VERITEK

Electricity Industry Participation Code Audit Report

For

Meridian Energy Limited

meridian

Scanpower Distributed Unmetered Load

Prepared by Tara Gannon – Veritek Ltd

Date of Audit: 29/11/17

Date Audit Report Complete: 01/03/18

Executive Summary

This audit of the Scanpower community lights DUML database and processes was conducted at the request of Meridian Energy Limited (Meridian), 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.

Scanpower manages a spreadsheet of under verandah lights installed in Woodville and Dannevirke. Installation and maintenance work is completed by East Coast Power Lines, who provide a monthly spreadsheet detailing any lights installed, repaired, or replaced. Scanpower uses this information to update their own spreadsheet.

EMS creates reconciliation submission information on Meridian's behalf using wattages provided by Meridian, and on and off times derived from a data logger read by EMS. Scanpower does not regularly provide their spreadsheet to Meridian. The wattages applied by EMS are based on Scanpower's December 2016 wattage information.

The audit process included a field audit of all items of load, and found a 98.7% accuracy. Three 84W fittings in Dannevirke were missing from Scanpower's spreadsheet, and have since been updated. The missing fittings resulted in the spreadsheet recording 252W less than was connected, which equates to approximately 1000 kWh per annum.

As recorded in Section 3.2, the overall inaccuracy of submission information is 3,105 kWh per annum (over submission).

The future risk rating of seven indicates that the next audit should be completed in 18 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 submissions	2.1	11(1) of Schedule 15.3	Incorrect kW information was used to calculate submission information for some months.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three lights were missing from the database	Strong	Low	1	Cleared
Database accuracy	3.1	15.2	Three lights were missing from the database.	Strong	Low	1	Cleared

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2	The volume information reported by EMS was based on out of date wattage information.	Weak	Low	3	Identified
					Future risk rating	7	
					Indicative audit frequency	18 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
		Nil	

Persons Involved in This Audit:

Auditor:

Tara Gannon
Veritek Limited
Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Helen Youngman	Energy Data Analyst	Meridian Energy
Tristan Smiley	Network Engineer (Field Services)	Scanpower

Contents

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

Scanpower and EMS are considered agents under this clause, and Meridian clearly understands that the use of agents does not release them from their compliance obligations.

The use of agents is not seen as an issue, if 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

Scanpower records DUML information for community and NZTA lights on their network in an Excel spreadsheet. The spreadsheet is saved on Scanpower's file network, which requires a login and password. All files on the network are backed up nightly.

A new version of the spreadsheet is created whenever a change occurs, and old versions are archived.

1.4 List of ICPs

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

ICP	Description	NSP	No. of items of load
0009107000CA9BC	Community Lighting - Dannevirke	DVK0111	215
0009108000CA0DC	Community Lighting - Woodville	WDV0111	47
		TOTAL items of load	262

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
Meridian 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
Meridian 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

Meridian provided a copy of the report of the previous audit conducted in December 2016 by Tara Gannon of Veritek. Compliance was recorded, and one recommendation was made. The status of the recommendation is recorded below.

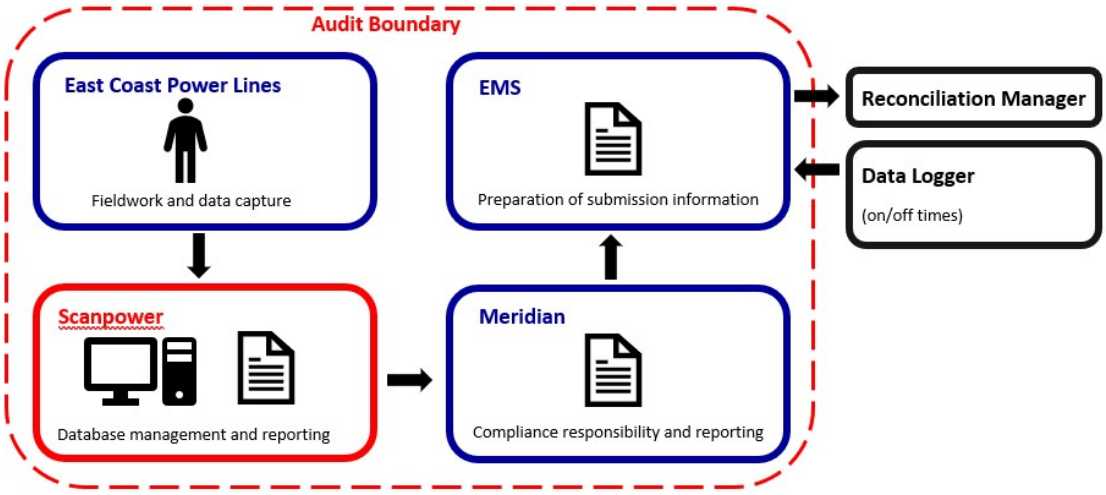
Subject	Section	Clause	Recommendation for improvement	Remedial Action
Capacity of each load item in kW	2.2.4	11(2)(d) of Schedule 15.3	Consider updating the load database column name to load (Watts).	Not implemented

