

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

WAIMAKARIRI DISTRICT COUNCIL AND
GENESIS ENERGY

Prepared by: Steve Woods

Date audit commenced: 21 May 2019

Date audit report completed: 29 May 2019

Audit report due date: 01-Jun-19

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EXECUTIVE SUMMARY

This audit of the Waimakiriri District Council (**WDC**) Unmetered Streetlights 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, which became effective on 1 June 2017.

This report includes ICP 0000366449MP595 for the Pegasus Boulevard streetlights. These lights are now part of WDC but were subject to a separate audit in December 2018. There was one error found in the 2018 audit, which has now been corrected. I've included the corrected data in the overall accuracy calculation.

The audit found two non-compliances.

The field audit found 37 discrepancies in total, but the database is considered accurate because it's within +/- 5%. I found 21 additional lamps in the field than were recorded in the database, two lamps in the database not present in the field and 15 incorrect wattages.

The future risk rating of three indicates that the next audit be completed in 24 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
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	Some inadequate location information.	Strong	Low	1	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	All load is not recorded in the database, 21 additional items of load were identified.	Moderate	Low	2	Identified
Future Risk Rating						3	

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	Action
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

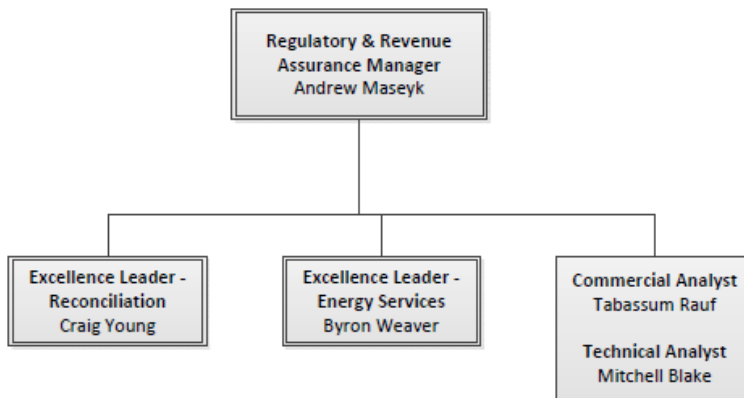
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

Genesis confirms that there are no exemptions in place relevant to the scope of this audit.

1.2. Structure of Organisation

Genesis provided the relevant 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
Craig Young	Excellence Leader- Reconciliation	Genesis Energy
Grace Hawken	Technical Specialist - Reconciliations Team	Genesis Energy

Sarah Barnes	Regulatory Manager	Mainpower
Neil O'Loughlin	Surveyor/ Pricing Co-ordinator	Mainpower
Joel Hung	Commercial Analyst	Mainpower

1.4. Hardware and Software

Section 1.8 shows that Mainpower maintains an Access database for the management of the DUML information. Backup and restoration procedures are in accordance with normal industry protocols.

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)
0000366371MPF7B	Waimakariri District Council	STREET LIGHT SBK 0331	SST	2,568	264,943
0000565850KEA7B	Waimakariri District Council	DISTRIBUTED STREETLIGHTING OLD KAIAPOI BOROUGH	SST	585	62,527
0000366372MP3BB	Waimakariri District Council	STREET LIGHTING KAI0111	SST	2,718	243,203
0000282125MP3EF	Waimakariri District Council	STREETLIGHTS SBK0661SWN	SST	51	5,865
0000305303MPA1B	Waimakariri District Council	STREETLIGHTS SBK0661BHL	SST	26	4,177
0000328410MP099	Waimakariri District Council	STREETLIGHTS SBK0661BHL (Riverlea Estate)	SST	85	8,067
0000366449MP595	PEGASUS BOULEVARD STREETLIGHTS	Kai0111	SST	86	5,118

1.7. Authorisation Received

All information was provided directly by Genesis or Mainpower.

