

VERITEK

# Electricity Industry Participation Code Audit Report

For

**Genesis Energy Limited**



**Stratford District Council  
Distributed Unmetered Load**

**Prepared by Tara Gannon – Veritek Ltd**

**Date of Audit: 11/12/2017**

**Date Audit Report Complete: 26/03/2018**

## Executive Summary

This audit of the Stratford District Council (SDC) 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.

Streetlight load is determined by wattages held within SDC's RAMM database. SDC maintains NZTA and private lighting details in the database, but they are excluded from the monthly reports provided to Genesis.

Festive and decorative lighting is connected to the streetlight circuits, and wattages for this lighting need to be checked and updated in RAMM.

The audit process included a field audit of 201 items of load and found 95.8% accuracy. Review of the entire database found 570 lamps with incorrect total wattage recorded. The errors in the field audit sample and wattages resulted in combined under reporting of approximately 13,220 kWh per annum.

The future risk rating of nine indicates that the next audit be completed in 12 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	11(1) of Schedule 15.3	The database used to prepare submissions contains some inaccurate information.	Weak	Low	3	Identified

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database Accuracy	3.1	15.2	The database contains some inaccurate information: <ul style="list-style-type: none"> <li>• 570 lamps have incorrect total wattage recorded.</li> <li>• Wattages of festive and decorative lights need to be updated in RAMM.</li> <li>• For the sample of 201 lamps checked, ten lamps had incorrect lamp and wattage information recorded.</li> </ul>	Weak	Low	3	Identified
Volume Information Accuracy	3.2	15.2	The database used to prepare submissions contains some inaccurate information.	Weak	Low	3	Identified
Future risk rating						9	
Indicative audit frequency						12 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
Deriving submission information	2.1	Unmetered load for 1000544328PCC4B	Confirm the correct unmetered load for 1000544328PCC4B. There is a discrepancy between the Registry and SDC's records.

## Persons Involved in This Audit:

Auditor:

**Tara Gannon**  
**Veritek Limited**  
**Electricity Authority Approved Auditor**

Other personnel assisting in this audit were:

<b>Name</b>	<b>Title</b>	<b>Company</b>
Steve Bowden	Roading Asset Manager	Stratford District Council
Shweta Arora	Reconciliation Systems Analyst	Genesis Energy

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## 1. Administrative

### 1.1 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.*

Review of current exemptions on the Electricity Authority's website confirmed that there are no exemptions in place relevant to the scope of this audit.

### 1.2 Supplier List

SDC, NPE Tech, and RAMM Software Limited are considered agents under this clause and Genesis clearly understands that the use of agents does not release them from their compliance obligations.

Genesis' contract is with SDC, and there is no direct contractual relationship between Genesis and NPE Tech, or Genesis and RAMM Software Limited.

SDC has contracts with

- **NPE Tech** for fieldwork and asset data capture; and
- **RAMM Software Limited** for database hosting.

This is not seen as an issue, as the processes for updating the database are robust and have appropriate validation controls in place. This is discussed further in **section 2.6**.

### 1.3 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".

SDC confirmed that the database back-up is in accordance with standard industry procedures. The database is password protected.

Compliance is confirmed.

### 1.4 List of ICPs

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

ICP	Description	Profile	NSP	No. of items of load
0080012045PC49C	CARRIAGEWAY LIGHTING	NST	SFD0331	180

ICP	Description	Profile	NSP	No. of items of load
0089352004PCE32	DRAWING 9807	NST	SFD0331	754
0089352001PC37D	UNDER VERANDA LIGHTS - ROMEO STREET	NST	SFD0331	198
1000544328PCC4B	ONE FLAG LIGHT CNR OF SOLE ROAD/SH3 -SOLE ROAD	NST	SFD0331	1
TOTAL items of load				1133

Only one light is connected to ICP 1000544328PCC4B, and this now reported as standard unmetered load.

## 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 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.

## 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 have requested Veritek to undertake this streetlight audit.

### Audit Commentary

The audit report for this DUML database is separate from other audit reports. Compliance is confirmed.

