VERITEK

Electricity Industry Participation Code Audit Report

For

King Country Energy Limited

kce
The power behind our community

Waitomo District Council Distributed Unmetered Load

Prepared by Steve Woods – Veritek Ltd

Date of Audit: 07/06/17

Date Audit Report Complete: 25/07/17

Executive Summary

King Country Energy (KCE) is required, as a reconciliation participant, to ensure their annual audit includes the audit of distributed unmetered load (DUML) databases to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

This audit of the Waitomo DC DUML database and processes was conducted at the request of KCE so that it can form part of their 2017 reconciliation participant audit, in accordance with clause 11(5) of schedule 15.3.

The audit was conducted in accordance with the guideline for DUML audits V1.1, which was published by the Electricity Authority. The audit process included a field audit based on a statistical sample.

Strong controls are in place within KCE and Alf Downs Street Lighting to ensure the database output is as accurate as possible.

The ICP identifier is required for the NZTA lighting to ensure clarity in the database. The field audit found one minor error, resulting in a slight over recording of consumption information.

Clause 16A.12(1)(e)(v) of Part 16A, requires the Auditor to recommend the date of the next audit. The tables in Section four recommend an audit frequency of 36 months, which I support, given the minor nature of the findings and the strong controls in place.

The matters identified are shown in the table below.

Table of Non-Compliance

Subject	Section	Clause	Non compliance	Controls	Audit risk rating	Breach risk rating	Remedial Action
ICP identifier	2.2.1	11(2)(a) of schedule 15.3	ICP identifiers not in database for NZTA lights	Strong	Low	1	Identified
Database accuracy	2.4	11(1) of schedule 15.3	Database not 100% accurate	Strong	Low	1	Cleared

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
			Nil	

Persons Involved in This Audit:

Auditor:
Steve Woods
Veritek Limited
Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title
Paul Jansen	Customer Service Manager
Gwen Hansen	Compliance and Reporting Specialist
Johan Rossouw	Manager Local Roads – Waitomo DC
Ferdinand Kruger	Waitomo DC

Contents

1. Pre-Audit and Operational Infrastructure Information

1.1 Summary of Previous Audit

This is the first audit Veritek Ltd has conducted for Waitomo DC.

1.2 Scope of Audit

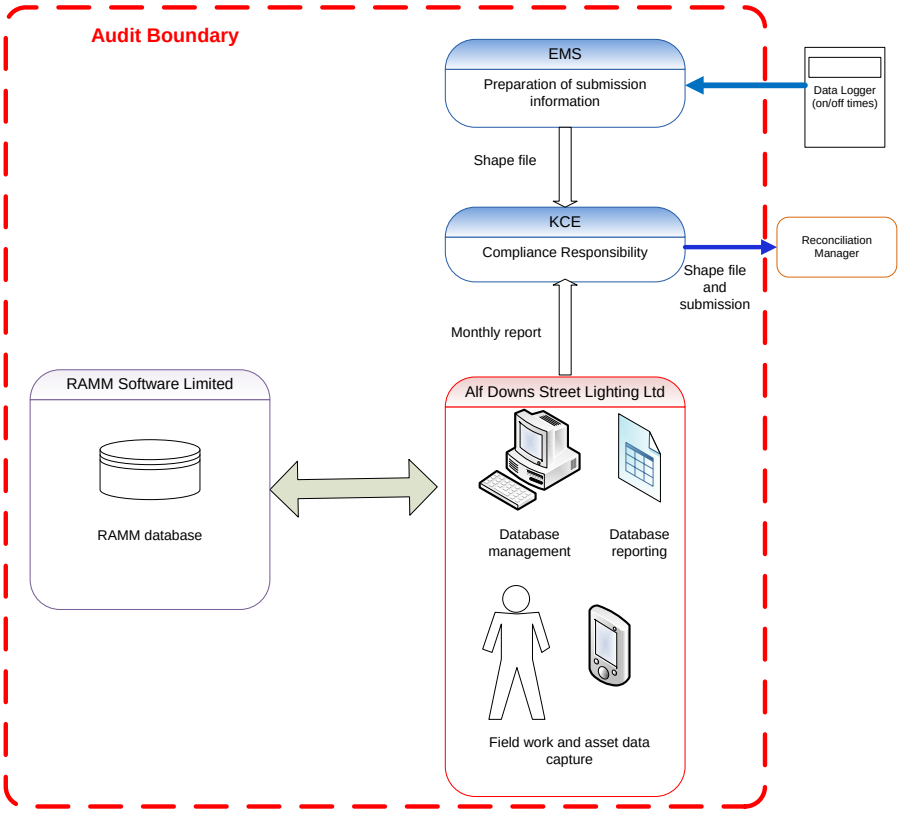
KCE is required, as a reconciliation participant, to ensure their annual audit includes the audit of distributed unmetered load (DUML) databases to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

This audit of the Waitomo DC DUML database and processes was conducted at the request of KCE so that it can form part of their 2017 reconciliation participant audit, in accordance with clause 11(5) of schedule 15.3.

