ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

KAWERAU DISTRICT COUNCIL AND GENESIS ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 18 June 2018

Date audit report completed: 3 December 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the Kawerau District Council (**KDC**) 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 scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information. A RAMM database is managed by Opus on behalf KDC in relation to this load. The field work is carried out by Broadspectrum. Pocket RAMM is used in the field to update the RAMM database directly.

KDC have commenced an LED rollout and this is expected to be completed by June 2019. There are no plans for dimming to be used.

Genesis use the daily kWh figure recorded in the registry to reconcile this load. This figure was updated when the ICP switched to Genesis in March 2016. Genesis have been provided with a wattage report but found the data quality to be too poor to use for submission purposes. Genesis intend to move to the KDC data once the database accuracy is confirmed. KDC have undertaken a 100% field audit to update the RAMM database but this data hadn't been uploaded to RAMM at the time of this audit. KDC will send a monthly wattage reports once this has been completed.

Analysis of the database found:

- missing wattage values
- lamp wattages recorded as ballast values
- a large volume of additional lights found in the field audit.

The combination of these factors means that it is not possible to calculate accurately the difference between the registry figure used for submission, and what is installed in the field.

This audit found eight non-compliances and makes one recommendation. The future risk rating of 39 indicates that the next audit be completed in three months, but I recommend that the next audit be in six months to allow time for field audit to be completed and the cleansed data to be uploaded to RAMM. The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
DUML Audit	1.10	17.295F of part 17	Audit not completed within 12 months of Part 16A coming into effect.	Strong	Low	1	Identified
Deriving submission information	2.1	11(1) of Schedule 15.3	Historic registry figure used for submission RAMM database is not accurate.	Weak	High	9	Identified
ICP Identifier	2.2	11(2)(a) & (aa) of Schedule 15.3	ICP is not recorded in the database.	Weak	Low	3	Identified
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	17 items of load with insufficient location details.	Moderate	Low	2	Identified
Description and capacity of each item of load	2.4	11(2)(c)&(d) of Schedule 15.3	71 items of load with no lamp description, wattage and ballast recorded. 146 items of load with no lamp and ballast wattage recorded. 30 items of load with no ballast recorded.	Weak	Low	3	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	79 lights not included in the database extract.	Moderate	Low	2	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 113.5% indicating potential under submission of 23,500 kWh per annum if the database were used for submission. Lamp wattage recorded as ballast wattage indicating an estimated over submission of 79,048 kWh of over submission if the database were used for submission. 218 items of load with missing wattage values indicating an estimated under submission of 26,758 kWh if the database were used for submission. Festive lighting is connected but the volume is not recorded.	Weak	High	9	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Historic registry figure used for submission.	Weak	High	9	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
Tracking of load change	2.6	Record festive lights in RAMM.	Genesis will request this information to be supplied.

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

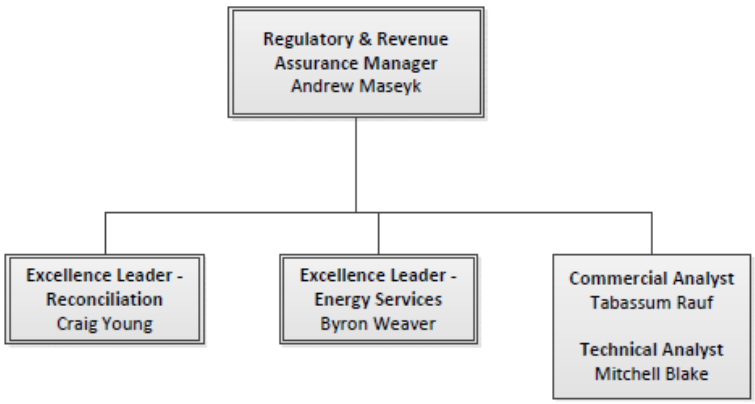
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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:

Rebecca Elliot

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 - Reconciliation Team	Genesis Energy
Dayle Johnson	Engineering Officer	Kawerau DC

1.4. Hardware and Software

The registry figures are used to calculate submission. KDC have a SQL database used for the management of DUML called RAMM. This is remotely hosted by RAMM Software Ltd. "RAMM" stands for "Roading Asset and Maintenance Management".

