ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

MACKENZIE DISTRICT COUNCIL AND GENESIS ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 25 March 2022

Date audit report completed: 21 April 2022

Audit report due date: 21 April 2022

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EXECUTIVE SUMMARY

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

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

The database is remotely hosted by thinkproject New Zealand Ltd and is managed by MDC, who is Genesis' customer. The fieldwork is conducted by NetCon.

Previously the MDC database was split between Contact Energy and Genesis. ICP 0000010005MO321 and 0000020005MO20D switched to Genesis on 1 March 2022 so there is only one audit for MDC.

Timaru District Council were providing reporting to Genesis on behalf of MDC from RAMM to calculate submissions until approximately October 2021. MDC have not provided any monthly reporting to Genesis since this date as they were unaware of this requirement.

The field audit was undertaken of a statistical sample of 157 items of load on 29 March 2022. This found the database is not confirmed to be accurate within the allowable ±5% accuracy threshold and over submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 6 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 1 kW lower to 11 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 4,400 kWh p.a. to 45,300 kWh p.a. higher than the database indicates.

Service Requests and Purchase orders are issued to NetCon to complete fieldwork, this is returned to MDC who update the changes in a spreadsheet. They are currently not able to load the data into RAMM and are investigating resolution of the issue, therefore any changes made in the field are not being updated.

Genesis reconciles this DUML load using the SST profile. I checked the February 2022 submission data and confirmed that the calculation methodology was correct. I found that there was a difference between the wattage applied by Genesis and the database extract I received from MDC. This will be resulting in an estimated over submission of 84,060 kWh per annum and will be due to the lack of a monthly wattage report being provided by MDC which would reflect the rollout of LED lights.

The audit found five non-compliances. The future risk rating of 39 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 period be in eight months' time from the audit due date.

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

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	Variance in light volumes submitted by Genesis vs what is recorded in the spreadsheet maintained by MDC, is likely to be resulting in an estimated over submission of 84,060 kWh per annum. Nine items of load do not have an ICP number recorded resulting in an estimated minor under submission of 1,691 kWh per annum. In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Monthly reporting is not being provided to Genesis, submission is based on a historical snapshot and does not consider changes or adjustments.	None	High	12	Identified
ICP identifier and items of load	2.2	Clause 11(2)(a) and (aa) of Schedule 15.3	Nine items do not have an ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum.	Moderate	Low	2	Identified
All load recorded in the database	2.5	Clauses 11(2A) of Schedule 15.3	Nine additional lamps identified in the field of 157 items of load sampled (6% error rate).	None	Low	5	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Nine items of load do not have an ICP number recorded resulting in an	None	Medium	8	Identified

			estimated under submission of 1,691 kWh per annum.				
Volume information accuracy	3.2	15.2 and 15.37B(c)	Variance in light volumes submitted by Genesis vs what is recorded in the spreadsheet maintained by MDC, is likely to be resulting in an estimated 84,060 kWh per annum of over submission. Nine items of load do not have an ICP number recorded resulting in an estimated minor under submission of 1,691 kWh per annum. In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Monthly reporting is not being provided to Genesis, submission is based on a historical snapshot and does not consider changes or adjustments.	None	High	12	Identified
					Future Risk Rating	**39**	

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

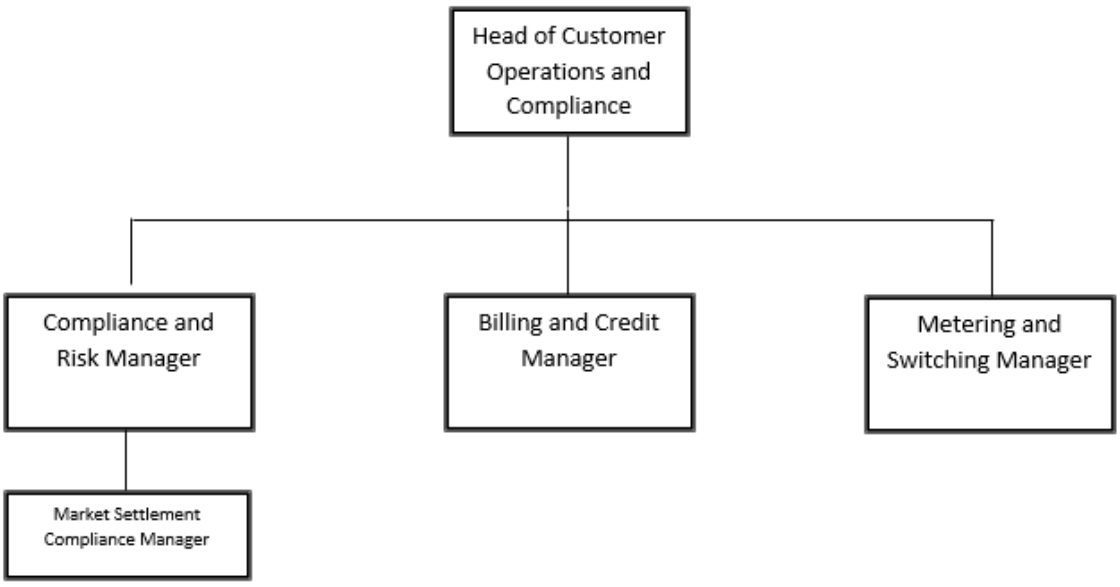
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Genesis provided a copy of their organisational structure:



