

ELECTRICITY INDUSTRY PARTICIPATION CODE  
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

MANAWATU DISTRICT COUNCIL AND  
GENESIS ENERGY

Prepared by: Tara Gannon

Date audit commenced: 19 January 2024

Date audit report completed: 20 February 2024

Audit report due date: 1 March 2024

---

## TABLE OF CONTENTS

Executive summary .....	3
Audit summary .....	4
Non-compliances .....	4
Recommendations .....	7
Issues .....	7
1. Administrative.....	8
1.1. Exemptions from Obligations to Comply with Code .....	8
1.2. Structure of Organisation .....	8
1.3. Persons involved in this audit.....	9
1.4. Hardware and Software .....	9
1.5. Breaches or Breach Allegations.....	9
1.6. ICP Data .....	9
1.7. Authorisation Received .....	10
1.8. Scope of Audit .....	10
1.9. Summary of previous audit .....	12
1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F).....	13
2. DUML database requirements.....	14
2.1. Deriving submission information (Clause 11(1) of Schedule 15.3) .....	14
2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3) .....	18
2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3) .....	18
2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3) .....	19
2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3) .....	20
2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3).....	22
2.7. Audit trail (Clause 11(4) of Schedule 15.3).....	22
3. Accuracy of DUML database .....	24
3.1. Database accuracy (Clause 15.2 and 15.37B(b)) .....	24
3.2. Volume information accuracy (Clause 15.2 and 15.37B(c)) .....	28
Conclusion .....	31
Participant response .....	31

## EXECUTIVE SUMMARY

This audit of the **Manawatu District Council (MDC)** 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 held by MDC, who is the customer of Genesis. Streetlight maintenance work is completed by Max Tarr, and new connections initiated by MDC are completed by Max Tarr or other Powerco approved contractors on a project basis. For any work completed by Max Tarr, data is collected from the field using a tablet as work is completed and then synchronised with RAMM. For new connections initiated by MDC using contractors other than Max Tarr, MDC will capture the light data using a tablet in the field which is then synchronised with RAMM.

Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within  $\pm 5\%$  leading to potential over submission of 3,500 kWh per annum.

Genesis reconciles the DUML load as NHH using the CST profile, with wattages derived from a monthly database extract provided by MDC and on and off times derived from data logger information. The database extract provided for the audit in January 2024 was not consistent with the database extract provided for submission in January 2024. Some of the differences do not appear to relate to timing of light changes. The differences could result in over submission of 14,089.9 kWh per annum.

In all five non-compliances were identified and two recommendations are made. The future risk rating of 13 indicates that the next audit be completed in 12 months, and I agree with this recommendation.

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>The database extract provided for the audit in January 2024 was not consistent with the database extract provided for submission in January 2024. Some of the differences do not appear to relate to timing of light changes. The differences could result in over submission of 14,089.9 kWh per annum.</p> <p>Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math> leading to potential over submission of 3,500 kWh per annum.</p> <p>Three lights at Waughs Road which were installed at a turning bay by MDC do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p> <p>Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.</p> <p>Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.</p> <p>Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS) leading to over submission of 42 kWh per annum.</p> <p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p>	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	<p>Three lights at Waughs Road which were installed at a turning bay by MDC do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p>	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.				
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>The field audit identified three lights which were not recorded in the database:</p> <ul style="list-style-type: none"> <li>one 22W LED (pole 475837) outside number 6 A'Court St, Sanson,</li> <li>one 22W LED (pole P35233) outside number 16-18 Hedges St, Sanson, and</li> <li>one 24W LED (pole L1058) outside number 1 Northfield Rise, Feilding.</li> </ul>	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math> leading to potential over submission of 3,500 kWh per annum.</p> <p>Three lights at Waughs Road which were installed at a turning bay by MDC do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p> <p>Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.</p> <p>Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.</p> <p>Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS) leading to over submission of 42 kWh per annum.</p>	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database extract provided for the audit in January 2024 was not consistent with the database extract provided for submission in January 2024. Some of the differences do not appear to relate to timing of	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			<p>light changes. The differences could result in over submission of 14,089.9 kWh per annum.</p> <p>Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math> leading to potential over submission of 3,500 kWh per annum.</p> <p>Three lights at Waughs Road which were installed at a turning bay by MDC do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p> <p>Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.</p> <p>Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.</p> <p>Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS) leading to over submission of 42 kWh per annum.</p> <p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p>				
Future Risk Rating						13	

<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	Recommendation	Participant comment
Deriving submission information Ensure that database extracts used for submission match current RAMM values	2.1	The audit identified differences between a RAMM extract provided for the audit in January 2024, and the RAMM extract used for submission by Genesis in January 2024. Ensure that the database information provided for submission is consistent with the current values in RAMM.	Genesis will investigate the differences in RAMM extract vs what is received for submissions.
Database accuracy Festive light accuracy	3.1	When festive lights are next installed, complete a stocktake to confirm which lamps are still in use and update the database accordingly.	MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy.

