

**ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT**

For

**UPPER HUTT CITY COUNCIL AND
GENESIS ENERGY**

Prepared by: Steve Woods

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Audit report due date: 1 October 2022

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EXECUTIVE SUMMARY

This audit of the **Upper Hutt City Council (UHCC)** DUML database and processes was conducted at the request of **Genesis Energy (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 RAMM database used for submission is managed by UHCC. Fulton Hogan is the streetlight contractor, and they update the database using Pocket RAMM. UHCC sends a monthly report to Genesis. The current report is provided as a snapshot. Genesis is working with UHCC to put reporting in place that tracks load change at a daily level.

The database contains three ICPs which include all relevant items of load.

The database contains some private lighting. These do not have individual ICPs and are included in the wattage reports. UHCC are reviewing these with the intention to pass them to Wellington Electricity to create standard or shared unmetered load, as appropriate, before they are removed from the database. Recent private lighting related to the Wallaceville Estate has been connected as part of the overall subdivision lighting without individual ICPs being requested by the developer and remain unaccounted for.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	111.8	Wattage from survey is HIGHER than the database wattage by 11.8%
R _L	106.8	With a 95% level of confidence, it can be concluded that the error could be between +6.8% and +17.4%
R _H	117.4	

In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUML database indicates. This is a decline from the 9,900 kWh of over submission reported in the last audit

The audit found six non-compliances, three recommendations, and one issue were made. The future risk rating of 23 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in no more than six months' time.

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>Under submission of 1,856 kWh for August 2022 due to the incorrect calculation of volume for submission.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 120,500 kWh p.a.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p>	Moderate	High	6	Identified
Location of each item of load	2.3	11(2)(a) and (d) of Schedule 15.3	502 (12%) items of load do not have sufficient information in the database to be locatable.	Strong	Low	1	Identified
Description and capacity of load	2.4	Clause 11(2)(c) and (d) of Schedule 15.3	136 items of load with insufficient information to enable the light model to be identified.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	23 items of load not recorded in the database of the sample of 314 items of load checked.	Moderate	Low	2	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 under submission of 120,500 kWh p.a.	Moderate	High	6	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Under submission of 1,856 kWh for August 2022 due to the incorrect calculation of volume for submission.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 120,500 kWh p.a.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p>	Moderate	High	6	Identified
Future Risk Rating						23	

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

RECOMMENDATIONS

Section	Subject	Description
3.1	Database Accuracy – lights associated with private roads within Wallaceville Estate subdivision.	Genesis works with UHCC, the developer for Wallaceville Estate and Wellington Electricity to ensure ICPs are requested and created to enable this unmetered load to be accounted for retrospectively and to review the current UHCC new connection process to ensure it is clear around who is responsible for private lights, so these are not connected in error prior to appropriate ICPs being created and a responsible retailer is identified.
3.1	Database Accuracy – confirm the ownership and operation of these carpark lights to ensure this load is accounted for.	Genesis works with UHCC to confirm the ownership and operation of the carpark lights at Trentham Memorial Park and Maidstone Park to ensure this load is accounted for.
3.1	Database Accuracy – Include Belisha Beacons in the database.	Genesis works with UHCC to add Beluhsa beacon lights into the database.

ISSUES

Subject	Section	Description	Issue
ICP identifier and items of load	2.2	Mechanism to ensure identified private streetlights from DUML audits are accounted in the market settlement process.	Where private lights are identified as part of a DUML audit, the process to ensure these lights are investigated by the distributor as potential standard unmetered or shared unmetered is not well understood including the ownership or responsibility for following up with the distributor.

