

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

CHRISTCHURCH INTERNATIONAL AIRPORT
LIMITED

AND MERIDIAN ENERGY LIMITED

NZBN: 9429037696863

Prepared by: Steve Woods

Date audit commenced: 28 February 2023

Date audit report completed: 21 March 2023

Audit report due date: 11-May-23

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EXECUTIVE SUMMARY

This audit of the **Christchurch International Airport Limited (CIAL)** DUMML 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 DUMML audits version 1.1.

Meridian reconciles this DUMML load using the DST profile. Submissions are based on the database information, with on and off times derived from data logger information.

I checked the March 2023 extract provided by Orion against the submission totals supplied by Meridian and found that submission matched the database.

The field audit was undertaken of the entire database of 227 items of load on 10th March 2023. A number of discrepancies were identified in the field where the wattage value recorded in the database is different to the lamp in the field. The database was within the allowable +/-5% accuracy threshold.

This audit found three non-compliances and repeats one recommendation.

The future risk rating of six indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in 18 months. The ICP has now switched to a new trader effective from 1.4.2023.

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	The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
All load recorded in the database	2.5	All load recorded in the database	One additional light found in the field of the 227 sampled.	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Moderate	Low	2	Investigating
Future Risk Rating						6	

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	Recommendation	Action
Database accuracy	3.1	Review the streetlight processes to ensure changes are notified and updated in the database.	Investigating

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

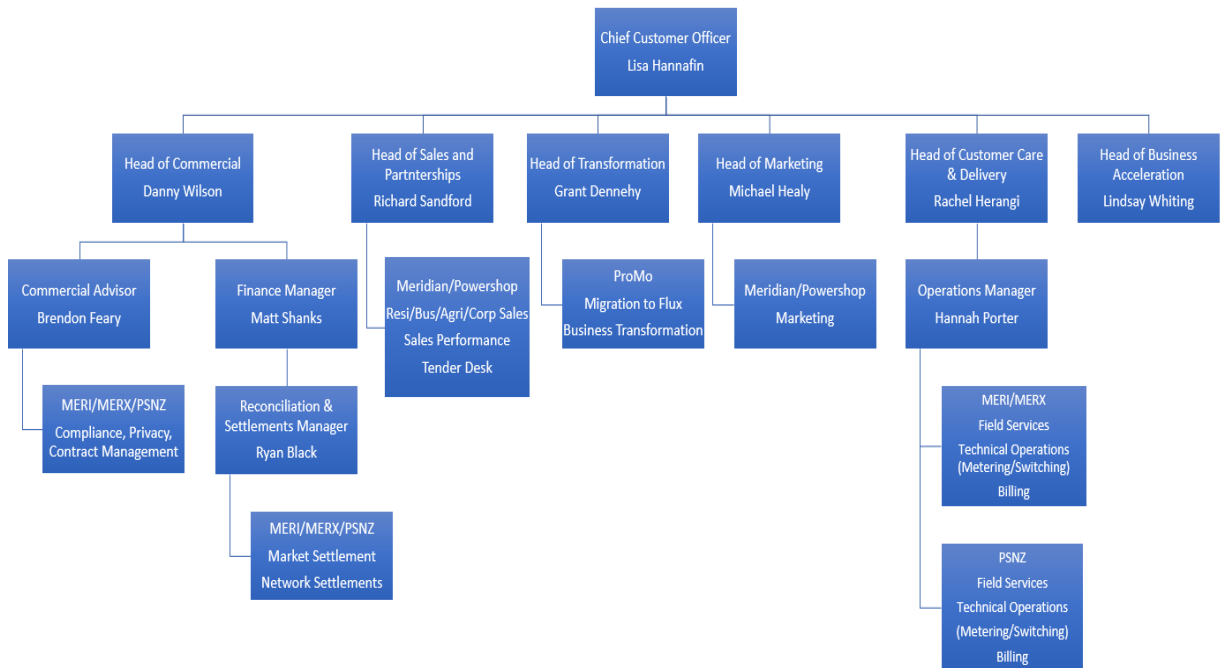
The Electricity Authority’s website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

There are no exemptions in place relevant to the scope of this audit.