## ISSUES

Subject	Section	Description	Issue
		Nil	

## 1. ADMINISTRATIVE

### 1.1. Exemptions from Obligations to Comply with Code

#### Code reference

*Section 11 of Electricity Industry Act 2010.*

#### Code related audit information

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

#### Audit observation

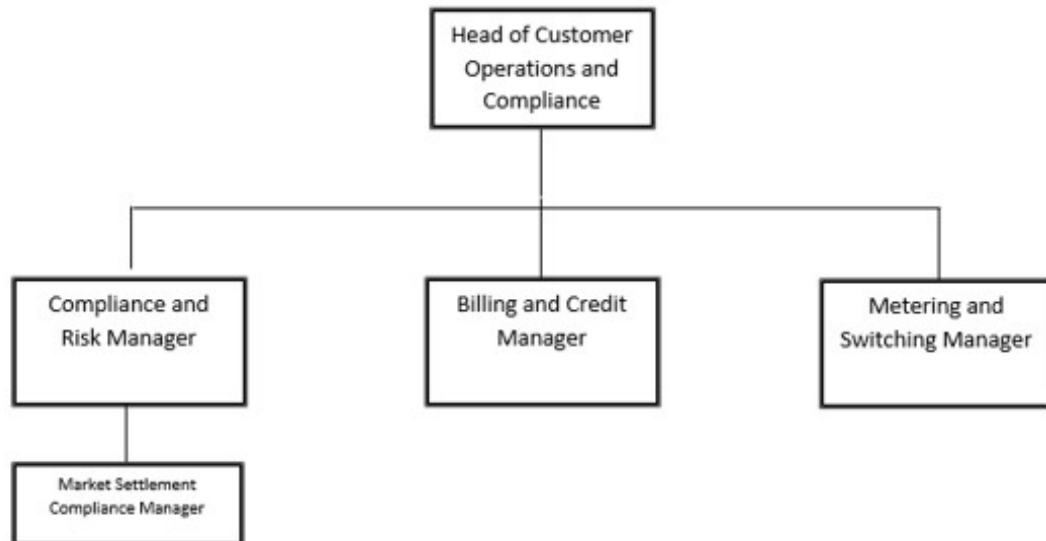
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

#### Audit commentary

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

### 1.2. Structure of Organisation

Genesis Energy provided a copy of their organisational structure.





### 1.3. Persons involved in this audit

Auditor:

Name	Role	Company
Tara Gannon	Auditor	Provera

Other personnel assisting in this audit were:

Name	Title	Company
Charlotte Jeffery	Engineering Technician	Manawatu District Council
Ed O’Leary	Cadet Technician	Manawatu District Council
Alysha Majury	Unmetered Account Specialist	Genesis Energy

### 1.4. Hardware and Software

#### RAMM

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited. The database is commonly known as “RAMM” which stands for “Road Assessment and Maintenance Management”. The specific data used for DUML is held in the Streetlight tables. thinkproject New Zealand Limited backs up the database and assists with disaster recovery as part of their hosting service.

Backup and restoration procedures are in place, and access to the database is restricted using logins and passwords.

#### Genesis systems

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)
0900087357PCBB6	MDC Streetlights BPE0331	BPE0331	CST	1,813	80,271.5
1000614912PCCE8	MDC Streetlights LTN0331	LTN0331	CST	108	5,799.0
<b>Total</b>				<b>1,921</b>	<b>86,070.5</b>

The database also contains metered ICPs 0000057374CPA35 and 0900085650PC039.

All items of load in the database had valid ICP numbers recorded against them, except:

ICP group	Count of items	Total wattage	Comment
NZTA Urban	196	28,308	These lights are the responsibility of NZTA, and the energy is reconciled and billed under another agreement and captured in an NZTA database.
Private	76	6,238	These lights are privately owned and not the responsibility of MDC. They are recorded in the database for completeness.
Blank	10	0	These lights are situated at Victoria Park and are metered floodlights, and do not need to be included in database submissions. They are listed in the database for completeness.

### 1.7. Authorisation Received

All information was provided directly by Genesis and MDC.