## 1.8 Summary of Previous Audit

Genesis provided a copy of the report of the previous audit conducted in February 2017 by Tara Gannon of Veritek Limited. Four non-compliances were found, and two recommendations were made. The status of the non-compliances and recommendations is detailed below:

## Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Derivation of submission information	2.1	Clause 11(1) of schedule 15.3	ICP 1000544328PCC4B was excluded from consumption reporting by Genesis, and reported with zero consumption by SDC.	Cleared, this ICP is now settled as standard unmetered load. Refer to <b>section 2.1</b> .
Capacity of each item	2.2.4	Clause 11(2)(d) of Schedule 15.3	Some incorrect ballasts were applied, resulting in an estimated over submission of 346 kWh per annum.	Still existing. Refer to <b>section 3.1</b> .
Wattages of festive and decorative lights	2.2.4	Clause 11(2)(d) of Schedule 15.3	Wattages of festive and decorative lights should be confirmed and updated in RAMM. Processes should be in place to ensure that festive and decorative lights are reported for the correct periods.	Still existing. Refer to <b>section 3.1</b> .
Tracking of load changes	2.3	Clause 11(3) of schedule 15.3	Some discrepancies identified between the lights in the field and the database, including: <ul style="list-style-type: none"> <li>Two 70W sodium lamps were recorded as 24W LED lamps in the database</li> <li>Two 24W LED lamps were recorded as 70W sodium lamps in the database</li> <li>One 24W LED lamp was recorded as a 72W LED lamp in the database</li> <li>One 24W LED lamp was missing from the database.</li> </ul>	Still existing. Refer to <b>sections 2.5 and 3.1</b> .

## Table of Recommendations

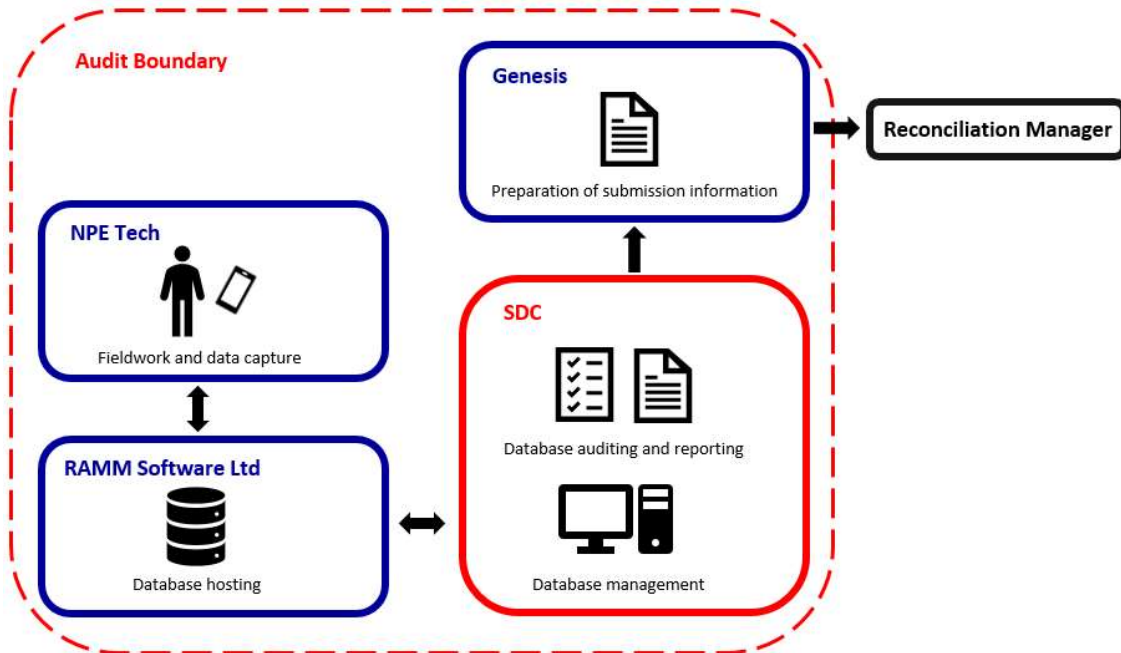
Subject	Section	Clause	Recommendation	Status
Data Transmission	1.9	Clause 20 of schedule 15.2	Require the monthly report from RAMM to be password protected.	Not implemented
Capacity of each item	2.2.4	Clause 11(2)(d) of Schedule 15.3	Record total wattage in an appropriately named field, instead of the gear wattage field.	Not implemented



## 1.9 Scope of Audit

A RAMM database is held by SDC, who is Genesis' customer. This database is hosted by RAMM Software Limited (CJN Technologies Ltd). NPE Tech complete the field work and data capture. SDC provides monthly reports from the database to Genesis.

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



The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

The field audit was undertaken of 201 lights using the statistical sampling methodology on 11 December 2018. Insufficient information was available to allow multiple population groups to be established.

## 1.10 Data Transmission (Clause 20 of Schedule 15.2)

The reporting from SDC to Genesis is by way of a spreadsheet attached to an email. This file is protected to prevent accidental editing, but not with a password.

