated based on "half night" but Power Solutions advised that ICP is a "full night" ICP. This has been corrected and revisions have been processed.

The report for April and May 2021 were examined and as reported in the last audit the content did not match the database. This was due to a number of factors:

- LED light changes that have occurred between the database extract being provided and the monthly wattage report,
- ICP identifiers are still linked to pole information not light information, therefore PSL makes an adjustment in the monthly report to correct the ICP,
- there are 45 private lights with ICPs recorded against them, but they are excluded from reconciliation; the other 114 private lights do not have ICPs recorded, and
- there are some amenity lights, right of way and car park lights that are recorded incorrectly against the unmetered council ICPs; these are corrected in the monthly report.

The last audit recorded six new roads were missing from the database. I rechecked these and two of the six have been corrected. The field audit also found evidence of new lights being installed and not recorded in the database. I also rechecked the rechecked the errors reported from the 2019 field audit and found all but two have been corrected. This is detailed in **section 2.5**. I recommend in **section 3.1** that the new connection process is reviewed. This is recorded as non-compliance.

In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

As detailed in **section 3.1**, there are 159 private lights in the database. 45 of these have one of the NCC ICPs recorded against them. These are excluded from reporting to Genesis. This will result in an estimated under submission of 28,500 kWh. NCC are investigating where all 159 private lights should be reconciled.

Database reporting is a monthly snapshot and does not record historic changes.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Jun-20 To: 17-May-21	NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight. Two of the 25 errors from the 2019 audit still to be corrected. Errors still present for four of six new roads found in the 2020 audit. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh. In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Database reporting is a monthly snapshot and does not record historic changes. Potential impact: High Actual impact: Medium Audit history: Three times previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak as the field findings indicate that the database management processes have weakened further during the audit period and I have recommended that the change management process is reviewed. The impact is assessed to medium due to the potential impact on settlement accuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis will be advising the council that it will be looking into including all private lights until the trader; council and the distributor agree on a solution. Genesis will be reviewing whether to be non compliant by continuing to use the NST profile for submission as all other profiles will result in the same outcome, or bill/settle full nights and be non-compliant for over submission Genesis will revisit the new connections process to see why the continuation of new roads are not being updated into the database in a timely manner	Unknown	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has revised the private lighting assets and found that there is a trend that the private lights are not catered for by the distributor where SUML is present or when UML is present. Amenity and park lighting will need to be confirmed by the council The half night assets require a check meter or become a metered installation to cater for the half night compliance issue. Genesis has no visibility of newly created roading and is unable to develop measures to report on their inclusion.	Unknown	

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 against each item of load.

Audit commentary

As reported in the last audit, there are 159 items of load where the owner is recorded as private. 45 of these have an NCC ICP identifier assigned. These are excluded from reconciliation. This will be resulting in an estimated under submission of 28,500 kWh per annum. All 159 private lights are still being investigated and if found to belong to the council, the correct ICP will be added.

As detailed in **section 2.1**, there are some amenity lights, right of way and car park lights that are recorded incorrectly against the unmetered council ICPs; these are corrected in the monthly report.

As reported in the last audit, all records have an ICP, but as recorded in **section 2.1**, the ICP is against the pole not the light and PSL adjusts the kWh per ICP to cater for this. The ICPs in the database are therefore not correct. This is recorded as non-compliance.

The accuracy of the ICPs allocated is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 01-Oct-18 To: 17-May-21	ICP identifiers in the database are not correct. Potential impact: Medium Actual impact: Low Audit history: Three times previously Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak because the design of the database does not ensure ICP identifiers are correct. The audit risk rating is low because the total kWh is correct and there is only one relevant GXP.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has revised the private lighting assets and found that there is a trend that the private lights are not catered for by the distributor where SUML or UML is present. Council and Distributor need to agree on who is servicing the lighting assets, the council or the private owners.	Unknown	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis indicative measures will be to move all private assets into council ownership until temporally until the council, trader and distributor can establish what is SUML and what is UML.	Unknown	

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 the nearest street address, displacement value and pole numbers and Global Positioning System (GPS) coordinates for majority of items of load and users in the office and field can view these locations on a mapping system.