### 1.8. Scope of Audit

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

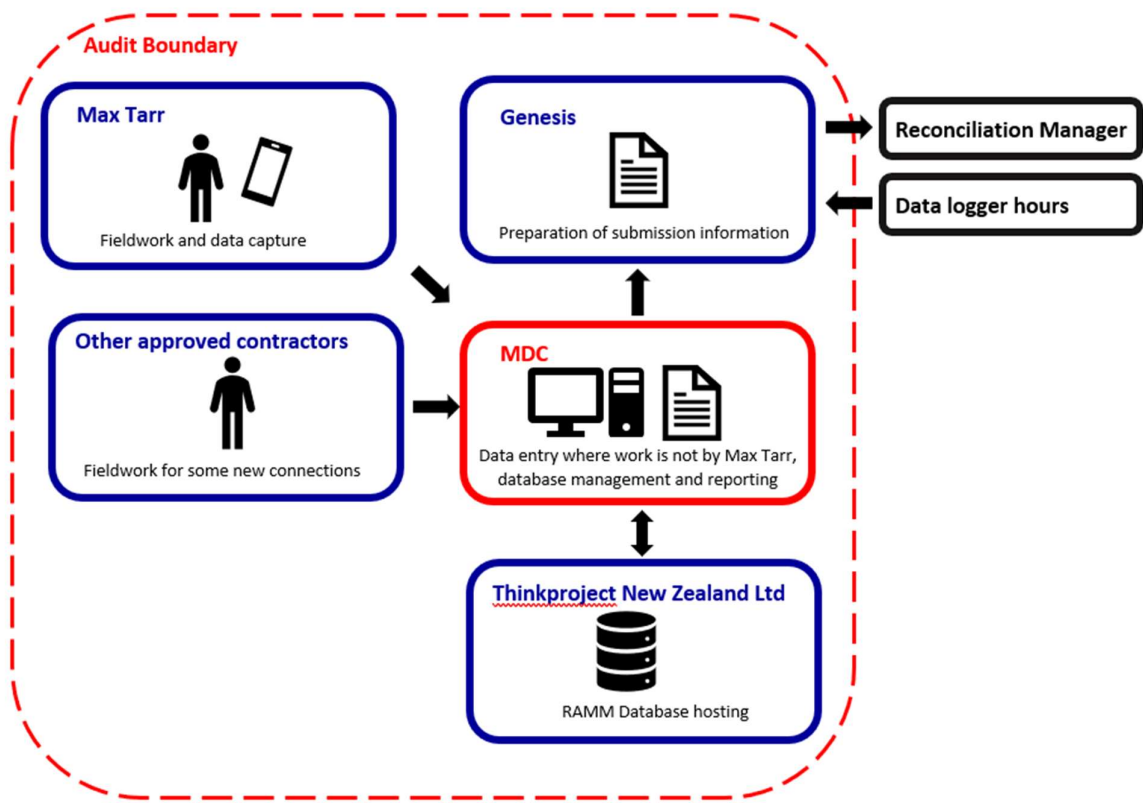
A RAMM database is held by MDC, who is Genesis' customer.

Streetlight maintenance work is completed by Max Tarr, and new connections initiated by MDC are completed by Max Tarr or other Powerco approved contractors on a project basis. For any work completed by Max Tarr, data is collected from the field using a tablet as work is completed and then synchronised with RAMM. For new connections initiated by MDC using contractors other than Max Tarr, MDC will capture the light data using a tablet in the field.

Once the tablets are returned to the MDC office, a technician checks that the updates made in the field are consistent with the work which was expected to be completed. Any exceptions are queried with the Max Tarr or MDC staff who collected the data, and then the data is synchronised to the RAMM database.

Genesis reconciles the DUML load as NHH using the CST profile, with wattages derived from a monthly database extract provided by MDC and on and off times derived from data logger information.

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



The field audit was undertaken of a statistical sample of 228 items of load on 6 February 2024.

