ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

NELSON CITY COUNCIL AND GENESIS ENERGY LIMITED NZBN: 9429041909676

Prepared by: Rebecca Elliot

Date audit commenced: 21 September 2021

Date audit report completed: 15 November 2021

Audit report due date: 26 November 2021

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EXECUTIVE SUMMARY

This audit of the **Nelson City Council (NCC)** 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 RAMM database used for submission is managed by NCC. New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Genesis reconciles the DUML load using the CST profile. Powertech provide Genesis a monthly report of replaced and removed lamp changes from the database, and a full report from the database every three months, the kW value is derived from this.

The on and off times were derived from data logger information.

I checked the submission data for September 2021 and confirmed it was accurate.

The last audit noted over submission was occurring due to the inclusion of the NZTA lights in both this database and the NZTA Nelson database against ICP 0000202024CT59F which is traded by Trustpower. The NCC ICPs have been removed in April 22021 from these items of load and are identified as NZTA unmetered. The over submission has been occurring since NCC switched to Genesis in February 2020. Revisions will be undertaken from December 2021 (R14 October 2020) but the estimated over submission of 50,165 kWh from February through to September 2020 will not be corrected as this is now outside the 14-month revision cycle.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

Some database content inaccuracies have led to inaccurate volume information as detailed in **sections 2.4** and **3.1**. Specifically:

- eight items of load with missing lamp wattage resulting in an estimated minor under submission of 2,391 kWh per annum, and
- 28 items of load with the incorrect ballast applied resulting in an estimated minor under submission of 1,302 kWh per annum.

The last audit noted that a database snapshot was being provided. This has been resolved and the reporting provided to Genesis now tracks changes at a daily level.

The audit found six non-compliances and makes one recommendation, that has been cleared. The future risk rating of 19 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' responses, I would have recommended that the next audit period be in six months' time. However due to the lateness of the report I recommend the next audit date is May 2022.

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	112 NZTA lights being submitted by Genesis but was also being submitted by Trustpower resulting in over submission of an estimated 50,165 kWh from February to September 2020. This will not be corrected as it is outside of the 14-month revision cycle. Eight items of load have zero wattage with an estimated annual under submission of 2,839 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh.	Moderate	High	6	Identified
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	120 items of load do not have the ICP recorded.	Moderate	Low	2	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Eight items of load have zero wattage with an estimated annual under submission of 2,391 kWh.	Moderate	Low	2	Identified
All loaded recorded in database	2.5	11(2A) of Schedule 15.3	One additional light found in the field of the 277 items of load sampled.	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Eight items of load have zero wattage with an estimated annual under submission of 2,391 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh.	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	112 NZTA lights being submitted by Genesis but was also being submitted by Trustpower resulting in over submission of an estimated 50,165 kWh from February to September 2020. This will not be corrected as it is outside of the 14-month revision cycle. Eight items of load have zero wattage with an estimated annual under submission of 2,391 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh.	Moderate	High	6	Identified
Future Risk Rating						**19**	

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	Status
Private Unmetered lights	2.1.	Update the 'Private Unmetered' lights with the correct ICP in the database.	Cleared

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

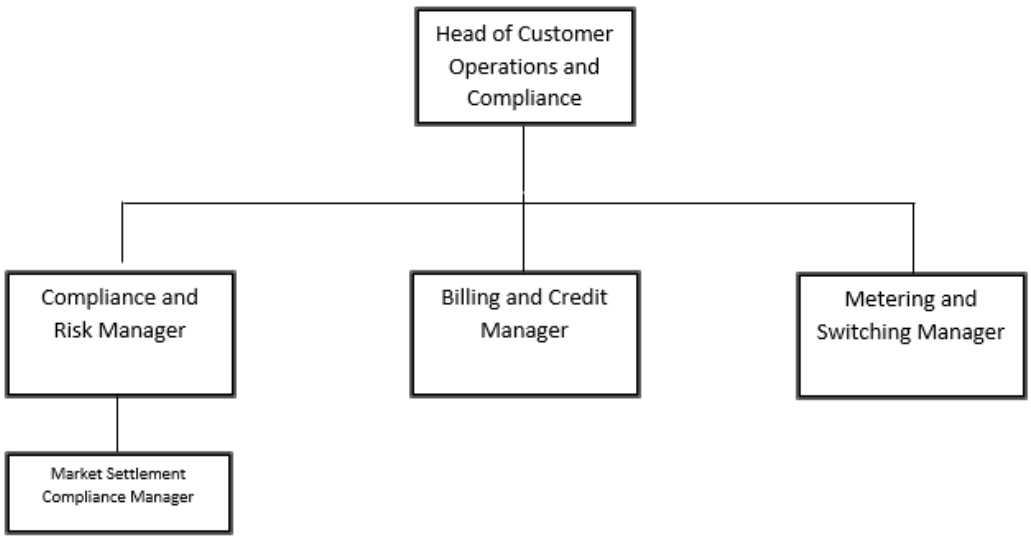
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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

