ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

FAR NORTH DISTRICT COUNCIL
AND GENESIS ENERGY

Prepared by: Steve Woods

Date audit commenced: 29 August 2020

Date audit report completed: 3 September 2020

Audit report due date: 1 September 2020

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EXECUTIVE SUMMARY

This audit of the Far North District Council (**FNDC**) DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

A RAMM database is held by FNDC, who is Genesis' customer. This database is hosted by RAMM Software Limited. FNDC engages McKay Ltd as their fieldwork and asset data capture service provider. Night inspections of all streetlights are conducted every six months and pedestrian lights are inspected every three months. There is an annual inspection of all lights which checks the condition of the equipment and accuracy of the database.

This audit found four non-compliances relating to minor inaccuracies in the database. The field audit found 100% accuracy and overall, the database has a high level of accuracy and robust controls to manage change.

The future risk rating of eight indicates that the next audit be completed in 18 months and I agree with this recommendation.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	Error in process used to calculate submission resulting in additional submission for 30 lights which would result in an annual over submission of 4,651 kWh. No input wattage being recorded for two permanently connected decorative lights in Kaeo. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Cleared for duplication in submission calculation. Identified for remainder
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	No lamp model or input wattage being recorded for two permanently connected decorative lights in Kaeo.	Moderate	Low	2	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)	One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. No lamp model or input wattage being recorded for two permanently connected decorative lights in Kaeo.	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Error in process used to calculate submission resulting in additional submission for 30 lights which would result in an annual over submission of 4,651 kWh. Incorrect status recorded for ICP 0000003759TEF13. No input wattage being recorded for two permanently connected decorative lights in Kaeo. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Cleared for duplication in submission calculation. Identified for remainder
Future Risk Rating						8	

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	Description	Recommendation
		Nil	

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

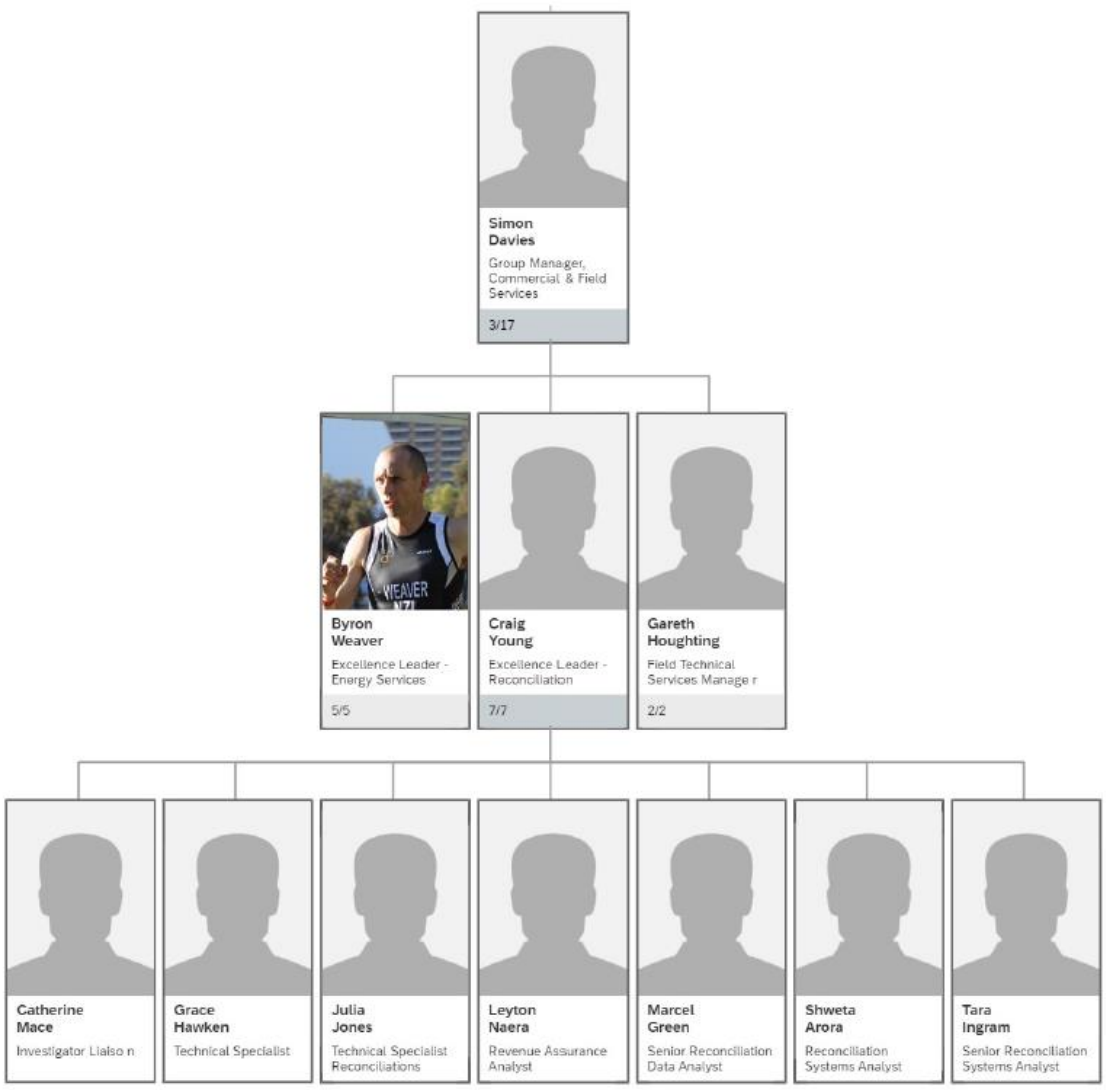
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Supporting Auditor:

Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader - Reconciliation	Genesis Energy
Grace Hawken	Technical Specialist - Reconciliations Team	Genesis Energy
Aaron Reilly	Operations Specialist Lighting & Transport	Far North District Council

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as "RAMM" which stands for "Roading Asset and Maintenance Management".

There are also 35 amenity lights not recorded in RAMM which are recorded separately in a spreadsheet and added manually to the monthly billing report.

Far North DC confirmed that the database back-up is in accordance with standard industry procedures.

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)
0000003756TE0CD	UNMETERED DECORATIVE LIGHTING	KOE1101	NST	12	561
0000910800TE359	SOUTHERN UNMETERED GROUP LIGHTING	KOE1101	NST	28	2,324

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000003545TECA7	PAI001 CARPARK DOUBLEHEADED	KOE1101	NST	32	2,436
0000910300TE057	SL1298 SOUTHERN CARPARK	KOE1101	NST	946	40,396
0000911400TEEF5	SOUTHERN UNMETERED STREETLIGHTS ON TE POLES FNDC	KOE1101	NST	273	9,962
0000003546TE067	TRIPLE HEAD STREETLIGHTS FNDC	KOE1101	NST	7	852
0000003757TEC88	DECORATIVE LIGHTING NORTHERN AREA	KOE1101	NST	3	249
0000910900TEA5D	NORTHERN UNMETERED GROUP LIGHTING	KOE1101	NST	7	581
0000003758TE356	STREETLIGHTS DOUBLE HEADS FNDC	KOE1101	NST	4	175
0000003759TEF13	STREETLIGHTS DOUBLE HEAD X 1 RECORD FNDC	KOE1101	NST	-	Reconciled under ICP 0000003758TE356
0000910200TE953	NORTHERN UNMETERED STREETLIGHTS FNDC	KOE1101	NST	487	16,359
0000911000TE2F4	NORTHERN UNMETERED STREETLIGHTS ON TE POLES FNDC	KOE1101	NST	119	4,472
Total				1,918	78,367

The ballast values are included in the wattage totals.

The data for ICPs 0000910800TE359 and 0000910900TEA5D (35 items in total) are recorded on an excel spreadsheet. These relate to amenity lighting in the rural areas. The intention is that when any changes are made to these lights the records will be added to RAMM.

The load associated with ICP 0000003759TEF13 is reconciled under ICP 0000003758TE356. This ICP should be recorded as status "inactive - reconciled elsewhere" with ICP 0000003758TE356 referenced. This is recorded as non-compliance in **section 3.2**.

1.7. Authorisation Received

All information was provided directly by Genesis and FNDC.