### 1.9. Summary of previous audit

I reviewed the last audit report completed by Tara Gannon of Veritek Limited in March 2023 for Genesis Energy. Four non-compliances were identified, and no recommendations were made. The statuses of the non-compliances are described below.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>The August 2022 submission data was not consistent with the RAMM database extract for August 2022, resulting in under submission of 4,470 kWh for August 2022.</p> <p>Three lamp models (124 lights) had different gear wattages to the expected values resulting in estimated over submission of 7,012 kWh p.a. and were corrected during the audit.</p> <p>Five lamp models (25 lights) had different gear wattages to the expected values resulting in estimated under submission of 628 kWh p.a. The wattages for 23 of the lights were corrected during the audit.</p> <p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p>	Some non-compliance still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Two Schreder - TC01 5144 - TC01 5144 which had their lamp model, gear model and wattage information removed during the audit.	Some non-compliance still existing
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Three lamp models (124 lights) had different gear wattages to the expected values resulting in estimated over submission of 7,012 kWh p.a. and were corrected during the audit.</p> <p>Five lamp models (25 lights) had different gear wattages to the expected values resulting in estimated under submission of 628 kWh p.a. The wattages for 23 of the lights were corrected during the audit.</p>	Some non-compliance still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>The August 2022 submission data was not consistent with the RAMM database extract for August 2022, resulting in under submission of 4,470 kWh for August 2022.</p> <p>Three lamp models (124 lights) had different gear wattages to the expected values resulting in estimated over submission of 7,012 kWh p.a. and were corrected during the audit.</p> <p>Five lamp models (25 lights) had different gear wattages to the expected values resulting in estimated under submission of 628 kWh p.a. The</p>	Some non-compliance still existing

Subject	Section	Clause	Non-compliance	Status
			<p>wattages for 23 of the lights were corrected during the audit.</p> <p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p>	

#### 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 Provera 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.

#### Audit commentary

Genesis reconciles this DUML load using the CST profile.

- Monthly wattage reports are provided by MDC, and
- On and off times are derived from data logger information.

I checked the submission data for January 2024 and confirmed that the submitted kWh was correctly calculated using the database extract provided by MDC, and the data logger on hours.

When I compared the database extract provided to me for the audit to the database extract provided to Genesis for submission in January 2024, the values matched for ICP 1000614912PCCE8, but I found some differences for ICP 0900087357PCBB6. I reviewed the ICP 0900087357PCBB6 differences and found they were caused by timing, ICP number differences, and different wattages being applied as described in the table below. It appears that some information is adjusted using lookup tables for lamp and gear wattages in the database extract used for submission.

Difference type	Database extract used for submission January 2024	Database extract provided for audit January 2024	Estimated submission impact (annual kWh)
Lamp details and wattage had changed indicating a likely timing difference between the extracts	Believed to be timing differences between the extracts	Believed to be timing differences between the extracts	-
Pole IDs 7514, 7515, 7516, 7517 and 7518 are recorded with 1118W each (5,590 W total) against ICP 0900087357PCBB6 in the submission extract, but have no ICP, lamp information or lamp wattage information recorded in the audit extract.  MDC confirmed that these are metered floodlights with their own ICP and therefore should be excluded from the submission data.	Incorrect – includes five lights with 1118W each which should be excluded	Correct	23,874.9 kWh of over submission
Pole IDs 7499, 7500 and 7501 at Waughs Road are recorded in the submission	Wattage is to be confirmed but	Incorrect – no lamp and wattage	-

Difference type	Database extract used for submission January 2024	Database extract provided for audit January 2024	Estimated submission impact (annual kWh)
database with no lamp model information and a lamp wattage of 120 W. They are recorded in the audit extract with no lamp information and zero wattages. These three lights are expected to be included in both extracts.	believed to be correct.	information is included in the database for these lights	
100w SON-T (HPS) x 1 recorded in the submission extract with 10 W gear and in the audit extract with 14 W gear.	Incorrect – expect 14 W gear	Correct	17.1 kWh of under submission
A - I TRON 49W x 14 recorded in the submission extract with 45 W and in the audit extract with 49 W.	Incorrect – expect 49 W per light	Correct	239.2 kWh of under submission
B - I TRON 54W x 14 recorded in the submission extract with 48 W and in the audit extract with 54 W.	Incorrect – expect 54 W per light	Correct	358.8 kWh of under submission
C - I TRON 66W x 14 recorded in the submission extract with 60 W and in the audit extract with 66 W.	Incorrect – expect 66 W per light	Correct	3,613.3 kWh of under submission
CREE XSP1 T3EU/T4 G x 4 recorded in the submission extract with 27 W and in the audit extract with 29 W.	Incorrect – expect 29 W per light	Correct	34.2 kWh of under submission
CREE XSP1 T3EU/T4 I x 4 recorded in the submission extract with 15 W and in the audit extract with 27 W.	Incorrect – expect 27 W per light	Correct	205.0 kWh of under submission
D - I TRON 79.5 x 11 recorded in the submission extract with 72 W and in the audit extract with 79.5 W.	Incorrect – expect 79.5 W per light	Correct	352.4 kWh of under submission
E - I TRON 97.5W x 156 recorded in the submission extract with 90 W and in the audit extract with 97.5 W.	Incorrect – expect 97.5 W per light	Correct	4,965.0 kWh of under submission
Total (excluding differences assumed to be timing)			14,089.9 kWh of over submission

I recommend that the differences are investigated to ensure that submission is based on complete, accurate and current RAMM data.

