VERITEK

Electricity Industry Participation Code Audit Report

For

Genesis Energy Limited

Kaipara District Council Unmetered Streetlights Distributed Unmetered Load

Prepared by Rebecca Elliot – Veritek Ltd

Date of Audit: 8/03/18

Date Audit Report Complete: 23/05/18

Executive Summary

This audit of the Kaipara District Council Unmetered Streetlights (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, which became effective on 1 June 2017.

Genesis reconciles this load using the streetlight database held by Northpower. This is maintained for the purpose of billing line charges and not for submission purposes. Whilst there were no errors found in the field audit, as there is no direct mechanism in place for updating load changes this is recorded as non-compliance. It was recommended in the previous audit that use of the Kaipara District Councils RAMM database is investigated to better manage changes in load items.

Analysis of the database found a discrepancy in the gear wattage for 1,397 of the items of load. This is resulting in an estimated over submission of 60,649.91 kWh per annum.

The audit found four non-compliances and makes two recommendations. The future risk rating of 41 indicates that the next audit be completed in three months. The matters raised are detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	Clause 11.1 of schedule 15.3	1,397 items of load have the incorrect ballast applied indicating over submission of 60,649.9 kWh per annum.	None	High	12	Investigating
Tracking of Load Changes	2.6	Clause 11(3) of Schedule 15.3	Tracking of load change not carried out, there is no direct mechanism for updates to be recorded.	None	Low	5	Investigating
Database Accuracy	3.1	Clause 15.2 & 15.37(b)	1,397 items of permanent load have the incorrect ballast applied indicating over submission of 60,649.91 kWh per annum.	None	High	12	Investigating
Volume Information Accuracy	3.2	Clause 15.2 & 15.37(c)	1,397 items of permanent load have the incorrect ballast applied indicating over submission of 60,649.91 kWh per annum.	None	High	12	Investigating
					Future Risk Rating	41	
					Indicative Audit Frequency	3 months	

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

Table of Recommendations

Subject	Section	Recommendation	Description
Data Transmission	1.10	Clause 20 of schedule 15.2	Add password protection to wattage report.
Tracking of Load Changes	2.6	Clause 11(3) of schedule 15.3	Investigate using KDC RAMM database to derive submission from.

Persons Involved in This Audit:

Auditor:

Name	Company	Role
Rebecca Elliot	Veritek Limited	Lead Auditor
Brett Piskulic	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader - Reconciliation	Genesis
Grace Hawken	Technical Specialist - Reconciliation Team	Genesis
Peter Smith	Retail Billing Accountant	Northpower

Contents

1. Administrative

1.1 List of ICPs

The following ICPs are relevant to the scope of this audit:

ICP	Description	Profile	NSP	No. of items of load
0000545278NRC7A	Streetlights; Kaipara District Council; MPE1101	NST	MPE1101	711
0000545280NRE79	Streetlights; Kaipara District Council; MTO0331	NST	MTO0331	760
			TOTAL items of load	1471

1.2 Exemptions from Obligations to Comply with Code (Section 11 of Electricity Industry Act 2010)

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.

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

1.3 Supplier List

Northpower is considered an agent, Genesis clearly understands that the use of agents does not release them from their compliance obligations.

1.4 Hardware and Software

The streetlight data is held in Northpower's SQL database with an Access interface.
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 Distributed Unmetered Load Audits (Clauses 16A.26 & 17.295F)

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 lighting audit.

Audit Commentary
This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe.

Audit outcome
Compliant

1.7 Separate Distributed Unmetered Load Audit (Clause 16A.8(4))

Retailers must ensure that DUML audits are reported in a separate audit report.

Audit Observation
Genesis has requested Veritek to undertake this street lighting audit.

Audit Commentary
The audit report for this DUML database is separate from other audit reports.