1.8. Scope of Audit

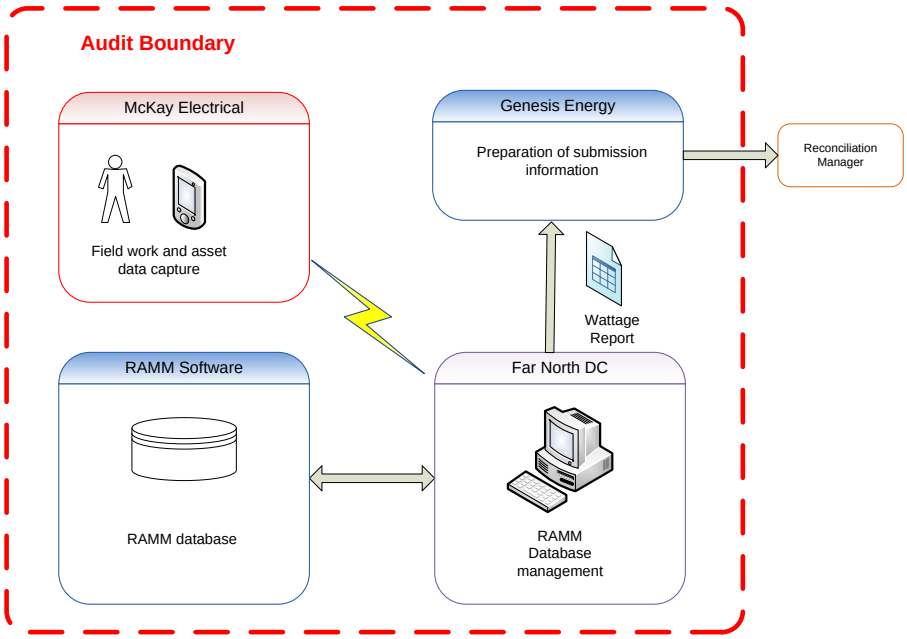
This audit of the Far North District Council (**FNDC**) DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

FNDC is located on the Top Energy network. McKay Electrical is engaged as the streetlighting maintenance contractor and FNDC maintain the RAMM database, which is used by Genesis to calculate submission information. The data for ICPs 0000910800TE359 and 0000910900TEA5D (35 items in total) are recorded on an excel spreadsheet by FNDC. These relate to amenity lighting in the rural areas. The intention is that when any changes are made to these lights the records will be added to RAMM.

FNDC provides reporting to Genesis on a monthly basis which includes the RAMM and spreadsheet data.

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



The field audit was undertaken of a statistical sample of 207 items of load between 29th and 31st July 2020.

1.9. Summary of previous audit

The previous audit was completed in February 2020 by Rebecca Elliot of Veritek Limited. 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	Seven lights with no input wattage being recorded resulting in under submission of an estimated 2,481 kWh if the database were used for submission. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission.	Still existing for two lights Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	16 items of load recorded with an "Unknown" or blank lamp model. Seven lights with no input wattage being recorded resulting in under submission of an estimated 2,481 kWh if the database were used for submission.	Still existing For two lights Still existing for two lights
Database accuracy	3.1	15.2 and 15.37B(b)	One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. Seven lights with no input wattage being recorded resulting in under submission of an estimated 2,481 kWh if the database were used for submission.	Still existing Still existing for two lights
Volume information accuracy	3.2	15.2 and 15.37(c)	Incorrect status recorded for ICP 0000003759TEF13. Seven lights with no input wattage being recorded resulting in under submission of an estimated 2,481 kWh if the database were used for submission. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission.	Still existing Still existing for two lights Still existing

Table of Recommendations

Subject	Section	Recommendation for Improvement	Status
Deriving submission information	2.1	Confirm cause of light count difference for ICP 0000003546TE067 between December and January.	Cleared

Subject	Section	Recommendation for Improvement	Status
Tracking of load changes	2.6	Field check that the light type provided in the “as builts” is what is installed in the field.	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 NST profile. Genesis derives the hours of operation information using a data logger. I checked the submission methodology. There was a difference in the number of lights and volume submitted for three ICPs as detailed in the table below:

ICPs	Fittings number from June submission	Fittings number from 17th July database extract	Difference	kWh value submitted	Calculated kWh value from database	kWh difference
0000910300TE057	963	946	17	17,574	17,136.79	437.21 over submission
0000003545TECA7	38	32	6	1,348	1,033	314.60 over submission
0000911400TEEF5	281	273	8	4,419	4,226	192.92 over submission

My analysis of the process used for calculating the submission volumes found that the billing report is broken down into "Roading" and "Amenity" lighting by the "light owner" field in RAMM. There are 15 lights with the owner identified as "unknown". These lights were included in both the Amenity and Roading tabs, in the roading tab they are also duplicated. This effectively adds an additional 30 lights to the sum of the Roading and Amenity volumes which explains the majority of the difference found in the volumes submitted for June. The additional lights will result in an annual over submission of 4,651 kWh (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool). The remainder of the difference in volume can be attributed to changes made in the field between the June Submission and provision of the RAMM extract on 17th July.