1.2. Structure of Organisation

Meridian provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditors:

Name	Company	Role
Steve Woods	Veritek Limited	Lead Auditor
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian Energy
Danial Lau	Energy Data Analyst	Meridian Energy
Penny Lawrence	Operations Services	Orion

1.4. Hardware and Software

Orion use a purpose-built Oracle system for the management of the DUML information. Backup and restoration procedures are in accordance with normal industry protocols.

Systems used by the trader and their agent to calculate submissions are assessed as part of their reconciliation participant audits.

1.5. Breaches or Breach Allegations

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

1.6. ICP Data

ICP Number	Description	Profile	Number of items of load	Database wattage (watts)
0007131634RNDC9	Ref Orion -CIA GXP street light ICP	DST	227	16,509

1.7. Authorisation Received

All information was provided directly by Meridian or Orion.

1.8. Scope of Audit

This audit of the CIAL DUMML 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.

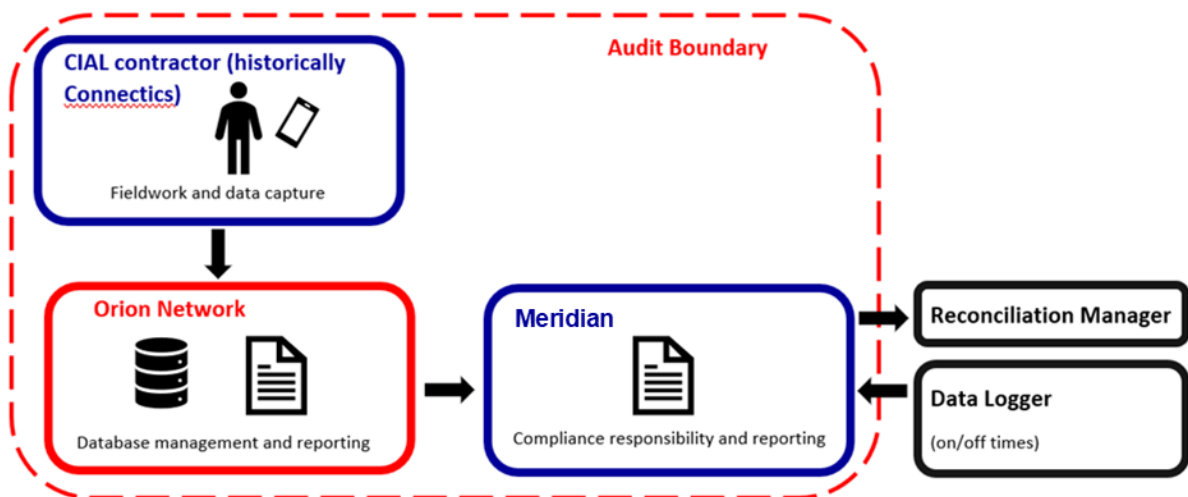
The audit was largely conducted in accordance with the audit guidelines for DUMML audits version 1.1.

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 CIAL boundary is part of the Orion Network. Orion manage their database for CIAL. Monthly reporting is supplied to Meridian by Orion.

This audit covers the Orion database.

The diagrams below show the audit boundaries for clarity.