Audit outcome
Compliant

1.8 Summary of Previous Audit

Genesis provided a copy of the last audit report undertaken by Rebecca Elliot of Veritek Limited in May 2017 as part of Genesis' 2017 reconciliation participant audit. This audit wasn't submitted due to the audit regime change that occurred on June 1st however I have included the findings for reference below:

Table of Non Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of schedule 15.3	Submission information too high by approx. 61,345 kWh per annum.	Still existing
Capacity of load	2.2.4	11(2)(d) of schedule 15.3	Gear wattage not in the database and incorrect figures are used in the report to Genesis.	Still existing
Tracking of load changes	2.3	11(3) of schedule 15.	Database is not completely accurate.	Still existing

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Data Transmission	1.9	20 of schedule 15.2	Add password protection to wattage report.	Still existing
Database Contents	2.2	11(2) of schedule 15.3	Investigate using KDC RAMM database for submission purposes.	Still existing
Tracking of Load Change	2.3	11(3) of schedule 15.	Check the management of load change processes in place when investigating using the KDC RAMM database for submission purposes.	Still existing

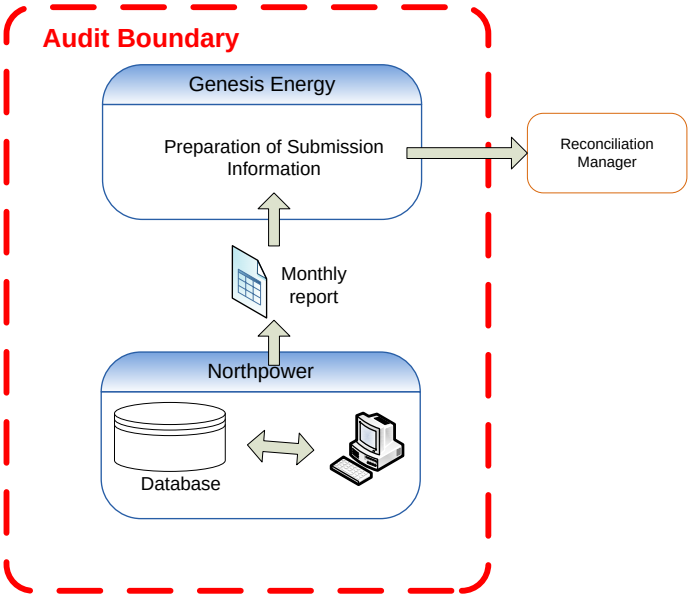
1.9 Scope of Audit

This audit of the Kaipara District Council Unmetered Streetlights 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.

Kaipara District Council Unmetered Streetlights are located on the Northpower network. These are reconciled using the streetlight database held by Northpower (this is indicated by the use of the NST profile). This is maintained for the purpose of billing line charges and not for submission purposes. Northpower provide a monthly report to Genesis of this database.

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



The field audit was undertaken of 155 lights using the statistical sampling methodology on 8/3/18. The field selection included five population groups:

- Dargaville Urban
- Other Urban
- Mangawhai
- Rural
- Amenity and Toilets

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1.10 Data Transmission (Clause 20 of Schedule 15.2)

The reporting from Northpower to Genesis is by way of email attachment of a summary report.

2. DUML database requirements

2.1 Deriving Submission Information (Clause 11(1) of Schedule 15.3)

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 load under the NST profile using the monthly report provided by Northpower. Genesis derives the hours of operation from Northpower. I checked the calculation for the month of January and confirm that methodology and volumes are correct.

The field audit found no incorrect data therefore the assessed database accuracy is 100%.

As detailed in **section 3.1**, the ballast being used for six lamp types (1,397 lamps) is incorrect and this is resulting in an estimated over submission of 60,649.91 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

Audit outcome
Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 11.1 of schedule 15.3 From: entire audit period	1,397 items of load have the incorrect ballast applied indicating over submission of 60,649.91 kWh per annum. Potential impact: High Actual impact: High Audit history: Once Controls: None Breach risk rating: 12
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as none, as the database being used for submission is not intended to be used for submission and there is no process to update changes made in the field. The audit risk rating is medium as there are ballast errors present on a significant number of lights in the database.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis Energy are currently opening communication channels with the Kaipara DC commercial and property advisor in order to ascertain whether there is another complete source of data	10/2018	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are engaging in conversation that could change its data source.	10/2018	

2.2 ICP Identifier (Clause 11(2)(a) of Schedule 15.3)

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 analysis found that all items of load had the correct ICP recorded against them.

