ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

WHAKATANE DISTRICT COUNCIL
AND GENESIS ENERGY
NZBN: 9429037706609

Prepared by: Rebecca Elliot

Date audit commenced: 5 July 2023

Date audit report completed: 24 August 2023

Audit report due date: 25 September 2023

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EXECUTIVE SUMMARY

This audit of the **Whakatane District Council (WDC)** 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.

Genesis reconciles this DUML load using the UNM profile for two ICPs (1000023060BP0E2 and 1000023061BPCA7) and the NST profile for the remaining two ICPs (1000023042BPD32 and 1000023047BP07D). As detailed in **section 1.6**:

- ICP 1000023061BPCA7 does not have any unmetered load associated with it and should have been decommissioned in September 2020 which will have resulted in an estimated over submission to the market of 9,248 kWh since September 2020 when this was confirmed (22 months), and
- ICP 1000023042BPD32 was updated on 1 April 2021, backdated to 1 October 2019 for 11 lights in Ruatahuna as these are not connected to Telensa, so their off and on times are controlled by the network relays; the equivalent daily unmetered kWh was not removed from ICP 1000023060BP0E2, so the load is being submitted twice which will have resulted in an estimated over submission to the market of 7,850 kWh since February 2020, which was the available 14-month revision period at the time the registry was updated (30 months).

The NST profile requires that a data logger be used to calculate the volumes, but the registry figure is being used for submission. Non-compliance for the incorrect profile is recorded for ICPs 1000023047BP07D and 1000023042BPD32.

Genesis continues to use the registry figures and UML or NST profile to calculate submissions. I compared the RAMM database extract against the registry figures and found a variance resulting in an estimated annual under submission 134,438 kWh. I recommend that WDC provide a monthly report from RAMM to Genesis to use for submission. In the long-term Genesis intends to start using the output from WDC's Telensa system for on/off times and possibly for wattage information. The wattage information will need to be checked for accuracy first, because lamps of the same rated wattage do not all have the same reported wattage in Telensa.

This audit found five non-compliances and makes three recommendations. The future risk rating of 22 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 taking into account the Christmas period.

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	ICP 1000023061BPCA7 has no unmetered load associated but has not been decommissioned resulting in an estimated over submission of 9,248 kWh occurring since September 2020 to date. 11 items of load submitted on both ICP 1000023042BPD32 and 1000023060BP0E2 resulting in an estimated over submission of 7,850 kWh since February 2020 to date. Incorrect NST profile applied to ICPs 1000023047BP07D and 1000023042BPD32. Actual on/off times are different to the fixed 11.9 hours used by Genesis. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 134,438 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions.	Weak	High	9	Investigating
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	Two items of load not readily locatable.	Strong	Low	1	Investigating
All load recorded in the database	2.5	11(2A) of Schedule 15.3	Four additional items of load were found.	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	Two items of load not readily locatable. Four items of load with insufficient light description of "LED" and actual wattages are unknown. This will be resulting in a very minor amount of incorrect submission. New connections are recorded from the time of vesting, not from the time of livening.	Moderate	Low	2	Investigating
Volume information accuracy	3.2	15.2 and 15.37B(c)	ICP 1000023061BPCA7 has no unmetered load associated but has not been decommissioned resulting in an estimated over submission of 9,248 kWh occurring since September 2020 to date. 11 items of load submitted on both ICP 1000023042BPD32 and 1000023060BP0E2 resulting in an estimated over submission of 7,850 kWh since February 2020 to date. Incorrect NST profile applied to ICPs 1000023047BP07D and 1000023042BPD32. Actual on/off times are different to the fixed 11.9 hours used by Genesis. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 134,438 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions.	Weak	High	9	Investigating
Future Risk Rating						22	

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
Deriving submission information	2.1	WDC provide a monthly report from RAMM to Genesis to use for submission.
		Genesis to investigate with WDC to get a burn hours report from Telensa until it can be used for monthly reporting.
Database accuracy	3.1	Genesis to liaise with WDC and Horizon to ensure streetlight livening dates are captured in RAMM in a timely manner.