There are 182 items of load that that do not have GPS co-ordinates, but all have a road name and displacement value which enables these to be located.

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 contains two records for wattage, firstly the lamp wattage and secondly the gear wattage, which represents ballast losses. Analysis of the database found no blank records and no discrepancies.

The issue where the ballast in RAMM was not being used for submission has been corrected. The wattage report is calculated using the wattage and ballast from RAMM.

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 last audit was undertaken during the COVID 19 pandemic and therefore the 2019 field audit findings were checked to confirm they had been corrected. There were six streets found to be missing from the database. For completeness I rechecked these for this audit.

A field audit was undertaken of 396 items of load on 23rd May 2021. The discrepancies found in the field are detailed below.

Audit commentary

The field audit discrepancies from 2019 were rechecked and found that all but the two items below have now been corrected. These are detailed in the table below, which shows that some updates are still outstanding. The additional light found in Pukekura Place is now in the database, therefore compliance is confirmed for this section.

Road Name	Pole ID	Database Watts	Field Watts	Notes	2021 Comments
LANARK CRESCENT	14063	45	83	70W HPS	**Not updated**
MARINE PARADE PARKING PRECINCT	3289	278	0	Not there	**Not updated**
Remaining discrepancy:		323	83	+240	

This will be resulting in an estimated over submission of 1,025 kWh per annum. This is recorded as non-compliance in **section 3.1**.

I rechecked the new light discrepancies found in the last audit. Two of the six roads have been corrected. The four streets below have yet to be fully updated as detailed below:

Street	Livening date	2020 comments	2021 comments
Kaituna Place (Off Hurunui)	Unknown	No database records. Streetview shows 4 LED lights	No change
Arrow Place (Off Hurunui)	25/02/2019	5 database records showing as “not connected”	No change
Pelorus Ave	25/06/2019	6 database records. Streetview has 12 lights	Ten records indicating two lights are still missing
Ruahine Rd	27/02/2018	No database records. Streetview shows 4 LED lights	Five items now added with electrical connection date of 15/02/21 when Unison have indicated that the lights were livened on 27/02/2018.

This year’s field audit also found new lights that have not been recorded in the database. This is detailed in the table below.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
ARGYLL CRESCENT	15	16	+1		1x additional 20W LED found in the field.
BOWER STREET SERVICE LANE TO WAREH	1	1		1	1x incorrect wattage recorded as 20W LED but 80W LED found in the field.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
FAULKNOR LANE	2	0	-2		2x 70W HPS not found in the field.
FREYBERG AVENUE	39	39		1	1x incorrect wattage recorded as 150W HPS, but 1 x 80W LED found in the field.
AVONDALE ROAD	2	2		1	1x incorrect wattage recorded as 35W MH, but 1 x 19W LED found in the field.
LEE ROAD CAR PARK SERVICE LANE	5	7	+2		2 x additional 100W HPS found in the field.
VAUTIER STREET S LEASE CARPARK	6	5	-1		1x 24.1W LED not found in the field.
MAADI ROAD	19	20	+1	1	1x additional 80W LED found in the field. 1x incorrect wattage recorded as 80W LED, but 1x 121W LED (est) found in the field.
MORSE STREET	11	11		1	1x incorrect wattage recorded as 24.1W LED, but 1x 20W LED found in the field.
NORWICH CRESCENT	10	11	+1	2	1x additional 20W LED found in the field. 2x incorrect wattage recorded as 24.1W LED, but 2x 20W LED found in the field.
OSIER ROAD	26	27	+1		1x additional 150W HPS found in the field.
PETANE ROAD	11	11		1	1x incorrect wattage recorded as 70W HPS, but 1x 20W LED found in the field.
PUKEKO PLACE	1	1		1	1x incorrect wattage recorded as 19W LED, but 1x 20W LED found in the field.
ROGERS ROAD	16	15	-1		1x 20W LED not found in the field.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
SELWYN ROAD	7	8	+1		1x additional 70W HPS found in the field.
WEST PLACE	3	5	+2		2x additional 19W LEDs found in the field.
WESTMINSTER AVE - TAMATEA DRIVE ROUNDABOUT	3	3		3	3x incorrect wattage recorded as 150W HSP, but 3x 80W LED found in the field.
Grand Total	**396**	**401**	**13 (+9-4)**	**12**	

