ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

GISBORNE DISTRICT COUNCIL AND MERIDIAN ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 8 October 2018

Date audit report completed: 8 November 2018

Audit report due date: 01-Dec-18

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EXECUTIVE SUMMARY

This audit of the Gisborne District Council **(GDC)** Unmetered Streetlights 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.

An Access database is hosted and managed by Eastland and monthly reporting is provided to Meridian.

The audit found five non-compliances and makes two recommendations.

The field audit findings found a high level of accuracy and the database accuracy fell within the accepted variance range, however I note that there is no formal updating of field changes in place between Eastland and the Gisborne District Council. Changes are updated as they are discovered by Eastland's field contractors.

The gear wattage is being applied outside of the database and I repeat the last audit's recommendation that this be derived from within the database.

The future risk rating of 12 indicates that the next audit be completed in 12 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
Deriving submission information	2.1	11(1) of Schedule 15.3	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded for one 400W MV lamp in the database. Estimated under submission of 3,288.5 kWh per annum due to incorrect gear wattages applied in the monthly wattage report.	Weak	Low	3	Identified
ICP Identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	One item of load (Sponge Bay Road 81 - JG_ENL4145637485000 1) does not have an ICP recorded.	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Description and capacity	2.4	11(2)(c) of Schedule 15.3	25 items of load have no lamp model or type recorded. Gear wattage is not recorded in the database. 3 lights have no wattage recorded.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded in the database for one 400W MV lamp.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded for one 400W MV lamp in the database. Estimated under submission of 3,288.5 kWh per annum due to incorrect gear wattages applied in the monthly wattage report.	Weak	Low	3	Identified
					Future Risk Rating	**12**	

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
Location of each item of load	2.3	Add Street Name and where possible Street Number into the database to assist with location.	We will ask Eastland to add this information to their database
Description and capacity of load	2.4	Add gear wattage to the database.	

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

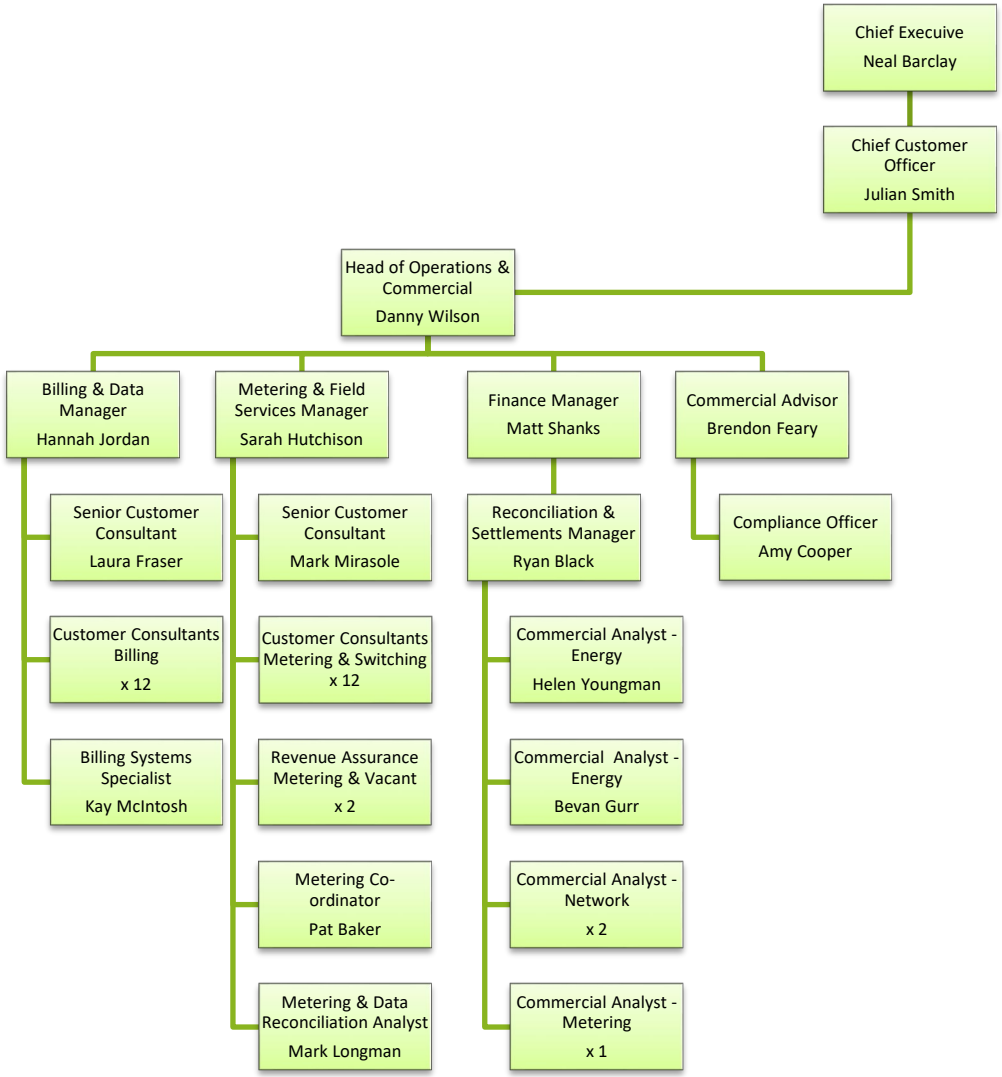
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