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

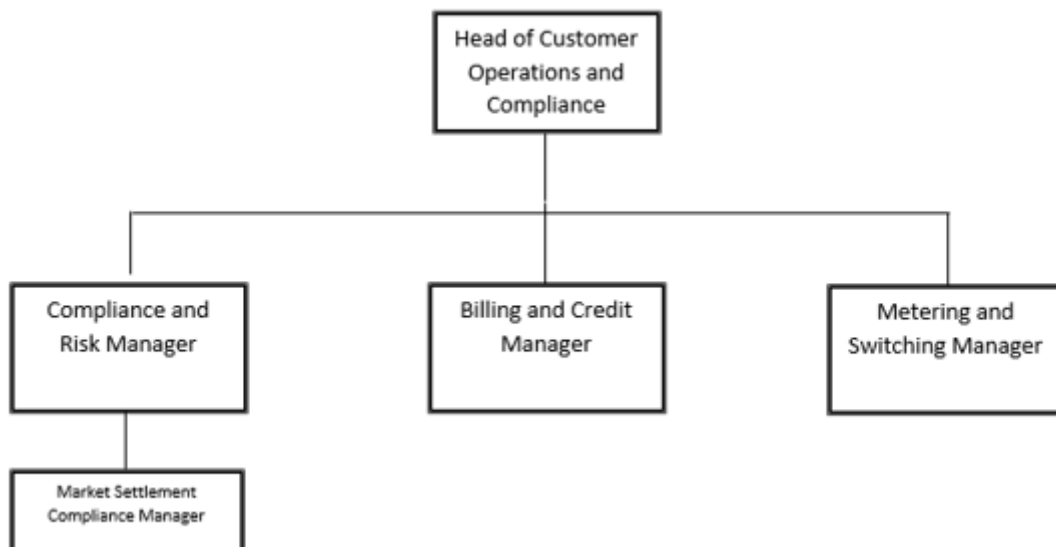
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Genesis provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Name	Company	Role
Steve Woods	Veritek Limited	Lead Auditor
Bernie Cross	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Nir Kumar	Senior Roothing Engineer - Operations	Upper Hutt City Council
Nirav Teli	DUML Data & Stakeholder Lead	Genesis Energy

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited (formerly RAMM NZ Ltd). The database is commonly known as “RAMM” which stands for “Roading Asset and Maintenance Management”. The specific module used for DUML is called RAMM Contractor.

UHCC 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)
0001255307UNA1A	SHP78 Hutt Road	UHT0331	CST	2,387	150,530
0001256870UN363	SHP1 Hutt Road	HAY0111	CST	370	12,701
0001256872UN3E6	SHP30 Hutt Road	HAY0331	CST	1,399	75,935
Total				4,156	239,166

1.7. Authorisation Received

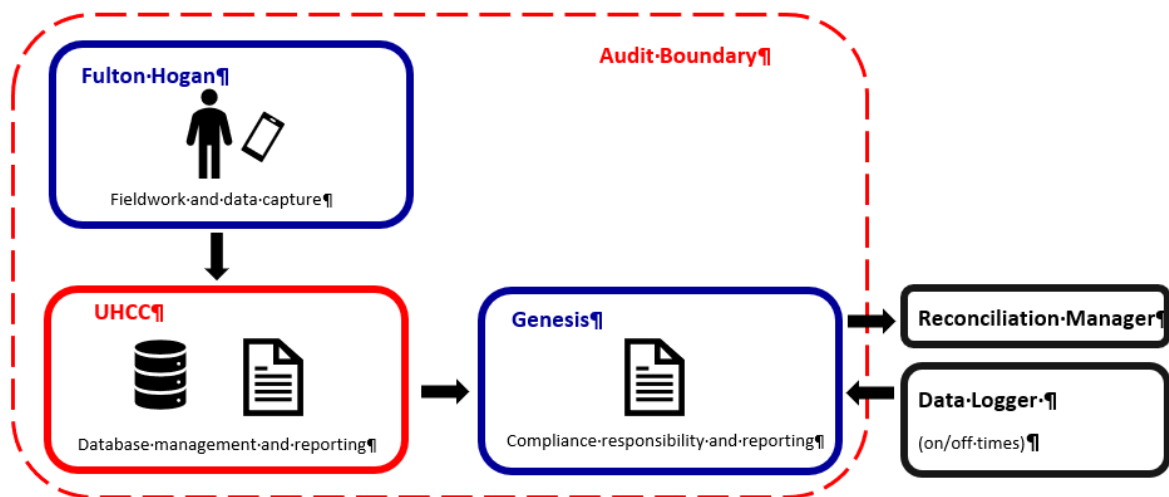
All information was provided directly by Genesis and UHCC.

1.8. Scope of Audit

A RAMM database used for submission is managed by UHCC in relation to this load. The database is remotely hosted by thinkproject New Zealand Limited. UHCC sends a monthly report to Genesis.

Field work and new light installations are carried out by Fulton Hogan. Pocket RAMM is used to update the database.

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 conducted in accordance with the audit guidelines for DUML audits version 1.1.

The field audit was undertaken of a statistical sample of 314 items of load on 23rd September 2022.

The database contains some private lighting. These do not have individual ICPs and are included in the wattage reports. UHCC is continuing to review these with the intention to pass them to Wellington Electricity to create standard or shared unmetered load, as appropriate, before they are removed from the database.