Nine additional lights were found in the field. This is recorded as non-compliance.

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: 27-Feb-18 To: 17-May-21	Errors still present for four of six new roads found in the 2020 audit resulting in 11 items of load identified still not recorded in the database. Nine additional lights found in the field. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact is assessed to be low based on number of additional lights found in the field in comparison to the overall number of lights checked.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has reviewed the auditors finding and have provided directive to infrastructure alliance and NCC to have missing assets added to the database.	31/07/2021	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are seeking further understanding of the NCC new connection/tracking of change processes. Genesis is unable to predict new connections or changes and therefore rely heavily on the council's processes to ensure assets information is accurate and timely	unknown	

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.

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

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	Napier City Council streetlights
Strata	The database contains items of load in the Napier City Council area. The processes for the management of items of load are the same, but I decided to place the items of load into five strata, as follows: • Amenity & Private, • Roading A-G, • Roading H-O, and • Roading P-Z.
Area units	I created a pivot table of the roads in each area, and I used a random number generator in a spreadsheet to select a total of 57 sub-units.
Total items of load	396 items of load were checked.

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

The process to manage changes made in the field being updated in the database was examined.

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 396 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	100.3	Wattage from survey is lower than the database wattage by 3.3%
R_L	95	With a 95% level of confidence, it can be concluded that the error could be between -5% and +5.2%
R_H	105.2	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 1 February 2019 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 5% lower and 5.2% higher 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 2 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 32 kW lower and 34 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 138,400 kWh p.a. lower to 143,300 kWh p.a. higher 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 %

2019 Database Accuracy findings

As detailed in **section 2.5**, the discrepancies found in the 2020 audit were rechecked and found:

- two discrepancies found in the 2019 audit are still to be updated, and
- four of the six roads missing from the database still have discrepancies.

This is recorded as non-compliance below.

ICP Accuracy

As detailed in **section 2.2**, all but 114 "private" records have an ICP, but as recorded in **section 2.1**, the ICP is against the pole not the light and PSL adjusts the kWh per ICP to cater for this. The ICPs in the database are therefore not correct. This is recorded as non-compliance.

As detailed in **section 2.1**, there are some amenity lights, right of way and car park lights that are recorded incorrectly against the unmetered council ICPs. These are corrected in the monthly report. This is recorded as non-compliance.

Wattage and ballast accuracy findings

The database contains two records for wattage, firstly the lamp wattage and secondly the gear wattage, which represents ballast losses. Analysis of the database found no blank records and 43 ballast discrepancies. This will be resulting in an estimated very minor under submission of 431 kWh per annum.

The ballast in RAMM is now used for submission and is no longer added to the monthly report separately.

Change management process findings

PSL are no longer managing changes in the database as this function has been bought in house. They still produce the monthly wattage report.

I made multiple attempts to meet with the council to discuss how the change management processes are being managed. The main contact is on long term sick leave, and I have had no response from their manager. The field audit results indicate that not all changes/ new connections in the field are being updated in the database in all instances. I recommend that the change management process is reviewed to ensure all changes are captured for the correct date.