Auditor:

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
Julia Jones	Technical Specialist - Reconciliations Team	Genesis Energy
Roy Price	Electrical Contracts Manager	Powertech Nelson New Zealand Limited
Gillian Dancey	Contract Supervisor - Roading	Nelson City Council

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 were 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)
0000090001NTBEF	NCC STREETLIGHTING STOKE	STK0331	CST	2,942	138,594
0000200190CTC63	NELSON STREETLIGHTS	STK0331	CST	2,281	127,503
			Total	**5,379**	**276,229**

NCC have removed the ICP from some of the private lights in the database and these are excluded in the totals above. I have confirmed that the private lights are still being submitted by Genesis, so this has no impact on submission. This is recorded as non-compliance in **section 2.2**.

1.7. Authorisation Received

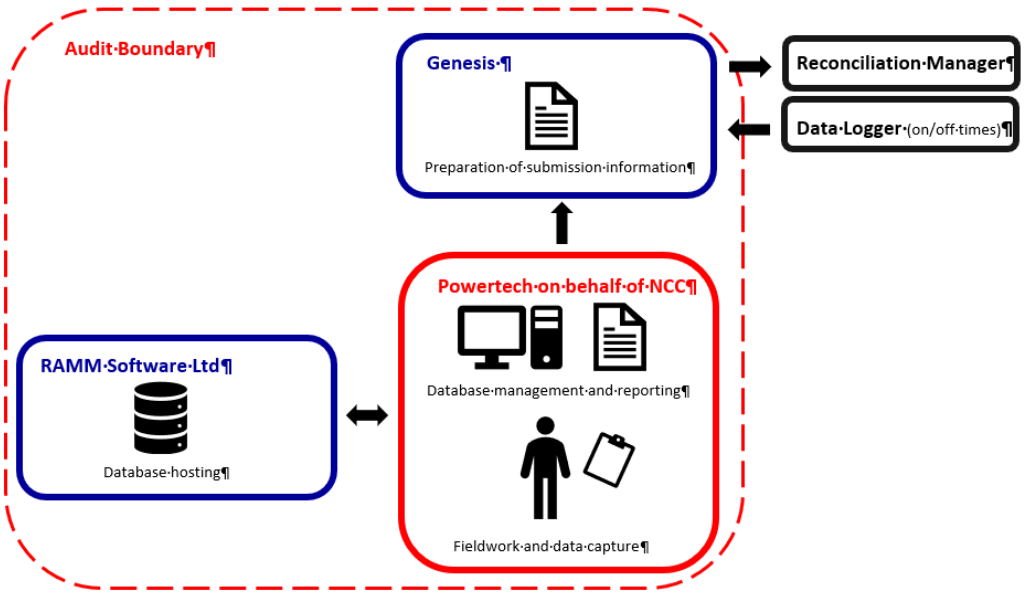
All information was provided directly by Genesis, NCC, and Powertech.

1.8. Scope of Audit

The RAMM database used for submission is managed by NCC. New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Powertech now record changes in the field into RAMM, this is loaded onto the technician's tablet. The fieldwork is checked by Powertech's Electrical Contracts Manager.

Powertech provide Genesis a monthly report of replaced and removed lamp changes from the database, and a full report from the database every three months.

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



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

The field audit was undertaken of 277 items of load on the 19th and 20th October 2021.