The audit was conducted in accordance with the guideline for DUML audits V1.1, which was published by the Electricity Authority. The audit process included a field audit based on a statistical sample.

Waitomo DC engages Alf Downs Street Lighting (Alf Downs) as their contractor for maintenance and database population. Alf Downs provides KCE with a monthly report, which is used to prepare submission information using the KSL profile. The KSL profile has a shape file prepared by EMS and the on/off times recorded by the data storage device are used to calculate the total “burn time”.

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 audit was carried out at KCE's premises on 07/06/17. A field audit was conducted of 276 individual items of load, randomly selected by Veritek.

1.3 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.

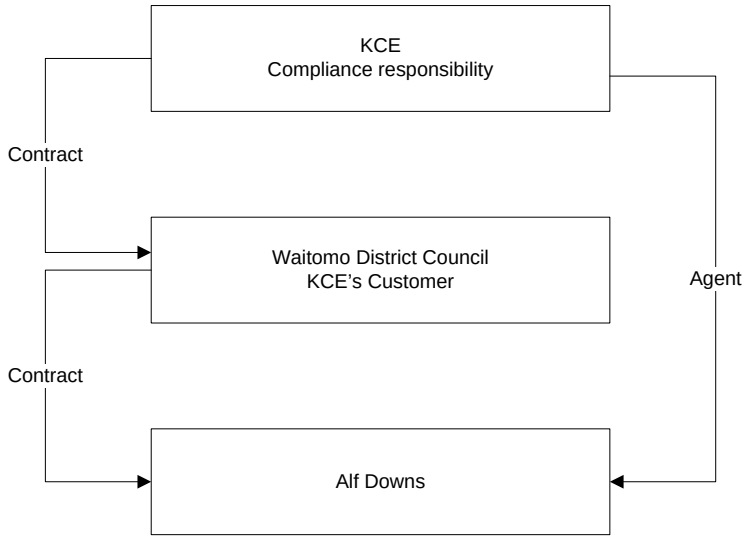
KCE confirms that there are no exemptions in place relevant to the scope of this audit.

1.4 Use of Agents (Clause 15.34 of Part 15)

Alf Downs is considered an agent under this clause, and KCE Energy clearly understands that the use of agents does not release them from their compliance obligations.

A contractual relationship exists between KCE and Waitomo DC as part of the sales contract, however there is no direct contractual relationship between KCE and Alf Downs for the provision of services in relation to DUML. This is not seen as an issue, if the processes for updating the database are robust and have appropriate validation controls in place.

The diagram below shows the relationships from a compliance and contractual perspective.



1.5 Hardware and Software

Section 1.2 shows that Alf Downs populates a remotely hosted version of the RAMM database for the management of DUML information. Backup and restoration procedures are in accordance with normal industry protocols.

1.6 Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.7 ICP Data

The relevant ICPs are as follows:

ICP	Description	No. of fixtures	kW	Approx annual consumption
0001060300WMD10	SKATE PARK STREETLIGHT	16	3.46	15,000 kWh
0008807413WMA59	Waitomo District Council	824	79.44	340,000 kWh
NZTA Urban		203	31.2	133,000 kWh
NZTA Rural		31	5.64	24,000 kWh
	Total	1,074	119.74	512,000 kWh

1.8 Data Transmission (Clause 20 of Schedule 15.2)

The reporting from Alf Downs to KCE is by way of email attachment of a password protected spreadsheet. This method is considered secure as required by this clause.

2. Distributed Unmetered Load Database

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

This clause requires that the distributed unmetered load database must satisfy the requirements of schedule 15.5 regarding the methodology for deriving submission information. KCE reconciles this DUML load using the KSL profile. The on and off times are derived from a data logger read by EMS. This information is used to create a shape file. The on/off times are used to calculate total kWh per ICP. KCE supplies a shape file and a NHH volumes file to the reconciliation manager. I checked these processes and confirm the accuracy of the shape file and the NHH volumes.