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

1.2. Structure of Organisation

Meridian provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Name	Title
Rebecca Elliot	Lead Auditor
Debbie Anderson	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian
Helen Youngman	Energy Data Analyst	Meridian
Jason Grout	Network GIS and Data Manager	Eastland

1.4. Hardware and Software

The database used for reporting is an Access database hosted and managed by Eastland. Eastland performs a nightly server backup and on a fortnightly basis a tape backup is performed which are stored off-site. These are periodically restored to check readability. A mirrored server also exists in a separate building.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

GDC has a large number of DUML ICPs as there is one for each streetlight circuit.

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740001EN47C	Gisborne DC	TUI1101	DST	20	884
0000740005EN576	Gisborne DC	TUI1101	DST	3	81
0000740009EN668	Gisborne DC	TUI1101	DST	8	259
0000740011ENED1	Gisborne DC	TUI1101	DST	3	124
0000740015ENFDB	Gisborne DC	TUI1101	DST	27	815
0000740019ENCC5	Gisborne DC	TUI1101	DST	11	383

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740023EN9AC	Gisborne DC	TUI1101	DST	6	162
0000740025EN823	Gisborne DC	TUI1101	DST	8	259
0000740027EN8A6	Gisborne DC	TUI1101	DST	3	124
0000740031EN384	Gisborne DC	TUI1101	DST	28	842
0000740033EN301	Gisborne DC	TUI1101	DST	44	1565
0000740035EN28E	Gisborne DC	TUI1101	DST	7	189
0000740037EN20B	Gisborne DC	TUI1101	DST	2	54
0000740041EN6D9	Gisborne DC	TUI1101	DST	21	921
0000740043EN65C	Gisborne DC	TUI1101	DST	2	54
0000740045EN7D3	Gisborne DC	TUI1101	DST	23	879
0000740047EN756	Gisborne DC	TUI1101	DST	5	135
0000740049EN4CD	Gisborne DC	TUI1101	DST	1	27
0000740053ENCF1	Gisborne DC	TUI1101	DST	24	1207
0000740057ENDFB	Gisborne DC	TUI1101	DST	4	151
0000740059ENE60	Gisborne DC	TUI1101	DST	7	189
0000740063ENB09	Gisborne DC	TUI1101	DST	3	81
0000740065ENA86	Gisborne DC	TUI1101	DST	6	162
0000740067ENA03	Gisborne DC	TUI1101	DST	17	803
0000740069EN998	Gisborne DC	TUI1101	DST	83	3892
0000740071EN121	Gisborne DC	TUI1101	DST	2	54
0000740075EN02B	Gisborne DC	TUI1101	DST	53	1601
0000740077EN0AE	Gisborne DC	TUI1101	DST	16	649
0000740079EN335	Gisborne DC	TUI1101	DST	40	2094
0000740081EN136	Gisborne DC	TUI1101	DST	12	754
0000740085EN03C	Gisborne DC	TUI1101	DST	2	177
0000740087EN0B9	Gisborne DC	TUI1101	DST	8	216