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

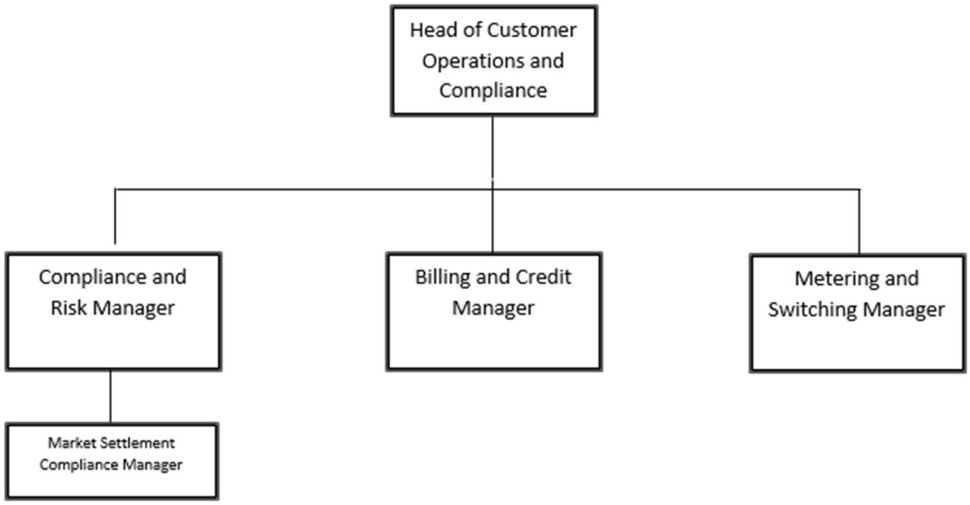
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Genesis provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Johan van Staden	Risk and Compliance Specialist	Genesis Energy
Shantelle Comer	Customer Operations Data and Systems Specialist	Genesis Energy
Aidan Glynn	Team Leader - Network Operations	Whakatane DC
Ella Barnfield	Contracts Engineer – Transportation	Whakatane DC
Wendy Bryenton	Technical Administrator	Whakatane DC

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.

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)
1000023042BPD32	Amenity Lights WDC	EDG0331	NST	0	0
1000023061BPCA7	Murupara Streetlights	EDG0331	UNM	0	0
1000023060BP0E2	Ruatahuna Streetlights	EDG0331	UNM	199	11,440
1000023047BP07D	Whakatane Streetlights	EDG0331	NST	2,341	122,662
Total				2,540	134,102

Two ICPs with no items of load are recorded in the RAMM database. These were examined and found:

- ICP 1000023061BPCA7:

  As reported in the last audit, the assets associated with ICP 1000023061BPCA7 (Murupara amenity lights) are not recorded in the RAMM database and are excluded from this audit; Whakatane DC have completed a number of checks and can find no evidence of these lights; therefore, Genesis and the Whakatane DC have agreed they do not exist, so this ICP should have been decommissioned and the resulting over submission to the market due to this is detailed in **sections 2.1** and **3.2**.

- ICP 1000023042BPD32:

  11 lights in Ruatahuna should be recorded against this ICP in the database as these are not connected to Telensa so their off and on times are controlled by the network relays and WDC are updating the ICP number in RAMM to reflect this - Genesis updated the daily unmetered kWh in the registry for these lights on 1 April 2021, backdated to 1 October 2019 but the lights are also included in the unmetered load for ICP 1000023060BP0E2 resulting in an estimated over submission to the market as detailed in **sections 2.1** and **3.2**.

1.7. Authorisation Received

All information was provided directly by Genesis and WDC.