Description	Recommendation	Audited party comment	Remedial action
Deriving submission information Ensure that database extracts used for	The audit identified differences between a RAMM extract provided for the audit in January 2024, and the RAMM	Genesis will investigate the differences in RAMM extract vs what is received for submissions.	Investigating

Description	Recommendation	Audited party comment	Remedial action
submission match current RAMM values	extract used for submission by Genesis in January 2024. Ensure that the database information provided for submission is consistent with the current values in RAMM.		

Examination of the database found:

Issue	Estimated volume information impact (Annual kWh)
Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within $\pm 5\%$ .	Over submission of 3,500 kWh p.a.
Pole IDs 7499, 7500 and 7501 at Waughs Road, which were installed by MDC as part of a turning bay but no lamp make, lamp model, lamp wattage or gear wattage is recorded. The light details are to be confirmed, and then the database will be updated.	Unknown under submission
Pole IDs 7203 and 7202 at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero-gear wattage.	-
Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.	-
Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS).	Over submission of 42 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

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

Data is reported as a snapshot and includes the installation and change dates. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes. Genesis is not receiving daily capacity values to enable compliance to be achieved with the requirement outlined in the Authority's memo. I verified that for the January 2024 submission no changes occurred during the month and the same values applied for each day. Genesis completes revision submissions where corrections are required.

#### Audit outcome

Non-compliant





MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy	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 whether an ICP is recorded for each item of load.

### Audit commentary

The analysis found that all items of load had valid ICP numbers recorded against them, except:

ICP group	Count of items	Total wattage	Comment
NZTA Urban	196	28,308	These lights are the responsibility of NZTA, and the energy is reconciled and billed under another agreement and captured in an NZTA database. They are listed in the database for completeness.
Private	76	6,238	These lights are privately owned and not the responsibility of MDC. They are recorded in the database for completeness so that if a fault is logged for a private light the caller can be advised that the end user needs to arrange the repair. It is expected that private lights will be metered through the customer's installation, or the network should create standard or shared unmetered load as appropriate.  Powerco have contacted MDC regarding their private lights, and is in the process of contacting consumers with private lights to determine whether they are still required. If not required they will be decommissioned, and if required they will be allocated to a metered or unmetered load ICP.
Blank	10	0	These lights are situated at Victoria Park and are metered floodlights, and do not need to be included in database submissions. They are listed in the database for completeness.

### Audit outcome

Compliant

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

### Code reference

Clause 11(2)(b) of Schedule 15.3

### Code related audit information

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

#### **Audit observation**

The database was checked to confirm the location is recorded for all items of load connected to ICP 0900087357PCBB6 and 1000614912PC.

#### **Audit commentary**

The database contains fields for road names, house numbers, pole numbers and GPS coordinates.

1,916 (99.9%) of the 1,921 lamps connected to ICPs 0900087357PCBB6 and 1000614912PCCE8 have valid GPS coordinates recorded. The other five lamps have road names, pole numbers and location numbers which allow them 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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

#### **Audit commentary**

The database contains fields for lamp make and model, lamp wattage and gear wattage. All items of load connected to ICP 0900087357PCBB6 and 1000614912PCCE8 have a valid lamp model and a non-zero lamp and gear wattage in the database extract provided except:

- pole IDs 7499, 7500 and 7501 at Waughs Road, which were installed by MDC as part of a turning bay, but no lamp make, lamp model, lamp wattage or gear wattage is recorded; the light details are to be confirmed, and then the database will be updated,
- pole IDs 7203 and 7202 at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero-gear wattage.

Two lights connected to pole ID 7513 at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded; they are metered floodlights, and not required to be reported as part of the DUML load. Non-compliance is recorded in **sections 2.1, 3.1** and **3.2** because an incorrect ICP number is recorded for these lights.

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

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3  From: 19-Jan-24 To: 19-Jan-24	Three lights at Waughs Road were installed at a turning bay by MDC but do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.  Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.  Potential impact: Low  Actual impact: Low  Audit history: Multiple times  Controls: Strong  Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	Controls are rated as strong, the exceptions with a wattage difference all related to one lamp installation job where the light details were not loaded into the database by Max Tarr.  The impact is assessed to be low based on the number and type of discrepancies. Revised submission data is expected to be provide once the wattages for the lights at Waughs Road are confirmed.		
Actions taken to resolve the issue		Completion date	Remedial action status
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy		Continuous Improvement	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy		Continuous Improvement	

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

**Code reference**

Clause 11(2A) of Schedule 15.3

**Code related audit information**

*The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.*

**Audit observation**

The field audit was undertaken of a statistical sample of 228 items of load on 6 February 2024. The sample was selected from three strata, as follows:

- road name A - Home,
- road name Huff - Nort, and
- road Name Nuku - Z.