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740089EN322	Gisborne DC	TUI1101	DST	4	108
0000740093ENB1E	Gisborne DC	TUI1101	DST	18	1550
0000740095ENA91	Gisborne DC	TUI1101	DST	55	1794
0000740097ENA14	Gisborne DC	TUI1101	DST	6	1400
0000740101END78	Gisborne DC	TUI1101	DST	4	108
0000740103ENDFD	Gisborne DC	TUI1101	DST	24	941
0000740105ENC72	Gisborne DC	TUI1101	DST	3	124
0000740107ENCF7	Gisborne DC	TUI1101	DST	1	150
0000740109ENF6C	Gisborne DC	TUI1101	DST	20	2354
0000740111EN7D5	Gisborne DC	TUI1101	DST	3	348
0000740113EN750	Gisborne DC	TUI1101	DST	3	81
0000740115EN6DF	Gisborne DC	TUI1101	DST	15	1740
0000740117EN65A	Gisborne DC	TUI1101	DST	3	348
0000740121EN02D	Gisborne DC	TUI1101	DST	3	425
0000740123EN0A8	Gisborne DC	TUI1101	DST	16	1251
0000740127EN1A2	Gisborne DC	TUI1101	DST	13	851
0000740131ENA80	Gisborne DC	TUI1101	DST	8	2000
0000740135ENB8A	Gisborne DC	TUI1101	DST	5	135
0000740139EN894	Gisborne DC	TUI1101	DST	43	1285
0000740141ENFDD	Gisborne DC	TUI1101	DST	1	70
0000740145ENED7	Gisborne DC	TUI1101	DST	1	27
0000740147ENE52	Gisborne DC	TUI1101	DST	7	189
0000740151EN570	Gisborne DC	TUI1101	DST	13	378
0000740153EN5F5	Gisborne DC	TUI1101	DST	5	258
0000740157EN4FF	Gisborne DC	TUI1101	DST	19	900
0000740501EN179	Gisborne DC	TUI1101	DST	30	3860

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740503EN1FC	Gisborne DC	TUI1101	DST	56	2835
0000740505EN073	Gisborne DC	TUI1101	DST	13	661
0000740507EN0F6	Gisborne DC	TUI1101	DST	128	9757
0000740509EN36D	Gisborne DC	TUI1101	DST	6	592
0000740511ENBD4	Gisborne DC	TUI1101	DST	40	2960
0000740513ENB51	Gisborne DC	TUI1101	DST	101	9180
0000740515ENADE	Gisborne DC	TUI1101	DST	23	1821
0000740517ENA5B	Gisborne DC	TUI1101	DST	29	2660
0000740519EN9C0	Gisborne DC	TUI1101	DST	24	3280
0000740521ENC2C	Gisborne DC	TUI1101	DST	13	910
0000740523ENCA9	Gisborne DC	TUI1101	DST	2	54
0000740525END26	Gisborne DC	TUI1101	DST	42	5284
0000740527ENDA3	Gisborne DC	TUI1101	DST	62	4340
0000740529ENE38	Gisborne DC	TUI1101	DST	15	1050
0000740531EN681	Gisborne DC	TUI1101	DST	71	6010
0000740533EN604	Gisborne DC	TUI1101	DST	4	280
0000740535EN78B	Gisborne DC	TUI1101	DST	105	10020
0000740537EN70E	Gisborne DC	TUI1101	DST	42	3924
0000740539EN495	Gisborne DC	TUI1101	DST	15	1450
0000740541EN3DC	Gisborne DC	TUI1101	DST	21	1876
0000740543EN359	Gisborne DC	TUI1101	DST	27	1890
0000740545EN2D6	Gisborne DC	TUI1101	DST	4	360
0000740547EN253	Gisborne DC	TUI1101	DST	35	3570
0000740549EN1C8	Gisborne DC	TUI1101	DST	94	8474
0000740551EN971	Gisborne DC	TUI1101	DST	7	628
0000740553EN9F4	Gisborne DC	TUI1101	DST	36	4372