2.2 Database Contents (Clause 11(2) of Schedule 15.3)

The Waitomo DC data is maintained in a RAMM database.

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

The RAMM database contains the relevant ICP identifiers for the Waitomo DC lights but the NZTA Rural ICP (0008806768WM373) is not in the database. The items of load are identified in the database but the ICP identifier is required to be populated to achieve full compliance. The NZTA urban lights are added to the Waitomo DC ICP for submission purposes. Whilst all items of load are accounted for, the ICP identifiers are required in the database.

Non-compliance	Description
With: Clause 11(2)(a) of schedule 15.3 From: 01/06/16 To: 07/06/17	ICP identifiers not in database for NZTA lights 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 recorded as strong because each item of load is identified correctly and submission occurs against the correct ICPs. There is a small risk that the lack of ICP identifier could result in incorrect submission information, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action Status
KCE will be contacting the NZTA to confirm the correct ICP prior to requesting Alf Downs updating the data base.	Proposed completion date 30 April 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
A monthly process check has been designed to ensure there are no additional problems.	Proposed completion date 30 April 2018	

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

The RAMM database contains pole numbers (which are mostly present in the field), gps coordinates, displacement and the nearest street address. The field audit confirmed the accuracy of the database. Compliance is confirmed.

2.2.3 Description of Load Type (Clause 11(2)(c) of Schedule 15.3)

Each type of load contains the make and model in its description. Compliance is confirmed.

2.2.4 Capacity of Each Item of Load in kW (Clause 11(2)(d) of Schedule 15.3)

The database contains the manufacturers rated wattage and the ballast wattage. The field audit found all wattages were correct. Compliance is confirmed.

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

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 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.

Changes in the field are conducted by Alf Downs and recorded in RAMM using "pocket RAMM" which is a field version of RAMM allowing population of the database through hand held devices. This process also plots the GPS coordinates.

Monthly "outage patrols" are conducted by Alf Downs and the process is used to identify any incorrect wattage and location issues that may exist.

For new subdivisions, the lights are plotted once the vesting process is complete.

There are unmetered festive lights connected in the Waitomo District and the reporting for December and January includes the on and off dates to ensure submission information is complete and accurate.

2.4 Database Accuracy

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	Waitomo DC region
Strata	The database contains items of load in the CBD of Te Kuiti, Piopio, Bennydale, Awakino and Mokau. There are a small number of towns and intersections with items of load and the NZTA lights are also in the database. The processes for the management of Waitomo DC items of load are the same and the entire region had a lamp by lamp audit conducted by Alf Downs a few years ago. The NZTA lights are contained in the same database but Broadspectrum is the contractor and the processes may be slightly different. I decided to place the items of load into four strata, as follows: 1. New connections (within the last 3 years) 2. Waitomo DC urban lighting 3. NZTA lighting
Area units	I used a hard copy map and created the following area units. 1. New connections 2 (there were only 2) 2. Waitomo DC urban lighting 239 3. NZTA lighting 16 I used a random number generator in a spreadsheet to select 14 urban units and five NZTA units. I conducted a 100% sample of the two new connection units
Total items of load	276 items of load were checked.

The results are shown in the table below. There was one additional light in the database for NZTA.

Street/Area	Database Count	Field Count	Difference from Database to Field	Comments
Urban – Te Kuiti				
AILSA ST	11	11	0	Wattages all match
Eketone St	11	11	0	
Eketone St Loop	7	7	0	
HETET ST	3	3	0	
HILL ST	23	23	0	
HOSPITAL RD	9	9	0	
MASSEY ST	5	5	0	
NGARONGO ST	15	15	0	
RATA ST	7	7	0	
TAUPIRI ST	32	32	0	
TE KUITI RD	18	18	0	
Rural Bennydale				
GEORGETTI ST	5	5	0	Wattages all match
KIWI PL	1	1	0	
MANIAITI RD	2	2	0	
MINE RD	1	1	0	
MURCOTT TCE	1	1	0	
SCHOOL RD	5	5	0	
NZTA				
Carroll St	31	31	0	One duplicate on Moa St, Piopio. There is only one light present and the exact details are recorded twice in the database
AWAKINO RD (SH 3)	11	11	0	
MOA ST (SH 3)	17	16	1	
Tui St	7	7	0	
Te Kumi Rd	29	29	0	
Ellis Rd	16	16	0	
New Subdivision Te Kuiti				
Sutherland St	3	3	0	Wattages all correct
ROBIN AZARIAH PL	6	6	0	
Total	**276**	**275**	**1**	

The DUML database auditing tool provided the following results indicating the database error will result in estimated over submission by 1,700 kWh per annum.