**Audit commentary**

The field audit discrepancies are detailed in the table below.

Street	Field count	Database count	Light count difference	Wattage recorded incorrectly	Comments
A'COURT STREET - SANSON	5	6	+1	-	One 22W LED (pole 475837) outside number 6 is missing from the database.
ALEXANDER FLATS (PRIVATE) - FEILDING	3	3	-	1	One 16W LED and one 22W LED are recorded in the database as 70W SON.
HEDGES STREET - SANSON	7	7	-	1	One 22W LED (pole ID 1916) is recorded in the database as a 24W LED.
MEDWAY STREET - RONGOTEA	2	3	+1	-	One 22W LED (pole P35233) outside number 16-18 is not recorded in the database
NORTHFEILD RISE - FEILDING	1	2	+1	-	One 24W LED (pole L1058) outside number 1 is not recorded in the database.
<b>Total</b>	<b>228</b>	<b>231</b>	<b>+3</b>	<b>2</b>	

The field audit identified three lights which were not recorded in the database. The accuracy of the database is detailed in **section 3.1**.

### Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 2.5</p> <p>With: Clause 11(2A) of Schedule 15.3</p> <p>From: 06-Feb-24</p> <p>To: 06-Feb-24</p>	<p>The field audit identified three lights which were not recorded in the database:</p> <ul style="list-style-type: none"> <li>one 22W LED (pole 475837) outside number 6 A'Court St, Sanson,</li> <li>one 22W LED (pole P35233) outside number 16-18 Hedges St, Sanson, and</li> <li>one 24W LED (pole L1058) outside number 1 Northfield Rise, Feilding.</li> </ul> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>
Audit risk rating	Rationale for audit risk rating
<b>Low</b>	<p>Controls are rated as moderate, because three additional lights and two wattage differences were found when checking a sample of 228 lights.</p> <p>The impact is assessed to be low because:</p> <ul style="list-style-type: none"> <li>the three additional lights have resulted in under reporting of 68W or 290 kWh per annum, and</li> </ul>

	<ul style="list-style-type: none"> <li>if there was a similar error rate across the whole database, where an extra 68W found when checking a sample of 6,475W, there could be potential under submission of 3,860 kWh per annum.</li> </ul>	
Actions taken to resolve the issue	Completion date	Remedial action status
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy	Continuous improvement	

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

### Audit observation

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

### Audit commentary

The RAMM database functionality achieves compliance with the code. The change management process and the compliance of the database reporting provided to Genesis is detailed in **sections 3.1** and **3.2**.

### Audit outcome

Compliant

## 2.7. Audit trail (Clause 11(4) of Schedule 15.3)

### Code reference

*Clause 11(4) of Schedule 15.3*

### Code related audit information

*The DUMML 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

RAMM records audit trail information of all changes made.

**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	Manawatu DC region
Strata	The database contains items of load in the Manawatu area. The processes for the management of all MDC items of load are the same, and I decided to create three strata: <ul style="list-style-type: none"> <li>• road name A - Home,</li> <li>• road name Huff - Nort, and</li> <li>• road Name Nuku - Z.</li> </ul>
Area units	I created a pivot table of the roads in each stratum, and I used a random number generator in a spreadsheet to select a total of 47 sub-units (roads), making up 8% of the entire database wattage.
Total items of load	228 items of load were checked.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority and Veritek, or the manufacturer's specifications.

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

##### Audit commentary

##### Field Audit Findings

A field audit was conducted of a statistical sample of 228 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	99.1	Wattage from survey is higher than the database wattage by 0.8%
R <sub>L</sub>	92.8	With a 95% level of confidence, it can be concluded that the error could be between -7.2% and +1.6%.
R <sub>H</sub>	101.6	

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, and the best available estimate is not precise enough to conclude that the database is accurate within  $\pm 5\%$ :

- in absolute terms the installed capacity is estimated to be 1.0 kW lower than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 6 kW lower and 1 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 3,500 kWh lower than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 26,400 kWh lower and 5,800 kWh p.a. higher than the database indicates.