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740555EN87B	Gisborne DC	TUI1101	DST	34	3710
0000740557EN8FE	Gisborne DC	TUI1101	DST	20	1400
0000740559ENB65	Gisborne DC	TUI1101	DST	12	840
0000740561ENE89	Gisborne DC	TUI1101	DST	12	1800
0000740563ENE0C	Gisborne DC	TUI1101	DST	12	1800
0000740565ENF83	Gisborne DC	TUI1101	DST	40	5306
0000740567ENF06	Gisborne DC	TUI1101	DST	28	3032
0000740569ENC9D	Gisborne DC	TUI1101	DST	13	1950
0000740571EN424	Gisborne DC	TUI1101	DST	4	600
0000740573EN4A1	Gisborne DC	TUI1101	DST	61	5699
0000740575EN52E	Gisborne DC	TUI1101	DST	10	705
0000740577EN5AB	Gisborne DC	TUI1101	DST	4	280
0000740579EN630	Gisborne DC	TUI1101	DST	40	3330
0000740581EN433	Gisborne DC	TUI1101	DST	47	5034
0000740583EN4B6	Gisborne DC	TUI1101	DST	23	1200
0000740585EN539	Gisborne DC	TUI1101	DST	75	7025
0000740587EN5BC	Gisborne DC	TUI1101	DST	34	2931
0000740589EN627	Gisborne DC	TUI1101	DST	44	4771
0000740591ENE9E	Gisborne DC	TUI1101	DST	49	5350
0000740593ENE1B	Gisborne DC	TUI1101	DST	89	10300
0000740595ENF94	Gisborne DC	TUI1101	DST	57	4550
0000740597ENF11	Gisborne DC	TUI1101	DST	72	5520
0000740599ENC8A	Gisborne DC	TUI1101	DST	46	3940
0000740601EN27A	Gisborne DC	TUI1101	DST	5	350
0000740603EN2FF	Gisborne DC	TUI1101	DST	9	630
0000740605EN370	Gisborne DC	TUI1101	DST	7	490

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740607EN3F5	Gisborne DC	TUI1101	DST	3	210
0000740609EN06E	Gisborne DC	TUI1101	DST	9	630
0000740611EN8D7	Gisborne DC	TUI1101	DST	3	210
0000740613EN852	Gisborne DC	TUI1101	DST	20	1400
0000740615EN9DD	Gisborne DC	TUI1101	DST	11	770
0000740617EN958	Gisborne DC	TUI1101	DST	10	940
0000740619ENAC3	Gisborne DC	TUI1101	DST	21	2380
0000740621ENF2F	Gisborne DC	TUI1101	DST	71	5380
0000740623ENFAA	Gisborne DC	TUI1101	DST	4	520
0000740625ENE25	Gisborne DC	TUI1101	DST	3	450
0000740627ENEA0	Gisborne DC	TUI1101	DST	59	7250
0000740629END3B	Gisborne DC	TUI1101	DST	4	280
0000740631EN582	Gisborne DC	TUI1101	DST	11	770
0000740633EN507	Gisborne DC	TUI1101	DST	5	430
0000740635EN488	Gisborne DC	TUI1101	DST	74	6425
0000740637EN40D	Gisborne DC	TUI1101	DST	90	8120
0000740639EN796	Gisborne DC	TUI1101	DST	43	4930
0000740641EN0DF	Gisborne DC	TUI1101	DST	33	2310
0000740643EN05A	Gisborne DC	TUI1101	DST	40	4320
0000740645EN1D5	Gisborne DC	TUI1101	DST	4	280
0000740647EN150	Gisborne DC	TUI1101	DST	23	1690
0000740649EN2CB	Gisborne DC	TUI1101	DST	5	350
0000740651ENA72	Gisborne DC	TUI1101	DST	1	150
0000740653ENAF7	Gisborne DC	TUI1101	DST	31	2170
0000740655ENB78	Gisborne DC	TUI1101	DST	32	2400
0000740657ENBFD	Gisborne DC	TUI1101	DST	17	1190

