ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

MCKENZIE DISTRICT COUNCIL (MOUNTAIN POWER) AND CONTACT ENERGY LIMITED

Prepared by: Steve Woods (assisted by Deborah Anderson)

Date audit commenced: 15 May 2018

Date audit report completed: 27 May 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the McKenzie Disctrict Council (**MDC**) DUML database (for Mountain Power's ICPs) and processes was conducted at the request of Contact Energy Limited (**Contact**), 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, which became effective on 1 June 2017.

The RAMM database used for submission is held by Timaru District Council on behalf of MDC.

New connection, fault and maintenance work is completed by NetCon. NetCon update the database for maintenance work using Pocket RAMM. Asset Management data eg LED upgrades in residential areas, are completed by NetCon and then advised to MDC who make those changes in the RAMM database.

MDC provide a monthly report to Contact from the database for submissions.

All database and submission checks performed on a database version and submission file as at the end of March 2018.

Six non-compliances were identified, and no recommendations were raised.

The future risk rating of Nine indicates that the next audit be completed in 12 months.

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	There is some inaccurate data within the database used to calculate submissions • 1 lamp type and wattage error, over submission of 4.3 kWh pa • 6 additional lamps found in field audit, under submission of 794 kWh pa	Strong	Low	1	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	There is one incorrect lamp type and wattage values in the database. There is one lamp affected with an estimated over submission of 4.3 kWh	Strong	Low	1	Identified

			per annum				
All load recorded in database	2.5	11(2A) of Schedule 15.3	Six additional L33 LED lamps were found in the field for an estimated under submission of 794.4 kWh per annum.	Moderate	Low	2	Identified
Tracking of load changes	2.6	11(3) of Schedule 15.3	Some lamps not recorded in the database	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database checks found one lamp with incorrect wattage information. Resulting in estimated over submission of 4.3 kWh per annum. The field audit found eight lamp type and wattage differences. The field data was 108.6% of the database data for the sample checked, resulting in estimated under submission of 794.4 kWh per annum.	Moderate	Low	2	Identified
Accuracy of volume information	3.2	15.2 and 15.37B(c)	Inaccurate information in the database used for submission calculation • 1 lamp type and wattage error, estimated over submission of 43 kWh per annum. • 6 additional lamps in the field and 2 lamp wattage differences, estimated over submission of 794 kWh per annum.	Strong	Low	1	Identified
					Future Risk Rating	**9**	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Recommendation

ISSUES

Subject	Section	Description	Issue

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.