Description	Recommendation	Audited party comment	Remedial action
Database Accuracy	Review the change management process to ensure that all changes are recorded in RAMM for the correct date.	Genesis have again raised this with the Council and third party. Better understanding of the processes will enable Genesis to assist in maintenance of their assets database	Investigating

Private lights

There are 159 private lights in the database, which are excluded from reporting to Genesis. 45 of these have one of the NCC ICPs recorded against them. These lights fit into many different categories, as follows:

- rest home lighting,
- council flats lighting,
- flood lights mounted on the same pole as the streetlight for carpark lighting, and
- commercial building forecourt decorative lighting.

As detailed in the last audit, this matter was raised with Unison during their distributor audit, and they had evidence for a small number of lights that were originally owned by NCC when they were installed. Many of the lights in rest homes, council flats or commercial premises could be the responsibility of the owner of the customer network, depending on how they are connected. NCC are investigating these, but 45 of the 159 lights are recorded against the NCC ICPs and are excluded from reconciliation. Most of the 45 are where additional lights have been connected to existing streetlights and are illuminating carparks or private properties.

I've have repeated the non-compliance for the under submission, because these 45 items of load have ICPs, therefore alternative arrangements need to be made for reconciliation before Genesis excludes them from their reconciliation. This will result in an estimated under submission of 28,500 kWh.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-20 To: 12-May-21	In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Some database discrepancies identified in the 2020 audit still to be corrected. Incorrect ICP identifiers because they are against the pole not the light. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 43 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 431 kWh. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh. Potential impact: High Actual impact: Medium Audit history: Once previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak as the field findings indicate that the database management processes have weakened further during the audit period and I have recommended that the change management process is reviewed. The impact on settlement and participants is moderate because under submission will be occurring; therefore, the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis continues to provide feedback and have again raised concerns around the private lights not being actioned appropriately within the database. Genesis will also raise its concerns with the distributor to try and resolve the ownership issue	unknown	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to mitigate the risk surrounding +- settlement submissions. The estimated value of the impact of private lights due to an ICP being associated is technical. Councils in general will have NZTA/Private lights in their databases in the event the public complain to the council they don't work. Where the private lights need to be addressed is at a distributor level to ensure that these lights, if not under Council ownership are assigned to the correct site/sites depend if SUML or UML.	unknown	

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 burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles this DUML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers installed on the Unison network.

As reported in the last audit, the methodology is compliant for the "full night" items of load but there are 244 items of load subject to "half night" switching. These lights are turned off at midnight, but the kWh is allocated over the entire night period. This does not achieve compliance with the rules of the profile and there is no approved profile that will meet this requirement. I recommend in **section 2.1**, that a new profile be applied for to address this.

In the last audit it was noted that ICP 0000939920HB224 had its consumption calculated based on "half night" but Power Solutions advised that ICP is a "full night" ICP. This has been corrected and revisions have been processed.

The report for April and May 2021 were examined and as reported in the last audit the content did not match the database. This was due to a number of factors:

- LED light changes that have occurred between the database extract being provided and the monthly wattage report,
- ICP identifiers are still linked to pole information not light information, therefore PSL makes an adjustment in the monthly report to correct the ICP,
- there are 45 private lights with ICPs recorded against them, but they are excluded from reconciliation; the other 114 private lights do not have ICPs recorded, and
- there are some amenity lights, right of way and car park lights that are recorded incorrectly against the unmetered council ICPs; these are corrected in the monthly report.

The last audit recorded six new roads were missing from the database. I rechecked these and two of the six have been corrected. The field audit also found evidence of new lights being installed and not recorded in the database. I also rechecked the rechecked the errors reported from the 2019 field audit and found all but two have been corrected. This is detailed in **section 2.5**. I recommend in **section 3.1** that the new connection process is reviewed. This is recorded as non-compliance.

In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

As detailed in **section 3.1**, there are 159 private lights in the database. 45 of these have one of the NCC ICPs recorded against them. These are excluded from reporting to Genesis. This will result in an estimated under submission of 28,500 kWh. NCC are investigating where these lights should be reconciled.