KDC confirmed that the database back-up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

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	Profile	Number of items of load	Database wattage (watts)
1000023043BP177	Street Lights, KAWERAU	UNM	684	40,890

Note that the above database wattage includes the incorrect ballast figures. The same lamp wattage value is recorded as the ballast. This is discussed in **sections 2.1** and **3.1**. The actual wattage is approximately 22,382W.

1.7. Authorisation Received

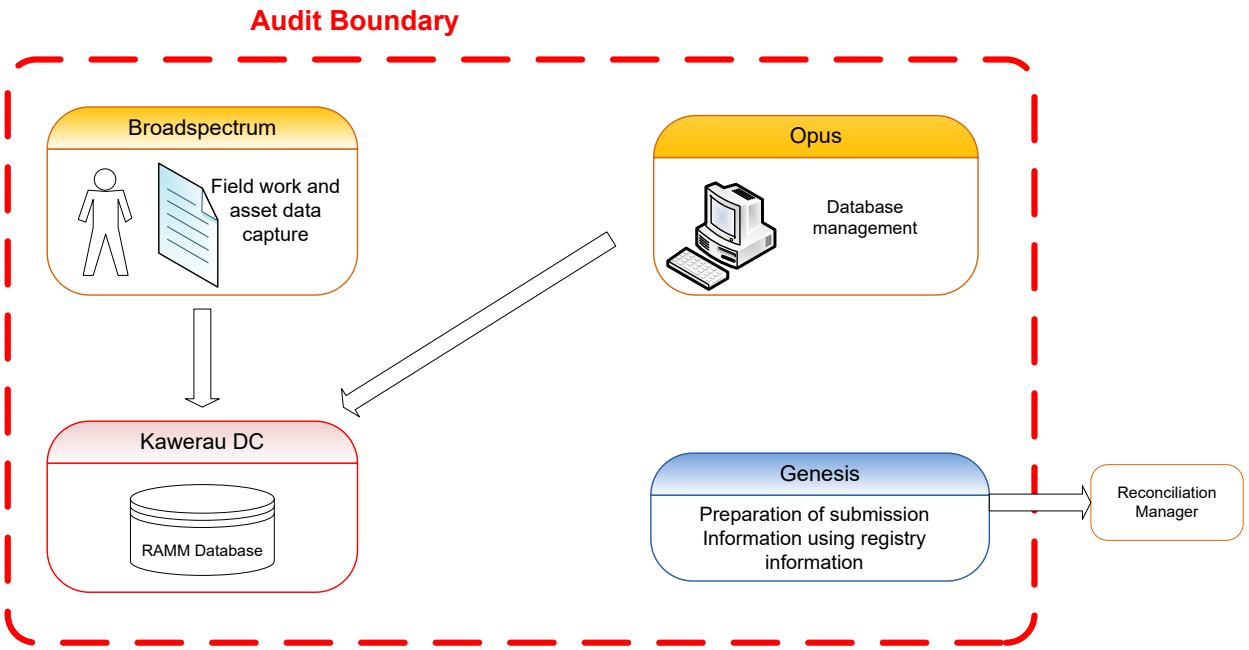
All information was provided directly by Genesis or KDC.

1.8. Scope of Audit

This audit of the Kawerau District Council (**KDC**) DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**), in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied. The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Genesis use the daily kWh figure recorded in the registry to reconcile this load. The registry figure was last changed in April 2018 and backdated to April 2017. A RAMM database is managed by KDC in relation to this load. I compared the field findings to the database records.

The database is remotely hosted by RAMM Software Ltd. The field work is carried out by Broadspectrum. The asset data capture and database population are conducted by Opus. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information. The diagram below shows the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 220 items of load on 2nd July 2018.

1.9. Summary of previous audit

This is the first audit of this distributed unmetered load undertaken by Genesis.