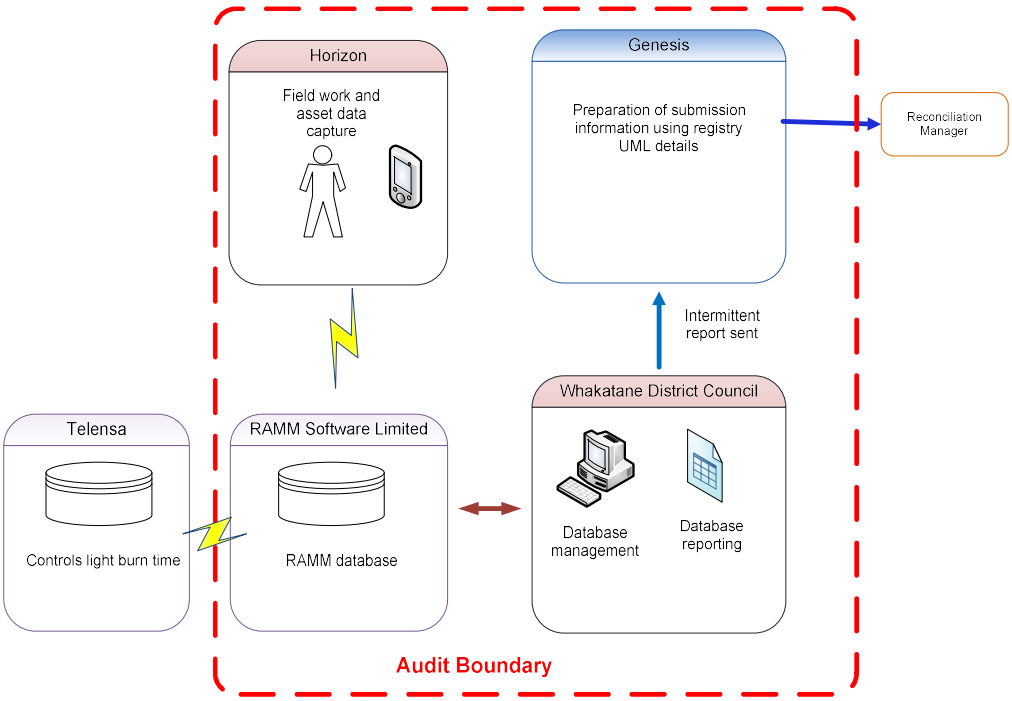
1.8. Scope of Audit

This audit of the **Whakatane District Council** (**WDC**) 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.

Horizon is engaged by WDC and conducts the fieldwork and asset data capture. WDC have a central management system called Telensa. It controls the light burn times and has replaced the network relays previously used for all but 11 lights. Genesis does not use the output from this system; therefore, I did not check the accuracy of the reporting. Genesis still uses the registry figures for submission.

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 314 items of load on 18 July 2023.

1.9. Summary of previous audit

The previous audit was completed in October 2022 by Rebecca Elliot of Veritek Limited. The last audit found four non-compliances and made one recommendation. The current status of that audit's findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Actual on/off times are different to the fixed 11.9 hours used by Genesis. Two ICPs with no unmetered load associated not decommissioned resulting in over submission of 11,064 kWh occurring since September 2020 to date. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 141,474 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions.	Still existing
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	One item of load not readily locatable.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	One item of load is not readily locatable. New connections are recorded from the time of vesting, not from the time of livening.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	Actual on/off times are different to the fixed 11.9 hours used by Genesis. Two ICPs with no unmetered load associated not decommissioned resulting in over submission of 11,064 kWh occurring since September 2020 to date. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 141,474 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions.	Still existing

Table of Recommendations

Subject	Section	Non-compliance	Status
All load recorded in database	2.5	Check additional light at the end of Kotare Drive.	Cleared

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 UNM profile for two ICPs (1000023060BP0E2 and 1000023061BPCA7) and the NST profile for remaining two ICPs (1000023042BPD32 and 1000023047BP07D). As detailed in **section 1.6**:

- ICP 1000023061BPCA7 does not have any unmetered load associated with it and should have been decommissioned in September 2020 which will have resulted in an estimated over submission to the market of 9,248 kWh since September 2020 when this was confirmed (22 months), and
- ICP 1000023042BPD32 was updated on 1 April 2021, backdated to 1 October 2019 for 11 lights in Ruatahuna as these are not connected to Telensa, so their off and on times are controlled by the network relays; the equivalent daily unmetered kWh was not removed from ICP 1000023060BP0E2, so the load is being submitted twice which will have resulted in an estimated over submission to the market of 7,850 kWh since February 2020, which was the available 14-month revision period at the time the registry was updated (30 months).

The NST profile requires that a data logger be used to calculate the volumes, but the registry figure is being used for submission. Non-compliance for the incorrect profile is recorded for ICPs 1000023047BP07D and 1000023042BPD32.