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740659EN866	Gisborne DC	TUI1101	DST	6	626
0000740661END8A	Gisborne DC	TUI1101	DST	39	3050
0000740663END0F	Gisborne DC	TUI1101	DST	15	1050
0000740665ENC80	Gisborne DC	TUI1101	DST	15	1050
0000740667ENC05	Gisborne DC	TUI1101	DST	2	140
0000740669ENF9E	Gisborne DC	TUI1101	DST	31	3012
0000740671EN727	Gisborne DC	TUI1101	DST	24	2978
0000740673EN7A2	Gisborne DC	TUI1101	DST	16	1920
0000740674ENA68	Gisborne DC	TUI1101	DST	20	2694
0000740675EN62D	Gisborne DC	TUI1101	DST	18	2424
0000740677EN6A8	Gisborne DC	TUI1101	DST	20	2422
0000740679EN533	Gisborne DC	TUI1101	DST	22	2574
0000740681EN730	Gisborne DC	TUI1101	DST	6	696
0000740683EN7B5	Gisborne DC	TUI1101	DST	5	614
0000740685EN63A	Gisborne DC	TUI1101	DST	16	1958
0000740687EN6BF	Gisborne DC	TUI1101	DST	6	737
0000740689EN524	Gisborne DC	TUI1101	DST	5	614
0000740691END9D	Gisborne DC	TUI1101	DST	18	2190
0000740693END18	Gisborne DC	TUI1101	DST	79	5513
0000740695ENC97	Gisborne DC	TUI1101	DST	8	441
0000740697ENC12	Gisborne DC	TUI1101	DST	66	6564
0000740699ENF89	Gisborne DC	TUI1101	DST	89	8566
0000740701ENB7E	Gisborne DC	TUI1101	DST	14	4650
0000740703ENBFB	Gisborne DC	TUI1101	DST	11	1330
0000740705ENA74	Gisborne DC	TUI1101	DST	1	70
0000740707ENAF1	Gisborne DC	TUI1101	DST	35	4930

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000740709EN96A	Gisborne DC	TUI1101	DST	24	3280
0000740711EN1D3	Gisborne DC	TUI1101	DST	19	2340
0000740713EN156	Gisborne DC	TUI1101	DST	28	3644
0000740714ENC9C	Gisborne DC	TUI1101	DST	1	150
0004801505EN6D7	Gisborne DC	TUI1101	DST	2	140
			Total	3972	341,565

I note that the total wattage recorded in the database excludes ballast but as detailed in **section 2.1**, this is added to the monthly wattage report sent by Eastland.

1.7. Authorisation Received

All information was provided directly by Meridian or Eastland.

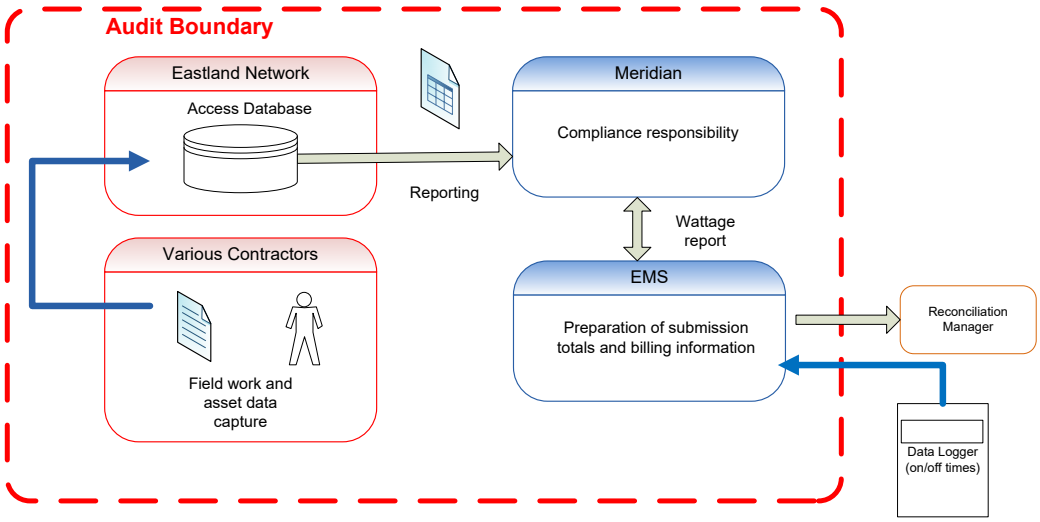
1.8. Scope of Audit

This audit of the GDC DUML database and processes was conducted at the request of 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.

Eastland data is contained in an Access database and Eastland provides reporting to Meridian on a monthly basis, detailing the total kW per ICP and the on/off times are derived by a data logger interrogated by EMS. Lamp ballast information is not stored in the database, instead is calculated at the time of billing.

The diagram below shows the audit boundary for clarity.



The field audit was carried out in Gisborne on 9th October 2018, of 318 items of load.

