ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

MANAWATU DISTRICT COUNCIL AND GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 10 January 2022

Date audit report completed: 1 March 2022

Audit report due date: 1 March 2022

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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.

The MDC DUML database switched to Genesis from 1 September 2021.

A RAMM database is held by MDC, who is Genesis' customer. MDC use three contractors to work on the streetlight network, East Coast Lines (C & J Contracting), Alf Downs and Max Tarr. Work is allocated on a project basis. The contractors provide invoices and supporting paperwork to MDC, who use this information to update RAMM.

A monthly report from the database is provided to Genesis and used to calculate submissions. On hours are derived from data logger information.

This audit found the database to be less accurate than the last audit which has increased the audit risk rating score. Overall, the processes in place will mitigate risk to an acceptable level but there is room for improvement.

Three non-compliances were identified, and no recommendations were raised. The future risk rating of 12 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in 12 months from the audit due date.

The late submission of the audit report is not recorded as a non-compliance as the draft audit report was provided prior to the due date and the delay has been due to the responses being late in being received.

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	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum. 171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. 191 items of LED load incorrectly recorded with ballast. The overall wattage value is correct so there is no impact on reconciliation. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. 191 items of LED load incorrectly recorded with ballast. The overall wattage value is correct so there is no impact on reconciliation. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum.				
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum. 171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Future Risk Rating						12	

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

RECOMMENDATIONS

Subject	Section	Recommendation
Database accuracy	3.1	Correct identified LED lights to record total wattage as lamp wattage.

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

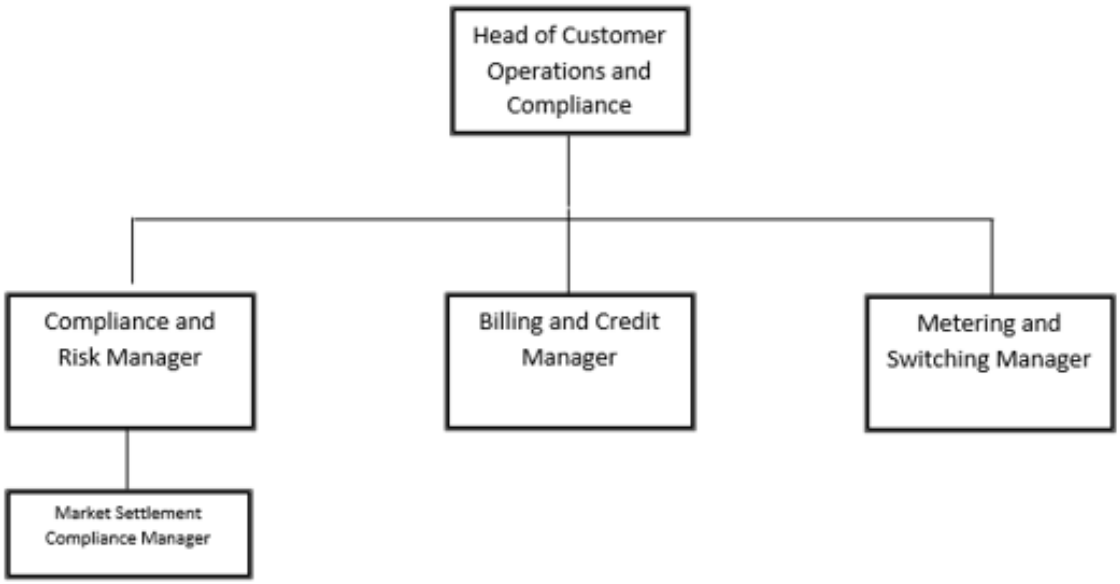
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Daniel Chu	Asset Management Coordinator (acting on behalf of MDC)	Rangitikei District Council
Darryn Black	Asset Management Team Leader	Manawatu District Council
Julia Jones	DUML Data & Stakeholder Lead - Market Settlement Compliance	Genesis Energy

1.4. Hardware and Software

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.

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	KAWAKAWA RD STREETLIGHTING	BPE0331	CST	1,910	86,349

ICP 1000560474PC712 previously associated with this database is ready to be decommissioned. The database has one item of load associated with it. This needs to be updated to ICP 0900087357PCBB6. The number of lights associated with the MDC database has decreased since the last audit as the NZTA lights are now reconciled against the NZTA lower North Island RAMM database.

1.7. Authorisation Received

All information was provided directly by Genesis and MDC.