1.9. Summary of previous audit

The previous audit was completed in February 2021 by Rebecca Elliot of Veritek Limited for Genesis Energy Ltd. Four non-compliances were identified, and two recommendations were made. The statuses of the non-compliances and recommendations are described below.

Table of Non-compliances

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Estimated over submission of 4,699 kWh for ICP 0000200190CTC63 for the month of December 2020 due to no monthly report being received. The database accuracy is assessed to be 97.9% of the database for the sample checked indicating a potential over submission of approximately 26,700 kWh per annum. Nine items of load have zero wattage with an estimated annual under submission of 2,690 kWh. 52 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 3,357 kWh. 112 lights are being submitted twice resulting in an estimated over submission of 85,997 kWh per annum. Submission is based on a snapshot and does not consider historic adjustments.	Cleared Cleared Still existing Still existing Cleared
ICP identifier and items of load	2.2	Clause 11(2)(a) and (aa) of Schedule 15.3	One item of load does not have an ICP recorded.	Cleared
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Nine items of load have zero wattage with an estimated annual under submission of 2,690 kWh.	Still existing for different lamps.

Subject	Section	Clause	Non-compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 97.9% of the database for the sample checked indicating a potential over submission of approximately 26,700 kWh per annum. Nine items of load have zero wattage with an estimated annual under submission of 2,690 kWh. 52 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 3,357 kWh. 112 lights are being submitted twice resulting in an estimated over submission of 85,997 kWh per annum.	Cleared Still existing Still existing Cleared

Table of Recommendations

Subject	Section	Recommendation	
ICP identifier	3.1	Populate the ICP field in RAMM with the relevant ICP for all unmetered and metered items of load.	Cleared
Liaise with Trustpower, Nelson Electricity and NZTA to identify the correct ICP for the NZTA lights.	3.1	173 lamps identified as owner NZTA in NCC database. 112 lamps are associated to ICP 0000202024CT59F. Confirm ICP for remaining 61 lamps in NCC database.	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 and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Genesis reconciles the DUML load using the CST profile. Powertech provide Genesis a monthly report of replaced and removed lamp changes from the database. Genesis then adjusts the wattage report according to these changes. A full database extract is provided every three months, and this is then used as the database extract with the changes tracked at a daily level.

The on and off times were derived from data logger information.

I checked the submission data for September 2021 and confirmed they were calculated correctly.

The last audit noted a difference in the volume of lights recorded between the database extract provided for the audit and that sent to Genesis. A similar difference was evident in this audit as detailed below:

ICPs	Fittings number from September 2021 submission	Fittings number from database extract	Differences	kWh value submitted	Calculated kWh value from database	kWh Differences
0000090001NTBEF	2,962	2,942	-20	51,438	50,591	-847
0000200190CTC63	2,381	2,281	-100	49,267	46,543	-2,724
TOTAL	5,343	5,223	-120	100,705	97,134	-3,571

This was investigated and I have determined that the volume of lights being submitted by Genesis is correct. The difference between the two data sets is due to some private unmetered lights not having the ICP recorded against them. I queried this with NCC, and they confirmed they had removed the ICP from the lamps and changed it to 'Private Unmeter'. NCC have repopulated the ICP during the audit for all of the lamps and provided have a copy of the database with the updated ICP.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

Some database content inaccuracies have led to inaccurate volume information as detailed in **sections 2.4** and **3.1**. Specifically:

- eight items of load with missing lamp wattage resulting in an estimated minor under submission of 2,391 kWh per annum, and
- 28 items of load with the incorrect ballast applied resulting in an estimated minor under submission of 1,302 kWh per annum.

The last audit noted over submission was occurring due to the inclusion of 112 NZTA lights in both this database and the NZTA Nelson database against ICP 0000202024CT59F which is traded by Trustpower. The NCC ICPs have been removed in April 2021 from these items of load and are identified as NZTA unmetered. The over submission has been occurring since NCC switched to Genesis in February 2020. Revisions will be undertaken from December 2021 (R14 October 2020) but the estimated over submission of 50,165 kWh from February through to September 2020 will not be corrected as this is now outside the 14-month revision cycle. This is recorded as non-compliance.