1.8. Scope of Audit

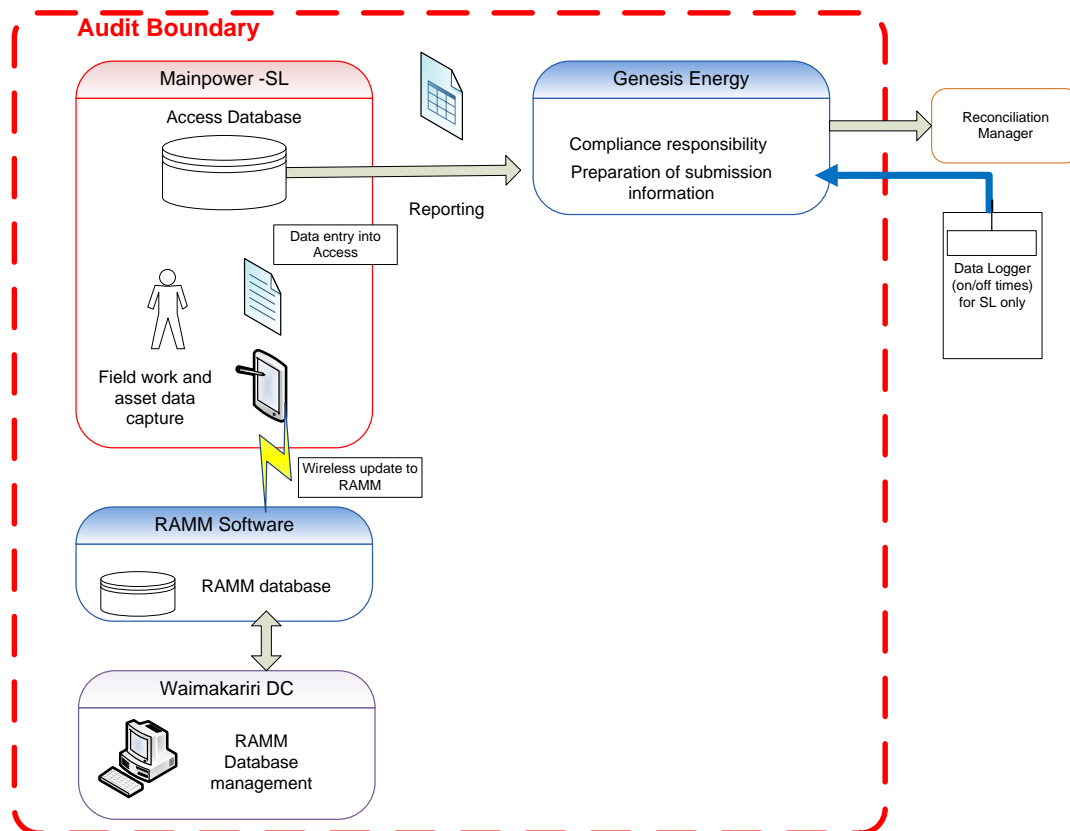
This audit of the WDC DUML database and processes was conducted at the request of Genesis, in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017.

WDC is located on the Mainpower network. Mainpower is engaged as the streetlighting maintenance contractor and they maintain a database, which is used by Genesis to calculate submission information. Mainpower provides reporting to Genesis on a monthly basis.

A RAMM database is held by WDC, who is Genesis's customer. This database is hosted by RAMM Software Limited and is populated by Mainpower, but it is not used by Genesis for the calculation of submission information.

The diagram below shows the flow of information and the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 377 items of load on 22 May 2019.

1.9. Summary of previous audit

Genesis provided a copy of the last audit report undertaken by Steve Woods of Veritek Limited in April 2018. The table below records the findings.

Table of Non-Compliance

Subject	Section	Clause	Non compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 95.9% indicating an estimated over submission of 106,900 kWh per annum.	Cleared
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	Some inadequate location information.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	All load is not recorded in the database (4 lamps missing from field audit).	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 95.9% indicating an estimated over submission of 106,900 kWh per annum.	Cleared
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 95.9% indicating an estimated over submission of 106,900 kWh per annum.	Cleared

Table of Recommendations

Subject	Section	Clause	Recommendation for Improvement	Status
ICP identifier	2.2		Check 65 streets where items of load are recorded against more than one ICP.	Cleared
Database accuracy	3.1		Check all 24 125 watt MV lamps to confirm whether they have been replaced.	Cleared

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

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

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

Audit observation

Genesis has 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

Genesis reconciles this DUML load using the SST profile.

I checked the April 2019 extract provided by Mainpower against the submission totals supplied by Genesis and found that submission matched the database.

The methodology for deriving submission information is compliant. The field audit found 37 discrepancies in total, but the database is considered accurate because it's within +/- 5%.

Audit outcome

Compliant

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.

During the previous audit I recorded that there are 65 streets where the items of load are recorded against more than one ICP. Mainpower confirmed that these examples were all where there were two towns with the same street name, therefore the ICPs are recorded correctly.

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 DUMML database must contain the location of each DUMML item.

Audit observation

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

Audit commentary

The Mainpower database contains a field for the nearest street address and there are GPS coordinates. There are 18 records with lot numbers and no street address and also without GPS coordinates, which makes them difficult to locate. There are also 22 items of load in new subdivisions recorded against the main road rather than the individual roads in the subdivision.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 01-May-18 To: 24-May-19	Some inadequate location information. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Strong Breach risk rating: 1	
Audit risk rating	Rationale for audit risk rating	
Low	The controls are recorded as strong because they mitigate risk most of the time and the number of issues is low. The impact is a lack of clarity when conducting the field audit. The audit risk rating is low.	
Actions taken to resolve the issue		Completion date
Genesis has raised these with Waimakiriri DC and requested the locational exceptions to be corrected.		01/07/2019
Preventative actions taken to ensure no further issues will occur		Completion date
Genesis will review and report exceptions back to Waimakiriri DC monthly where exceptions are identified.		01/06/2019
		Identified

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

Mainpower's access database contains the manufacturers rated wattage and the ballast wattage.

