

ELECTRICITY INDUSTRY PARTICIPATION CODE  
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

NAPIER CITY COUNCIL AND  
GENESIS ENERGY  
NZBN:9429037706609

Prepared by: Steve Woods

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Audit report due date: 01-Dec-21

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## 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 thinkdata Ltd. The database management is no longer outsourced and is managed directly by NCC.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated over submission of 98,800 kWh per annum.

The database accuracy is very poor and the controls to ensure the database records match the installed items of load in the field are weak. The overall impact on settlement is high. No improvements have been made since the last audit and many of the discrepancies identified since 2019 are still existing. The database inaccuracy has now reached the point where a full field audit may be required to get it accurate again. This would need to be coupled with improvements to the controls to ensure ongoing database accuracy.

This audit found five non-compliance and makes two recommendations. The future risk rating of 33 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in six months to allow time for a full field audit and for the required improvements to be made.

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	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>19 of the 25 errors from the May 2021 audit still to be corrected.</p> <p>Errors still present for two of six new roads found in the 2020 audit.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC un-metered streetlight ICPs.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes</p>	Weak	High	9	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
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
All load recorded in database	2.5	11(2A) of Schedule 15.3	Errors still present for two of six new roads found in the 2020 audit resulting in six items of load identified still not recorded in the database.  13 additional lights found in the field.	Weak	Low	3	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	<p>In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the 2020 audit still to be corrected.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>30 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 8.5 kWh.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh.</p>	Weak	High	9	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)	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>19 of the 25 errors from the May 2021 audit still to be corrected.</p> <p>Errors still present for two of six new roads found in the 2020 audit.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p>	Weak	High	9	Investigating
Future Risk Rating						33	

<b>Future risk rating</b>	0	1-4	5-8	9-15	16-18	19+
<b>Indicative audit frequency</b>	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

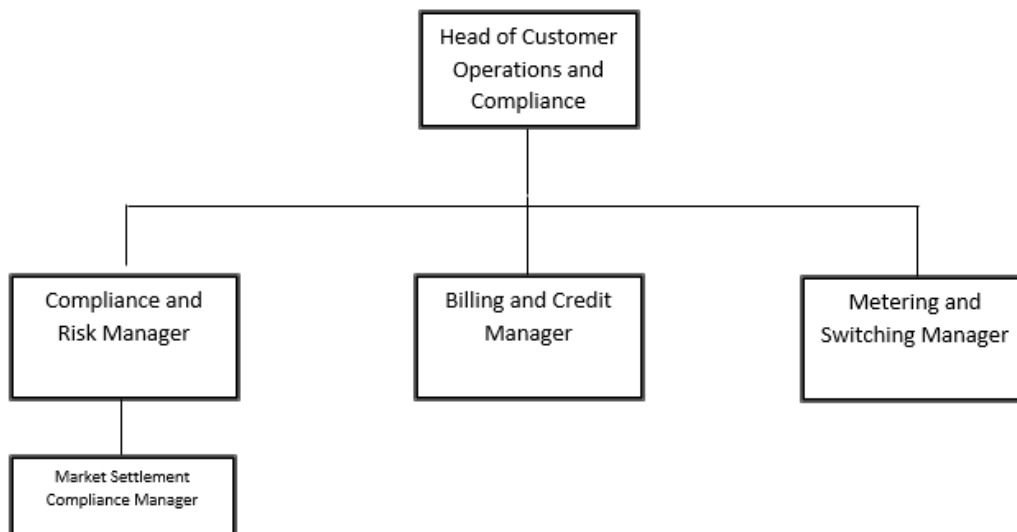
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

#### 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
Steve Woods	Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Julia Jones	DUML Data & Stakeholder Lead - Market Settlement Compliance	Genesis Energy
Jon Stevens	Projects Engineer	Power Solutions

#### 1.4. Hardware and Software

A Rooding Asset and Maintenance Management database, commonly known as RAMM continues to be used the management of DUML. This is remotely hosted by thinkproject 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	14,317
0000939923HBEE4	Amenity Lighting	RDF0331	NST	82	5,419
0000939906HBEFE	Road Lighting	RDF0331	NST	7,510	415,674
0000939908HBD65	Amenity Lighting	RDF0331	NST	1,161	96,396
Total				8,934	533,646

As reported in the last audit report there are 158 lights where the ICP is reported as private. This has reduced from 159 lamps recorded in the last audit. 44 of these have one of the NCC unmetered load ICP recorded. Submission does not occur for these lights. This is discussed in **section 2.2**.