Recent private lighting related to the Wallaceville Estate associated with private roads (Kindergarten Lane, Gloaming Lane, Le Mer Lane, Desert Gold Lane and one unnamed lane) have been connected as part of the overall subdivision lighting connection without individual ICPs being requested by the developer and remain unaccounted for. This is discussed further in **section 3.1**.

1.9. Summary of previous audit

The previous audit was completed in July 2021 by Rebecca Elliot of Veritek Limited. Five non-compliances were identified. The statuses of the non-compliances and recommendation are described below.

Table of Non-compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing
Location of each item of load	2.3	11(2)(a) and (d) of Schedule 15.3	506 (13%) items of load do not have sufficient information in the database to be locatable.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three items of load not recorded in the database of the sample of 314 items of load checked.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database is outside of the allowable +/- 5% threshold. In absolute terms, total annual consumption is estimated to be 9,900 kWh lower than the DUML database indicates.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database is outside of the allowable +/- 5% threshold. In absolute terms, total annual consumption is estimated to be 9,900 kWh lower than the DUML database indicates. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
		Nil	

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. Submissions are based on the database information, with on and off times derived from data logger information.

I checked the submission calculation provided by Genesis and found the calculation for August 2022 to be different to the information provided by UHCC for ICP 0001255307UNA1A by 114 items of load and 1,856 kWh. According to the database extract provided by Genesis for UHCC there have only been five new lights installed since the end of June 2022. Non-compliance is recorded below and in **section 3.2**.

The database is outside of the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUML database indicates. This is recorded as non-compliance below and in **sections 3.1** and **3.2**.

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 monthly report is provided as a snapshot and this practice is non-compliant. The database contains a "light install date" and a "lamp install date". The light install date is populated with the electrical connection date. 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 working with UHCC to get appropriate reporting in place.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Aug-21 To: 31-Aug-22	Under submission of 1,856 kWh for August 2022 due to the incorrect calculation of volume for submission. Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 120,500 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: High Audit history: Multiple times Controls: Moderate Breach risk rating: 6		
Audit risk rating	Rationale for audit risk rating		
High	The controls are recorded as moderate as they will mitigate risk most of the time. The audit risk rating is high based on kWh variances.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has sent a revision for the volumes submitted for Aug-22. Attached snip for your reference. Genesis relies on UHCC to accurately maintain its database. Genesis has reviewed the auditors finding and will advise UHCC of requirement of visibility of tracking of change within their data base and will work with UHCC to incorporate this in the dataset.		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with the council to increase accuracy levels in their database.		01/07/2023	

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 for each item of load.

Audit commentary

All items of load have an ICP recorded.

The database contains private lighting. These do not have individual ICPs and are included in the wattage reports. UHCC are continuing to review these with the intention to pass them to Wellington Electricity to create standard or shared unmetered load, as appropriate, before they are removed from the database.

Recent private lighting related to the Wallaceville Estate associated with private roads (Kindergarten Lane, Gloaming Lane, Le Mer Lane, Desert Gold Lane and one unnamed lane) have been connected as part of the overall subdivision lighting connection without individual ICPs being requested by the developer and remain unaccounted for. Because these lights have now been livened and the subdivision has been vested to the local council there is little incentive for any participant to follow up and ensure these lights have ICPs created, and a retailer takes responsibility for. These private lights will continue to contribute towards network UFE until action is taken by the responsible participants and I have recorded the lack of progress in ensuring these lights are included in the market settlement process as an issue.

Issue	Section	Clause	Description
Mechanism to ensure identified private streetlights identified from DUML audits are accounted in the market settlement process.	2.2	Clause 11(3)(e) Part 11	Where private lights are identified as part of a DUML audit, the process to ensure these lights are investigated by the distributor as potential standard unmetered or shared unmetered is not well understood including the ownership or responsibility for following up with the distributor.

Audit outcome

Compliant

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The database contains fields for the street address and also GPS coordinates. Unlike most RAMM databases, it does not have the RPS values (distance from the end of a road) populated. Only 1,772 of 4,156 records have GPS coordinates. A further 1,882 have a street number that makes them locatable, but the remaining 502 (12%) items of load have only the street name to locate them. RAMM GIS has the location available for all items of load, but this has not been imported to the database. UHCC are continuing to investigate getting the missing GPS co-ordinates populated.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 01-Aug-21 To: 31-Aug-22	502 (12%) items of load do not have sufficient information in the database to be locatable. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as strong, as locations are available in the RAMM GIS but are not populated in the database. The impact is assessed to be low, as this has no effect on reconciliation.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has informed UHCC to populate Northings & Easting for all assets to locate them in field with the intent that UHCC takes every effort to have the dataset updated.		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with the council to increase accuracy levels in their database.		01/07/2023	

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.