1.3. Persons involved in this audit

Auditors:

Name	Company	Role
Rebecca Elliot	Veritek Limited	Lead Auditor
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Scott McKenzie	Road Engineering Technician	Mackenzie District Council
Julia Jones	DUML Data & Stakeholder Lead - Market Settlement Compliance	Genesis Energy

1.4. Hardware and Software

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

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)
0000000007ALB68	Streetlighting	TKA0331	SST	374	15,174
0000000008AL4B6	Streetlighting	TWZ0331	SST	477	13,234
0000000003ALA62	Streetlighting	ABY0111	SST	211	12,793
0000010005MO321	Streetlighting	MMT0111	SST	42	924
0000020005MO20D	Streetlighting	MMO0111	SST	9	396
Total				1,113	42,521

1.7. Authorisation Received

All information was provided directly by Genesis and MDC.

1.8. Scope of Audit

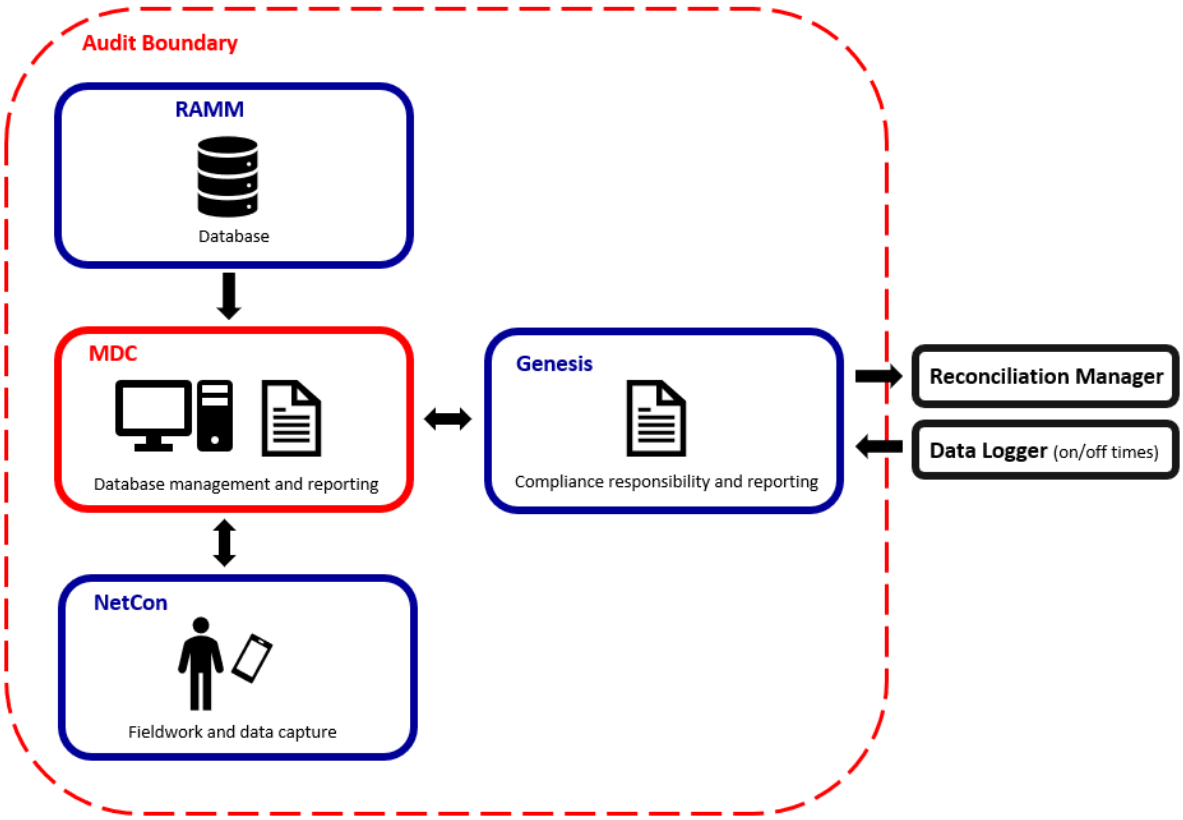
This audit of the Mackenzie District Council (MDC) DUML database and processes was conducted at the request of Genesis in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