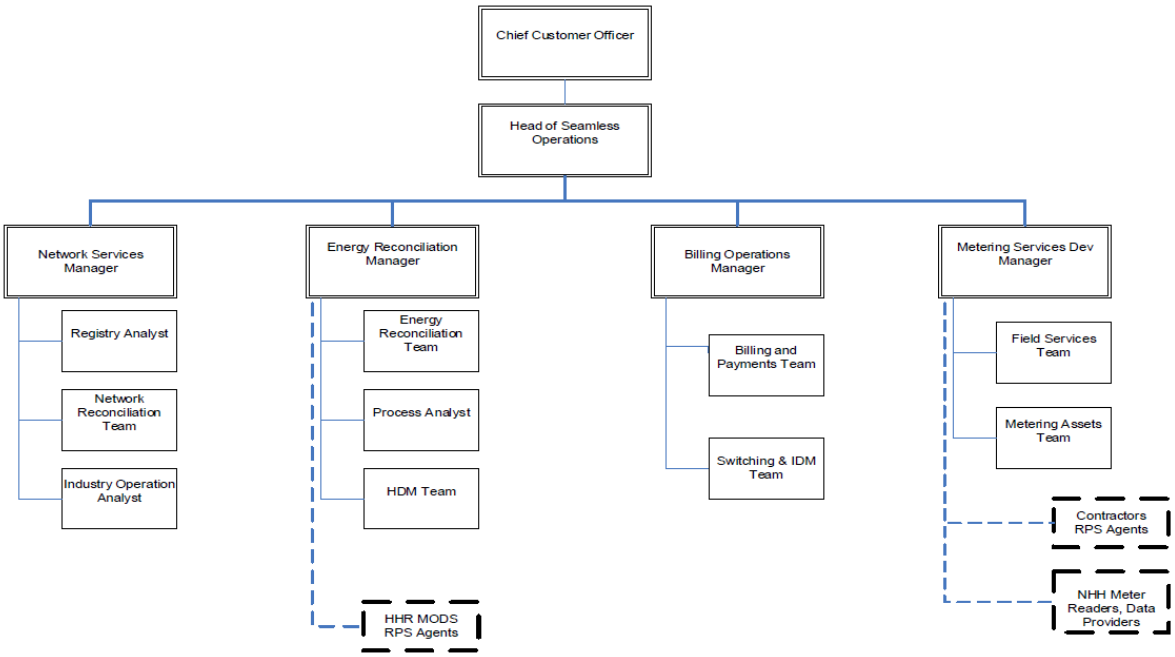
Audit commentary

There is one exemption in place relevant to the scope of this audit:

Exemption No. 177: Exemption to clause 8(g) of schedule 15.3 of the Electricity Industry Participation Code 2010 ("Code") in respect of providing half-hour ("HHR") submission information instead of non half-hour ("NHH") submission information for distributed unmetered load ("DUML"). This exemption expires at the close of 31 October 2023.

1.2. Structure of Organisation

Contact Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Anthony Bacon	Road Engineering Technician	Timaru District Council (acting for MDC)
Bernie Cross	Energy Reconciliation Manager	Contact Energy

1.4. Hardware and Software

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

MDC 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	NSP	Profile	Number of items of load	Database wattage (watts)
0000010005MO321	Streetlighting - The Drive	MMT0111	RPS	18	306
0000020005MO20D	Streetlighting	MMP0111	RPS	42	1,849

1.7. Authorisation Received

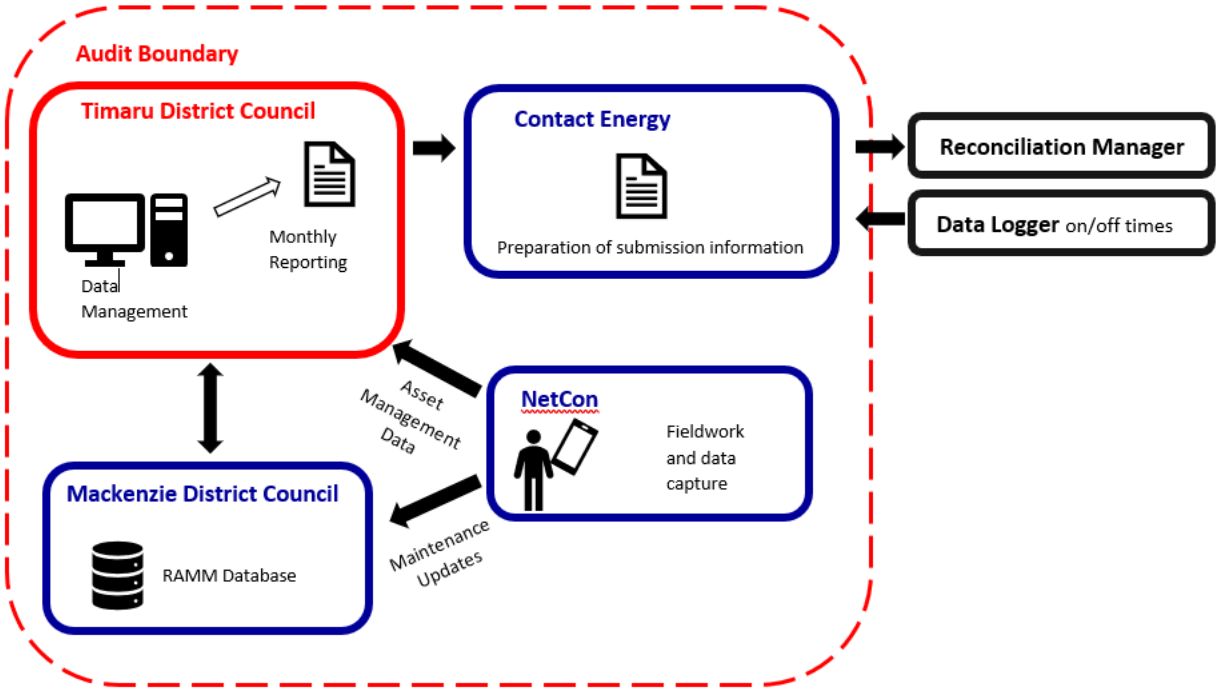
All information was provided directly by Contact and MDC.