Audit commentary

There is lamp make, model, lamp wattage and ballast wattage fields in the database. These were examined and found all were populated with sufficient information to determine the wattage except for 136 items of load that have the light type recorded as unknown. There is insufficient information to ensure the light model can be identified and therefore accurately assess the load for these lights. Non-compliance is recorded below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: 11(2)(c) and (d) of Schedule 15.3 From: 01-Aug-21 To: 31-Aug-22	136 items of load with insufficient information to enable the light model to be identified. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has reviewed the auditors finding and have advised UHCC to provide lamp description so model can be identified.		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with the council to increase accuracy levels in their database.		01/07/2023	

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 314 items of load.

Audit commentary

The field audit discrepancies are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
ANDREWS SERVICE LANE	6	8	+2		1x 103W LED double light listed as single light. 1x 73W LED found in the field.
CHATSWORTH ROAD	23	24	+1		1x 24W LED found in the field outside 39.
EASTERN HUTT RD (SOUTHBOUND)	29	34	+5		5x 149W LED found in the field.
FLUX ROAD	5	6	+1		1x 149W? LED found in the field.
GOLDERS ROAD	14	15	+1	1	1 additional 27W LED light. 1x 149W LED recorded as 73W LED.
GRANVILLE STREET	7	7		3	1x 149W LED recorded as 73W LED. 1x 75W LED (L75) recorded as 73W LED. 1x 27W LED (L27) recorded as 24W LED.
KEYS STREET	5	7	+2	5	1 additional 27W LED light. 1 additional 103W LED light. 4x 27W LED recorded as 24W LED. 1x 73W LED recorded as 103W LED.
LANE STREET	20	20		1	1x 73W LED recorded as 103W LED.
MAWAL HAKONA DRIVE EXT	15	21	+6		6 additional 15W? pillar lights identified in lane not labelled as private road.
NORBERT STREET	10	11	+1		1 additional 70W HPS light.
S/LANE HSE NO 18 BONNIE GLEN CR	1	1		1	1x 27W LED (L27) recorded as 24W LED.
SUNSTONE CRESCENT	13	13		2	1x 27W LED (L27) recorded as 24W LED. 1x 149W LED recorded as 73W LED.
TAWAI STREET	5	6	+1		1 additional 24W LED light.
TOTARA PARK/CALIFORNIA ROUNDABOUT	7	8	+1		1 additional 149W LED light.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
WALLACEVILLE ROAD	2	2		2	1x 149W LED recorded as 73W LED. 1x 73W LED recorded as 103W LED.
WEKA GROVE	7	7		1	1x 27W LED (L27) recorded as 24W LED.
WHITTEN WAY	3	5	+2		2 additional 29W LED lights.
Total			23	16	

This clause relates to lights in the field not recorded in the database. 23 additional items of load were found in the field. This is recorded as non-compliance below. 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: 01-Aug-21 To: 31-Aug-22	23 items of load not recorded in the database of the sample of 314 items of load checked. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
Low	The controls are recorded as moderate as they will mitigate risk most of the time. The impact on settlement and participants is minor; therefore, the audit risk rating is low.	
Actions taken to resolve the issue		Completion date
Genesis has reviewed the auditors finding and have advised UHCC of the discrepancy with the intent that UHCC makes every effort to ensure the exceptions are rectified.		01/07/2023
Preventative actions taken to ensure no further issues will occur		Completion date
Genesis continues to work with the council to increase accuracy levels in their database.		01/07/2023
Remedial action status		
Identified		

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

UHCC demonstrated 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	UHCC region
Strata	<p>The database contains items of load in Upper Hutt area.</p> <p>The processes for the management of all UHCC items of load are the same, and I decided to create five similar size strata based on road name:</p> <ul style="list-style-type: none"> • A-D • E-K • L-O • P-S • T-K
Area units	I created a pivot table of the roads, and I used a random number generator in a spreadsheet to select a total of 40 sub-units.
Total items of load	314 items of load were checked.

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

Audit commentary

Field Audit Findings

A field audit was conducted of a statistical sample of 314 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	111.8	Wattage from survey is HIGHER than the database wattage by 11.8%.
R _L	106.8	With a 95% level of confidence, it can be concluded that the error could be between +6.8% and +17.4%.
R _H	117.4	

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 B applies.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.8% and 17.4% higher than the wattage recorded in the DUMML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 28 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 16.0 kW lower to 42 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUMML database indicates.

