

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

WELLINGTON CITY COUNCIL TRAFFIC
LIGHTS AND MERIDIAN ENERGY

NZBN: 9429037696863

Prepared by: Bernie Cross

Date audit commenced: 20 April 2023

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Audit report due date: 25 May 2023

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EXECUTIVE SUMMARY

This audit of the **Wellington City Council traffic light** 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.

Wellington City Council maintains an Excel spreadsheet of traffic lights. Traffic light installation and maintenance is completed by Downer as a contractor.

Wellington City Council's SCATS system is used to determine the wattages. Total wattage is calculated as the sum of wattages for all phases at the location, plus the wattages for routers, CCTV and any other equipment installed. Daily kWh is provided and used by Meridian to calculate reconciliation submissions.

There is a large programme of work associated with the "Let's get Wellington moving" campaign. This may result in some changes to the existing unmetered signals. These are expected to be managed via the excel spreadsheet. Any new signals being installed by the council are planned to be metered supplies.

Meridian reconciles the load for ICP 0001259560UN5A6 (TRK0331) as NHH using the UML profile. The NSP assignment was found to be incorrect for the majority of the items of load when these lights were plotted on a map and compared to metered connections in the same proximity. This will however have little effect on submission as Wellington Electricity has one balancing area.

The audit found four non-compliance issues and makes one recommendation. The future risk rating of seven indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian Energy's responses and agree with this recommendation.

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	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities.	Moderate	Low	2	Identified
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP assignment is not correct for all items of load resulting in incorrect allocation of submission volumes to the respective NSP.	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities.	Moderate	Low	2	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities.	Moderate	Low	2	Identified
Future Risk Rating						7	

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	Recommendation
Location of each item of load.	2.3	Location accuracy	Review GPS co ordinates to ensure they relate to the street address for each item of load

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 the audit.

1.2. Structure of Organisation

Not applicable.

1.3. Persons involved in this audit

Auditor:

Bernie Cross

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Amy Cooper	Compliance Officer	Meridian Energy
Melanie Matthews	Quality and Compliance Advisor	Meridian Energy
Savaram Rengarajan	ITS Contracts Manager	Wellington City Council

1.4. Hardware and Software

Wellington City Council maintains an Excel spreadsheet of traffic lights. The spreadsheet is saved on Wellington City Council's network and backed up along with other files on the network according to standard industry procedures. Access to the network is secure.

Systems used by the trader 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	NSP	Profile	Number of items of load	Database wattage (watts)
0001259560UN5A6	Traffic signals	TKR0331	UML	56	13,200

1.7. Authorisation Received

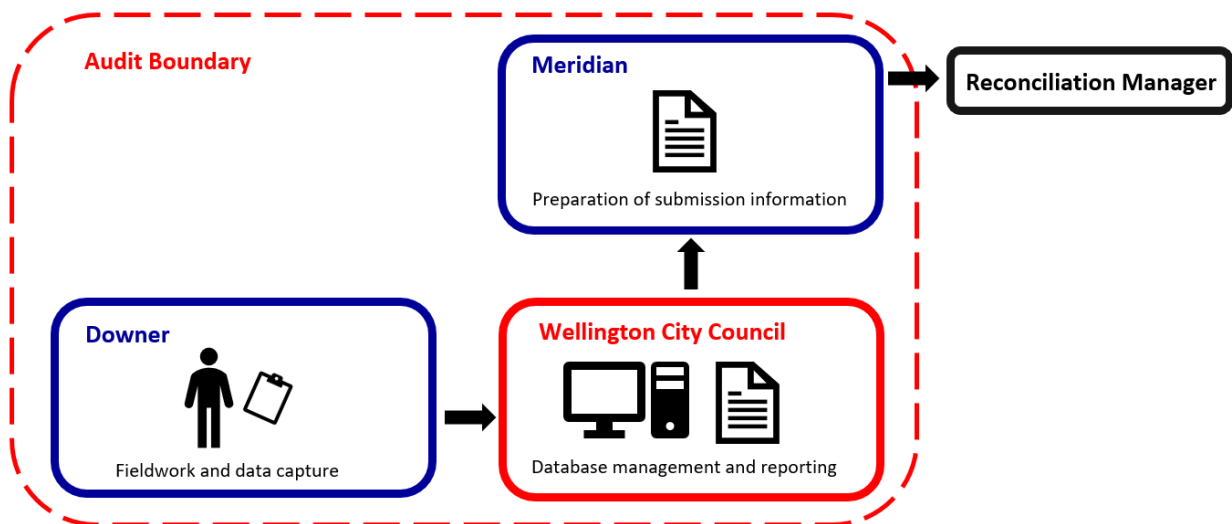
All information was provided directly by Wellington City Council and Meridian.

1.8. Scope of Audit

Wellington City Council maintains an Excel spreadsheet of traffic lights. Traffic light installation and maintenance is completed by Downer as a contractor.

If any information changes, the spreadsheet is updated, and a copy is provided to Meridian. New installations and changes are rare. One new installation has been completed during this audit period relating to a new pedestrian crossing of Cobham Drive has been undertaken and this has been reflected as a standard unmetred load with its own ICP.

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 was undertaken of all 56 items of load on 16th & 17th May 2023.

1.9. Summary of previous audit

The previous audit was completed in May 2021 by Rebecca Elliot of Veritek Limited. Compliance was confirmed.

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 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.

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.

Audit commentary

Meridian reconciles the load for ICP 0001259560UN5A6 as NHH using the UML profile.

Wellington City Council's SCATS system is used to determine the wattages. At each location, lanterns are grouped by phase. For each phase, the lantern wattage is calculated by averaging the SCATS wattage for the red and green lanterns, because they are on most of the time. For pedestrian crossings, a usage factor is applied in addition to the SCATS wattages to account for how frequently they are used.