Audit outcome
Compliant

2.3 Location of Each Item of Load (Clause 11(2)(b) of Schedule 15.3)

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 has the nearest street address for all items of load.

Audit outcome

Compliant

2.4 Description of Load Type (Clause 11(2)(c) & (d) of Schedule 15.3)

The DUML database must contain:

• a description of load type for each item of load and any assumptions regarding the capacity

• the capacity of each item in watts.

Audit Observation

The database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage.

Audit Commentary

The database contains a field for lamp type and this is populated appropriately. The database contains three fields for wattage for each address, firstly the lamp wattage, secondly the gear wattage and the third contains the total wattage. All had a value populated.

Audit outcome

Compliant

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

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 155 lights using the statistical sampling methodology.

Audit Commentary

The field audit findings are detailed in the table below and found no discrepancies.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Dargaville Urban					
Awakino Road	27	27	-	-	
Beach Road	7	7	-	-	
Campbell Terrace	1	1	-	-	
Clyde Street	3	3	-	-	

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Kapia Street	1	1	-	-	
Meadowpark Drive	1	1	-	-	
Murdoch Street	9	9	-	-	
Portland Terrace	2	2	-	-	
Totara Street	5	5	-	-	
Other Urban					
Griffin Road	1	1	-	-	
Nathan Road	1	1	-	-	
Calla Place	5	5	-	-	
Gibbons Road	1	1	-	-	
Paikea Lane	1	1	-	-	
Walker Crescent	2	2	-	-	
Hurndall Street East	14	14	-	-	
Bickerstaffe Road	7	7	-	-	
Mangawhai					
Parklands Avenue	4	4	-	-	
Dune View Drive	8	8	-	-	
Sailrock Drive	3	3	-	-	
Awatea Street	3	3	-	-	
Olsen Avenue	5	5	-	-	
Beachcomber Road	1	1	-	-	
Fagan Place	7	7	-	-	
Pohutukawa Place	2	2	-	-	
Spinifex Road	4	4	-	-	
Estuary Drive	2	2	-	-	
Kakapo Place	2	2	-	-	
Weka Street	5	5	-	-	
Rural					
Komiti Road	20	20	-	-	
Ammenity and Toilets					
Opposite Dargaville Community Gardens	1	1	-	-	
1st light LHS past Northern Wairoa Boating Club	1	1	-	-	
Total	155	155	-	-	

Audit outcome

Compliant

2.6 Tracking of Load Changes (Clause 11(3) of Schedule 15.3)

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

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 20 September 2012, the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required if 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 streetlight database held by Northpower is maintained for the purpose of billing line charges and not for submission purposes. When new installations are completed or changes are made there is not a direct mechanism for updated information to be provided from the contractors who complete the installations to Northpower. Therefore, changes are gathered in a haphazard manner as Northpower comes across changes in the course of their management of the network. Whilst no errors were found in the field audit I recommend that KDC's RAMM database be investigated to be used for submission as the tracking of load changes will be managed in a more systematic way.

Recommendation	Description	Audited party comment	Remedial action
Regarding: Clause 11(3) of schedule 15.3	Investigate using KDC RAMM database to derive submission from.	Ref 2.1 Genesis Energy are currently opening communication channels with the Kaipara DC commercial and property advisor in order to ascertain whether there is another complete source of data	Investigating

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.6 With: Clause 11(3) of Schedule 15.3 From: Entire audit period	Tracking of load change not carried out, there is no direct mechanism for updates to be recorded. Potential impact: Medium Actual impact: Low Audit history: Once Controls: None Breach risk rating: 5
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated none as there is no systematic process to manage the tracking of load change. The field audit did not identify any discrepancies relating to load changes therefore the audit risk rating of low.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis Energy are currently opening communication channels with the Kaipara DC commercial and property advisor in order to ascertain whether there is another complete source of data	10/2018	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are engaging in conversation that could change its data source.	10/2018	

2.7 Audit Trail (Clause 11(4) of Schedule 15.3)

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 Northpower database has an audit trail of all additions and changes to the database information.