There is a 95% level of confidence that the annual consumption is between 69,300kWh p.a. to 177,400 kWh p.a. higher than the database indicates.

Scenario	Description
<p>A - Good accuracy, good precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 <p>The conclusion from this scenario is that:</p> <ul style="list-style-type: none"> (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
<p>B - Poor accuracy, demonstrated with statistical significance</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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. <p>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level</p>
<p>C - Poor precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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 <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>

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority, and the manufacturer’s specifications where they were not included in the standardised wattage table. All wattages and ballast wattages were found to be correct.

Wattage and ballast accuracy findings

The database was analysed and found one lamp recorded with an incorrect lamp description XSP1IP66-SINGLE MODULE-52W but there is a 25W LED in the lamp wattage field. This was identified in the prior audit and has not yet been corrected.

The following items of load are being investigated to confirm that the correct wattage is recorded for them. They are LED signage that is supplied by a battery that charges off the streetlight circuit. I was unable to confirm if the current wattage recorded is incorrect, given the load required to be recorded

within the database is for the process to charge the battery each day and not operate the LED sign, so I have recorded compliance.

Item of load	No. of items of load	Wattage recorded
LED Illuminated 40K School Zone Sign	2	5
Cyclist Alert LED sign	5	20

Change management process findings

The RAMM database used for submission is managed by UHCC. Fulton Hogan is the streetlight contractor, and they update the database using Pocket RAMM. UHCC is installing the Telensa central management system and there are plans to use both static and dynamic dimming in the future. Genesis will be working with them to ensure that there is an appropriate profile used.

The current new connection process has previously been reviewed and remains the same. The lights are recorded in RAMM when an “as built” plan is provided to UHCC, and a field check by the Asset Engineer is completed as part of this process. UHCC notifies Genesis when new lights are ready to be livened, and Genesis provides Wellington Electricity with an approval to liven. The code details that:

Clause 10.33A(4)

No participant may electrically connect a point of connection or authorise the electrical connection of a point of connection, other than a reconciliation participant.

Therefore, when Wellington Electricity electrically connects the streetlight circuit, they are doing this as an agent to the trader.

The database contains a “light install date” and a “lamp install date”. The light install date is populated with the electrical connection date.

Recently connected private lighting related to the Wallaceville Estate associated with private roads (Kindergarten Lane, Gloaming Lane, Le Mer Lane, Desert Gold Lane and one unnamed lane) have been connected as part of the overall subdivision lighting connection without individual ICPs being requested by the developer and remain unaccounted for.

It is of concern that these lights have been connected without ICPs being requested and created and a retailer being assigned as responsible for this unmetered load. I have recorded this as an issue in **section 2.2**.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy – lights associated with private roads within Wallaceville Estate subdivision.	Genesis works with UHCC, the developer for Wallaceville Estate and Wellington Electricity to ensure ICPs are requested and created to enable this unmetered load to be accounted for retrospectively and to review the current UHCC new connection process to ensure it is clear around who is responsible for private lights, so these are not connected in error prior to appropriate ICPs being created and a responsible retailer is identified.	Genesis Energy only sends a request to live for the lights where an ICP to add the load to and ROI is provided by council. Genesis will highlight this to the council and relies on the council to add any lights to RAMM where they have requested us to send the livening request.	Identified

UHCC provides the dates the festive lights are connected to the trader, so they can include or exclude the lights in their submissions as appropriate. I checked the festive light data and expect this will be compliant as UHCC will provide the Genesis with this data and this will be included when connected.

Outage patrols occur periodically but are not as critical now that LED lighting is in place.

Parks Lighting

There are a number of sport fields within the UHCC boundaries and a number of these have car park lighting. As part of the field audit the carparks for Trentham Memorial Park, off Barton Road, and Maidstone Park, off Park Road, were visited.

It was observed at Trentham Memorial Park that there were two floodlights aimed at the carpark and these lights do not appear to be within the database.

It was observed at Maidstone Park that there were seven Phillips HPS lights positioned around the carpark and these lights do not appear to be within the database. This carpark was also visited after dark and some of these lights were operating even though the floodlights associated with the artificial sport pitches were not operational indicating these carpark lights are being operated separately to the metered sport field floodlights.