1.9 Scope of Audit

Scanpower manages a spreadsheet of under verandah lights installed in Woodville and Dannevirke. Installation and maintenance work is completed by East Coast Power Lines, who provide a monthly spreadsheet detailing any lights installed, repaired, or replaced. Scanpower uses this information to update their own spreadsheet.

EMS creates reconciliation submission information on Meridian's behalf using wattages provided by Meridian, and on and off times derived from a data logger read by EMS. Scanpower does not regularly provide their spreadsheet to Meridian. The wattages applied by EMS are based on Scanpower's December 2016 wattage information.

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

The field audit of all 262 lights in the database was undertaken on 29 November 2017.

1.10 Data Transmission (Clause 20 of Schedule 15.2)

Database information is not regularly reported to Meridian. This is discussed further and recorded as non-compliance in **section 2.1**.

Meridian's submissions are based upon historic DUML information provided by Scanpower, which is checked periodically against Scanpower's spreadsheet of DUML information. The last check was conducted in December 2016.

When required by Meridian, Scanpower sends the DUML information via email.

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

Meridian reconciles this DUML load using the DST profile. The on and off times are derived from a data logger read by EMS, and are used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit, and its accuracy and compliance was confirmed.

While the process to calculate the submission information is correct, the capacity report sent to EMS contains the wattage values recorded by Scanpower in December 2016 and is out of date. This is recorded as non-compliance below.

Scanpower's spreadsheet was found to be inaccurate for ICP 0009107000CA9BC, and this is recorded as non-compliance in **sections 2.5** and **3.1**.

ICP	kW reported to EMS (Dec 16 to Nov 17)	kW in Scanpower's spreadsheet (Nov 17)	kW found in field audit (Nov 17)
0009107000CA9BC	16.179	15.68	15.93
0009108000CA0DC	3.75	3.29	3.29
Total	**19.929**	**18.97**	**19.22**

Non-compliance	Description
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: after December 2016	Incorrect kW information was used to calculate submission information for some months. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is low, because the difference in kW is small, and only affected one ICP.

Actions taken to resolve the issue	Completion date	Remedial action status
We have sent corrected kW information to our agent and revisions of historic submissions will be undertaken in accordance with the wash up cycle.	Dec 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Scanpower are now providing database information to us monthly so changes can be identified when they occur.	Ongoing	

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 all ICPs were recorded against each item of load.

Audit Commentary
ICP is recorded for all items of load. 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
Street number, road name, and business name are recorded for all items of load. 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 light and gear wattages.

Audit Commentary
The database contains a field for total wattage which was populated appropriately. 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
A field audit was undertaken for all 262 lights in the database.

Audit Commentary
The field audit findings are detailed in the table below:

ICP	Town	Fitting type	Database Count	Field Count	Light Count Differences	Wattage Differences	Comments
0009107000CA9BC	Dannevirke	84W Fluoro	154	157	3	-	3 missing lights
0009107000CA9BC	Dannevirke	45W LED	61	61	-	-	
0009108000CA0DC	Woodville	84W Fluoro	29	29	-	-	
0009108000CA0DC	Woodville	45W LED	18	18	-	-	
Total			**262**	**265**	**3**	**-**	

The three lights which were missing from the database are recorded as non-compliance below.

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: after December 2016	Three lights were missing from the database. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, as they are sufficient to mitigate the risk most of the time. The impact is rated as low, because the inaccuracies had no impact on submissions, which were based on old database information. Scanpower checked the missing lights and updated their database within one business day of being informed of the discrepancy.