1.9. Summary of previous audit

Meridian provided a copy of the last audit report undertaken by Rebecca Elliot of Veritek Limited, completed in May 2022 for Meridian Energy. 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 data used for submission does not track changes at a daily basis and is provided as a snapshot. Estimated over submission of 3,199 per annum. 18 x 90W LED lamps not recorded correctly in the database, resulting in 811 kWh of over submission that will not be corrected as it is outside the 14-month revision cycle.	Still existing Cleared Cleared
All load recorded in the database	2.5	All load recorded in the database	21 additional lights found in the field.	Cleared – one additional lamp identified
Database accuracy	3.1	15.2 and 15.37B(b)	18 x 90W LED lamps not recorded correctly in the database, resulting in over submission of 1,110 kWh since November 2017. Estimated over submission of 3,199 per annum.	Cleared Cleared
Volume information accuracy	3.2	15.2 and 15.37B(c)	The data used for submission does not track changes at a daily basis and is provided as a snapshot. Estimated over submission of 3,199 per annum. 18 x 90W LED lamps not recorded correctly in the database, resulting in 811 kWh of over submission that will not be corrected as it is outside the 14-month revision cycle.	Still existing Cleared Cleared

Subject	Section	Recommendation	Action	Status
Database accuracy	3.1	Review the new streetlight processes to ensure changes are notified and updated in the database.	The majority of inaccuracies are due to lack of notification from the contractor (Connetics) regarding new installations and variations from initial designs. Meridian will work with Connetics to provide Orion with the install updates and changes to maintain the database in a timely manner	Still existing for some lamps

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 3 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 the Orion database within the required timeframe.

Audit outcome

Compliant

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.

Submissions are based on the database information, with on and off times derived from data logger information.

I checked the March 2023 extract provided by Orion against the submission totals supplied by Meridian and found that submission matched the database.

The field audit was undertaken of the entire database of 227 items of load on 10th March 2023. The database was within the allowable +/-5% accuracy threshold.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 06-May-20 To: 04-Apr-22	The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
			Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission.		14/4/2023	

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 DUMML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUMML*
- *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

All items of load have an ICP recorded against them.

Audit outcome

Compliant

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 DUMML database must contain the location of each DUMML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for the street name, number, and GPS coordinates. The street name and GPS coordinates are recorded for all items of load.

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 DUMML 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 and that each item of load had a value recorded in these fields.

Audit commentary

The database contains a lamp type, which corresponds to a lamp total wattage including ballast wattage. All items of load have a lamp type and total wattage recorded. The accuracy of the recorded wattages is discussed in **section 3.1**.

Audit outcome

Compliant

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 DUMML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of the entire database of 227 items of load on 10th March 2023.

Audit commentary

The field audit discrepancies found are detailed in the table below:

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Deep Freeze Barracks				4	3 x 51W LED recorded in the database but 3 x 36W LED located in the field. 1 x 51W LED recorded in the database but 1 x 2*30W FF located in the field.
Deep Freeze Carpark			-2	5	4 x 2*30W FF recorded in the database but 4 x 51W LED located in the field. 1 x 51W LED recorded in the database but 1 x 70W HPS located in the field. 2 x 70W HPS recorded in the database but not located in the field.
George Bellew Rd				1	1 x 70W MH recorded in the database but 1 x 28W LED located in the field.
Orchard Rd			+1	9	7 x 55W LED recorded in the database but 7 x 30W LED located in the field. 2 x 61W LED recorded in the database but 2 x 30W LED located in the field. 1 additional 51W LED located in the field (outside Customs building).
Perimeter Rd				4	4 x 47W LED recorded in the database but 4 x 46W LED located in the field.
Peter Leeming Drive				16	16 x 130W LED recorded in the database but 16 x 147W LED located in the field.
Richard Pearse Rd				1	1 x 37W LED recorded in the database but 1 x 37.5W LED located in the field.
Ron Guthrey Rd			-1	14	2 x 37W LED recorded in the database but 2 x 37.5W LED located in the field. 4 x 36W LED recorded in the database but 4 x 37.5W LED located in the field. 2 x 100W MH recorded in the database but 2 x 106W LED located in the field. 1 x 70W HPS recorded in the database but not located in the field. 5 x 77W LED recorded in the database but 5 x 106W LED located in the field. 1 x 77W LED recorded in the database but 1 x 77W HPS located in the field.
Syd Bradley Rd underpass lights				2	2 x 106W LED recorded in the database but 2 x 129W LED located in the field.
TOTAL			4 (+1,-3)	56	

The field audit found one additional item of load found in the field of items of 227 load sampled. This is recorded as non-compliance below.