The registry was checked and confirmed that there are no individual ICPs created for the lighting at each sport field carpark. I recommend that Genesis works with UHCC to confirm the ownership and operation of these carpark lights to ensure this load is accounted for.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy – confirm the ownership and operation of these carpark lights to ensure this load is accounted for.	Genesis works with UHCC to confirm the ownership and operation of the carpark lights at Trentham Memorial Park and Maidstone Park to ensure this load is accounted for.	Genesis will discuss with UHCC to investigate and account for load as required	Identified

Belisha Beacons at pedestrian crossings

Upper Hutt City Council still has a number of operating Belisha Beacon pedestrian crossings which are not recorded within the database. The streets selected for this field audit did not have any pedestrian crossings included however a quick check of the provided database has confirm these lights are not included in the calculation of streetlight load. I recommend the Belisha Beacons are included in the database to enable an accurate calculation of DUML load.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy – Include Belisha Beacons in the database.	Genesis works with UHCC to add Beluhsa beacon lights into the database.	Genesis has reviewed the auditors finding and have advised UHCC of the discrepancy with the intent that UHCC makes every effort to ensure the exceptions are rectified.	Identified

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Aug-21 To: 31-Aug-22	Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 120,500 kWh p.a. Potential impact: High Actual impact: High Audit history: Multiple times Controls: Moderate Breach risk rating: 6		
Audit risk rating	Rationale for audit risk rating		
High	The controls are recorded as moderate as they will mitigate risk most of the time. The audit risk rating is high based on kWh variances.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis relies on UHCC to accurately maintain its database.		31/03/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with the council to increase accuracy levels in their database.		31/03/2023	

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. Submissions are based on the database information, with on and off times derived from data logger information.

I checked the submission calculation provided by Genesis and found the calculation for August 2022 to be different to the information provided by UHCC for ICP 0001255307UNA1A by 114 item of load and 1,856 kWh. According to the database extract provided by Genesis for UHCC there have only been five new lights installed since the end of June 2022. Non-compliance is recorded below and in **section 2.1**.

The database is outside of the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUML database indicates. This is recorded as non-compliance below and in **sections 2.1** and **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 monthly report is provided as a snapshot and this practice is non-compliant. The database contains a "light install date" and a "lamp install date". The light install date is populated with the electrical connection date. 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 working with UHCC to get appropriate reporting in place.

Audit outcome

Non-compliant

Non-compliance	Description
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<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)</p> <p>From: 01-Aug-21 To: 31-Aug-22</p>	<p>Under submission of 1,856 kWh for August 2022 due to the incorrect calculation of volume for submission.</p> <p>The database is outside of the allowable +/-5% threshold. In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUML database indicates.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Potential impact: High Actual impact: High Audit history: Multiple times Controls: Moderate Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
High	<p>The controls are recorded as moderate as they will mitigate risk most of the time.</p> <p>The audit risk rating is high based on kWh variances.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis has sent a revision for the volumes submitted for Aug-22. Attached snip for your reference.</p> <p>Genesis relies on UHCC to accurately maintain its database.</p> <p>Genesis has reviewed the auditors finding and will advise UHCC of requirement of visibility of tracking of change within their data base and will work with UHCC to incorporate this in the dataset</p>		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Genesis continues to work with the council to increase accuracy levels in their database.</p>		01/07/2023	

CONCLUSION

The RAMM database used for submission is managed by UHCC. Fulton Hogan is the streetlight contractor, and they update the database using Pocket RAMM. UHCC sends a monthly report to Genesis. The current report is provided as a snapshot. Genesis is working with UHCC to put reporting in place that tracks load change at a daily level.

The database contains three ICPs which include all relevant items of load.

The database contains some private lighting. These do not have individual ICPs and are included in the wattage reports. UHCC are reviewing these with the intention to pass them to Wellington Electricity to create standard or shared unmetered load, as appropriate, before they are removed from the database. Recent private lighting related to the Wallaceville Estate has been connected as part of the overall subdivision lighting without individual ICPs being requested by the developer and remain unaccounted for.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	111.8	Wattage from survey is HIGHER than the database wattage by 11.8%.
R _L	106.8	With a 95% level of confidence, it can be concluded that the error could be between +6.8% and +17.4%.
R _H	117.4	

In absolute terms, total annual consumption is estimated to be 120,500 kWh higher than the DUML database indicates. This is a decline from the 9,900 kWh of over submission reported in the last audit.

The audit found six non-compliances, three recommendations, and one issue were made. The future risk rating of 23 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments and recommend that the next audit be in no more than six months' time.

PARTICIPANT RESPONSE