The kWh values are calculated using the registry figures. I recommend that WDC provide a monthly report from RAMM to Genesis to use for submission.

Description	Recommendation	Audited party comment	Remedial action
Deriving submission information	WDC provide a monthly report from RAMM to Genesis to use for submission.	Genesis will work with WDC to implement this system until Telensa can be used for monthly reporting and submissions.	Investigating

As noted in previous audits, there are no loggers used for this lighting load. WDC have installed a central management system called Telensa as part of the LED replacement programme of work. This has been demonstrated during a past site audit. The light burn times are controlled by light sensors in each light and the burn hours are recorded in the CMS. This has replaced the networks relays previously used. I recommend that Genesis investigate if Telensa can provide a burn hours report by ICP.

Description	Recommendation	Audited party comment	Remedial action
Deriving submission information	Genesis to investigate with WDC to get a burn hours report from Telensa until it can be used for monthly reporting.	Genesis will work with WDC to implement this system until Telensa can be used for monthly reporting and submissions.	Investigating

The calculation method used by Genesis to calculate submission will not be representative of the actual burn hours. This is recorded as non-compliance.

As reported in the last audit, the Telensa system calculates the kWh consumption across the streetlight network. Genesis has analysed the output of Telensa and concluded it is accurate. They intend to use this output once a check meter is installed, and a profile is set up. This has been delayed due to staff changes at Genesis and resource constraints at WDC, but it is intended for this to progressed.

I confirmed WDC are not dimming any of their lights at this stage.

I compared the submission volumes for the two remaining ICPs with the load recorded in the database extract provided for this audit for June 2023 against the volumes submitted by Genesis and found discrepancies for both ICPs.

ICPs	Fittings number from June 2023 submission	Fittings number from June 2023 database extract	Differences	kWh value submitted	Calculated kWh value from database	Differences
1000023060BP0E2	199	199	0	4,094.08	4,084.08	+10.62
1000023047BP07D	2,250	2,341	+91	32,730.00	43,790.33	-11,773.56
Total month kWh difference						-11,049.71

Annualised this will result in an estimated annual under submission of approximately 134,438 kWh. This is calculated on the difference in the daily kWh figures. The differences are likely to be due to changes made in the field post the date the registry was last updated which was 26 June 2019 for ICP 1000023060BP0E2 and 30 March 2021 for ICP 1000023047BP07D.

The field audit confirmed that the RAMM database if used for submission would be within the database accuracy thresholds. This is detailed in **section 3.1**.

The registry is being used to calculate submissions as monthly reporting is not being provided to Genesis, so any changes made in the database are not being reflected in submissions. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 08-Oct-21 To: 30-Jun-23	ICP 1000023061BPCA7 has no unmetered load associated but has not been decommissioned resulting in an estimated over submission of 9,248 kWh occurring since September 2020 to date. 11 items of load submitted on both ICP 1000023042BPD32 and 1000023060BP0E2 resulting in an estimated over submission of 7,850 kWh since February 2020 to date. Incorrect NST profile applied to ICPs 1000023047BP07D and 1000023042BPD32. Actual on/off times are different to the fixed 11.9 hours used by Genesis. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 134,438 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak as the submission is not calculated from the database and the burn hours used to calculate submission are fixed but are variable in the field. The impact is assessed to be high due to the submission variances.

Actions taken to resolve the issue	Completion date	Remedial action status
1000023061BPCA7 has been decommissioned by Genesis, corrections will be made within the submission period to correct this. NST profiles have been corrected in the registry.	1/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis will work with WDC to implement a database submission process until Telensa can be used for monthly reporting and submissions.	1/11/2023	

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 DUML database must contain:

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

Audit observation

The database was checked to confirm an ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP recorded against them.

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 the nearest street address, pole numbers, metres from the end of the carriageway and GPS coordinates for all but two items of load. Two items of load were not locatable:

- as reported in the last audit, pole number 6618, Ruatoki Valley Road has no location details, and
- pole number 4424, Ruatahuna SP Road has no location details.

These have been passed to WDC to add location details and is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 08-Oct-21 To: 30-Jun-23	Two items of load not readily locatable. Potential impact: Low Actual impact: None Audit history: Once previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong as the processes in place will mitigate risk to an acceptable level. The impact is assessed to be none but low is the only option available to assign.