The database is remotely hosted by thinkproject New Zealand Ltd and is managed by MDC, who is Genesis's customer. The fieldwork is conducted by NetCon.

Timaru District Council were providing reporting to Genesis on behalf of MDC from RAMM to calculate submissions until approximately October 2021. MDC have not provided any monthly reporting to Genesis since this date as they were unaware of this requirement.

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 157 items of load on 29 March 2022.

1.9. Summary of previous audit

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

Table of Non-compliances

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 103.5% of the database for the sample checked indicating a potential under submission of approximately 8,900 kWh per annum. Nine items of load have an invalid ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum. Submission is based on a snapshot and does not consider historic adjustments.	Still existing Still existing Still existing
ICP identifier and items of load	2.2	Clause 11(2)(a) and (aa) of Schedule 15.3	Nine items of load have an invalid ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum.	Still existing
All load recorded in the database	2.5	Clauses 11(2A) of Schedule 15.3	18 additional lamps identified in the field.	Still existing for different lamps
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 103.5% of the database for the sample checked indicating a potential under submission of approximately 8,900 kWh per annum. Nine items of load have an invalid ICP number recorded.	Still existing Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 103.5% of the database for the sample checked indicating a potential under submission of approximately 8,900 kWh per annum. Nine items of load have an invalid ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum. Submission is based on a snapshot and does not consider historic adjustments.	Still existing Still existing Still existing

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

1. *by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
2. *within three months of submission to the reconciliation manager (for new DUML)*
3. *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Genesis have requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Genesis reconciles this DUML load as NHH using the SST profile, and on hours are derived using data logger information for all five ICP's.

ICP 0000010005MO321 and 0000020005MO20D switched from Contact to Genesis on 1 March 2022, they are reconciled using the SST profile. The data for these ICPs is included in the extract provided for this audit.

I checked the data submission for February 2022 and found some differences:

ICP	Submitted kWh Value	Expected kWh Value	kWh difference
0000000003ALA62	7432.344	4,498.367	- +2,934.63
0000000007ALB68	6045.526	5,335.732	- + 710.27
0000000008AL4B6	7687.274	4,653.434	- + 3,034.57
0000010005MO321	107.5979	107.598	- + 0.40
0000020005MO20D	649.8071	324.904	- +325.10
		TOTAL	- + 7,004.97

It is expected that this is due to MDC not providing a monthly report to Genesis to calculate submissions. Timaru District Council were providing reporting to Genesis from RAMM to calculate submissions until approximately October 2021. MDC have continued with their LED roll-out and have maintained this information in a spreadsheet, RAMM has not been updated. This will be resulting in an estimated over submission of approximately 84,060 kWh per annum.

As detailed in **section 3.1**, the database accuracy is not within +/-5% threshold. This will be resulting in an estimated under submission of approximately 26,700 kWh per annum.

As detailed in the previous audit, nine items of load had an invalid ICP number recorded, currently they do not have an ICP recorded which means they are not being reconciled. This is resulting in an estimated under submission of 1,691 kWh per annum.

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.

Monthly reporting is not being provided to Genesis by MDC.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 18-May-21 To: 25-Mar-22	Variance in light volumes submitted by Genesis vs what is recorded in the spreadsheet maintained by MDC, is likely to be resulting in an estimated over submission of 84,060 kWh per annum. Nine items of load do not have an ICP number recorded resulting in an estimated minor under submission of 1,691 kWh per annum. In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Monthly reporting is not being provided to Genesis, submission is based on a historical snapshot and does not consider changes or adjustments. Potential impact: High Actual impact: High Audit history: None Controls: None Breach risk rating: 12
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as none as this database is not being updated. The impact is assessed to be high due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified. Genesis is currently working with Mackenzie DC to obtain monthly data extract that meets requirements of the tracking of change within a month. Once this has been obtaining Genesis will look to review the consumption been submitted.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

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

Audit observation

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

Audit commentary

The analysis found that all items of load, except for nine items had an ICP number recorded, which means they are not all being reconciled. This will be resulting in an estimated minor under submission of 1,691 kWh per annum. In the previous audit the lamps had an invalid ICP recorded.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 18-May-21 To: 25-Mar-22	Nine items do not have an ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum. 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 advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

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

All items of load have street addresses and GPS coordinates recorded.