Scenario	Description
<b>A - Good accuracy, good precision</b>	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 $\pm 5\%$ ; and (b) this is the best outcome.
<b>B - Poor accuracy, demonstrated with statistical significance</b>	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
<b>C - Poor precision</b>	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 $\pm 5\%$

#### Lamp description and capacity accuracy

All items of load connected to ICPs 0900087357PCBB6 and 1000614912PCCE8 have a valid lamp model and a non-zero lamp and gear wattage in the database extract provided except:

- pole IDs 7499, 7500 and 7501 at Waughs Road, which were installed by MDC as part of a turning bay, but no lamp make, lamp model, lamp wattage or gear wattage is recorded; the light details are to be confirmed, and then the database will be updated,
- pole IDs 7203 and 7202 at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero-gear wattage, and

Lamp and gear wattages for items of load connected to ICPs 0900087357PCBB6 and 1000614912PCCE8 were checked for alignment with the published standardised wattage table produced by the Electricity Authority or the LED light specification. Two exceptions were identified:

Lamp Make and model	Pole ID(s)	Quantity	Recorded gear wattage	Expected gear wattage	Wattage difference
Teceo 1 5144 63W	7203 and 7202	2	Blank	0	0
150w SON-T (HPS) - 150W	3028	1	28	18	+10
<b>Total</b>		<b>3</b>	<b>+10 W or 42.71 kWh of over submission pa</b>		

### ICP Accuracy

As discussed in **section 2.2** all items of load had valid ICP numbers recorded against them, except 196 lights which are the responsibility of NZTA and recorded in a separate database, and 76 private lights which MDC is not responsible for.

Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.

### Change management process findings

A RAMM database is held by MDC, who is Genesis' customer.

Streetlight maintenance work is completed by Max Tarr, and new connections initiated by MDC are completed by Max Tarr or other Powerco approved contractors on a project basis. For any work completed by Max Tarr, RAMM is updated from the field using a tablet as work is completed. For new connections initiated by MDC using contractors other than Max Tarr, MDC will capture the light data using a tablet in the field. Review of the whole database found that lights at a turning bay in Waughs Road loaded by MDC were missing lamp and wattage information.

Once the tablets are returned to the MDC office, a technician checks that the updates made in the field are consistent with the work which was expected to be completed. Any exceptions are queried with the Max Tarr or MDC staff who collected the data, and then the data is synchronised to the RAMM database.

Where new connections are initiated by developers for new subdivisions, lights are checked and added to the database once they are vested and MDC takes responsibility for them. The information is loaded into RAMM based on plans and "as built" information provided by the developer, and field checks are conducted to ensure that the lights installed match the plan. If the lights are vested after electrical connection, then that period of connection will not be recorded in RAMM. The lights are still the responsibility of the developer at that time and the distributor at the point of electrical connection must ensure that a trader has taken responsibility for the lights.

The LED upgrade is complete and outage patrols are completed by an engineer fortnightly to monthly selecting a different area of the network each time. Any issues are recorded in RAMM using a tablet.

MDC has no plans to use dimming or a CMS.

### Festive lights

Some Christmas and festive lights are used and are included in the database. Database extracts provided to Genesis include the most recent festive lighting "on" and "off" dates and MDC highlights whether Genesis should use the monthly wattage including or excluding festive lighting for that month.

MDC believes that some of the festive lights may no longer be used, and that over submission may be occurring.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy Festive light accuracy	When festive lights are next installed, complete a stocktake to confirm which lamps are still in use and update the database accordingly.	MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy.	Identified

### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1</p> <p>With: Clause 15.2 and 15.37B(b)</p> <p>From: 19-Jan-24</p> <p>To: 06-Feb-24</p>	<p>Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math> leading to potential over submission of 3,500 kWh per annum.</p> <p>Three lights at Waughs Road which were installed at a turning bay by MDC do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p> <p>Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.</p> <p>Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have zero.</p> <p>Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS) leading to over submission of 42 kWh per annum.</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: Twice</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>Controls are rated as moderate overall:</p> <ul style="list-style-type: none"> <li>based on the field audit the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math>, and</li> <li>most information is accurate.</li> </ul> <p>The impact is assessed to be low based on the kWh differences described above.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy		Continuous improvement	Identified

Preventative actions taken to ensure no further issues will occur	Completion date
MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy	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 all ICPs have the correct profile and submission flag, and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

#### Audit commentary

Genesis reconciles this DUML load using the CST profile.

- Monthly wattage reports are provided by MDC, and
- On and off times are derived from data logger information.

I checked the submission data for January 2024 and confirmed that the submitted kWh was correctly calculated using the database extract provided by MDC, and the data logger on hours.

When I compared the database extract provided to me for the audit to the database extract provided to Genesis for submission in January 2024, the values matched for ICP 1000614912PCCE8, but I found some differences for ICP 0900087357PCBB6. I reviewed the ICP 0900087357PCBB6 differences and found they were caused by timing, ICP number differences, and different wattages being applied. The differences are set out in a table in **section 2.1** and are estimated to result in over submission of 14,089.9 kWh per annum.