Database reporting is a monthly snapshot and does not record historic changes.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jun-20 To: 17-May-21	NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight. Two of the 25 errors from the 2019 audit still to be corrected. Errors still present for four of six new roads found in the 2020 audit. Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs. 45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh. In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates. Database reporting is a monthly snapshot and does not record historic changes. Potential impact: High Actual impact: Medium Audit history: Three times previously Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as weak as the field findings indicate that the database management processes have weakened further during the audit period and I have recommended that the change management process is reviewed. The impact is assessed to medium due to the potential impact on settlement accuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis will be advising the council that it will be looking into including all private lights until the trader; council and the distributor agree on a solution. The provision of assets will be sent to the distributor for assistance in resolving this issue. Genesis will be reviewing whether to be none compliant by continuing to use the NST profile for submission as all other profiles will result in the same outcome, or bill/settle full nights and be non-compliant for over submission Genesis will revisit the new connections process to see why the continuation of new roads are not being updated into the database in a timely manner	unknown	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has revised the private lighting assets and found that there is a trend that the private lights are not catered for by the distributor where SUML is present or when UML is present. Amenity and park lighting will need to be confirmed by the council The half night assets require a check meter or become a metered installation to cater for the half night compliance issue. Genesis has no visibility of newly created roading and is unable to develop measures to report on their inclusion.	Unknown	

CONCLUSION

A RAMM database is managed by NCC, and monthly reporting is provided to Genesis. The database is remotely hosted by RAMM Software Ltd. The database management has been bought in house from Power Solutions Limited since the last audit.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated under submission of 9,400 kWh per annum.

The last audit noted five main issues. I have updated the status of these in the table below:

Issue	2021 Findings
The load for two ICPs is only on for half of the night (turned off at midnight), but submission occurs using the NSP profile, which is a full night profile, therefore the load is spread over the whole night when it should not be.	Still existing
ICP 0000939920HB224 has consumption calculated based on "half night" but Power Solutions advised this ICPs is a "full night" ICP. Under submission of 442 kWh has occurred for March 2020 which could be approx. 5,000 kWh for the year	Resolved and revisions have been processed.
ICP identifiers are linked to pole information not light information in RAMM, therefore PSL makes an adjustment in the monthly report to correct the ICP. Manual manipulation of the database output can lead to errors, and I strongly recommend the database is corrected and manual manipulation ceases as soon as possible.	Still existing
Submission is not occurring for 170 private lights recorded in the database, 49 of the 170 have NCC ICP identifiers.	Submission is not occurring for 159 private lights recorded in the database, 45 of these have NCC ICP identifiers recorded. NCC are investigating these lights to determine who should be paying for this load.

Issue	2021 Findings
12 of 25 discrepancies from the last audit were not corrected. Six new streets with streetlights are not recorded in the database.	All but two of these have been corrected in RAMM. Two of the new streets missing have been corrected. I found discrepancies were still present for the other four streets. This is detailed in **section 2.5**. I have recommended that the change management process is reviewed to ensure all additions or removals are captured from the correct date.

This audit found five non-compliance and makes two recommendations. The future risk rating of 23 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, particularly in the lack of engagement from the council and recommend that the next audit be in six months.

PARTICIPANT RESPONSE

Genesis finds it hard to have proactive engagement with the council to resolve the issue within their database.

Genesis are currently responding to this audit with no active input from the council except the third party who has indicated that the missing assets pertaining to the new roads will be added. This has led to the date of Unknown to be associated to the completion date.

Genesis will provide the private lighting assets to the distributor and identify where a distributor icp should be administered for SUML. And where potential UML (Daily kWh figure) should be added to that sites ICP, removing the ownership from the council.

Genesis is currently recruiting for a permanent position in order to assist in maintaining their current DUML portfolio, to increase Genesis' customer engagement to help Genesis maintain its responsibilities under the DUML regime moving forward.