The last audit noted that a database snapshot was being provided. This has been resolved and the reporting provided to Genesis now tracks changes at a daily level.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 20-Jan-21 To: 19-Sep-21	112 NZTA lights being submitted by Genesis but was also being submitted by Trustpower resulting in over submission of an estimated 50,165 kWh from February to September 2020. This will not be corrected as it is outside of the 14-month revision cycle. Eight items of load have zero wattage with an estimated annual under submission of 2,839 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh. Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated overall as moderate but there is room for improvement in relation to the processing of revisions. The impact is assessed to be high due to the level of submission inaccuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
In regard to the over submission of the NZTA Lights this has now been corrected and back dated till December 2020 along with the data base been updated showing that these assets as being NZTA. Genesis has advised council of the incorrect wattage and ballast that has been identified by the audit with the intent that council makes every effort to ensure the exceptions are rectified.	01/01/2022 Continuous improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
In reference to the NZTA assists this now been identified in the data extract and going forward will no longer be reconciled by Genesis		

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 is recorded for each item of load.

Audit commentary

120 items of load do not have the ICP recorded against them, they are Private Unmetered lights. As detailed in **section 2.1**, these are being submitted by Genesis. NCC have repopulated the ICP during the audit and have provided a copy of the database with the updated ICP.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: 11(2)(a) and (aa) of Schedule 15.3 From: 20-Jan-21 To: 21-Sep-21	120 items of load do not have the ICP recorded. Potential impact: Low Actual impact: Low Audit history: 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. There is no impact on settlement and participants as Genesis is correctly reconciling these lamps.; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has investigated the assets that have been listed as 'Private Unmetered lights' to ensure that assets have not been used in submission.	01/01/2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 nearest house address is recorded for all items of load and all but 216 had GPS coordinates. The street address was sufficient to locate those.

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 has all details complete with the exception of the eight items of load recorded which have the wattage recorded as zero or blank. Seven of these have no lamp make, model description or lamp wattage. One item of load has Gear Wattage recorded in the database.

The records are shown in the table below.

Pole	House Address	Make	Model	Lamp Wattage	Gear Wattage
8132	JENNER ROAD	Philips	Unknown	0	10
190	BRIDGE STREET	Unknown	Unknown	Unknown	Unknown
8404	Park Church Hill Trafalgar	Unknown	Unknown	Unknown	Unknown
8404	Park Church Hill Trafalgar	Unknown	Unknown	Unknown	Unknown
8405	Park Church Hill Trafalgar	Unknown	Unknown	Unknown	Unknown
8405	Park Church Hill Trafalgar	Unknown	Unknown	Unknown	Unknown
8406	Trafalgar Street (North)	Unknown	Unknown	Unknown	Unknown
8406	Trafalgar Street (north)	Unknown	Unknown	Unknown	Unknown

If it is assumed that these lights are 70W HPS then under submission of 2,839.94 kWh p.a. is estimated (based on 4271 hours per annum).

The accuracy of the lamp wattages and ballasts is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 20-Jan-21 To: 21-Sep-21	Eight items of load have zero wattage with an estimated annual under submission of 2,839.94 kWh. 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 moderate, as they are sufficient to mitigate the risk most of the time to an acceptable level. The impact is assessed to be low due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised council of the incorrect wattage and ballast that has been identified by the audit 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 will continue to provide exception reporting to the council where exceptions has been identified.	Continuous improvement	

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 277 items of load on the 19th and 20th October 2021. The total population was divided into four strata.

Audit commentary

The field audit discrepancies are detailed in the table below.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Iti Lane	8	9	+1		1 x additional 52W LED located in the field
Total discrepancies found	**277**	**278**	**+1**		

One additional light found in the field.

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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3) From: 20-Jan-21 To: 21-Sep-21	One additional light found in the field of the 277 items of load sampled. 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 Nelson CC have robust processes to ensure that changes are tracked, and this is reflected in the high level of accuracy found in the database. The impact is assessed to be low due to one additional light found in the field in relation to the overall count of the items of load.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has discussed the audit findings with the council with the intent the 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**	

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 contains a complete audit trail. Reporting is provided to Genesis from the RAMM database.