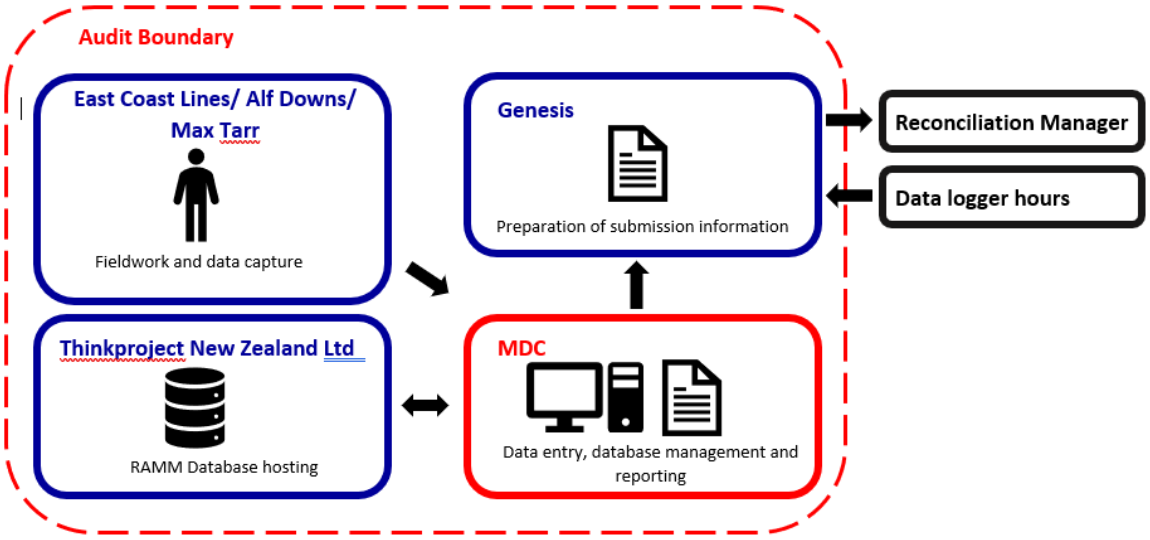
1.8. Scope of Audit

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. MDC use three contractors to work on the streetlight network, East Coast Lines (C & J Contracting), Alf Downs and Max Tarr. Work is allocated on a project basis. The contractors provide invoices and supporting paperwork to MDC, who use this information to update RAMM.

A monthly report from the database is provided to Genesis and used to calculate submissions. On hours are 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 183 items of load on 17 January 2022.

1.9. Summary of previous audit

I reviewed the last audit report completed by Rebecca Elliot of Veritek Limited in August 2020 for Contact Energy. Three 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	Variance found between the monthly wattage report provided to Contact and the database extract provided for this audit resulting in an estimated annualised under submission of 9,881.58 kWh. Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 7,900 kWh per annum. Nine lamps had incorrect lamp or ballast wattage applied in the DUML database which would result in a very minor estimated under submission of 188 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 7,900 kWh per annum. Nine lamps had incorrect lamp or ballast wattage applied in the DUML database which would result in a very minor estimated under submission of 188 kWh per annum.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	Variance found between the monthly wattage report provided to Contact and the database extract provided for this audit resulting in an estimated annualised under submission of 9,881.58 kWh. Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 7,900 kWh per annum. Nine lamps had incorrect lamp or wattage ballast applied in the DUML database which would result in a very minor estimated under submission of 188 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	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.

Audit commentary

Genesis reconciles this DUML load using the CST profile. The methodology for deriving submission information is compliant. On and off times are derived from data logger information.

I checked the December 2021 submission data and confirmed that the calculations matched.

The last audit found a difference of 823.47 kWh for May 2020. I noted that there appeared to be 12 more Council Amenity lights in the database extract provided for the audit, than recorded in the report provided to Genesis. This is being investigated by Genesis with the council.

Examination of the database found:

Issue	Estimated volume information impact (Annual kWh)
Eight incorrect wattages applied.	Under submission of 239 kWh
171 items of load with the incorrect ballast applied	Over submission of 5,352 kWh
191 items of LED load incorrectly recorded with ballast. The overall wattage value is correct so there is no impact on reconciliation	Nil
Incorrect ICP applied to one item of load	Under submission of 416 kWh

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. This is detailed in **section 3.1**.

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.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 03-Aug-20 To: 31-Dec-21	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum. 171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. 191 items of LED load incorrectly recorded with ballast. The overall wattage value is correct so there is no impact on reconciliation. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Moderate Breach risk rating:4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has discussed the audit findings with the MDC with the intent that council makes every effort to ensure the exceptions are rectified. Genesis will continue to work the council to define the monthly reporting requirements in regard to the tracking of changes that has occurred within the month.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	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 DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

The database was checked to confirm whether an ICP is recorded for each item of load.