Actions taken to resolve the issue	Completion date	Remedial action status
As reported, the 3 additional lights found in the field have been added to the database.	Nov 2017	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Controls are reported as strong and are considered adequate to sufficiently mitigate risk of errors occurring most of the time.	Ongoing	

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.

Installation and maintenance work is completed by East Coast Power Lines, who provide a monthly spreadsheet detailing any lights installed, repaired or replaced. Scanpower uses this information to update their spreadsheet.

Inspections of under verandah lights are completed every six months by Scanpower, to identify any lights that require repairs or maintenance.

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
Audit trails were reviewed.

Audit Commentary
A new version of the spreadsheet is created whenever a change occurs, and old versions are archived. I saw evidence of this process in operation. 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 field audit found that all items of load were recorded except three missing lights, totalling 252 W.

The entire database was audited, and database accuracy is estimated to be 98.7%, based recorded database load of 18.97 kW compared to actual load of 19.22 kW.

Recorded wattages were consistent with the Electricity Authority's published wattage table

Non-compliance	Description
Audit Ref: 3.1 With: 15.2 From: after December 2016	Three lights were missing from the database. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong, as they are sufficient to mitigate the risk most of the time. The impact is low. Three lights were missing from the database, and the difference was 252 W, or approximately 1000 kWh per annum. Scanpower checked the missing lights and updated their database within one business day of being informed of the discrepancy.

Actions taken to resolve the issue	Completion date	Remedial action status
As reported, the 3 additional lights found in the field have been added to the database.	Nov 2017	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Controls are reported as strong and are considered adequate to sufficiently mitigate risk of errors occurring most of the time.	Ongoing	

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 kW information provided to EMS
- confirming the accuracy of EMS' process to calculate volumes.

Audit Commentary

Meridian reconciles this DUML load using the DST profile, and the correct profile and submission flag is recorded on the registry. The on and off times are derived from a data logger read by EMS, and are used to create a shape file. Meridian supplies EMS with the capacity information and EMS calculates the kWh figure for each ICP and includes this in the relevant AV080 file. This process was audited during Meridian's reconciliation participant audit, and its accuracy and compliance was confirmed.

The kW volumes provided to EMS were compared to the kW in Scanpower's spreadsheet, and the kW found during the field audit. I found that the total volume submitted to EMS to generate the reconciliation information differed to what was recorded in the field, and what was recorded in the spreadsheet. The differences are shown in the table below, and recorded as non-compliance

ICP	kW reported to EMS (Dec 16-Nov 17)	kW in Scanpower's spreadsheet (Nov 17)	kW found during field audit (Nov 17)
0009107000CA9BC	16.179	15.68	15.93
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Total	19.929	18.97	19.22

Non-compliance	Description
Audit Ref: 3.2 With: 15.2 From: after December 2016	Incorrect kW information was used to calculate submission information for some months. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is low, because the difference in kW is small, and only affected one ICP.

Actions taken to resolve the issue	Completion date	Remedial action status
We have sent corrected kW information to our agent and revisions of historic submissions will be undertaken in accordance with the wash up cycle.	Dec 2017	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Scanpower are now providing database information to us monthly so changes can be identified when they occur.	Ongoing	

4. Conclusions

Scanpower manages a spreadsheet of under verandah lights installed in Woodville and Dannevirke. Installation and maintenance work is completed by East Coast Power Lines, who provide a monthly spreadsheet detailing any lights installed, repaired, or replaced. Scanpower uses this information to update their own spreadsheet.

EMS creates reconciliation submission information on Meridian's behalf using wattages provided by Meridian, and on and off times derived from a data logger read by EMS. Scanpower does not regularly provide their spreadsheet to Meridian. The wattages applied by EMS are based on Scanpower's December 2016 wattage information.

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As recorded in Section 3.2, the overall inaccuracy of submission information is 3,105 kWh per annum (over submission).

The future risk rating of seven indicates that the next audit be completed in 18 months.

Tara Gannon
Veritek Limited
Electricity Authority Approved Auditor

5. Meridian Comments

Meridian has reviewed this report, and their comments are recorded within the non-compliance boxes.