As discussed in **sections 3.1** and **3.2**, the database and associated processes to derive submission were found to contain some inaccuracies and missing data.

No input wattage recorded for two permanently connected decorative lights in Kaeo. The wattage of the two decorative lights is unknown so I am unable to estimate the resulting annual under submission. This is detailed in **section 2.4.**

The lamp ballast is not recorded correctly for one lamp when compared to the standardised wattage table. The incorrect capacity would result in an estimated over submission of 428.15 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if used for submission. This is detailed in **section 3.1**.

The field audit against the database quantities found that the database records were 100% accurate. 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: 01-Feb-19 To: 30-Jun-20	Error in process used to calculate submission resulting in additional submission for 30 lights which would result in an annual over submission of 4,651 kWh. No input wattage being recorded for two permanently connected decorative lights in Kaeo. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	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 low due to the kWh volumes.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis Energy note that the duplication no longer exists	01/09/2020	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Genesis questioned the council on the duplicated assets and the council have ensured this duplication no longer exists.	01/09/2020	

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 the correct ICP was recorded against each item of load.

Audit commentary

All items of load had an ICP recorded.

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 has the nearest street address and Global Positioning System (GPS) coordinates for each item 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.

Audit commentary

The database contains a lamp make field and two lamp model fields which were populated appropriately for all items of load except for two permanently connected decorative lights in Kaeo.

The database contains two records for wattage, firstly the lamp wattage and secondly the total wattage including any gear wattage, which represents ballast losses. All had a value populated except for two permanently connected decorative lights in Kaeo. The wattage of the two decorative lights is unknown so I am unable to estimate the resulting annual under submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 01-Feb-19 To: 30-Jun-20	No lamp model or input wattage being recorded for two permanently connected decorative lights in Kaeo. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time, but there is room for improvement. The risk is low due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis provides exception reporting to FNDC. Genesis acknowledges that the data set provided in July-2020 has a total of 49 exceptions that they are currently working through with the Council	01/10/2020	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Genesis continues to provide the relative feedback for any lamp information exceptions to help FNDC take any necessary corrective measures.	01/10/2020	

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 207 items of load between 29th and 31st July 2020.

Audit commentary

The field audit findings for the sample of lamps was accurate with the exception of one lamp with the incorrect lamp model and wattage recorded. There were no additional items of load found in the field audit.

Details of the discrepancy found in the field audit is recorded in the table below.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
ARANGA ROAD, Kerikeri	12	12	-	1	Database = 10 x 21W LED, 1 x 23W Fluorescent and 1 x 43W LED. 11 x 21W LED, and 1 x 43W LED found in the field.

The database accuracy is discussed 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

The RAMM database has a complete audit trail of all additions and changes to the database information. There are also 35 amenity lights not recorded in RAMM which are recorded separately in a spreadsheet and there has been no change to these lights for some years, so no changes have been logged. The intention is that when any changes are made to these lights the records will be added to RAMM.

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	Far North District Council area
Strata	The database contains items of load in the Far North District Council area. The processes for the management of all FNDC items of load are the same, but I decided to place the items of load into four strata based on their location: 1. Far North 2. North West 3. Bay of Islands 4. Kerikeri.
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 58 sub-units.
Total items of load	207 items of load were checked.

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

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

Audit commentary

Database accuracy based on the field audit

A statistical sample of 207 items of load found that the field data was 100% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	100.%	Wattage from survey is equal to database.
R_L	99.9%	With a 95% level of confidence it can be concluded that the error could be between -0.1% and +0.0%
R_H	100%	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario A (detailed below) applies.

The conclusion from Scenario A is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 0.1% lower and equal to the wattage recorded in the DUML database. Compliance is recorded because the potential error is less than 5.0%.

In absolute terms the installed capacity is estimated to be equal to the capacity indicated by the database.

There is a 95% level of confidence that the installed capacity is equal to wattage recorded in the database.

In absolute terms, total annual consumption is estimated to be 100 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is up to 400kWh p.a. lower 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 checked the ballasts being applied in the database and found that one lamp had a discrepancy when compared to the standardised wattage table. This is detailed in the table below:

Lamp Type	Database Total Lamp Wattage	EA Standardised Total Wattage	Variance	Database Quantity	Estimated Annual kWh effect on consumption
150w HPSV	270	168	102	1	428.15
Total estimated annual effect on submission					428.15

The incorrect capacity would result in an estimated over submission of 428.15 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if used for submission.