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

All items of load have a lamp model, lamp wattage and gear wattage populated. The accuracy of these are 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 157 items of load on 29 March 2022.

Audit commentary

The field audit discrepancies found are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
AORANGI CRESCENT	10	10		1	1 x 17W LED recorded in the database but 1 x 27W LED located in the field.
CASS CRESCENT	8	8		1	1 x 17W LED recorded in the database but 1 x 22W LED located in the field.
FRASER CRESCENT	12	12		3	3 x 22W LED recorded in the database but 3 x 17W LED located in the field.
AYR STREET	3	5	+2		2 x additional 27W LED not recorded in the database but located in the field.
UNWIN PLACE	4	4		4	4 x 22W LED recorded in the database but 4 x 21W LED located in the field.
PENSTOCK PLACE	3	3		3	3 x 22W LED recorded in the database but 3 x 21W LED located in the field.
ALLOWAY STREET	10	10		1	1 x 22W LED recorded in the database but 1 x 70W HPS located in the field.
TALBOT ROAD	16	23	+7		7 x additional 70W HPS (bollard) not recorded in the database but located in the field.
Sample Total	**157**	**166**	**+9**	**13**	

The field audit found nine additional lamps that were missing from the database, and this is recorded as non-compliance below. The database accuracy is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clauses 11(2A) of Schedule 15.3 From: 18-May-21 To: 25-Mar-22	Nine additional lamps identified in the field of 157 items of load sampled (6% error rate). Potential impact: Low Actual impact: Low Audit history: Once Controls: None Breach risk rating:5
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as none as the database is not being maintained. The impact is assessed to be medium due to the number of additional lights found in the field for the size of the database.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

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 when it is being maintained.

Audit outcome

Compliant

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database*

Audit observation

The database was checked for audit trails.

Audit commentary

RAMM records audit trail information of changes made.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Mackenzie DC region
Strata	The database contains 1,113 items of load in the Mackenzie region. The processes for the management of all items of load are the same, and strata were created for each of the three ICPs.
Area units	I created a pivot table of the roads in each strata and used a random number generator in a spreadsheet to select a total of 16 sub-units making up approximately 10% of the entire database wattage.
Total items of load	157 items of load were checked.

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

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 157 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	114.6	Wattage from survey is higher than the database wattage by 14.6%
R_L	102.4	With a 95% level of confidence, it can be concluded that the error could be between 2.4% and 24.8% higher than the database
R_H	124.8	

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 B (detailed below) 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 2.4% and 24.8% higher than the wattage

recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 6 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 1 kW to 11 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 4,400 kWh p.a. to 45,300 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

As discussed in **section 2.4**, all items of load have a gear model, light model, light wattage and gear wattage recorded, and no items have invalid zero lamp or gear wattages.

The database was checked against the published standardised wattage table, and manufacturer's specifications where available. No lamp or gear wattage inaccuracies were identified.

Location accuracy

The field audit did not identify any location discrepancies.

ICP number accuracy

As detailed in **section 2.2**, nine items of load do not have an ICP populated. This will be resulting in an estimated under submission of 1,691 kWh per annum. This is recorded as non-compliance below.

Change management process findings

New connection, fault and maintenance work is completed by NetCon.

Service Requests and Purchase orders are issued to NetCon to complete fieldwork, this is returned to MDC who update the changes in a spreadsheet that is currently being maintained and will be loaded into RAMM. MDC are currently having some issues loading all the fields into RAMM and are investigating resolution of the issue.

MDC is working on establishing new processes for managing New Connections.

All private lights in the MDC area are metered, and no festive lights are used.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 18-May-21 To: 25-Mar-22	In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Nine items of load do not have an ICP number recorded resulting in an estimated under submission of 1,691 kWh per annum. Potential impact: High Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as none as this database is not being maintained. The impact is assessed to be medium due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified. Genesis is currently working with Mackenzie DC to obtain monthly data extract that meets requirements of the tracking of change within a month. Once this has been obtaining Genesis will look to review the consumption been submitted.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- *volume information for the DUML is being calculated accurately*
- *profiles for DUML have been correctly applied.*

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has 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 as NHH using the SST profile, and on hours are derived using data logger information for all five ICP's.