Audit outcome

Compliant

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

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

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

Audit observation

The field audit was undertaken of a statistical sample of 377 items of load.

Audit commentary

The field audit discrepancies are detailed in the table below:

Street	Databas e count	Field count	Light count differences	Wattage recorded incorrectly	Comments
BEACH ROAD	20	21	+1	-	Pole 11455 has two lights not just one.
GREENFIELD MEWS	4	4	-	1	11815 is 45W not 65W.
STATION ROAD	4	3	-1	-	1879 not found.
BRACEBRIDGE ST	7	8	+1	1	12626 is proposed in database but is installed. 4689 is 70W SON not Fluoro
HILTON ST	20	20	-	8	4404 – 100HPS not Fluoro. 4420 – LED not 250 HPS.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
					4422 – LED not 250 HPS. 4423 – 100 HPS not fluoro. 4424 - 100 HPS not fluoro. 4425 - LED not 250 HPS. 6207 - 100 HPS not fluoro. 6298 - LED not 250 HPS.
COURTENAY DRIVE	21	40	+19	5	20 LED recorded as proposed. 6164 not found. 4292 – LED not 150 HPS. 4295 – LED not 150 HPS. 4296 – LED not 150 HPS. 6158 – LED not 150 HPS. 6159 – LED not 150 HPS.
Grand Total			20 (Net)	15	

I found 21 additional lamps in the field than were recorded in the database, two lamps in the database not present in the field and 15 incorrect wattages. The items missing from the database are recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-May-18 To: 24-May-19	All load is not recorded in the database, 21 additional items of load were identified. Potential impact: Low Actual impact: Low Audit history: Twice 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 number of differences described above.
Actions taken to resolve the issue	
	Completion date
	Remedial action status

Genesis has raised these with Waimakiriri DC and requested the locational exceptions to be corrected.	01/07/2019	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
Genesis will review and report exceptions back to Waimakiriri DC monthly where exceptions are identified.	01/06/2019	

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 DUMML 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

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. 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.

Monthly “outage patrols” are conducted by Mainpower and the process is used to identify any incorrect wattage and location issues that may exist.

For new subdivisions, the technician provides a form per light and these are signed at the time of data entry to confirm database population. There is also a check against the design. Information is entered into the database immediately on receipt, without having to wait for other departments to process their information.

There are some festive lights connected each year and this is reported separately to Genesis for inclusion in submission information.

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 DUMML 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 compliant audit trail for additions, deletions and changes as required by this clause.

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	Waimakariri District Council
Strata	The database contains items of load in the Waimakariri District Council area. The processes for the management of items of load are the same, but I decided to place the items of load into three strata, as follows: <ol style="list-style-type: none">1. GXP KAI01112. GXP SBK03313. Small town NZTA lighting is a separate audit report and not included in this one.
Area units	I created a pivot table of the roads in each area and I used a random number generator in a spreadsheet to select a total of 69 sub-units.
Total items of load	377 items of load were checked.

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

Audit commentary

The field data was 99.1% of the database data for the sample checked. The statistical sampling tool reported with 95% confidence the precision of the sample was 5.7% and the true load in the field will be between 96.6% to 102.1% of the load recorded in the database.

There will be approximately 21,900 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence the estimated impact will be between 50,200 kWh per annum over submission and 81,800 kWh per annum under submission. This falls within the acceptable database accuracy variance of +/- 5% as advised by the Electricity Authority, therefore compliance is recorded for database accuracy.

I checked the wattages and ballasts being applied and found these were correctly recorded.

Audit outcome

Compliant

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

- checking the registry to confirm that the ICP has the correct profile and submission flag; and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles this DUML load using the SST profile.

I checked the April 2019 extract provided by Mainpower against the submission totals supplied by Genesis and found that submission matched the database.

The methodology for deriving submission information is compliant. The field audit found 37 discrepancies in total, but the database is considered accurate because it's within +/- 5%.

Audit outcome

Compliant

CONCLUSION

The audit found two non-compliances.

The field audit found 37 discrepancies in total, but the database is considered accurate because it's within +/- 5%. I found 21 additional lamps in the field than were recorded in the database, two lamps in the database not present in the field and 15 incorrect wattages.

The future risk rating of three indicates that the next audit be completed in 24 months.

PARTICIPANT RESPONSE

Genesis will work with Waimakiriri DC to correct the exceptions found in the field and dataset.