1.9. Summary of previous audit

The previous audit was conducted for Meridian by Steve Woods of Veritek Limited in May 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 96.6% indicating an estimated over submission of 44,900 kWh per annum. Under submission of approx. 5,500 kWh per annum has occurred due to a ballast wattage difference.	Still existing
Description and capacity	2.4	11(2)(c) of Schedule 15.3	70 watt SON lamp should have ballast of 13 watts not 12 watts.	Still existing
All load recorded	2.5	11(2)(c) of Schedule 15.3	One light not recorded in the database.	Cleared
Tracking of load changes	2.6	11(3) of Schedule 15.3	Process not in place to track all load changes.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 96.6% indicating an estimated over submission of 44,900 kWh per annum. Under submission of approx. 5,500 kWh per annum has occurred due to a ballast wattage difference.	Still existing

Subject	Section	Clause	Non-compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 96.6% indicating an estimated over submission of 44,900 kWh per annum. Under submission of approx. 5,500 kWh per annum has occurred due to a ballast wattage difference.	Still existing

Recommendation

Subject	Section	Description	Status
Load description and capacity	2.4	Add lamp description and gear wattage to the database.	Lamp description has been added to the database – but not gear wattage.

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

Meridian 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

Meridian reconciles this DUML load using the DST profile. The on and off times are derived from a data logger read by EMS. This information is 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 examined during EMS's audit in May 2018 and compliance was confirmed. I checked the figures for September 2018 and I confirm the kW value matches the database extract.

The methodology for deriving submission information is compliant, but there is some inaccurate data within the database used to calculate submissions, and ballasts are applied outside of the database. This is recorded as non-compliance and discussed in **sections 3.1** and **3.2**.

There is some inaccurate data within the database used to calculate submissions as detailed in the table below. This is recorded as non-compliance and discussed in **sections 2.4, 3.1** and **3.2**.

Issue	Volume information impact (annual kWh)
Lamps in the database that do not have a wattage recorded	1,922 kWh under submission
1 x 400W Mercury Vapour lamp has a wattage of 800 recorded	1,708kWh over submission
Incorrect ballasts applied in the monthly report from Eastland	3,288.5 kWh under submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-May-18 To: 30-Sep-18	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded for one 400W MV lamp in the database. Estimated under submission of 3,288.5 kWh per annum due to incorrect gear wattages applied in the monthly wattage report. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because updates to the database are only occurring due to "local knowledge" by Eastland staff, not through a formal update process. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We are following up with Eastland regarding correction of the missing and incorrect information identified in this audit.	31 Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will be working with both GDC and Eastland Network to ensure a robust process is put in place for notification of changes.	31 Mar 2019	

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 in the database, except one 70W High Pressure Sodium lamp, have the ICP identifier recorded against them.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 01-May-18 To: 30-Sep-18	One item of load (Sponge Bay Road 81 - JG_ENL41456374850001) does not have an ICP recorded. Potential impact: Low Actual impact: Low Audit history: never Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong, only one item (Sponge Bay Road 81 - JG_ENL41456374850001) does not have an ICP recorded. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We are following up with Eastland regarding correction of the missing and incorrect information identified in this audit.	31 Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will be working with both GDC and Eastland Network to ensure a robust process is put in place for notification of changes.	31 Mar 2019	

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 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

There are 133 items of load that do not have a Street Name or Street Number populated, but the database does contain a unique identifier for each item of load and GPS coordinates are present for all items of load. This achieves compliance with this clause.

I recommend that Street Name and where possible Street Number are added to the database to assist with location information.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 11(2)(b) of Schedule 15.3	Add Street Name and where possible Street Number into the database to assist with location.	We will ask Eastland to add this information to their database	Investigating

Audit outcome

Compliant

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

Audit commentary

The lamp model has been added to the database since the last audit for all but 25 items of load.

The gear wattages are still to be added to the database to ensure all information is in the database as required by the code. The gear wattage is added by Eastland during the network billing process. I have repeated the last audits recommendation. This is recorded as non-compliance.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 11(2)(c) and (d) of Schedule 15.3	Add gear wattage to the database.	We will ask Eastland to add this information to their database	Investigating

Three lamps have no wattage recorded as detailed below:

Issue	Volume information impact (annual kWh)
1x 100W High Pressure Sodium lamp does not have a wattage recorded	487 kWh under submission
2x 150W High Pressure Sodium lamps do not have a wattage recorded	1,435 kWh under submission

The accuracy of ballasts in the database is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) of Schedule 15.3 From: 01-Apr-18 To: 25-Sep-18	25 items of load have no lamp model or type recorded. Gear wattage is not recorded in the database. 3 lights have no wattage recorded. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because the majority of items in the database have the lamp model, type and wattage recorded. The impact on settlement is low because under submission has occurred by approximately 1,922 kWh per annum overall.