A recommendation had previously been raised to require the file to be password protected to improve file security. SDC did implement password protection temporarily, but Powerco, who also receive a copy of the report, asked for it to be removed.

## 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.

#### Audit Commentary

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information. Genesis reconciles this DUML load using the NST profile.

The calculations were checked for October 2017 for ICPs 0080012045PC49C, 0089352004PCE32 and 0089352001PC37D, and compliance is confirmed.

Non-compliance was recorded in the February 2017 audit, because ICP 1000544328PCC4B was recorded with zero wattage on the SDC summary report and excluded from Genesis' submissions. ICP 1000544328PCC4B is now settled as standard unmetered load by Genesis, based on a 150W lamp. Load of 70W is recorded in the SDC database, and it is reported with a wattage of zero in the summary table ensuring it is excluded from DUML calculations.

I recommend the discrepancy between the registry records and the SDC DUML database is investigated and resolved.

Subject	Recommendation	Description
Deriving submission information	Unmetered load for 1000544328PCC4B	Confirm the correct unmetered load for 1000544328PCC4B. There is a discrepancy between the Registry and SDC's records.

While Genesis are using up to date database information, there is some inaccurate data within the database. This is recorded as non-compliance below and discussed in **section 3.1**.

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3  From: entire audit period	The database used to prepare submissions contains some inaccurate information. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating		
Low	<p>Controls are rated as weak, as they are not sufficient to ensure that total wattage is accurately recorded most of the time.</p> <p>The impact is assessed as low, because the differences have resulted in under reporting of approximately 13220 kWh.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis are working with the database owner to maintain exceptions where identified.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Awaiting database owner's response, and will work with SDC in order to have the database maintained.		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 an 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. Compliance is confirmed.

## 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 contains addresses, Global Positioning System (GPS) coordinates and displacement for each item of load. Users in the office and field can view these locations on a mapping system. Compliance is confirmed.

## 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 two records for wattage: the lamp wattage, and the adjusted lamp wattage (including the gear wattage). All items of load have descriptions and wattages recorded. Compliance is confirmed.

## **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 201 lights using the statistical sampling methodology.

### Audit Commentary

The field audit findings are detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
AJAX WALKWAY	1	1	-	-	
AVON STREET	2	2	-	-	
BRECON ROAD (1 NORTH)	19	19	-	-	
BRECON ROAD (2 SOUTH)	17	17	-	-	
CLOTEN ROAD	19	19	-	1	One lamp recorded as 40W appears to be 70W.
CORDELIA STREET (1 NORTH)	16	16	-	2	Two lamps recorded as 70W have been replaced with 24W LED lamps.
CORDELIA STREET (2 SOUTH)	9	9	-	-	
CRAIG STREET	4	4	-	-	
CURTIS STREET	3	3	-	-	
FENTON STREET	25	25	-	-	
FOOKES STREET	1	1	-	-	
MARGARET STREET	3	3	-	-	
MIRANDA STREET (1 NORTH)	20	20	-	-	
MIRANDA STREET (2 SOUTH)	13	13	-	3	Three lamps recorded as

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
					70W have been replaced with 24W LED lamps.
ORLANDO STREET (1 NORTH)	16	16	-	-	
ORLANDO STREET (2 SOUTH URBAN)	11	11	-	-	
WARWICK ROAD (1 WEST URBAN)	18	18	-	4	Three lamps recorded as 70W have been replaced with 24W LED lamps.
WARWICK ROAD (2 EAST URBAN)	4	4	-	-	
Total	201	201	-	10	

The field audit found the database to be highly accurate. No lamp count differences were identified, and compliance is confirmed.

Ten lamp type differences are recorded as non-compliance in **section 3.1**.

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

*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 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 processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance.

Fault, maintenance and upgrade work is completed by NPE Tech. The RAMM database is either updated in the field using PDAs, or paper records are provided to the NPE Tech administration staff who update the database. Under their contract NPE Tech are responsible for validating any work completed in RAMM.

Outage patrols are completed by NPE Tech every three months.

SDC is in the process of replacing their existing sodium lamps with LEDs street by street. This project is scheduled to be completed by 30 June 2018. Where faults or maintenance require a lamp to be replaced, NPE Tech will replace it with a LED lamp.

New connections are infrequent. No new subdivisions have been created over the last few years. The SDC Roding Team works closely with the planning team to identify new subdivisions that will have streetlighting. The Roding Team approves any proposed streetlights, and the developer is responsible for installation and advising SDC once the work is complete. SDC then updates RAMM. Once SDC has developed its structure plan, it is intended that the roading team will have input into the types of lights installed.

Compliance is confirmed.