As recorded in **section 2.4** there are two decorative lights with no lamp model or input wattage recorded in the database.

Change management process findings

As changes occur the contractor, McKay Electrical, provides the information to FNDC directly from the field using Pocket RAMM. The database is checked for accuracy as part of the lamp replacement process. Night inspections of all streetlights are conducted every six months and pedestrian lights are inspected every three months. There is an annual inspection of all lights which checks the condition of the equipment and accuracy of the database.

As detailed in **section 1.6**, there are 35 amenity lights recorded separately in an excel spreadsheet. The intention is that when any changes are made to these lights the records will be added to RAMM.

For new subdivisions, of which there are few, the lighting information is provided by the developer to FNDC as part of the vesting process. They are added to RAMM prior to livening and will not be livened until the Council has given their approval. It is at this point that they are added to the monthly reporting to Genesis. FNDC accept that the “as builts” are what is installed in the field. FNDC is currently undertaking an engineering process review of its new connection process which will see the implementation of a field check of newly connected lights.

Audit outcome

Non-compliant

Non-compliance	Description

Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Feb-19 To: 30-Jun-20	One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum. No lamp model or input wattage being recorded for two permanently connected decorative lights in Kaeo. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	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 low due to the kWh volumes.

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Genesis has provided FNDC with a copy of the audit and highlighted the need to correct the items Identified in the audit. Genesis has also reiterated that they will continue to provide the council with any exceptions found when reviewing their monthly data.	01/10/2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Continue to work with council with any exceptions found in their monthly dta reporting.	01/10/2020	

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

As detailed in **section 1.6**, the load associated with ICP 0000003759TEF13 is reconciled under ICP 0000003758TE356. This ICP should be recorded as status "inactive - reconciled elsewhere" with ICP 0000003758TE356 referenced.

Genesis reconciles this DUML load using the NST profile.

The total volume submitted to the Reconciliation Manager is based on the monthly database billing report provided by FNDC.

As detailed in **section 2.1**, my analysis of the process used for calculating the submission volumes found that the billing report is broken down into "Roading" and "Amenity" lighting by the "light owner" field in RAMM. There are 15 lights with the owner identified as "unknown". These lights were included in both the Amenity and Roading tabs, in the roading tab they are also duplicated. This effectively adds an additional 30 lights to the sum of the Roading and Amenity volumes which explains the majority of the difference found in the volumes submitted for June. The additional lights will result in an annual over submission of 4,651 kWh (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

As recorded in **section 2.4** there are two decorative lights with no input wattage recorded in the database.

One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. 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: 01-Feb-19 To: 30-Jun-20	Incorrect status recorded for ICP 0000003759TEF13. Error in process used to calculate submission resulting in additional submission for 30 lights which would result in an annual over submission of 4,651 kWh. No input wattage being recorded for two permanently connected decorative lights in Kaeo. One item of load has the incorrect ballast applied in the DUML database which would result in over submission of 428.15 kWh per annum if used for submission. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	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 low due to the kWh volumes.

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Genesis Energy note that the duplication no longer exists	01/09/2020	Cleared for duplication in submission calculation. Identified for remainder
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis questioned the council on the duplicated assets and the council have ensured this duplication no longer exists. Genesis will continue to review data reporting to maintain quality assurance.	01/09/2020	

CONCLUSION

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

A RAMM database is held by FNDC, who is Genesis' customer. This database is hosted by RAMM Software Limited. FNDC engages McKay Ltd as their fieldwork and asset data capture service provider. Night inspections of all streetlights are conducted every six months and pedestrian lights are inspected every three months. There is an annual inspection of all lights which checks the condition of the equipment and accuracy of the database.

This audit found four non-compliances relating to minor inaccuracies in the database and makes one recommendation. The field audit found 100% accuracy and overall, the database has a high level of accuracy and robust controls to manage change.

The future risk rating of eight indicates that the next audit be completed in 18 months and I agree with this recommendation.

PARTICIPANT RESPONSE

Genesis would like the reviewers to objectively entertain the possibility of a 24-month review, due to the risk score being 8 which could have easily been 4 if the “reporting duplication” had not occurred. This duplication was not in the database merely an administration error in the reporting to Genesis Energy.

FNDC has continued to maintain a high level of database accuracy with the odd exception that have very minor impacts. Genesis continues to provide feedback on datasets provide where any exception is found, and the council takes quick steps to rectify once any exception has become known.