Examination of the database found:

Issue	Estimated volume information impact (Annual kWh)
Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within $\pm 5\%$ .	Over submission of 3,500 kWh p.a.
Pole IDs 7499, 7500 and 7501 at Waughs Road were installed by MDC as part of a turning bay but no lamp make, lamp model, lamp wattage or gear wattage is recorded. The light details are to be confirmed, and then the database will be updated.	Unknown under submission

Issue	Estimated volume information impact (Annual kWh)
Pole IDs 7203 and 7202 at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero-gear wattage.	-
Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.	-
Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS).	Over submission of 42 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

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

Data is reported as a snapshot and includes the installation and change dates. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes. Genesis is not receiving daily capacity values to enable compliance to be achieved with the requirement outlined in the Authority's memo. I verified that for the January 2024 submission no changes occurred during the month and the same values applied for each day. Genesis completes revision submissions where corrections are required.

### Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)	<p>The database extract provided for the audit in January 2024 was not consistent with the database extract provided for submission in January 2024. Some of the differences appear not to relate to timing of light changes. The differences could result in over submission of 14,089.9 kWh per annum.</p> <p>Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math> leading to potential over submission of 3,500 kWh per annum.</p> <p>Three lights at Waughs Road were installed at a turning bay by MDC but do not have lamp model, lamp wattage or gear wattage recorded. The light details are to be confirmed.</p> <p>Two lights at Leithbridge Street do not have lamp model, lamp wattage or gear wattage recorded. They are metered floodlights, and not required to be reported as part of the DUML load and should not be recorded against DUML ICP 0900087357PCBB6. Zero wattage is recorded against these lights so there is no impact on submission.</p> <p>Two lights at Kimbolton-Stafford roundabout have a blank gear wattage but are expected to have a zero.</p>

<p>From: 01-Jan-24 To: 06-Feb-24</p>	<p>Pole ID 3028 had a 150w SON-T (HPS) - 150W lamp type with a gear wattage for a 250W SON-T (HPS) leading to over submission of 42 kWh per annum.</p> <p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 4</p>		
<b>Audit risk rating</b>	<b>Rationale for audit risk rating</b>		
<p><b>Medium</b></p>	<p>Controls are rated as moderate overall:</p> <ul style="list-style-type: none"> <li>• based on the field audit the best available estimate is not precise enough to conclude that the database is accurate within <math>\pm 5\%</math>,</li> <li>• most information is accurate, and</li> <li>• the values applied for submission are adjusted and not consistent with the raw data from RAMM. It appears that in some cases the adjustments increased accuracy, and others decreased accuracy.</li> </ul> <p>The impact is assessed to be medium, based on the kWh differences described above. Revised submission data will be provided through the wash up process.</p>		
<b>Actions taken to resolve the issue</b>	<b>Completion date</b>	<b>Remedial action status</b>	
<p>MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy</p>	<p>Continuous improvement</p>	<p>Identified</p>	
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>		
<p>MDC are aware of the findings and Genesis will continue to work with MDC in improving their database accuracy</p>	<p>Continuous improvement</p>		

## CONCLUSION

A RAMM database is held by MDC, who is the customer of Genesis. Streetlight maintenance work is completed by Max Tarr, and new connections initiated by MDC are completed by Max Tarr or other Powerco approved contractors on a project basis. For any work completed by Max Tarr, RAMM is updated from the field using a tablet as work is completed. For new connections initiated by MDC using contractors other than Max Tarr, MDC will capture the light data using a tablet in the field which is then synchronised with RAMM.

Based on the field survey of 228 items of load on 6 February 2024, the best available estimate is not precise enough to conclude that the database is accurate within  $\pm 5\%$  leading to potential over submission of 3,500 kWh per annum.

Genesis reconciles the DUML load as NHH using the CST profile, with wattages derived from a monthly database extract provided by MDC and on and off times derived from data logger information. The database extract provided for the audit in January 2024 was not consistent with the database extract provided for submission in January 2024. Some of the differences do not appear to relate to timing of light changes. The differences could result in over submission of 14,089.9 kWh per annum.

In all five non-compliances were identified and two recommendations are made. The future risk rating of 13 indicates that the next audit be completed in 12 months, and I agree with this recommendation.

## Participant response

Genesis will continue to work with and build on their relationship with the council to increase accuracy levels in their database. Genesis has previously provided MDC a template for tracking of changes and will continue to discuss the importance.

Genesis agrees with the audit findings.