1.8. Scope of Audit

This audit of the McKenzie District Council (**MDC**) DUML database, Mountain Power ICP's, and processes was conducted at the request of Contact Energy Limited (**Contact**), 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, which became effective on 1 June 2017.

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



The field audit was undertaken of the entire database of 60 items of load on 15th May 2018.

1.9. Summary of previous audit

This is the first audit for these ICPs for Contact.

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 3 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

Contact 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. Compliance is confirmed.

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

Contact confirmed "Mountain Power streetlight submission for March 2018 – settled as NHH so no logger file for these". The RPS profile is used and consumption is based on the daily kWh figure on the registry, which is updated from the database information.

I checked the calculation for March 2018 and I confirm it is accurate.

There are no Festive lights to be considered in the calculation.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clauses 11(1) of Schedule 15.3 From: Unknown To: 30-Apr-18	Inaccurate information in the database used for submission calculation • 1 lamp type and wattage error, **section 2.4**, estimated over submission of 43 kWh per annum. • 6 additional lamps in the field and 2 lamp wattage differences, **section 2.5**, estimated over submission of 794 kWh per annum. 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 because there were very few incorrect lamps identified. The impact is low; the expected wattage difference is under 900 kWh per annum.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time		June 2018	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	

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 number recorded against them in the database.

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

All items of load have address location as well as Pole ID and Light ID reference numbers and GPS co-ordinates to assist with Location.

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 and that each item of load had a value recorded in these fields.

Audit commentary

Lamp make, model, lamp wattage and ballast wattage are included in the database.

MDC's database contains the manufacturers rated wattage and the ballast wattage. Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority.

Database checks found one lamp that appears to have been identified with incorrect wattage information. Total wattage difference of 1W will result in estimated over submission of 4.3 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Lamp Type	Description	Wattage	Lamp Type Category	MDC database	Correct wattage	Lamps affected	wattage difference	total difference
35w Low Pressure Sodium	Unknown	45	Low Pressure Sodium	36w Low Pressure Sodium	44	1	-1	-1
						1		1W

Lamp identified as a '36w Low Pressure Sodium' in the database:

Pole ID	Road Name	Displacement	House Address	Carriageway Area	Light ID
717	LAKELAND AVENUE	204m	20 - 20 LAKELAND AVENUE	TWIZEL	973

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clauses 11(2)(c) and (d) of Schedule 15.3 From: Unknown To: 30-Apr-18	There is one incorrect lamp type and wattage value in the database. There is one lamp affected with an estimated over submission of 4.3 kWh per annum. 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 because only one of the 60 lamps in the database had incorrect type and wattage information. The impact is low; the expected wattage difference is 4.3 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time	June 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 the entire database, 60 items of load on the 15th May.

Audit commentary

The field audit findings are detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Strata					
THE DRIVE	10	10			
WOODLEY AVENUE	7	7			
HOMESTEAD AVENUE	1	1			
GRANDVUE DRIVE	17	23	6	186 W	• 1 lamp recorded as 35 W LPS but a LED L33 • 6 additional LED L33 lamps found
GREENFIELD PLACE	7	7			
LAKELAND AVENUE	11	11		-1 W	One lamp recorded incorrectly as 45 W
PENSTOCK PLACE	3	3			
UNWIN PLACE	4	4			
Total by Type	**60**	**66**	**6**	**185 W**	

I found six additional lamps in the field than were recorded in the database, and two lamp wattage differences. The missing load is recorded as a non-compliance.

The field data was 108.6% of the database data for the sample checked. The total wattage recorded in the database for the sample was 2,155 watts. The total wattage found in the field for the sample checked was 2,341 watts, a difference of 186 watts. This will result in estimated under submission of 794.4 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Incorrect wattage found in the field is recorded as a 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: Unknown To: 30-Apr-18	Six additional L33 LED lamps were found in the field for an estimated under submission of 794.4 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 mitigate risk most of the time but some errors still occur The impact is low based on the annual kWh difference

Actions taken to resolve the issue	**Completion date**	**Remedial action status**
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time	June 2018	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

On September 20th 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.

NetCon is the maintenance contractor for MDC region. Outage patrols are conducted on a regular basis. Lamp outages are notified to MDC by residents and work requests are made to NetCon personnel. NetCon update the database directly when maintenance is performed.

LED upgrades are underway by region by street. NetCon report to MDC as upgrades completed and the database is updated within the month of notification.