#### 1.7. Authorisation Received

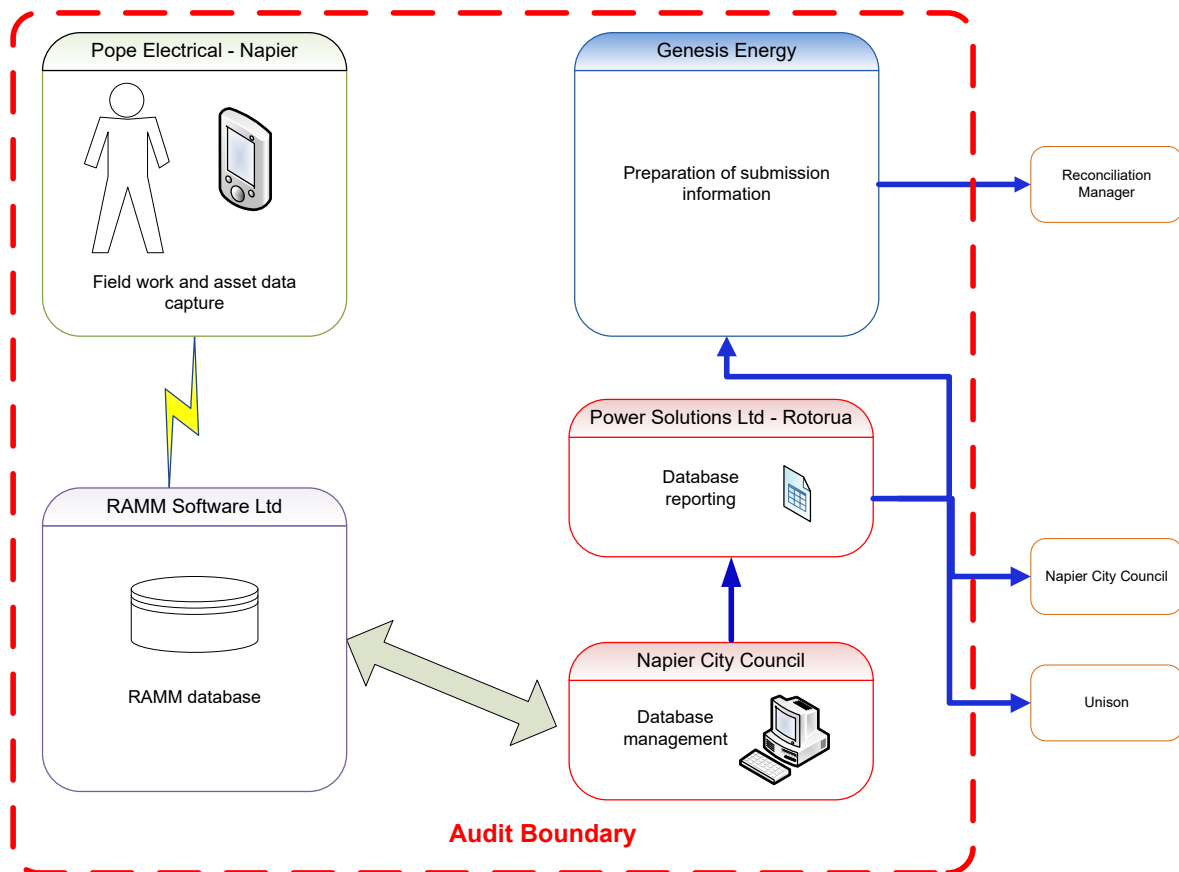
All information was provided directly by Genesis or Power Solutions.

## 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 thinkproject 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 17<sup>th</sup> November 2021. A field audit was conducted of 468 items of load.

## 1.9. Summary of previous audit

I reviewed that last audit report undertaken by Rebecca Elliot of Veritek Limited in May 2021. 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	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Two of the 25 errors from the 2019 audit still to be corrected.</p> <p>Errors still present for four of six new roads found in the 2020 audit.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUMML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p>	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	<p>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.</p> <p>Nine additional lights found in the field.</p>	Still existing

Subject	Section	Clause	Non-Compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	<p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates.</p> <p>Some database discrepancies identified in the 2020 audit still to be corrected.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>43 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 431 kWh.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p>	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Two of the 25 errors from the 2019 audit still to be corrected.</p> <p>Errors still present for four of six new roads found in the 2020 audit.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p>	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
<b>Regarding:</b> 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. In order to achieve this Genesis will need the council to assist with installing a check meter to enable data validations to occur.	Investigating

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

- 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 44 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 field audit recorded 25 discrepancies. Six of the 25 have been corrected but 19 have not been corrected. 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 98,800 kWh lower 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 158 private lights in the database. 44 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 26,600 kWh just for the 44 with ICPs. During the Unison distributor audit, it was identified that the remaining private lights do not meet the definition of “shared unmetered load”, because they are not connected directly to Unison’s network. In most cases, they’re connected to customer networks, normally retirement villages.