Audit outcome
Compliant

3. Accuracy of DUML database

3.1 Database Accuracy (Clause 15.2 & 15.37(b))

The 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	Kaipara DC region
Strata	The database contains items of load in Kaipara area. The area has two distinct sub regions of Kaipara urban and rural. The processes for the management of KDC items of load are the same, but I decided to place the items of load into five strata, as follows: 1. Dargaville Urban 2. Other Urban 3. Mangawhai 4. Rural 5. Amenity and Toilets
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 31 subunits.
Total items of load	155 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 audit confirmed that the database was accurate in relation to the number of permanent load items.

I checked the ballasts being applied and found that 1,397 lamps had a discrepancy when compared to the standardised wattage table. This is detailed in the table below:

Lamp Type	Database Total Lamp Wattage	EA Standardised Total Wattage	Variance	Database Quantity	Estimated Annual kWh effect on consumption
100W HP Sodium	120.1	114	6.1	3	78.16
150w HPSV Lamp	397	0.1801	0.168	4.8037	20,516.60
160w BMV Lamp.	1	0.1601	0.16	1	0.43
250W MH	294.5	278	16.5	27	1,902.73
250w HPSV Lamp	294.5	278	16.5	80	5,637.72
400w MV Lamp	457.4	425	32.4	2	276.76
70w HPSV Lamp	91.5	83	8.5	888	32,237.51
Total estimated annual effect on submission					60,649.91

The incorrect capacities will be resulting in an estimated over submission of 60,649.91 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: 15.2 & 15.37(b) From: entire audit period	1,397 items of permanent load have the incorrect ballast applied indicating over submission of 60,649.91 kWh per annum. Potential impact: Medium Actual impact: Low Audit history: None Controls: None Breach risk rating: 12
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as none, as the database being used for submission is not intended to be used for submission and there is no process to update changes made in the field. The audit risk rating is high as the errors are present on a significant number of light and this is resulting in a significant volume of over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Audit 2017 identified these issues. Contact was made with the network, who indicated that the wattage table held by Veritek/EA was inaccurate and that North Power had based it off manufacturers specifications.	10/2018	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis Energy are currently opening communication channels with the Kaipara DC commercial and property advisor in order to ascertain whether there is another complete source of data	10/2018	

3.2 Volume Information Accuracy (Clause 15.2 & 15.37(c))

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 load under the NST profile using the monthly report provided by Northpower. Genesis derives the hours of operation from Northpower. I checked the calculation for the month of January and found

The field audit found no incorrect data therefore the assessed database accuracy is 100%.

As detailed in **section 3.1**, the ballast being used for six lamp types (1,397 lamps) is incorrect and this is resulting in an estimated over submission of 60,649.9 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: 15.2 & 15.37(c) From: entire audit period	1,397 items of permanent load have the incorrect ballast applied indicating over submission of 60,649.91 kWh per annum. Potential impact: High Actual impact: High Audit history: None Controls: None Breach risk rating: 12
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The audit risk rating is high as the errors are present on a significant number of light and this is resulting in a significant volume of over submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis Energy are currently opening communication channels with the Kaipara DC commercial and property advisor in order to ascertain whether there is another complete source of data	10/2018	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis are engaging in conversation that could change its data source.	10/2018	

4. Conclusions

Genesis reconciles this load using the streetlight database held by Northpower. This is maintained for the purpose of billing line charges and not for submission purposes. Whilst there were no errors found in the field audit, as there is no direct mechanism in place for updating load changes this is recorded as non-compliance. It was recommended in the previous audit that use of the Kaipara District Councils RAMM database is investigated to better manage changes in load items.

Analysis of the database found a discrepancy in the gear wattage for 1,397 of the items of load. This is resulting in an estimated over submission of 60,649.91 kWh per annum.

The audit found four non-compliances and makes two recommendations. The future risk rating of 41 indicates that the next audit be completed in three months.

5. Genesis Comments

Genesis have reviewed this report. Their comments are recorded in the audit and no further comments were provided.