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. Genesis were unable to complete this audit by the required timeframe as a database extract was not able to be obtained prior to the audit due date.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 Clause 17.295F of part 17 From: 01-Jun-18 To: 01-Jul-18	Audit not completed within 12 months of Part 16A coming into effect. 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 Genesis are reliant on the database provider to supply the data and in this case the delay caused this report to be late. The impact is assessed to be low, as this has no direct impact on reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has been working with Kawerau DC to revise their information within their asset database to be able to utilize for DUML requirements. Albeit there is still some work to be done, Genesis will continue working with Kawerau DC to improve the database accuracy.	01/12/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis will continue working with Kawerau DC to improve the database accuracy.	01/12/2018	

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 using the UML profile. The Distributor's registry kW figure and average daily burn hours (11.9 hours) are used to calculate submission. I confirmed the calculation was correct. This figure was updated when the ICP switched into Genesis in March 2016. Genesis have been provided with a wattage report but found the data quality to be too poor to use for submission purposes. They intend to use the KDC data once the database accuracy can be confirmed. KDC have undertaken a 100% field audit to update the RAMM database but this data hadn't been uploaded to RAMM at the time of this audit. KDC will send a monthly wattage reports once this has been completed.

I compared the kW value recorded in the registry with the load recorded in the database extract for the month of June 2018 and found:

ICP Number	Description	June 2018 kW from registry	RAMM kW value estimated June submission	Estimated June 2018m difference
1000023043BP177	Street Lights, KAWERAU	101	40.89	60.11-

This indicated that there is potential over submission of 256,730 kWh per annum if the database were accurate. However, analysis of the database (detailed in the table below) found the data quality to be poor and means that it is not possible to calculate accurately what the difference is between the field and the figures being used calculate submission.

The accuracy of the database fields found:

Items	Estimated volume information impact (annual kWh)
ICP is not recorded in the database	No impact as only one ICP is associated with the DUML load.
217 items of load with no wattage recorded (assumed an average lamp wattage of 29W) and the one item of load with a missing ballast value	26,758 kWh of under submission if the database were used for submission.
Lamp wattage recorded as ballast	79,048 kWh of over submission if the database were used for submission.

Items	Estimated volume information impact (annual kWh)
Database accuracy is indicated to be 113.5% indicating potential under submission	23,500 kWh of under submission if used for submission
Festive lighting is connected but the volume is not recorded.	Unknown volume but estimated to be small

This detailed in **sections 2.2,2.4** and **3.1.**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 Clause 11(1) of Schedule 15.3 From: 01-Jun-17 To: 30-Jun-18	Historic registry figure used for submission. RAMM database is not accurate. Potential impact: Unknown Actual impact: High Audit history: None Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak as the RAMM database is not used for reconciliation. The impact is assessed to be unknown due to the registry figure being used, and the RAMM database accuracy being poor therefore I have rated the impact as high.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has initiated the use of the information provided by KDC, seems Genesis will not meet compliance regardless which avenue it takes. The information provided by KDC albeit having inaccuracies relating to missing lamp wattages, Genesis has been able to determine, off notes what the most likely is and where there was no information defaulted. This has led to Genesis halving the daily kW's which is the best representation as to what's in the field.	01/12/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been in contact with Kawerau DC, unfortunately we have not made too much ground in making the corrections required to meet compliance	01/12/2018	

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

The ICP is not recorded in the database. There is only one ICP associated with this database therefore there is no material impact.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 Clause 11(2)(a) & (aa) of Schedule 15.3 From: 01-Jun-17 To: 30-Jun-18	ICP is not recorded in the database. Potential impact: None Actual impact: None Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak as the RAMM database does not hold the ICP. The impact is assessed to be low as there is only one ICP associated with this database.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis is aware of the issues with the data being supplied and is working with the council to have this rectified. To date this has not been done. Genesis are taking steps to make sure this happens and Ideally have a goal of March -19 to have the council meet.	01/03/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been requesting the monthly extraction, to date this highlights no changes have been initiated. Genesis review this report and request changes, Genesis will continue with this process.	01/03/2018	

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 databases were checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for the street address and also GPS coordinates. This was populated for all but 17 items of load. These had a road name only.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.3 Clause 11(2)(b) of Schedule 15.3 From: 01-Jun-17 To: 30-Jun-18	17 items of load with insufficient location details. 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 rated as moderate as the location is recorded for all but 17 items of load. The impact is assessed to be low as there are only 17 items of load with insufficient location details.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis is aware of the issues with the data being supplied and is working with the council to have this rectified. To date this has not been done. Genesis are taking steps to make sure this happens and Ideally have a goal of March -19 to have the council meet.	01/03/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been requesting the monthly extraction, to date this highlights no changes have been initiated. Genesis review this report and request changes, Genesis will continue with this process.	01/03/2018	

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 it contained a field for lamp type and wattage capacity and included any ballast or gear wattage and that each item of load had a value recorded in these fields.