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

### Audit outcome

#### Non-compliant

Non-compliance	Description
<p>Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3</p> <p>From: 01-Jun-21 To: 26-Nov-21</p>	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>19 of the 25 errors from the May 2021 audit still to be corrected.</p> <p>Errors still present for two of six new roads found in the 2020 audit.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p> <p>Potential impact: High</p> <p>Actual impact: High</p> <p>Audit history: Multiple times previously</p> <p>Controls: Weak</p> <p>Breach risk rating: 9</p>
Audit risk rating	Rationale for audit risk rating
<p><b>High</b></p>	<p>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.</p> <p>The impact is assessed to high due to the potential impact on settlement accuracy.</p>



Actions taken to resolve the issue	Completion date	Remedial action status
<p>Genesis are still in the process of 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.</p> <p>Genesis has advised the council of the audit outcome regarding the discrepancy between what is out in field and what has been recorded within the council data base; with the intent that council makes every effort to ensure the exceptions are rectified.</p> <p>In reference to the new connection process within the Napier region, Genesis will look to review this process with the council with the aim that new roads are been added within a timely manner.</p>	Continuous Improvement	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>The half night assets require a check meter or become a metered installation to cater for the half night compliance issue.</p> <p>Regarding newly created roading within the Napier region, Genesis will work with the council to review their process with the intent that new roads are being added within a timely manner.</p>	Continuous Improvement	

## 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 DUMML database must contain:*

- *each ICP identifier for which the retailer is responsible for the DUMML*
- *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 158 items of load where the owner is recorded as private. 44 of these have an NCC ICP identifier assigned. These are excluded from reconciliation. This will be resulting in an estimated under submission of 26,600 kWh per annum.

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: 26-Nov-21	ICP identifiers in the database are not correct. Potential impact: Medium Actual impact: Low Audit history: Multiple times previously Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	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 discussed the auditor's findings with the council regarding the private lights that have been recorded to show that the ICP as being with NCC. As the council has these assets listed as private lighting genesis has passed this information on to the distributor for further investigation into ownership of these assets.		Continuous Improvement	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
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.		Continuous Improvement	

### 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 196 items of load 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 DUMML database must contain:*

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

### **Audit observation**

The database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage 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 DUMML 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 23<sup>rd</sup> 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.

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"	Five records now in the database
Pelorus Ave	25/06/2019	6 database records. Streetview has 12 lights	Ten records indicating two lights are still missing

This year's field audit also found some discrepancies, as recorded in the table below. These findings have been provided to NCC and Genesis.

Discrepancy	Quantity
Incorrect wattage	26
Additional lights found	13
Lights in the database not in the field	8

13 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: 26-Nov-21	Errors still present for two of six new roads found in the 2020 audit resulting in six items of load identified still not recorded in the database. 13 additional lights found in the field. Potential impact: Medium Actual impact: Low Audit history: Twice Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are recorded as weak because they do not mitigate risk to an acceptable level and some of the discrepancies have been present for some years. 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 advised the council of the audit outcome regarding the discrepancy between what is out in field and what has been recorded within the council data base; with the intent that council makes every effort to ensure the exceptions are rectified.  In reference to the new connection process within the Napier region, Genesis will look to review this process with the council with the aim that new roads are been added within a timely manner.		Continuous Improvement	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	

## 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 four strata, as follows: <ul style="list-style-type: none"> <li>• Amenity &amp; Private,</li> <li>• Roding A-G,</li> <li>• Roding H-O, and</li> <li>• Roding P-Z.</li> </ul>
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 79 sub-units.
Total items of load	468 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 468 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	95.7	Wattage from survey is lower than the database wattage by 4.3%
R <sub>L</sub>	89.7	With a 95% level of confidence, it can be concluded that the error could be between -10.3% and -0.5%
R <sub>H</sub>	99.5	

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 10.3% lower and 0.5% 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 23 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 3 kW lower and 56 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 237,300 kWh p.a. lower to 10,900 kWh p.a. lower than the database indicates.

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

### Previous Database Accuracy findings

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

- two discrepancies found in the 2019 audit are still to be updated, and
- two of the six roads missing from the database still have discrepancies.
- 19 of the 25 field audit discrepancies are yet to be corrected.

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 but 30 ballast discrepancies. This will be resulting in an estimated very minor under submission of 8.5 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.

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. Unison should be engaged regarding the new connections process to ensure responsibility is identified prior to the electrical connection of streetlight circuits.

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.	Identified

**Private lights**

There are 158 private lights in the database, which are excluded from reporting to Genesis. 44 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. 44 of the 158 lights are recorded against the NCC ICPs and are excluded from reconciliation. Most of the 44 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 44 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 26,600 kWh.