## **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 RAMM database contains an audit trail for all changes, in addition this clause requires that an audit trail exists for all processing functions. The provision of reports from the database is considered to be secure, and an audit trail exists for the transmission of these reports.

Compliance is confirmed.

## **3 Accuracy of DUML database**

### **3.1 Database Accuracy (Clause 15.2)**

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

### Audit Observation

The audit findings were used to determine if the information contained in the database is complete and accurate.

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 inaccurate information.

Ten lamp type differences were identified during the field audit. Nine of the lamp type differences related to recently installed LED lamps. This is discussed further in **section 2.5**.

The database was compared to the published standard wattage table. All lamp wattages were recorded correctly. There were some errors in the gear wattages applied, which resulted in incorrect total wattages being reported to Genesis for the 570 lamps shown in red below.

Lamp Type	Total Wattage including ballast						Expected Wattage
	0	24	44	81	110	168	
GO (500, 70 watts)			1				83
PH (100S, 100 watts)					5		114
PH (150I, 150 watts)				1		77	168
PH (250H, 250 watts)			1	1			278
PH (40, 40 watts)			200				50
PH (70SI, 70 watts)	4	1		251			83
TERR (T24, 24 watts)		444		108			24
TERR (T72, 72 watts)		2					72

I have calculated that the wattage discrepancies result in over submission of 3410 W or approximately 14,900 kWh per annum. The published Electricity Authority wattage table has been provided for reference to SDC, who intend to update the affected data.

Festive lights have been replaced in recent years. When festive lights are not in place, other decorative lights are used. SDC advised that the database has not been updated to reflect the new wattages of these festive and decorative lights, but an update is planned.

The recorded wattage for the sample checked in the field was 9112, and the actual wattage found was 8728. The light count and wattage differences identified in the field totalled -384 W, which would result in over reporting of approximately 1680 kWh per annum. Based on this the sample's accuracy was 95.8%.

The inaccurate information is recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2  From: entire audit period	The database contains some inaccurate information: <ul style="list-style-type: none"> <li>570 lamps have incorrect total wattage recorded.</li> <li>Wattages of festive and decorative lights need to be updated in RAMM.</li> <li>For the sample of 201 lamps checked, ten lamps had incorrect lamp and wattage information recorded.</li> </ul> Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating		
Low	<p>Controls are rated as moderate, as they are sufficient to ensure that total wattage is accurately recorded most of the time.</p> <p>The impact is assessed as low, because the differences have resulted in under reporting of approximately 13220 kWh.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis are working with the database owner to maintain exceptions where identified. Council is aware of the wattage discrepancies and are working with contracted database manager to correct these errors.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Awaiting database owner's response to see how these updates are progressing.		10/2018	

### 3.2 Volume Information Accuracy (Clause 15.2)

*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 all ICPs have the correct profile and submission flag
- checking the database extract against the submitted figure to confirm accuracy.

#### Audit Commentary

All the ICPs have the correct profile and submission flag assigned on the registry.

The calculations were checked for October 2017 for ICPs 0080012045PC49C, 0089352004PCE32 and 0089352001PC37D, and compliance is confirmed.

As discussed in **section 2.1**, ICP 1000544328PCC4B is now settled as standard unmetered load by Genesis.

While Genesis are using up to date database information, there is some inaccurate data within the database. This is recorded as non-compliance below and discussed in **section 3.1**.



Non-compliance	Description		
Audit Ref: 3.2 With: Clause 15.2  From: entire audit period	The database used to prepare submissions contains some inaccurate information. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	Controls are rated as weak, as they are not sufficient to ensure that total wattage is accurately recorded most of the time.  The impact is assessed as low, because the differences have resulted in under reporting of approximately 13220 kWh.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis are working with the database owner to maintain exceptions where identified. In relation to 3.1		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Awaiting database owner's response to see how these updates are progressing.		10/2018	

## 4 Conclusions

Streetlight load is determined by wattages held within SDC's RAMM database. SDC maintains NZTA and private lighting details in the database, but they are excluded from the monthly reports provided to Genesis.

Festive and decorative lighting is connected to the streetlight circuits, and wattages for this lighting need to be checked and updated in RAMM.

The audit process included a field audit of 201 items of load and found 95.8% accuracy. Review of the entire database found 570 lamps with incorrect total wattage recorded. The errors in the field audit sample and wattages resulted in combined under reporting of approximately 13,220 kWh per annum.

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



**Tara Gannon**  
**Veritek Limited**  
**Electricity Authority Approved Auditor**

## **5 Genesis Comments**

Genesis have reviewed the report and their comments are contained in its body.