Actions taken to resolve the issue	Completion date	Remedial action status
We are following up with Eastland regarding correction of the missing and incorrect information identified in this audit.	31 Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will be working with both GDC and Eastland Network to ensure a robust process is put in place for notification of changes.	31 Mar 2019	

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 318 lights using the statistical sampling methodology. The population was divided into the following strata:

New	1.	2018
Rural	2.	Rural A-F
	3.	Rural G-L
	4.	Rural M-S
	5.	Rural T-Z
Urban	6.	Urban A-F
	7.	Urban G-L
	8.	Urban M-S
	9.	Urban T-Z

Audit commentary

The field audit findings are detailed in the table below and show some discrepancies.

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
New 2018					
Gladstone Road	17	17	-		
RURAL - A-F					
Atkins Street	6	6	-		
RURAL - G-L					
Gladstone Road	3	3	-		
RURAL - M-S					
Makorori Beach Road	11	11	-		
RURAL - T-Z					
Wharerata Road	10	10	-		
URBAN - A-F					
Ada Beer Place	1	1	-		
Ash Street	2	2	-		
Asquith Street	3	3	-		
Berry Street	3	3	-		
Blackpool Street	3	3	-		
Chalmers Road	19	19	-		
Crawford Road	24	24	-		
Curie Place	2	2	-		
Daphne Place	2	2	-		
Davy Place	1	1	-		
Derby Street	15	15	-		
Emily Street	7	7	-		

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Forest Park Lane	1	1	-		
URBAN - G-L					
Grafton Road	6	6	-		
Haronga Road	5	5	-		
Heron Place	5	5	-		
Hillview Terrace	15	15	-		
Hudson Street	1	1	-		
Judd Street	2	2	-		
Kingsley Street	5	5	-		
Lawrence Place	1	1	-		
Leon Street	3	3	-		
Lyell Road	11	11	-		
Lyndhurst Street	6	6	-		
Lysnar Street	9	9	-		
URBAN - M-S					
Macdonald Street	8	8	-		
Main Road (MKK)	22	21	-1		1 x less light found in the field
Mangapapa Road	4	4	-		
Matthews Road	8	8	-		
Munro Street	12	12	-	1	1 x 27W LED found in the field recorded as 70W HPS in database
Northcote Road	5	5	-		
Ropata Street	4	4	-		
Seddon Crescent	8	7	-1		1 x less light found in the field
Shelley Road	7	7	-		
Steele Road	8	8	-		

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
URBAN - T-Z					
Totara Street	9	9	-	1	1 x 70W HPS LED found in the field recorded as 27W LED in database
Tuamotu Park	1	1			
Wairere Road	23	23	-		
Grand Total	**318**	**316**	**-2**	**2**	

The field audit found two lamp wattage discrepancies and two roads that have a different count.

This clause relates to lights in the field not recorded in the database. The two roads discovered with a lamp count discrepancy, Main Road (MKK) and Seddon Crescent, both have one fewer lamp found in the field. This is recorded as non-compliance in **section 3.1.**

There were no additional lamps found in the field.

Audit outcome

Compliant

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 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 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.

The database tracks additions and removals as required by this clause.

All new streetlight circuits are required to be metered; therefore, the tracking of load changes is only relevant to the existing unmetered circuits. Eastland becomes aware of changes occurring due to local knowledge which leads to database updates, but as this happens on a discovery basis this can be sometime after the change has occurred. This is evident in the incorrect lamp count and wattage differences noted in **section 2.5**. This is recorded as non-compliance in **section 3.1** as part of the database accuracy assessment.

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 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 database has a complete audit trail.