**Audit outcome**

Non-compliant

Non-compliance	Description	
<p>Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b)</p> <p>From: 01-Jun-21 To: 26-Nov-21</p>	<p>In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the 2020 audit still to be corrected.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some amenity, right of way and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>30 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 8.5 kWh.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh.</p> <p>Potential impact: High Actual impact: High Audit history: Twice previously</p> <p>Controls: Weak Breach risk rating: 9</p>	
Audit risk rating	Rationale for audit risk rating	
<p><b>High</b></p>	<p>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.</p> <p>The impact on settlement and participants is high because over submission will be occurring; therefore, the audit risk rating is high.</p>	
Actions taken to resolve the issue	Completion date	Remedial action status

<p>Genesis has advised the council of the audit findings where database discrepancies has been identified with the intent that council makes every effort to ensure the exceptions are rectified.</p> <p>Genesis has again raised the concerns with council around how private lighting has been recorded within their database. As the council has these assets listed as private lighting genesis has passed this information on to the distributor for further investigation into the ownership of these assets.</p>	Continuous Improvement	Investigating
<p><b>Preventative actions taken to ensure no further issues will occur</b></p>	<p><b>Completion date</b></p>	
<p>Genesis continues to work with the council to mitigate the risk surrounding +- settlement submissions. Councils in general will have NZTA/Private lights in their databases in the event the public complain to the council they don't work.</p> <p>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.</p>	Continuous Improvement	

### 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.

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

- 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 44 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 field audit recorded 25 discrepancies. Six of the 25 have been corrected but 19 have not been corrected. 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 98,800 kWh lower 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 158 private lights in the database. 44 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 26,600 kWh just for the 44 with ICPs. During the Unison distributor audit, it was identified that the remaining private lights do not meet the definition of “shared unmetered load”, because they are not connected directly to Unison’s network. In most cases, they’re connected to customer networks, normally retirement villages.

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-21 To: 26-Nov-21	NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight. 19 of the 25 errors from the May 2021 audit still to be corrected. Errors still present for two 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. 44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,600 kWh. In absolute terms, total annual consumption is estimated to be 98,800 kWh lower than the DUML database indicates. Database reporting is a monthly snapshot and does not record historic changes. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
<b>Audit risk rating</b>	<b>Rationale for audit risk rating</b>

<b>High</b>	<p>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.</p> <p>The impact is assessed to high due to the potential impact on settlement accuracy.</p>	
<b>Actions taken to resolve the issue</b>	<b>Completion date</b>	<b>Remedial action status</b>
<p>Genesis has advised the council of the audit findings where database discrepancies has been identified with the intent that council makes every effort to ensure the exceptions are rectified.</p> <p>Genesis has also re-raised the concerns surrounding how private lighting has been recorded within the council database. Genesis has advised the distributor of these private lights so that further investigation can be conducted into who own's these assets.</p> <p>Genesis are still in the process of 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.</p> <p>In reference to the new connection process within the Napier region, Genesis will look to review this process with the council with the aim that new roads are been added within a timely manner.</p>	Continuous Improvement	Investigating
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	
<p>Genesis continues to work with the council to mitigate the risk surrounding +- settlement submissions.</p> <p>Regarding newly created roading within the Napier region, Genesis will work with the council to review their process with the intent that new roads are being added within a timely manner.</p> <p>With regards to half night assets, Genesis requires a check meter to be installed in order to validate burn hours or become for these assets to become a metered installation to cater for the half night compliance issue.</p>	Continuous Improvement	

## CONCLUSION

A RAMM database is managed by NCC, and monthly reporting is provided to Genesis. The database is remotely hosted thinkdata Ltd. The database management is no longer outsourced and is managed directly by NCC.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated over submission of 98,800 kWh per annum.

The database accuracy is very poor and the controls to ensure the database records match the installed items of load in the field are weak. The overall impact on settlement is high. No improvements have been made since the last audit and many of the discrepancies identified since 2019 are still existing. The database inaccuracy has now reached the point where a full field audit may be required to get it accurate again. This would need to be coupled with improvements to the controls to ensure ongoing database accuracy.

This audit found five non-compliance and makes two recommendations. The future risk rating of 33 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in six months to allow time for a full field audit and for the required improvements to be made.

## PARTICIPANT RESPONSE

Genesis continues to work with the council to mitigate the risk surrounding +- settlement submissions and has re-raised the concerns surrounding the database discrepancies with the intent that council makes every effort to ensure the exceptions are rectified.

With regards to half night assets, Genesis requires a check meter to be installed in order to validate burn hours or for these assets to become a metered installation to cater for the half night compliance issue until then Genesis will continue to use the current profile that has been allocated to ICP 0000939921HBE61 and 0000939923HBEE4.