Actions taken to resolve the issue	Completion date	Remedial action status
6618 and 4424 location details will be uploaded after these are further investigated in the field.	1/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Whakatane DC believe their controls are strong regarding location details	NULL	

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

All items of load have a lamp make, model, wattage and ballast wattage recorded 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 314 items of load on 18 July 2023.

Audit commentary

The field audit findings are shown in the table below.

Finding	Quantity
Additional lights found in the field	4
Light in the field not in the database	1
Incorrect wattage	3

The four additional lights found in the field are recorded as non-compliance.

The additional light reported in the last audit on Kotare Drive has been added to the database. 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-Sep-22 To: 30-Jun-23	Four additional items of load were found. 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 the processes in place will mitigate risk to an acceptable level. The impact is assessed to be low as the database was confirmed to be within the allowable +/-5% threshold.

Actions taken to resolve the issue	Completion date	Remedial action status
2/5 lights were added to the database that were found in the field; the remainder are still to be investigated. 2/3 wattages have been corrected, with one still to be investigated.	1/11/2023	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Whakatane DC believe their controls are strong regarding this non-compliance.	NULL	

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 database tracks additions and removals as required by this clause.

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

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 contains a complete audit trail of all additions and changes with operator ID 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

RAMM extracts have been provided periodically and these have been used to populate the registry unmetered load figures. The registry unmetered load figures are used to calculate submission. A RAMM database extract was provided in June 2023, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Whakatane District Council area
Strata	The database contains the items of load in the Whakatane region. The processes for the management of all WDC items of load are the same, but I decided to place the items of load into three strata: 1. Roads A-K, 2. Roads L-Z, and 3. Rural.
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 54 sub-units.
Total items of load	314 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 the manufacturer's specifications or in the case of LED lights against the LED light specification.

Audit commentary

Database accuracy based on the field audit.

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	101.5	Wattage from survey is 1.5% higher than the database to one decimal place
R_L	100.3	With a 95% level of confidence, it can be concluded that the error is between +0.3% or up to +3.8%
R_H	103.8	

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 A (detailed below) applies.

The conclusion from Scenario A is that the database is within the allowable +/-5% variance threshold.

In absolute terms the installed capacity is estimated to be 2.0 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is the same as the database and up to 5.0 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 8,400 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 1,600 kWh p.a. lower to 21,600 kWh p.a. higher than the database indicates.

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

Lamp description and capacity accuracy

I reviewed the database and found all had the correct wattage and ballast applied except for four items of load with "LED" recorded as the light type. This description is not sufficient to determine the correct wattage has been applied. These are all in the same street and the actual wattage is unknown. WDC intend to upgrade these. This is recorded as non-compliance.

Waka Kotahi lighting

Waka Kotahi lighting is not included in the database. Waka Kotahi lighting is expected to be reconciled from their own database.

ICP accuracy

The RAMM database is used to manage roading assets and all items of load have the correct ICP recorded against them. There are two ICPs relating to amenity lighting discussed in **section 1.6**, that have no load associated with them. This is recorded as non-compliance in **sections 2.1** and **3.2**.

Location accuracy

Analysis of the RAMM database extract found compliance for all but two items and this is recorded as non-compliance below and in **section 2.3**.

Festive Lighting

Festive lighting is connected into the metered circuits and is therefore accounted for in the metered supply.

Private Lighting

Some private lights have been identified as a result of the installation of the Telensa system as these lights were no longer turning off with the removal of the network owned relays. These were passed to Horizon networks for investigation.

Change management process findings.

Horizon is the contractor and paperwork is updated directly into RAMM by Horizon. Pocket RAMM is used by the contractors to track changes. These are reviewed by WDC before they are accepted into the database. This is done on at least a monthly basis so once a monthly wattage report is received such changes will be submitted correctly.

WDC have a central management system called Telensa. This has been demonstrated during a past site audit and controls the lights burn times. It has replaced the networks relays previously used. WDC have no plans to use dimming. The future use of the CMS system is discussed further in **sections 2.1** and **3.2**.

The Telensa CMS system tracks faults on the network and therefore outage patrols are no longer required. The system also flags if the lamp burn wattage is different to that recorded in the database. This will increase the accuracy of the data in the database. The data from the Telensa system is synchronised with the RAMM database.