Audit commentary

All items of load have an ICP number recorded, or the owner is noted as NZTA or Private. The accuracy of the ICP application is discussed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

Street addresses and GPS coordinates are recorded for all items of load.

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

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

Audit observation

The database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage and that all items of load were recorded.

Audit commentary

Lamp model, lamp wattage and gear wattage are included in the database. The accuracy of these is discussed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

The field audit was undertaken of a statistical sample of 183 items of load on 17 January 2022.

Audit commentary

The field audit findings are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
CHURCH STREET	24	24	-	4	3x 97.5W LEDs recorded as 105W LEDs. 1x 69W LED recorded as 49W LED.
HEDGES STREET	7	7	-	1	1x 22W LED recorded as 24W LED.
KAIRANGA BUNNYTHORPE ROAD	3	3		2	2x 97.5W LEDs recorded as 105W LEDs.
QUEEN STREET	7	7	-	1	1 x 97.5W LED recorded as 105W LED.
SANDOWN AVENUE	4	3	-1	1	1x pole with no light head recorded as 35W LED. 1 x 35W LED recorded as 75W LED
WELD STREET	14	14	-	2	2x 97.5W LEDs recorded as 105W LEDs.
Total	**183**	**182**	**-1**	**11**	

The field audit did not identify any lights which were present in the field but not recorded in the database.

The accuracy of the database is detailed in **section 3.1**.

Audit outcome

Compliant

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The 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 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

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: • Street name A-H, • Street name K-O, and • Street name P-Y.
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 41 sub-units (roads), making up 9% of the entire database wattage.
Total items of load	183 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 183 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	96.7	Wattage from survey is lower than the database wattage by 3.3%
R_L	89.6	With a 95% level of confidence, it can be concluded that the error could be between -10.4% and -0.3%.
R_H	99.7	

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 10.4% and 0.3% 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 3.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 9 kW lower and the same as the database.

In absolute terms, total annual consumption is estimated to be 12,000 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 120,000 and 38,300kWh p.a. lower than the database indicates. The sample included eight of the 158 97.5W LEDs that are incorrectly recorded as 105W in the database. Once these are corrected, I believe that the database accuracy would greatly improve. These are discussed below.

Scenario	Description
A - **Good accuracy, good precision**	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - **Poor accuracy, demonstrated with statistical significance**	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level

Scenario	Description
C - **Poor precision**	This scenario applies if: (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Lamp description and capacity accuracy

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. Festive light wattages have been checked by MDC with a clamp meter in the past and were confirmed to be correct.

I found eight wattage discrepancies. The same light type discrepancy was recorded in the last audit.

Lamp Model	Quantity	Recorded total wattage	Expected lamp wattage	Difference (W)
CREE XSP1 T3EU/T4 G	4	27	29	8
CREE XSP1 T3EU/T4 I	4	15	27	48
Total				56

This will result in an estimated under submission of 56W or 239 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). The very minor estimated amount of under submission is recorded as non-compliance below.

Lamp Model	Quantity	Recorded total wattage	Expected total wattage	Difference (W)
100w SON-T (HPS)	2	110	114	8
150w SON-T (HPS)	1	168	178	-10
36w Single Fluorescent Tube	4	46	40	24
E - I TRON 97.5W	158	97.5	105	-1,185
F - ITRON 116w	6	116	131	-90
Total				-1,123

This will result in an estimated over submission of 1,125W or 5,352 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). The estimated amount of over submission is recorded as non-compliance below.

I found a further four types of LED light that have gear wattage recorded but the overall lamp total is correct:

Lamp Model	Quantity	Lamp Wattage	Gear Wattage	Expected lamp wattage
A - I TRON 49W	16	45	4	49
B - I TRON 54W	14	48	6	54
C - I TRON 66W	149	60	6	66
D - I TRON 79.5	12	72	7.5	79.5
TOTAL	191			

I recommend that the lamp wattage is corrected, and the ballast recorded as zero.

Recommendation	Description	Audited party comment	Remedial action
Database accuracy	Correct identified LED lights to record total wattage as lamp wattage.	Genesis has discussed the audit findings with the council with the intent that council makes every effort to ensure the exceptions are rectified.	Identified

ICP Accuracy

ICP 1000560474PC712 previously associated with this database is ready to be decommissioned. The database has one item of load associated with it. This needs to be updated to ICP 0900087357PCBB6. This will result in an estimated under submission of 97.5W or 416 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Change management process findings

Processes to track changes to the database were reviewed.