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	NCC region
Strata	The database contains items of load in Nelson area. The processes for the management of all NCC items of load are the same. The total population was divided into four strata: • A-G, • H-O, • P-S, and • T-Z.
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 48 sub-units.
Total items of load	277 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database or in the case of LED lights against the LED light specification.

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

Audit commentary

A field audit was conducted of a statistical sample of 277 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	100.6	Wattage from survey is higher than the database wattage by 0.6%
R_L	100.0	With a 95% level of confidence, it can be concluded that the error could be the same as the database to +2.1%
R_H	102.1	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 1 February 2019. The table below shows that Scenario A (detailed below) applies, and the best available estimate indicates that the database is accurate within ± 5.0%.

In absolute terms the installed capacity is estimated to be 2 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is 6 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 6,600 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is the same as the database or up to 23,800 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**, the database has all details complete with the exception of eight unmetered items of load that have the wattage recorded as zero or unknown. Seven of these have no lamp make or model description. One has Gear Wattage recorded in the database. If it is assumed that these lights are 70W HPS then under submission of 2,839.94 kWh p.a. is estimated.

Wattages for all items of load were checked against the published standardised wattage tables produced by the Electricity Authority, and the manufacturer's specifications. In relation to the LED lights, I found there were no wattages that could not be supported by at least one specification sheet. I found 28 lights with incorrect gear wattage applied resulting in an estimated annual under submission of 1,302 kWh.

ICP number and owner accuracy

As recorded in **sections 2.1** and **2.2,** 120 lights are incorrectly identified as 'Private Unmeter' in the database, they are being correctly reconciled by Genesis.

NCC have repopulated the ICP during the audit for all of the lamps and provided have a copy of the database with the updated ICP.

Location accuracy

The location details were found to be accurate.

Change management process findings

New connection, fault, and maintenance work is completed by Powertech Nelson New Zealand Limited (Powertech). Powertech now record changes in the field into RAMM, this is loaded onto the technician's tablet. The fieldwork changes are checked by Powertech's Electrical Contracts Manager.

If the road is yet to be loaded in RAMM the lights are pegged to the nearest available load until such time that the road is created in RAMM. The lights are then reassigned to the new road. The light install date is used as the date of physical change.

For new connections, NCC receive a request for a new connection, this is passed onto Powertech. Powertech arrange connection and provide notification to Network Tasman or NEL. When the work has been completed, Powertech update RAMM with all the required details.

For new subdivisions, the NCC subdivision team pass information to the Contract Supervisor – Roading, and this is passed onto Powertech. If Powertech is the contractor, the new connection process is followed as above. If other contractors have completed the work, the developer arranges connection with the network and provides 'as built' plans to NCC. NCC passes the information to Powertech, who check the information and update RAMM.

Christmas and festive lights are used by NCC. These lights are metered and excluded from the scope of this audit.

Outage Patrols are completed once a month by Powertech, a job is raised in RAMM if an issue is identified, and the light is fixed.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 20-Jan-21 To: 21-Sep-21	Eight items of load have zero wattage with an estimated annual under submission of 2,391 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh. Potential impact: Low Actual impact: Low Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating
Low	The controls are rated as moderate overall, because they are sufficient to ensure that database wattage is accurate for the bulk of lights which belong to NCC council. The impact is assessed to be low as the database was found to be within the allowable accuracy threshold.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has advised council of the incorrect wattage and ballast that has been identified by the audit 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 will continue to provide exception reporting to the council where exceptions has been identified.	Continuous improvement	

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

- checking the registry to confirm that all ICPs have the correct profile and submission flag, and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles the DUML load using the CST profile. Powertech provide Genesis a monthly report of replaced and removed lamp changes from the database. Genesis then adjusts the wattage report according to these changes. A full database extract is provided every three months, and this is then used as the database extract with the changes tracked at a daily level.

The on and off times were derived from data logger information.

I checked the submission data for September 2021 and confirmed they were calculated correctly.