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	Gisborne District Council
Strata	The database contains items of unmetered load in the Gisborne 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 nine strata, as follows: New 2018 Urban Urban A – F Urban G – L Urban M – S Urban T - Z Rural Rural A – F Rural G – L Rural M – S Rural T - Z
Area units	I created a pivot table of the ICP in each area and used a random number generator in a spreadsheet to select a total of 43 sub-units.
Total items of load	318 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 99.4% of the database data for the sample checked. The statistical sampling tool reported with 95% confidence the precision of the sample was 3.2% and the true load in the field will be between 97.4% to 100.6% of the load recorded in the database.

There will be approximately 10,600 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of under submission. The statistical sampling tool reported with 95% confidence the estimated impact will be between 42,300 kWh per annum over submission and 9,600 kWh per annum under submission. This falls within the acceptable database accuracy variance as advised by the Electricity Authority's memo issued 22 August 2018.

As detailed in **section 2.4**, three lamps have no wattage recorded in the database, this will be resulting in an estimated under submission of 1,922 kWh per annum.

Examination of the database found one 400W Mercury vapour lamp has an incorrect wattage of 800W recorded. This will be resulting in an estimated over submission of 1,708 kWh per annum.

As detailed in **section 2.1**, gear wattage is applied outside of the database. The accuracy of these is discussed in **section 3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-May-18 To: 30-Sep-18	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded in the database for one 400W MV lamp. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because updates to the database are only occurring due to "local knowledge" by Eastland staff, not through a formal update process. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We are following up with Eastland regarding correction of the missing and incorrect information identified in this audit.	31 Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will be working with both GDC and Eastland Network to ensure a robust process is put in place for notification of changes.	31 Mar 2019	

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
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

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. This information is 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 examined during EMS's audit in May 2018 and compliance was confirmed. I checked the figures for September 2018 and I confirm the kW value matches the database extract.

The methodology for deriving submission information is compliant, but there is some inaccurate data within the database used to calculate submissions, and ballasts are applied outside of the database.

- Three lamps have no wattage recorded in the database, this will be resulting in an estimated under submission of 1,922 kWh per annum.
- Examination of the database found one 400W Mercury vapour lamp has an incorrect wattage of 800W recorded. This will be resulting in an estimated over submission of 1,708 kWh per annum.

This is recorded as non-compliance and discussed further in **sections 2.1, 2.4** and **3.1**.

The monthly wattage report from Eastland was found to contain some incorrect gear wattages when matched to the published standardised wattage table. The errors found with the data are as follows:

Issue	Volume information impact (annual kWh)
3 x 400W High Pressure Sodium lamps have an incorrect ballast of 46W being applied instead of 38W	102.5kWh over submission
2 x 400W Metal Halide lamps have an incorrect ballast of 46W being applied instead of 38W	68kWh over submission
50 x 50W Halogen TH50 and a further 50x 50W TH50 lamps have a ballast of 9W being applied when Halogen lamps do not have a ballast	3,844kWh over submission
1,702 x 70W High Pressure Sodium lamps have a ballast of 12W being applied instead of 13W	7,269kWh under submission
8 x 70W Metal Halide lamps have a ballast of 12W being applied instead of 13W	34kWh under submission

The incorrect gear wattage will be resulting in an estimated under submission of 3,288.5 kWh.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-May-18 To: 30-Sep-18	Estimated under submission of 1,922 kWh due to missing lamp wattages in the database. Estimated over submission of 1,708 kWh due to incorrect wattage recorded for one 400W MV lamp in the database. Estimated under submission of 3,288.5 kWh per annum due to incorrect gear wattages applied in the monthly wattage report. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because updates to the database are only occurring due to "local knowledge" by Eastland staff, not through a formal update process. The impact is assessed to be low, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
We are following up with Eastland regarding correction of the missing and incorrect information identified in this audit.	31 Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will be working with both GDC and Eastland Network to ensure a robust process is put in place for notification of changes.	31 Mar 2019	

CONCLUSION

The audit found five non-compliances and makes two recommendations.

The field audit findings found a high level of accuracy and the database accuracy fell within the accepted variance range, however I note that there is no formal updating of field changes in place between Eastland and the Gisborne District Council. Changes are updated as they are discovered by Eastland's field contractors.

The gear wattage is being applied outside of the database and I repeat the last audit's recommendation that this be derived from within the database.

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

PARTICIPANT RESPONSE

Meridian have reviewed this report and their comments are recorded in the body of the document. No further comments were provided.