A RAMM database is held by MDC, who is Genesis' customer. MDC use three contractors to work on the streetlight network, East Coast Lines (C & J Contracting), Alf Downs and Max Tarr. Work is allocated on a project basis. The contractors provide invoices and supporting paperwork to MDC, who use this information to update RAMM.

There has been no change to the new connection process. New connections on the Powerco network are customer initiated. The customer submits plans to Powerco and MDC which are approved, and once ready the streetlights are livened by a Powerco approved contractor. An "as built" plan is provided to MDC. These lights are added to the database once the asset has been vested to council and the date of vesting is used to update the database. 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 won't 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. Council owned lights are added to RAMM with the date of electrical connection. In some cases, there may be a delay in MDC being advised that the streetlights are connected. MDC intend to work with Genesis and Powerco to ensure that new streetlights are not livened without being accepted by MDC or the developer.

The LED upgrade is complete. Some HPS lights still remain where they are attached to Powerco owned poles due to Powerco potentially undergrounding the power supply and therefore the lights will be removed. These may get replaced depending on Powerco's plans in the future. There is no CMS system in place or dimming planned of the MDC lights.

As MDC have LED lights in the field, outage patrols are completed irregularly. Outages are also reported by residents within the MDC region and work orders are raised as required.

Private lights are recorded in the database with an ICP number of "private", except where the private light is connected to a pole which has a council or NZTA light attached. Because the ICP is assigned at pole level, these lights have a valid ICP, but are recorded with zero wattage because MDC is not responsible for private lights. The private lights are with Powerco to investigate and resolve.

Some Christmas and festive lights are used and are included in the database. These lights are excluded from submissions when they are not connected, and on and off dates are advised to Genesis.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 03-Aug-20 To: 31-Dec-21	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum. 171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. 191 items of LED load incorrectly recorded with ballast. The overall wattage value is correct so there is no impact on reconciliation. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum. Potential impact: Medium Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has discussed the audit findings with the council with the intent that council makes every effort to ensure the exceptions are rectified.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	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. The methodology for deriving submission information is compliant. On and off times are derived from data logger information.

I checked the December 2021 submission data and confirmed that the calculations matched.

The last audit found a difference of 823.47 kWh for May 2020. I noted that there appeared to be 12 more Council Amenity lights in the database extract provided for the audit, than recorded in the report provided to Genesis. This is being investigated by Genesis with the council.

Examination of the database found:

Issue	Estimated volume information impact (Annual kWh)
Eight incorrect wattages applied.	Under submission of 239 kWh
171 items of load with the incorrect ballast applied	Over submission of 5,352 kWh
Incorrect ICP applied to one item of load	Under submission of 416 kWh

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. This is detailed in **section 3.1**.

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.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 03-Aug-20 To: 31-Dec-21	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated over submission of 12,000 kWh per annum. Eight lamps had incorrect lamp wattage applied in the DUML database resulting in a very minor estimated under submission of 239 kWh per annum. 171 items of load with the incorrect ballast wattage applied in the DUML database resulting in an estimated over submission of 5,352 kWh per annum. One item of load with the incorrect ICP associated with it resulting in a very minor estimated under of 416 kWh per annum. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has discussed the audit findings with the MDC with the intent that council makes every effort to ensure the exceptions are rectified. Genesis will continue to work the council to define the monthly reporting requirements in regard to the tracking of changes that has occurred within the month.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

CONCLUSION

The MDC DUML database switched to Genesis from 1 September 2021.

A RAMM database is held by MDC, who is Genesis' customer. MDC use three contractors to work on the streetlight network, East Coast Lines (C & J Contracting), Alf Downs and Max Tarr. Work is allocated on a project basis. The contractors provide invoices and supporting paperwork to MDC, who use this information to update RAMM.

A monthly report from the database is provided to Genesis and used to calculate submissions. On hours are derived from data logger information.

This audit found the database to be less accurate than the last audit which has increased the audit risk rating score. Overall, the processes in place will mitigate risk to an acceptable level but there is room for improvement.

Three non-compliances were identified, and no recommendations were raised. The future risk rating of 12 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in 12 months from the audit due date.

The late submission of the audit report is not recorded as a non-compliance as the draft audit report was provided prior to the due date and the delay has been due to the responses being late in being received.

PARTICIPANT RESPONSE

Genesis has discussed the audit findings with the MDC with the intent that council makes every effort to ensure the exceptions are rectified.

Genesis will continue to work the council to define the monthly reporting requirements in regard to the tracking of changes that has occurred within the month.