The new connection process was examined and is unchanged from the previous audit. The level of new activity in the WDC area is increasing but is still relatively small. New streetlight circuits get connected by the network, but these do not get added to the RAMM database until the lights are vested to WDC. Currently the registry figures are used for submission, and this does not track changes made in the database. Once a monthly wattage report is provided such changes will be able to be accounted for in submission calculations. However, the current new connection process can result in lights being connected for some time before they get added to the database. I recommend that Genesis work with WDC and Horizon to ensure that streetlight livening dates are recorded in RAMM. The network streetlight connection processes are examined in the Horizon Distributor audit report.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy	Genesis to liaise with WDC and Horizon to ensure streetlight livening dates are captured in RAMM in a timely manner.	Genesis will work with WDC and Horizon to ensure livening dates are provided to WDC in a timely manner.	Investigating

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 08-Oct-21 To: 30-Jun-23	Two items of load not readily locatable. Four items of load with insufficient light description of "LED" and actual wattages are unknown. This will be resulting in a very minor amount of incorrect submission. New connections are recorded from the time of vesting, not from the time of livening. Potential impact: Low Actual impact: Low Audit history: Multiple times 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 audit risk rating is assessed to be low due to the error in kWh.

Actions taken to resolve the issue	Completion date	Remedial action status
The four items of load with insufficient light description have been updated. Two items with insufficient location details are being investigated.	1/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis will work with WDC and Horizon to ensure livening dates are provided to WDC in a timely manner.	1/11/2023	

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 UNM profile for two ICPs (1000023060BP0E2 and 1000023061BPCA7) and the NST profile for remaining two ICPs (1000023042BPD32 and 1000023047BP07D). As detailed in **section 1.6**:

- ICP 1000023061BPCA7 does not have any unmetered load associated with it and should have been decommissioned in September 2020 which will have resulted in an estimated over submission to the market of 9,248 kWh since September 2020 when this was confirmed (22 months), and
- ICP 1000023042BPD32 was updated on 1 April 2021, backdated to 1 October 2019 for 11 lights in Ruatahuna as these are not connected to Telensa, so their off and on times are controlled by the network relays; the equivalent daily unmetered kWh was not removed from ICP 1000023060BP0E2, so the load is being submitted twice which will have resulted in an estimated over submission to the market of 7,850 kWh since February 2020, which was the available 14-month revision period at the time the registry was updated (30 months).

The NST profile requires that a data logger be used to calculate the volumes, but the registry figure is being used for submission. Non-compliance for the incorrect profile is recorded for ICPs 1000023047BP07D and 1000023042BPD32.

The kWh values are calculated using the registry figures. I recommend in **section 2.1**, that WDC provide a monthly report from RAMM to Genesis to use for submission.

As noted in previous audits, there are no loggers used for this lighting load. WDC have installed a central management system called Telensa as part of the LED replacement programme of work. This has been demonstrated during a past site audit. The light burn times are controlled by light sensors in each light and the burn hours are recorded in the CMS. This has replaced the networks relays previously used. I recommend in **section 2.1**, that Genesis investigate if Telensa can provide a burn hours report by ICP.

The calculation method used by Genesis to calculate submission will not be representative of the actual burn hours. This is recorded as non-compliance.

As reported in the last audit, the Telensa system calculates the kWh consumption across the streetlight network. Genesis has analysed the output of Telensa and concluded it is accurate. They intend to use this output once a check meter is installed, and a profile is set up. This has been delayed due to staff changes at Genesis and resource constraints at WDC, but it is intended for this to progressed.

I confirmed WDC are not dimming any of their lights at this stage.

I compared the submission volumes for the two remaining ICPs with the load recorded in the database extract provided for this audit for June 2023 against the volumes submitted by Genesis and found discrepancies for both ICPs.