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

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 05-Apr-22 To: 28-Feb-23	One additional light found in the field of the 227 sampled. 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 as the database used for submission has a large number of wattage discrepancies. The impact is assessed to be low due to effect on reconciliation accuracy.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian advised Orion of the inaccuracy and confirms that it has now been corrected		19/4/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

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

The Orion database functionality achieves compliance with the code.

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 DUMML 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

Orion demonstrated a complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 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

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

The findings of the field audit undertaken during the last audit were reviewed to determine if the database had been updated.

The change management process to track changes and timeliness of database updates was evaluated.

Audit commentary

Database Accuracy and Lamp accuracy

A full field audit was undertaken, and one additional light and some incorrect wattages were identified, the database accuracy is estimated to be 99%. The database was within the allowable +/-5% accuracy threshold.

Lamp description and capacity accuracy

The Orion database was found to have no inaccuracies when compared to the published standardised wattage table.

Change management process findings

Orion's processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance. CIAL are responsible for the Network maintenance at CIAL, and they can choose their own contractor licensed to work on the Orion Network. Outage patrols are conducted on a regular basis. Lamp outages are notified to CIAL, and work requests are passed to their contractor.

There has been no change to the processes to manage new streetlights. New streetlights require a proposed design to be provided which is then approved by the Orion contract manager. On completion of the work the contractor is required to supply the following documents:

- As-Built - Showing full design including pole and lamp specs,
- LVA – (Low voltage alteration sheet) Outlining Cable size, circuits, cable tests and date of testing etc,
- Test Certs - Lamp ID, location, Tested, Livened (this date is used in DB), GPS Co-ordinates,
- COC - Certificate of Compliance,
- ROI - record of inspection, and
- Completion Cert from Contractor notifying Orion of completed works,

Orion Completion Cert is issued once all the above is complete.

Once all the above has been received, the As built/LVA are input into GIS and the streetlight database.

The previous audit identified a large number of changes that had not been notified to update the database and included a recommendation that the new streetlight process is reviewed. This audit

identified a large number of lamp wattage changes in the field that have not been notified to update the database. I repeat the recommendation.

Description	Recommendation	Audited party comment	Remedial action
Database accuracy	Review the streetlight processes to ensure changes are notified and updated in the database.	Meridian has advised Orion of the recommendation	Investigating

Audit outcome

Compliant

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, and
- 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.

Submissions are based on the database information, with on and off times derived from data logger information.

I checked the March 2023 extract provided by Orion against the submission totals supplied by Meridian and found that submission matched the database.

The field audit was undertaken of the entire database of 227 items of load on 10th March 2023. The database was within the allowable +/-5% accuracy threshold.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: 15.2 and 15.37B(c) From: 06-May-20 To: 04-Apr-22	The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
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Preventative actions taken to ensure no further issues will occur		Completion date	
We have assessed our processes and tools to account for historic lamp installations and changes to the database at a daily level. There are checks in place comparing month to month data to identify any material changes and confirm details for these. These are accounted for in monthly submission.		14/4/2023	

CONCLUSION

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

Meridian reconciles this DUML load using the DST profile. Submissions are based on the database information, with on and off times derived from data logger information.

I checked the March 2022 extract provided by Orion against the submission totals supplied by Meridian and found that submission matched the database.

The field audit was undertaken of the entire database of 227 items of load on 10th March 2023. A number of discrepancies were identified in the field where the wattage value recorded in the database is different to the lamp in the field. The database was within the allowable +/-5% accuracy threshold.

This audit found three non-compliances and repeats one recommendation.

The future risk rating of six indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian's comments and recommend that the next audit be in 18 months. The ICP has now switched to a new trader effective from 1.4.2023.

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PARTICIPANT RESPONSE

Meridian have reviewed this report and their comments are contained within the report.