ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CENTRAL OTAGO DISTRICT COUNCIL RAMM DATABASE AND GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 22 October 2018

Date audit report completed: 7 December 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the Central Otago District Council (**CODC**) Unmetered Streetlights DUML RAMM 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.

This audit covers the items of load on the OtagoNet network. Genesis have been using the historic OtagoNet spreadsheet until CODC supplied them with a wattage report from RAMM in September 2018. This audit examines the accuracy of the items of load on the OtagoNet ICP. The RAMM database covers all of the CODC ICPs but Genesis use the Aurora streetlight database for the load associated with that network and this has been audited separately. Genesis would like to move to using the RAMM database for all items of load associated with this database post this audit.

The RAMM database is managed by CODC and is remotely hosted by RAMM Software Ltd. The field work, asset data capture and database population is conducted by Delta.

The field audit was undertaken of the all 230 items of load associated with the OtagoNet ICP on 27th October 2018. This found a minor number of variances but due to the small number of lights associated with this load the database accuracy is 95.1%, slightly lower than the 2.5+/- detailed in the DUML audit guidelines.

The audit found five non-compliances and makes one recommendation. These relate to a difference of lamps found in the field. The future risk rating of nine indicates that the next audit be completed in 12 months. If the cleared non-compliance relating to the late submission of this audit is excluded the score is eight and this indicates the next audit be completed in 18 months. I recommend this is adopted and includes all of the ICPs associated with the CODC RAMM database. 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	Cleared
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 95.1% indicating a potential over submission of approximately 3,500 kWh per annum.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Four lights not included in the database extract used for submission, estimated 705 kWh of under submission per annum.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 95.1% indicating an estimated over submission of approximately 3,500 kWh per annum.	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 95.1% indicating a potential over submission of approximately 3,500 kWh per annum.	Moderate	Low	2	Identified
					Future Risk Rating	**9**	

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
Location of each item of load	2.3	Update sub-area field to better reflect location of the item of load.	Genesis have yet to receive any comments from CODC, however will discuss the population of the information if this is required to meet compliance

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

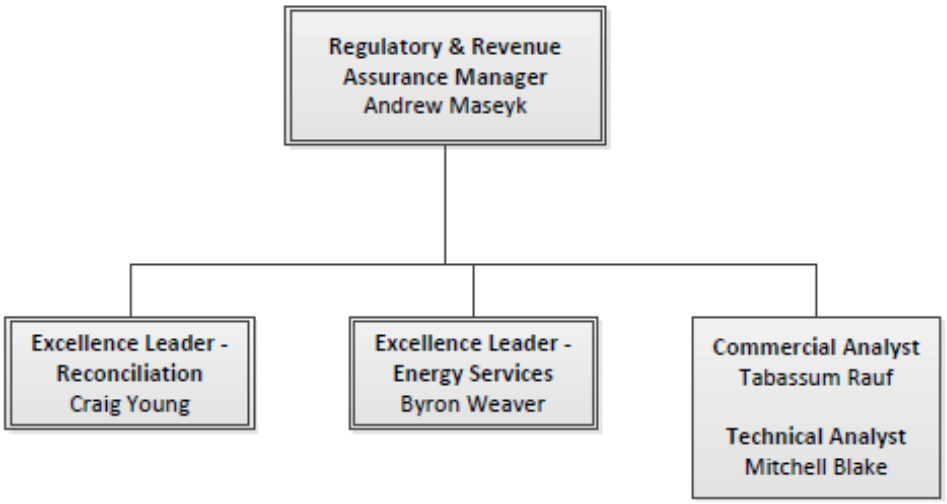
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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	Title
Rebecca Elliot	Lead Auditor
Debbie Anderson	Supporting 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
Andy Bartlett	Asset Engineer	Central Otago DC
Kevin Furnival	Project Engineer	Central Otago DC
Quinton Penniall	Environmental Engineer	Central Otago DC

1.4. Hardware and Software

The RAMM database used for the management of DUML is remotely hosted by RAMM Software Ltd.

CODC 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)
0001982630TG886	CODC STREETLIGHTS	SST	230	16,394

1.7. Authorisation Received

All information was provided directly by Genesis or CODC.