Audit commentary

The database contains fields for the manufacturers rated wattage and the ballast wattage. The extract provided has fields for lamp and gear make and model. Analysis found there were:

- 71 items of load with no lamp descriptions, lamp wattage and ballast detailed
- 146 items of load with lamp description but no lamp wattage or ballast wattage recorded
- 30 items of load with no ballast wattage recorded.

The accuracy of those with the lamp description, capacity and ballasts recorded is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 Clause 11(2)(c)&(d) of Schedule 15.3 From: 01-Jun-17 To: 30-Jun-18	71 items of load with no lamp description, wattage and ballast recorded. 146 items of load with no lamp and ballast wattage recorded. 30 items of load with no ballast recorded. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak the data quality indicates a lack of quality control to check the data being inputted. The impact is assessed to be low as overall volume of load is small.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis is aware of the issues with the data being supplied and is working with the council to have this rectified. To date this has not been done. Genesis are taking steps to make sure this happens and Ideally have a goal of March -19 to have the council meet.	01/03/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been requesting the monthly extraction, to date this highlights no changes have been initiated. Genesis review this report and request changes, Genesis will continue with this process.	01/03/2018	

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 220 items of load on 2nd July 2018.

Audit commentary

The field audit findings for the sample of lamps are detailed in the table below:

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Main Road					
FENTON MILL ROAD	21	25	4		4 additional 67W LEDs found in the field
VALLEY ROAD	17	45	28		28 additional LEDs found in the field
LOCAL					
BELL STREET	5	14	9		9 additional LEDs found in the field
BLUNDELL AVENUE	1	3	2		2 additional HPS lights found in the field
DIPPIE PLACE	1	1		1	No wattage recorded in the database for this light
EMME ALLEN ROAD	4	4		2	no wattage recorded in the database for two lights. 70W HPS lights found in the field
FITZGERALD STREET	3	3			
FITZROY STREET	2	2			
FLETCHER AVENUE	10	13	3		3 additional LEDs found in the field
FORBES PLACE	3	3		2	2 lamps without a wattage recorded
GALWAY STREET	13	13		3	3 lamps without a wattage recorded
HARDIE AVENUE	8	8		4	4 lamps with no wattage recorded
HAY PLACE	2	2		1	1 lamp recorded with no wattage

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
HOLLAND CRESCENT	7	9	2	3	2 additional HPS lights found in the field 3 lamps recorded with no wattage
HOLYOAKE CRESCENT	2	11	9		9 additional lamps found in the field
ISLINGTON STREET	65	65		10	10 lamps recorded with no wattage
KIRK CRESCENT EXTENSION	4	4		2	2 lamps without a wattage recorded
LIVERPOOL STREET	7	7			
LIVERPOOL STREET SERVICE LANE #1	2	2			1 lamp recorded with no wattage
MANUKORIHI DRIVE	3	4	1	1	1 additional LED found in the field 1 lamp recorded with no wattage
MARSHALL STREET	2	2			
NEWALL STREET	13	17	4		4 additional LEDs found in the field
NORMANBY STREET	7	7		4	4 lamps with no wattage recorded
PETER LIPPA DRIVE	4	13	9		9 additional lamps found in the field
SHEPHERD ROAD	2	2		2	2 lamps without a wattage recorded
STOUT STREET	2	2		2	2 lamps without a wattage recorded
SYME CRESCENT EXTENSION	1	1		1	1 lamp recorded as an HPS but LED found in the field
TUWHARETOA ROAD	1	8	7		7 additional lamps found in the field
WHITAKER STREET	4	2	-2	2	2 lamps not found in the field 2 lamps without a wattage recorded
WINDLEY PLACE	4	5	1		1 extra HPS lamp found in the field
Grand Total	220	297	79	40	

This clause relates to lights in the field that are not recorded in the database. The field audit found 79 additional lights. The accuracy of the field audit 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: unknown To: 02-Jul-18	79 lights not included in the database extract. Potential impact: Medium Actual impact: Unknown Audit history: None Controls: Weak Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak the data quality indicates a lack of quality control to check the data being inputted. The impact is rated as high as the actual impact is unknown as the registry figure is being used for reconciliation.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis are unaware of any missing information as Genesis relies on the extraction of the asset database. Genesis will raise this with the council to have rectified.	01/03/2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis can't realistically control this as Genesis relies on the customer to ensure that this information is provided. Genesis can however maintain and drive the changes that the audit identifies.	01/03/2019	

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 ability of the database to track changes was assessed and the process for tracking of changes in the database was examined.