The last audit noted a difference in the volume of lights recorded between the database extract provided for the audit and that sent to Genesis A similar difference was evident in this audit as detailed below:

ICPs	Fittings number from September 2021 submission	Fittings number from database extract	Differences	kWh value submitted	Calculated kWh value from database	kWh Differences
0000090001NTBEF	2,962	2,942	-20	51,438	50,591	-847
0000200190CTC63	2,381	2,281	-100	49,267	46,543	-2,724
TOTAL	5,343	5,223	-120	100,705	97,134	-3,571

This was investigated and I have determined that the volume of lights being submitted by Genesis is correct. The difference between the two data sets is due to some private unmetered lights not having the ICP recorded against them. I queried this with NCC, and they confirmed they had removed the ICP from the lamps and changed it to 'Private Unmeter'. NCC have repopulated the ICP during the audit for all of the lamps and provided have a copy of the database with the updated ICP.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

Some database content inaccuracies have led to inaccurate volume information as detailed in **sections 2.4** and **3.1**. Specifically:

- eight items of load with missing lamp wattage resulting in an estimated minor under submission of 2,391 kWh per annum, and
- 28 items of load with the incorrect ballast applied resulting in an estimated minor under submission of 1,302 kWh per annum.

The last audit noted over submission was occurring due to the inclusion of 112 NZTA lights in both this database and the NZTA Nelson database against ICP 0000202024CT59F which is traded by Trustpower. The NCC ICPs have been removed in April 2021 from these items of load and are identified as NZTA unmetered. The over submission has been occurring since NCC switched to Genesis in February 2020. Revisions will be undertaken from December 2021 (R14 October 2020) but the estimated over submission of 50,165 kWh from February through to September 2020 will not be corrected as this is now outside the 14-month revision cycle. This is recorded as non-compliance.

The last audit noted that a database snapshot was being provided. This has been resolved and the reporting provided to Genesis now tracks changes at a daily level.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 20-Jan-21 To: 21-Sep-21	112 NZTA lights being submitted by Genesis but was also being submitted by Trustpower resulting in over submission of an estimated 50,165 kWh from February to September 2020. This will not be corrected as it is outside of the 14 month revision cycle. Eight items of load have zero wattage with an estimated annual under submission of 2,391 kWh. 28 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 1,302 kWh. Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated overall as moderate but there is room for improvement in relation to the processing of revisions. The impact is assessed to be high due to the level of submission inaccuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
Regarding the over submission of the NZTA Lights this has now been corrected and back dated till December 2020 along with the data base been updated showing that these assets as being NZTA. Genesis has advised council of the incorrect wattage and ballast that has been identified by the audit with the intent that council makes every effort to ensure the exceptions are rectified.	01/01/2022 Continuous Improvement	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

I checked the submission data for September 2021 and confirmed it was accurate.

The last audit noted over submission was occurring due to the inclusion of the NZTA lights in both this database and the NZTA Nelson database against ICP 0000202024CT59F which is traded by Trustpower. The NCC ICPs have been removed in April 2021 on XXX from these items of load and are identified as NZTA unmetered. The over submission has been occurring since NCC switched to Genesis in February 2020. Revisions will be undertaken from December 2021 (R14 October 2020) but the estimated over submission of 50,165 kWh from February through to September 2020 will not be corrected as this is now outside the 14-month revision cycle.

The field audit confirmed that the database accuracy is within the allowable +/-5% threshold.

Some database content inaccuracies have led to inaccurate volume information as detailed in **sections 2.4** and **3.1**. Specifically:

- eight items of load with missing lamp wattage resulting in an estimated minor under submission of 2,391 kWh per annum,
- 28 items of load with the incorrect ballast applied resulting in an estimated minor under submission of 1,302 kWh per annum.

The last audit noted that a database snapshot was being provided. This has been resolved and the reporting provided to Genesis now tracks changes at a daily level.

The audit found six non-compliances and makes one recommendation, that has been cleared. The future risk rating of 19 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' responses, I would have recommended that the next audit period be in six months' time. However due to the lateness of the report I recommend the next audit date is May 2022.

PARTICIPANT RESPONSE

In regard to the over submission of the NZTA Lights this has now been corrected and back dated till December 2020 along with the data base been updated showing that these assets as being NZTA.

Genesis has advised council of the incorrect wattage and ballast that has been identified by the audit with the intent that council makes every effort to ensure the exceptions are rectified.