New subdivisions require a proposed plan to be provided and an "as built" plan once the development is complete. The Councils have an acceptance process for new subdivisions. NetCon's site foreman advises when able to be livened. MDC then go and check these are installed and livened and add them to their database from the day of livening.

As recorded in Section 2.5, some additional lights were installed and they were not updated into the database and therefore the daily kWh figure in the registry is also incorrect. This does not achieve compliance with this clause.

There is no Festive light installation to be accounted for in MDC's Mountain Power region.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.6 With: Clause 11(3) of Schedule 15.3 From: Unknown To: 30-Apr-18	Some lamps not recorded in the database Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time	June 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

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

Audit observation

The database was checked for audit trails.

Audit commentary

RAMM records audit trail information of changes made.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

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

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

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

Audit observation

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

Plan Item	Comments
Area of interest	Mountain Power region
Strata	The database contains 60 items of load in the Twizel area. There is new development occurring in Twizel. The processes for the management of all items of load is the same, I decided to place the items of load into two strata, as follows: 1. The Drive & associated streets 2. Grandvue & associated streets
Area units	All items of load in the database were checked.
Total items of load	60 items of load were checked.

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

Audit commentary

The database was found to contain some inaccuracies.

Database checks found one lamp that appears to have been identified with incorrect wattage information. Total wattage difference of 1W will result in estimated over submission of 4.3 kWh per annum. This has been recorded as a non-compliance in **section 2.4**.

The field audit found eight lamp type and wattage differences.

The field data was 108.6% of the database data for the sample checked. The total wattage recorded in the database for the sample was 2,155 watts. The total wattage found in the field for the sample checked was 2,341 watts, a difference of 186 watts. This will result in estimated under submission of 794.4 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: Unknown To: 30-Apr-18	Database checks found one lamp with incorrect wattage information. Resulting in estimated over submission of 4.3 kWh per annum. The field audit found eight lamp type and wattage differences. The field data was 108.6% of the database data for the sample checked, resulting in estimated under submission of 794.4 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 of the number of incorrect lamp type and wattage differences. The impact is low, as the expected nett wattage difference is less than 1,000 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time	June 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Contact reconcile this DUML load using the NHH profile.

Submissions are based on the database information provided monthly from MDC.

I recalculated the submissions for March 2018 for ICPs using MDC's database information.

I confirmed that the calculation method was correct.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clauses 15.2 and 15.37B(c) From: Unknown To: 30-Apr-18	Inaccurate information in the database used for submission calculation • 1 lamp type and wattage error, **section 2.4**, estimated over submission of 43 kWh per annum. • 6 additional lamps in the field and 2 lamp wattage differences, **section 2.5**, estimated over submission of 794 kWh per annum. 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 because there were very few incorrect lamps identified. The impact is low; the expected wattage difference is under 900 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Contact will work with MDC's agent Timaru DC to get the database updated with the correct values and attributes. Timaru DC have historically been very proactive in correcting issues once identified and we would expect a relatively quick resolution time	June 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

Timaru District Council access and update the DUML database for the Mountain Power ICP's held by Mackenzie District Council.

New connection, fault and maintenance work is completed by NetCon. NetCon update the database for maintenance work using Pocket RAMM. Asset Management data eg LED upgrades in residential areas, are completed by Netcon and then advised to MDC who make those changes in the RAMM database.

MDC provide a monthly report to Contact from the database for submissions.

The field audit was undertaken of the entire database of 60 items of load on 15th May 2018.

Six non-compliances were identified, and no recommendations were raised.

The future risk rating of six indicates that the next audit be completed in 12 months.

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

PARTICIPANT RESPONSE

APPENDIX A - TEMPLATE FOR NON-COMPLIANCE, ISSUES AND RECOMMENDATIONS.

NON-COMPLIANCE

Non-compliance	Description
Audit Ref: With: From: Click here to enter a date. To: Click here to enter a date.	Potential impact: Choose an item. Actual impact: Choose an item. Audit history: Controls: Choose an item. Breach risk rating:
Audit risk rating	**Rationale for audit risk rating**
Choose an item.	

Actions taken to resolve the issue	Completion date	Remedial action status
[Participant comment]	[proposed or actual completion date]	Choose an item.
Preventative actions taken to ensure no further issues will occur	**Completion date**	
[Participant comment]	[proposed or actual completion date]	

RECOMMENDATION

Description	Recommendation	Audited party comment	Remedial action

ISSUE

Description	Issue	Remedial action