Audit commentary

On 20th September 2012 the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required as long as the database contained an audit trail. I have interpreted this to mean that the production of a monthly "snapshot" report is sufficient to achieve compliance.

The database tracks additions and removals as required by this clause.

The processes were reviewed for ensuring that changes in the field are captured. The field work is carried out by Broadspectrum using Pocket RAMM. The asset data capture and database population are conducted by Opus. KDC have undertaken a 100% field audit to update the RAMM database but this data hadn't been uploaded to RAMM at the time of this audit. This is expected to greatly improve the database accuracy.

The process for new connections was examined. There has been no new development in the Kawerau district in recent times but there is one new area currently under development in Bowen Street. KDC plan to liaise with Horizon to ensure that these assets are added to the database in a timely manner.

KDC have an LED replacement project in progress. This is expected to be completed by June 2019. KDC have np plan for dimming to be deployed.

KDC have fortnightly outage patrols in place. The frequency of these patrols is expected to be extended due to the lower failure rate of LED lights.

Festive lights are connected to the unmetered streetlight circuits but are not tracked in RAMM. I recommend that these be added to RAMM and included in the monthly wattage report for the period connected. This is recorded as non-compliance in **section 3.1**.

Description	Recommendation	Audited party comment	Remedial action
Tracking of load change	Record festive lights in RAMM.	Genesis will request this information to be supplied.	Identified

There are no known private lights connected and the NZTA lights in the area are recorded in the NZTA database.

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 database has a complete audit trail.

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	Kawerau District Council street lights in and around Kawerau
Strata	The databases contain 684 items of load in the Kawerau DC area. The processes for the management of all Kawerau DC items of load is the same. I selected the following strata: • Local roads • Main roads
Area units	I created a pivot table of the roads in each database and used a random number generator in each spreadsheet to select a total of 29 sub-units.
Total items of load	220 items of load were checked.

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

Audit commentary

A statistical sample of 256 items of load found that the field data was 113.5% of the database data for the sample checked. This is outside the required database accuracy of 2.5%+/-. The statistical sampling tool reported with 95% confidence the precision of the sample was 62% and the true load in the field will be between 84.1% to 146.1% of the load recorded in the database. The sample is not sufficiently precise to be able to determine the database accuracy but indicates that the database is potentially under submitting.

The tool indicated that there is potentially 23,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of under submission if the database were used for submission. The statistical sampling tool reported with 95% confidence that there is a potential estimated submission variance range of between 27,800 kWh per annum over submission and 80,500 kWh per annum under submission.

As detailed in **section 2.1**, the database was checked against the published standardised wattage table. The RAMM database lamp wattage is recorded as ballast as well, therefore this would result in 79,048 kWh of over submission if the database were used for submission (as much of the database are LED lights and they do not have ballast). This is recorded as non-compliance below.

As detailed in **section 2.4**, analysis of the database found:

- 71 items of load with no lamp descriptions, lamp wattage and ballast detailed
- 146 items of load with lamp description but no lamp wattage or ballast wattage recorded
- 30 items of load with no ballast wattage recorded, but only one of these is a 250W HPS light requiring a ballast value of 28W.

Assuming an average lamp wattage of 29W for the 217 items of load with no wattage recorded and the one item of load with a ballast value, indicating an estimated 26,758 kWh of under submission if the database were used for submission. This is recorded as non-compliance.