Stratum	Estimated wattage from survey (MW)	Total wattage from DUML database (MW)	Ratio
Urban	0.082	0.082	100.0%
NZTA	0.037	0.037	101.1%
New Subdivision	0.001	0.001	100.0%
Total	0.120	0.120	**100.3%**

The point estimate of R is 100.3% (as calculated in the table to the left).

A 95.0% confidence interval for R is from 100.0% to 101.1%.

Press this button to update confidence interval.
Always do this after changing data inputs.
Takes a few minutes.

In absolute terms, true wattage is estimated to be 0 MW higher than the DUML database indicates.

A 95.0% confidence interval for (true wattage - DUML database wattage) is from 0.000 to 0.001 MW.

In absolute terms, total annual consumption is estimated to be 1.7 MWh higher than the DUML database indicates.

A 95.0% confidence interval for (true annual consumption - DUML database annual consumption) is from 0.0 to 5.4 MWh.

Non-compliance	Description
With: Clause 11(1) of schedule 15.3 From: 01/06/16 To: 07/06/17	Database not 100% accurate Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach Risk Rating: 1
Audit Risk Rating	**Rationale for audit risk rating**
Low	Over submission has occurred due to one additional light in the database, this is considered a minor impact, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action Status
Alf Downs have been advised and have corrected this error in their data base.	12 June 2017	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
KCE intends to review the month data supplied by Alf Downs on a half yearly basis, using the audited May data as a base line.	Proposed completion of the first review 28 Feb 2018	

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

The RAMM database has a compliant audit trail.

2.6 Database Audit (Clause 11(5) of Schedule 15.3)

This audit report confirms that the requirement to conduct an audit has been met for this particular database.

2.7 Additional Matters

The database held by Waitomo DC contains details of all light fittings including some private lights.

There are 16 private lights in the database and whilst they are outside the scope of this audit, I have recorded them in this report because KCE and the Authority may be able to assist in liaising with The Lines Company to have ICPs created for these connections, which may be standard, distributed or shared unmetered load.

Road name	No of fittings	Watts	Comments
Waitomo Village Rd	4	417	The road up to the Waitomo Caves Hotel is private but it has streetlights
Kaka St, Piopio	8	664	This is a group of flats at number 5 Kaka St, Piopio
Te Anga Rd	1	83	This appears to be a carpark light at what was the Te Anga tavern carpark
Rauparaha St	1	83	This is unknown and requires investigation
Waiteti Rd	1	90	This looks like the light shining on the Universal Beef Packers sign

3. Conclusions

Strong controls are in place within KCE and Alf Downs Street Lighting to ensure the database output is as accurate as possible.

The ICP identifier is required for the NZTA lighting to ensure clarity in the database. The field audit found one minor error, resulting in a slight over recording of consumption information.

Clause 16A.12(1)(e)(v) of Part 16A, requires the Auditor to recommend the date of the next audit. The tables in Section four recommend an audit frequency of 36 months, which I support, given the minor nature of the findings and the strong controls in place.

The matters identified are shown in the table below.

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Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
			Nil	

Steve Woods
Veritek Limited
Electricity Authority Approved Auditor

4. Audit Date Recommendation

Clause 16A.12(1)(e)(v) of Part 16A, requires the Auditor to recommend the date of the next audit. The Authority has provided a guideline for the calculation of the next audit date, which is shown below. The total risk score is two, which results in a recommendation for an audit within 36 months.

Breach risk ratings

		Adequacy of control		
		Weak	Moderate	Strong
Audit Risk Rating	High	0	0	0
	Medium	0	0	0
	Low	0	0	0

Table 1: Indicative audit frequency

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

5. KCE Response

KCE has reviewed this report and agrees with the assessment made by Steve Woods of Veritek. We have corrected and adjusted our procedures to prevent further breaches of 2.4 and are pro-actively working to ensure all lamps have ICP data recorded.

We have also reviewed the table in section 2.7 – Additional Matters and are working towards resolving these issues.