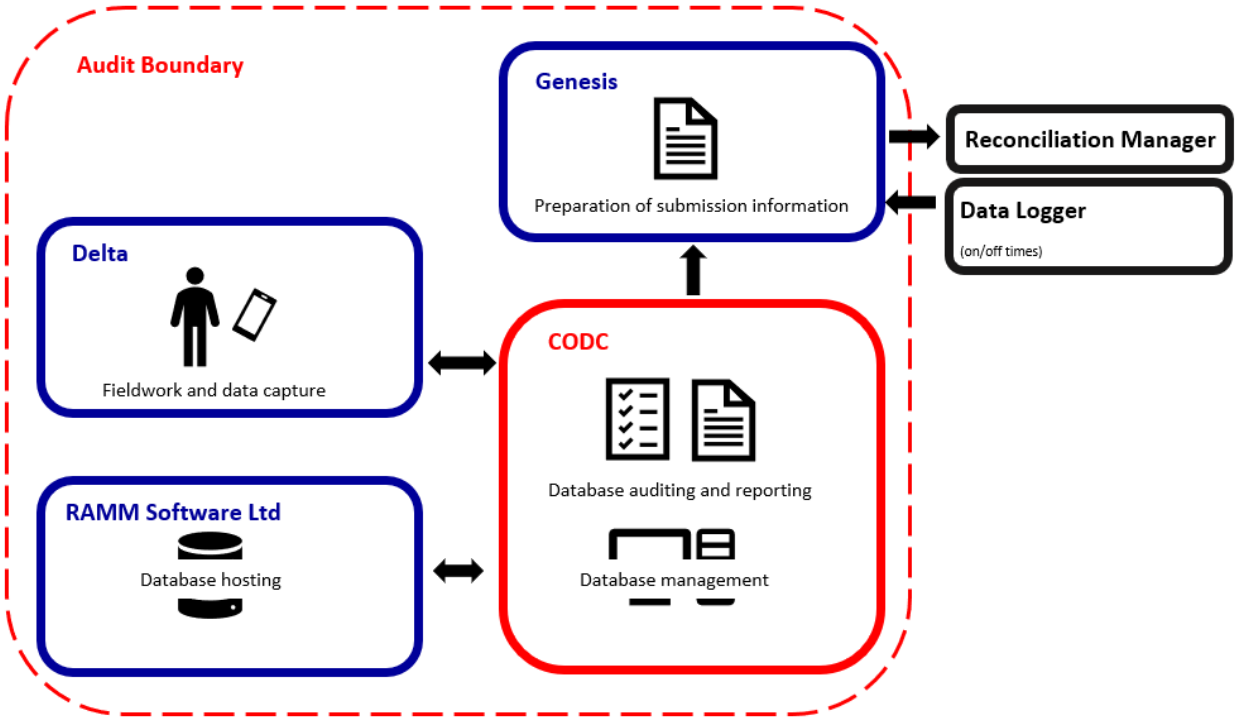
1.8. Scope of Audit

This audit of the CODC DUML RAMM 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.

This audit covers the items of load on the OtagoNet network. Genesis have been using the historic OtagoNet spreadsheet until CODC supplied them with a wattage report from RAMM in September 2018. This audit examines the accuracy of the items of load on the OtagoNet ICP. The RAMM database covers all of the CODC ICPs but Genesis use the Aurora streetlight database for the load associated with that network and this has been audited separately.

The RAMM database is managed by CODC and is remotely hosted by RAMM Software Ltd. The field work is carried out by Delta. The asset data capture and database population are conducted by CODC. 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 audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The audit was carried out at CODC's premises in Alexandra on 30th October 2018. The field audit was undertaken of all 230 items of load on the 27th October 2018.

1.9. Summary of previous audit

This is the first audit of this database 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 was not undertaken within the require timeframe due to the RAMM database contents not being available. The audit has now been completed but the late submission of this report is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 1.10 Clause 17.295F of part 17 From: 01-Jun-18 To: 16-Oct-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 liaised with CODC which lead to CODC completing a field audit to validate their RAMM dataset.	01/11/2018	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are receiving monthly data to validate and work with CODC on any exceptions found.	01/11/2018	

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 SST profile.

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers. The methodology is compliant.

I checked the submission calculation provided by Genesis for the September period and confirmed it to be correct.

The accuracy of the database was checked and found a minor number of variances but due to the small number of lights associated with this load the database accuracy is 95.1%, slightly lower than the 2.5+/- detailed in the DUML audit guidelines. This will result in an estimated over submission of 3,500 kWh per annum. This is also recorded as non-compliance in **sections 2.5, 3.1 and 3.2.**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-18 To: 16-Oct-18	The database accuracy is assessed to be 95.1% indicating an estimated over submission of approximately 3,500 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 rated as moderate, because they are sufficient to ensure that lamp information is correctly recorded most of the time. 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 liaised with CODC which lead to CODC completing a field audit to validate their RAMM dataset. Genesis have been working closely to ensure that the maintenance/implementation of lamps are recorded and reported to Genesis.	01/11/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are receiving monthly data to validate and work with CODC on any exceptions found.	01/11/2018	

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

All items of load have an ICP recorded against them.