As detailed in **section 2.5**, festive lights are connected to the unmetered streetlight circuits but are not tracked in RAMM. I was unable to determine the specific impact on reconciliation, but the volume of lights associated with this is small.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 31-Jul-18	The database accuracy is assessed to be 113.5% indicating potential under submission of 23,500 kWh per annum if the database were used for submission. Lamp wattage recorded as ballast wattage indicating an estimated over submission of 79,048 kWh of over submission if the database were used for submission. 218 items of load with missing wattage values indicating an estimated under submission of 26,758 kWh if the database were used for submission. Festive lighting is connected but the volume is not recorded. Potential impact: High Actual impact: Unknown Audit history: None Controls: Weak Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak the data quality indicates a lack of quality control to check the data being inputted. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis is engaging with the council to have this information accurately depicted in the RAMM database. Genesis has initiated the correction of the information and have started the rebilled and revision of the information billed and settled.	01/03/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis will continue to review the KDC information provided monthly.	01/03/2019	

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
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles this DUML load using the UML profile. The Distributor's registry kW figure and average daily burn hours (11.9 hours) are used to calculate submission. I confirmed the calculation was correct. This figure was updated when the ICP switched to Genesis in March 2016. Genesis have been provided with a wattage report but found the data quality to be too poor to use for submission purposes. Genesis intend to move to the KDC data once the database accuracy is confirmed.

KDC are undertaking 100% field audit to update the RAMM database. Once this has been completed KDC will send a database report monthly to Genesis. Analysis of the database found that the RAMM database lamp wattage is recorded as ballast figure as well, therefore this would result in approximately 50% more kW than is in the field if the database were used for submission in its current state (as much of the database are LED lights and they do not have a ballast).

I compared the kW value recorded in the registry with the load recorded in the database extract for the month of June 2018 and found:

ICP Number	Description	June 2018 kW from registry	RAMM kW value estimated June submission	Estimated June 2018 kW difference
1000023043BP177	Street Lights, KAWERAU	101	40.89	60.11-

This indicated that there is potential over submission of 256,730 kWh per annum if the database were accurate. However, as detailed in **sections 2.5** and **3.1**, the field audit found a large volume of load missing from the database. This combined with the fact that the RAMM database with the large volume of lights with the lamp wattage recorded in the ballast wattage field means it is not possible to calculate accurately what the difference is between the field and the figures being used calculate submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 Clause 15.2 and 15.37B(c) From: 01-Jun-17 To: 30-Jun-18	Historic registry figure used for submission Potential impact: Unknown Actual impact: High Audit history: None Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak as the RAMM database is not used for reconciliation. The impact is assessed to be unknown due to the registry figure being used and the RAMM database accuracy being poor therefore I have rated the impact as high.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis has initiated the use of the information provided by KDC, seems Genesis will not meet compliance regardless which avenue it takes. The information provided by KDC albeit having inaccuracies relating to missing lamp wattages, Genesis has been able to determine, off notes what the most likely is and where there was no information defaulted. This has led to Genesis halving the daily kW's which is the best representation as to what's in the field.	01/12/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been in contact with Kawerau DC, unfortunately we have not made too much ground in making the corrections required to meet compliance	01/12/2018	

CONCLUSION

Genesis use the daily kWh figure recorded in the registry to reconcile this load. This figure was updated when the ICP switched to Genesis in March 2016. Genesis have been provided with a wattage report but found the data quality to be too poor to use for submission purposes. Genesis intend to move to the KDC data once the database accuracy is confirmed. KDC have undertaken a 100% field audit to update the RAMM database but this data hadn't been uploaded to RAMM at the time of this audit. KDC will send a monthly wattage reports once this has been completed.

Analysis of the database found:

- missing wattage values
- lamp wattages recorded as ballast values
- a large volume of additional lights found in the field audit.

The combination of these factors means that it is not possible to calculate accurately the difference between the registry figure used for submission, and what is installed in the field.

This audit found eight non-compliances and makes one recommendation. The future risk rating of 39 indicates that the next audit be completed in three months, but I recommend that the next audit be in six months to allow time for field audit to be completed and the cleansed data to be uploaded to RAMM.

PARTICIPANT RESPONSE

Genesis has refrained from using the KDC RAMM information as it has not been complete. Due to not meeting compliance either way, Genesis has opted to initiate the use of the RAMM extraction. Genesis has back dated the data billed to January 2018, and will wash up the settlement through the revision process. Genesis are aware that the information within KDC's RAMM database is estimated @ 113.5% depicting an under submission. Genesis are reviewing the extraction provided by KDC to populate missing/erroneous information and will settle/bill based on that volume until KDC can have their database corrected. The daily kWh has reduced from 1202 to 557.53 which is the best reflection of what is in the field.