ICPs	Fittings number from June 2023 submission	Fittings number from June 2023 database extract	Differences	kWh value submitted	Calculated kWh value from database	Differences
1000023060BP0E2	199	199	0	4,094.08	4,084.08	+10.62
1000023047BP07D	2,250	2,341	+91	32,730.00	43,790.33	-11,773.56
Total month kWh difference						-11,049.71

Annualised this will result in an estimated annual under submission of approximately 134,438 kWh. This is calculated on the difference in the daily kWh figures. The differences are likely to be due to changes made in the field post the date the registry was last updated which was 26 June 2019 for ICP 1000023060BP0E2 and 30 March 2021 for ICP 1000023047BP07D.

The field audit confirmed that the RAMM database if used for submission would be within the database accuracy thresholds. This is detailed in **section 3.1**.

The registry is being used to calculate submissions as monthly reporting is not being provided to Genesis, so any changes made in the database are not being reflected in submissions. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 08-Oct-21 To: 30-Sep-22	ICP 1000023061BPCA7 has no unmetered load associated but has not been decommissioned resulting in an estimated over submission of 9,248 kWh occurring since September 2020 to date. 11 items of load submitted on both ICP 1000023042BPD32 and 1000023060BP0E2 resulting in an estimated over submission of 7,850 kWh since February 2020 to date. Incorrect NST profile applied to ICPs 1000023047BP07D and 1000023042BPD32. Actual on/off times are different to the fixed 11.9 hours used by Genesis. Variance found between the kWh figure submitted by Genesis and the RAMM database extract, resulting in an estimated annual under submission 134,438 kWh per annum. No database reporting is being provided and therefore changes made in the database are not reflected in submissions. Potential impact: High Actual impact: High Audit history: Multiple times previously Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak as the submission is not calculated from the database and the burn hours used to calculate submission are fixed but are variable in the field. The impact is assessed to be high due to the submission variances.

Actions taken to resolve the issue	Completion date	Remedial action status
1000023061BPCA7 has been decommissioned by Genesis, corrections will be made within the submission period to correct this. NST profiles have been corrected in the registry.	1/10/2023	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis will work with WDC to implement a database submission process until Telensa can be used for monthly reporting and submissions.	1/11/2023	

CONCLUSION

Genesis reconciles this DUML load using the UNM profile for two ICPs (1000023060BP0E2 and 1000023061BPCA7) and the NST profile for the remaining two ICPs (1000023042BPD32 and 1000023047BP07D). As detailed in **section 1.6**:

- ICP 1000023061BPCA7 does not have any unmetered load associated with it and should have been decommissioned in September 2020 which will have resulted in an estimated over submission to the market of 9,248 kWh since September 2020 when this was confirmed (22 months), and
- ICP 1000023042BPD32 was updated on 1 April 2021, backdated to 1 October 2019 for 11 lights in Ruatahuna as these are not connected to Telensa, so their off and on times are controlled by the network relays; the equivalent daily unmetered kWh was not removed from ICP 1000023060BP0E2, so the load is being submitted twice which will have resulted in an estimated over submission to the market of 7,850 kWh since February 2020, which was the available 14-month revision period at the time the registry was updated (30 months).

The NST profile requires that a data logger be used to calculate the volumes, but the registry figure is being used for submission. Non-compliance for the incorrect profile is recorded for ICPs 1000023047BP07D and 1000023042BPD32.

Genesis continues to use the registry figures and UML or NST profile to calculate submissions. I compared the database extract against the registry figures and found a variance resulting in an estimated annual under submission 134,438 kWh. I recommend that WDC provide a monthly report from RAMM to Genesis to use for submission. In the long-term Genesis intends to start using the output from WDC's Telensa system for on/off times and possibly for wattage information. The wattage information will need to be checked for accuracy first, because lamps of the same rated wattage do not all have the same reported wattage in Telensa.

This audit found five non-compliances and makes three recommendations. The future risk rating of 22 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 taking into account the Christmas period.

PARTICIPANT RESPONSE

Genesis and Whakatane District Council have taken on board all recommendations made by the auditor and will make corrections to ensure greater accuracy for submission and database accuracy.

Genesis will work with Whakatane District Council to establish good database submission processes on a routine basis. Both parties will also work together to establish better new connection processes with Horizon. Both parties will need time to implement these changes and ensure that corrections can be made during this time on the possible historical inaccuracies.

With an audit period of 12 months, significant improvement can be made by the next audit period with both Genesis and Whakatane District Council positive of that with all of these completed and proposed actions.