ICP 0000010005MO321 and 0000020005MO20D switched from Contact to Genesis on 1 March 2022, they are reconciled using the SST profile. The data for these ICPs is included in the extract provided for this audit.

I checked the data submission for February 2022 and found some differences:

ICP	Submitted kWh Value	Expected kWh Value	kWh difference
0000000003ALA62	7432.344	4,498.367	- +2,934.63
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0000000008AL4B6	7687.274	4,653.434	- +3,034.57
0000010005MO321	107.5979	107.598	- +0.40
0000020005MO20D	649.8071	324.904	- + 325.10
		TOTAL	- +7,004.97

It is expected that this is due to MDC not providing a monthly report to Genesis to calculate submissions. Timaru District Council were providing reporting to Genesis from RAMM to calculate submissions until approximately October 2021. MDC have continued with their LED roll-out and have maintained this information in a spreadsheet, RAMM has not been updated. This will be resulting in an estimated over submission of approximately 84,060 kWh per annum.

As detailed in **section 3.1**, the database accuracy is not within +/-5% threshold. This will be resulting in an estimated under submission of approximately 26,700 kWh per annum.

As detailed in the previous audit, nine items of load had an invalid ICP number recorded, currently they do not have an ICP recorded which means they are not being reconciled. This is resulting in an estimated under submission of 1,691 kWh per annum.

In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates.

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.

Monthly reporting is not being provided to Genesis by MDC.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clauses 15.2 and 15.37B(c) From: 18-May-21 To: 25-Mar-22	Variance in light volumes submitted by Genesis vs what is recorded in the spreadsheet maintained by MDC, is likely to be resulting in an estimated 84,060 kWh per annum of over submission. Nine items of load do not have an ICP number recorded resulting in an estimated minor under submission of 1,691 kWh per annum. In absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates. Monthly reporting is not being provided to Genesis, submission is based on a historical snapshot and does not consider changes or adjustments. Potential impact: High Actual impact: High Audit history: None Controls: None Breach risk rating: 12
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as none as this database is not being updated. The impact is assessed to be high due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified. Genesis is currently working with Mackenzie DC to obtain monthly data extract that meets requirements of the tracking of change within a month. Once this has been obtaining Genesis will look to review the consumption been submitted.	Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis continues to work with the council to raise database accuracy levels.	Continuous improvement	

CONCLUSION

The database is remotely hosted by thinkproject New Zealand Ltd and is managed by MDC, who is Genesis's customer. The fieldwork is conducted by NetCon.

Previously the MDC database was split between Contact Energy and Genesis. ICP 0000010005MO321 and 0000020005MO20D switched to Genesis on 1 March 2022 so there is only one audit for MDC.

Timaru District Council were providing reporting to Genesis on behalf of MDC from RAMM to calculate submissions until approximately October 2021. MDC have not provided any monthly reporting to Genesis since this date as they were unaware of this requirement.

The field audit was undertaken of a statistical sample of 157 items of load on 29 March 2022. This found the database is not confirmed to be accurate within the allowable ±5% accuracy threshold and over submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 6 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 1 kW lower to 11 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 26,700 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 4,400 kWh p.a. to 45,300 kWh p.a. higher than the database indicates.

Service Requests and Purchase orders are issued to NetCon to complete fieldwork, this is returned to MDC who update the changes in a spreadsheet. They are currently not able to load the data into RAMM and are investigating resolution of the issue, therefore any changes made in the field are not being updated.

Genesis reconciles this DUML load using the SST profile. I checked the February 2022 submission data and confirmed that the calculation methodology was correct. I found that there was a difference between the wattage applied by Genesis and the database extract I received from MDC. This will be resulting in an estimated over submission of 84,060 kWh per annum and will be due to the lack of a monthly wattage report being provided by MDC which would reflect the rollout of LED lights.

The audit found five non-compliances. The future risk rating of 39 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 period be in eight months' time from the audit due date.

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

PARTICIPANT RESPONSE

Genesis has advised Mackenzie DC of the audit findings with the intent that council makes every effort to ensure the exceptions are rectified.

Genesis is currently working with Mackenzie DC to obtain monthly data extract that meets requirements of the tracking of change within a month. Once this has been obtaining Genesis will look to review the consumption been submitted.