Audit outcome

Compliant

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for the street identifier (street name), displacement and also GPS coordinates which are populated for all items of load.

There is also a field called sub-area which is populated for the majority of items with the settlement the items are located in or nearest to. The sub-area field for a small number of items, 24, is populated only with Rural. I would recommend updating these records to also display the settlement the items are located in or nearest to. This would enable the quick recalling of all items in a particular settlement if required.

Recommendation	Description	Audited party comment	Remedial action
Regarding: Clause 11(2)(b) of schedule 15.3	Update sub-area field to better reflect location of the item of load.	Genesis have yet to receive any comments from CODC, however will discuss the population of the information if this is required to meet compliance	Identified

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 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 the manufacturers rated wattage and the ballast wattage. The extract provided has fields for lamp make and model, and all were populated. The accuracy of the lamp description, capacity and ballasts recorded is discussed in **section 3.1**.

Audit outcome

Compliant

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of all 230 items of load associated with the OtagoNet ICP on 27 October 2018.

Audit commentary

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

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
NASEBY A-D					
ALLEN ST	3	3			
ARROW ST	3	3			
AVOCA ST	3	3			
BROOM STREET (NASEBY)	4	4			
CARRON ST	2	2			
CEMETERY RD (NASEBY)	2	2			
CHANNEL RD	7	7			
DERG ST	1	1			
DERWENT ST	18	18	-2		2 x 500W Halogen not found in the field
NASEBY					
EARNE ST	4	4			
EASK ST	2	2			
ENNEL ST	1	1			
FOYLE ST	1	1			
KESWICK ST	1	1			
LARCH AVE	2	2			
LEVEN ST	7	7			
LOMOND STREET	1	1			
LUA ST	1	1			
MELVIN STREET	1	1			

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
NESS ST	1	1			
OUGHTER ST	7	7	-2		2 x 14W LEDs not found in the field
STRODE AVE	5	5			
SWIMMING DAM RD	2	2			
TAY ST	1	1			
RANFURLY					
BUTE ST	8	8			
CAULFEILD ST	9	9			
CHARLEMONT STREET (SH 85)	6	6			
CHARLEMONT STREET CPARK	3	3			
CHARLEMONT STREET EAST	2	2			
DAVIS AVENUE	1	1			
DUNGANNON ST	11	11	2		2 x additional 17W LED lamps found in the field
FRASER AVE	4	4			
GRANVILLE PLACE	2	2			
HANRAHAN LANE (Ranfurly)	1	1			
JOHN ST	14	14	2	1	2 x additional lights found in the field 1x 100W HPS and 1 x 17W LED 1 x incorrect wattage- 125W MV in the field and not 70W HPS
KNOWLES CRES	5	5			
LAUNCESTON PLACE	5	5			
MITCHELL STREET	3	3			
NORTHLAND STREET (SH 85)	3	3			
PERY ST	7	7			
PERY STREET (SH 85)	2	2			
RANFURLY COUNCIL BUILDING CPARK	6	6			
RANFURLY PATEAROA RD	4	4			
READE ST	2	2			
STADIUM DRIVE	4	4			
STAFFORD ST	5	5			
STUART RD	4	4			
THOMAS ST	6	6			
TYRONE ST	4	4			
WELLES ST	3	3			
PATEAROA, WAIPIATA, OTUREHUA					
AITKEN ROAD	1	1			

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
CAMBRIDGE ROAD (Patearoa)	2	2			
CHIRNSIDE TERRACE (PATEAROA)	3	3			
HALL ROAD (PATEAROA)	1	1			
HAWTHORNE AVENUE (Patearoa)	2	2			
MCATAMNEY ROAD	1	1			
PATEAROA ROAD	4	4			
IDA VALLEY OMAKAU ROAD (Oturehua)	5	5			
KOMAKO ROAD	1	1			
MAIN STREET (WAIPIATA)	4	4			
WAIPIATA DOMAIN ROAD	2	2			
Grand Total	**230**	**230**	**8**	**1**	

This clause relates to lights in the field that are not recorded in the database. The field audit found four additional lights in the field, this is recorded as a non-compliance below.

There were also four lights that were not found in the field and one incorrect wattage identified, these field audit variances found are recorded as non-compliance in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Sep-18 To: 16-Oct-18	Four lights not included in the database extract used for submission, estimated 705 kWh of under submission 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 rated as moderate because they ensure most information is accurate. 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 has highlighted the minor dataset discrepancy, CODC will be managing the issues highlighted to update the streetlight dataset held for CODC.	01/03/2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are receiving monthly data to validate and work with CODC on any exceptions found. However, it relies on CODC operational processes to ensure all asset information is recorded within RAMM.	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 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 new lamp connections and the tracking of load changes due to faults and maintenance. All fault and maintenance work is conducted by Delta and as each job is completed and invoiced, the database is updated by council staff from the invoice details to ensure database accuracy. When lighting in new subdivisions is connected, "as built" plans are supplied to CODC. There is an onsite inspection prior to the "as built" (224c) being approved. CODC are aware there is a risk of a timing delay from when the lights are livened to when they are present in the database and this will be monitored.

Lamp outages are predominately notified to CODC by residents from which work requests are made to Delta, there are no outage patrols at present.

There is a project underway to roll out LED lights, a number of different contractors have been used to date, but the database update process remains the same. As blocks of work are completed and invoiced the database is updated by council staff. It is expected that the majority of replacements will be completed by Christmas 2018.

There are no festive lights connected to the unmetered streetlight circuits. Private lights are also not held in the 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

A 100% field audit was undertaken of the database.

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

Audit commentary

The 100% field audit found four additional lights, four lights missing from the field and one incorrect lamp wattage totalling 810W and resulting in an estimated over submission of 3,500 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool). The database is 95.1% accurate which is outside of the +/-2.5% variance allowed. This is recorded as non-compliance below.

The database was checked against the published standardised wattage table and confirmed that ballasts applied, and lamp descriptions were correct.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-18 To: 16-Oct-18	The database accuracy is assessed to be 95.1% indicating an estimated over submission of approximately 3,500 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 rated as moderate, because they are sufficient to ensure that the database is accurate most of the time. 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 liaised with CODC which lead to CODC completing a field audit to validate their RAMM dataset. Genesis have been working closely to ensure that the maintenance/implementation of lamps are recorded and reported to Genesis.	01/11/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are receiving monthly data to validate and work with CODC on any exceptions found.	01/11/2018	

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

The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the "burn time" which is sourced from data loggers. The methodology is compliant.

I checked the submission calculation provided by Genesis for the September period and confirmed it to be correct.

The accuracy of the database was checked and found a minor number of variances but due to the small number of lights associated with this load the database accuracy is 95.1%, slightly lower than the 2.5+/- detailed in the DUML audit guidelines. This will result in an estimated over submission of 3,500 kWh per annum. This is also recorded as non-compliance in **sections 2.5, 3.1 and 3.2.**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 Clause 15.2 and 15.37B(c) From: 01-Sep-18 To: 16-Oct-18	The database accuracy is assessed to be 95.1% indicating a potential over submission of approximately 3,500 kWh per annum. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because they are sufficient to ensure that lamp information is correctly recorded most of the time. 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 liaised with CODC which lead to CODC completing a field audit to validate their RAMM dataset. Genesis have been working closely to ensure that the maintenance/implementation of lamps are recorded and reported to Genesis.	01/11/2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are receiving monthly data to validate and work with CODC on any exceptions found.	01/11/2018	

CONCLUSION

This audit covers the items of load on the OtagoNet network. Genesis have been using the historic OtagoNet spreadsheet until CODC supplied them with a wattage report from RAMM in September 2018. This audit examines the accuracy of the items of load on the OtagoNet ICP. The RAMM database covers all of the CODC ICPs but Genesis use the Aurora streetlight database for the load associated with that network and this has been audited separately. Genesis would like to move to using the RAMM database for all items of load associated with this database post this audit.

The RAMM database is managed by CODC and is remotely hosted by RAMM Software Ltd. The field work, asset data capture and database population is conducted by Delta.

The field audit was undertaken of the all 230 items of load associated with the OtagoNet ICP on 27th October 2018. This found a minor number of variances but due to the small number of lights associated with this load the database accuracy is 95.1%, slightly lower than the 2.5+/- detailed in the DUML audit guidelines.

The audit found five non-compliances and makes one recommendation. These relate to a difference of lamps found in the field. The future risk rating of nine indicates that the next audit be completed in 12 months. If the cleared non-compliance relating to the late submission of this audit is excluded the score is eight and this indicates the next audit be completed in 18 months. I recommend this is adopted and includes all of the ICPs associated with the CODC RAMM database.

PARTICIPANT RESPONSE

Genesis are pleased to see the increase of accuracy within CODC asset database. Genesis continue to build a strong relationship with CODC that will only continue to achieve higher accuracy levels.