Total wattage is calculated as the sum of wattages for all phases at the location, plus the wattages for routers, CCTV and any other equipment installed. Daily kWh is provided and used by Meridian to calculate reconciliation submissions.

I checked and found that the most recently provided version of the database (26 May 2021) reflecting changes to the traffic signals at the Cable Street / Chaffers Street intersection has a daily kWh value of 329 kWh per day, however the kWh value recorded on the registry is 317 kWh per day, a difference of 4,380 kWh per annum.

The database accuracy is confirmed to be within the allowable +/-5% threshold. This is discussed further in **section 3.1**.

Some database inaccuracies were found as detailed in **sections 2.2 and 3.1** and summarised below:

Description	Items of load	Estimated annual kWh impact
Incorrect NSP assignment as all items of load are assigned to TKR0331	Unknown	N/A – NSPs relate to the same balancing area.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Jun-22 To: 30-Apr-23	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities. Potential impact: Low Actual impact: Low Audit history: none Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate, as the process to revise Meridian's database capacity is not robust resulting in out-of-date information being used. The volume impact is small therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian will work with WCC and Wellington Electricity to have additional ICPs created for each NSP the load is connected to.		30/8/2023	Identified
Meridian will request for the current database with the correct capacities to use moving forward and will revise any backdated submissions where possible.		30/8/2023	
Preventative actions taken to ensure no further issues will occur		Completion date	

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 is recorded for each item of load.

Audit commentary

All items of load were plotted to ensure the correct network supply point (NSP) was allocated through the ICP assignment. All 56 records recorded in the database were consolidated in 2010 to a single ICP assigned to NSP TKR0331.

NSP assignment was also compared to the metered traffic light ICPs within the same geographical areas, and it was found that the NSP assignment via the ICP allocation is incorrect for approximately 50 items of load.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 01-Jun-22 To: 30-Apr-23	ICP assignment is not correct for all items of load resulting in incorrect allocation of submission volumes to the respective NSP. Potential impact: Low Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong as all lights are assigned an ICP on entry to the database. The impact is rated as low as all affected NSPs are part of the same balancing area.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian will work with WCC and Wellington Electricity to have additional ICPs created for each NSP the load is connected to.		30/8/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

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

All items of load had street address information recorded and also includes GPS co ordinates for each item of load.

The GPS co ordinates for SCATS ID 35 (with a street address of the intersection between Molesworth Street and Pipitea Street) place the traffic lights in the intersection of Mulgrave Street and Pipitea Street. I recommend that the GPS co ordinates are reviewed to ensure they relate to the street address for each item of load.

Recommendation	Description	Audited party comment	Remedial action
Location accuracy	Review GPS co ordinates to ensure they relate to the street address for each item of load	Meridian will inform WCC of the recommendation	Identified

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.

Audit commentary

The database groups lanterns into phases and includes the SCATS wattages for each group. Each phase is treated as a separate item of load.

The database includes descriptions and wattages for other equipment installed.

The database lists assumptions regarding the wattages.

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

A field audit of all items of load was undertaken.

Audit commentary

The database lists lantern groups and other equipment installed at each location. To verify that all load was recorded. I checked all locations and confirmed that items of load were present as described in the database. There have been no changes to the calculation of wattage since the last audit. I reviewed one example and confirmed that wattage calculations were correct.

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 DUMML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The ability of the database to track changes was assessed and the process for tracking of changes in the database was examined.

Audit commentary

A new tab is created in the spreadsheet when any changes occur with the date of the change recorded including the initials of the user who completed the changes.

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

The excel spreadsheet contains an audit trail. The audit trail includes the date, and a description of the before and after values. The user's initials are recorded in each tab.

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

A sample of wattage data was checked against SCATS.

Audit commentary

Database Accuracy

All items of load were confirmed in the field.

To verify that all load was recorded I checked all locations and confirmed that items of load were present as described in the database. All metered traffic light ICPs were mapped to verify that all load is being accounted for.

The database accuracy is confirmed to be within the allowable +/-5% threshold. Compliance is confirmed.

I checked and found that the most recently provided version of the database (26 May 2021) has a daily kWh value of 329 kWh per day, however the kWh value recorded on the registry is 317 kWh per day, a difference of 4,380 kWh per annum:

Change Management

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

All maintenance and new connections are requested by Wellington City Council.

Where maintenance is completed, Wellington City Council updates the database if changes are required once they have confirmed the work is complete. In most cases, maintenance does not result in changes to the database.

There is a programme of work associated with the "Let's get Wellington moving" campaign. This may result in some changes to the existing unmetered signals. These are expected to be managed via the excel spreadsheet. Any new signals being installed by the council are planned to be metered supplies.

Lamp outages are monitored in real time using the SCATS system.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-22 To: 30-Apr-23	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate, as the process to revise Meridian's database capacity is not robust resulting in out-of-date information being used. The volume impact is small therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian will work with WCC and Wellington Electricity to have additional ICPs created for each NSP the load is connected to.		30/8/2023	Identified
Meridian will request for the current database with the correct capacities to use moving forward and will revise any backdated submissions where possible.		30/8/2023	
Preventative actions taken to ensure no further issues will occur		Completion date	

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

Audit commentary

Meridian reconciles the load for ICP 0001259560UN5A6 as NHH using the UML profile.

Wellington City Council’s SCATS system is used to determine the wattages. At each location, lanterns are grouped by phase. For each phase, the lantern wattage is calculated by averaging the SCATS wattage for the red and green lanterns, because they are on most of the time. For pedestrian crossings, a usage factor is applied in addition to the SCATS wattages to account for how frequently they are used.

Total wattage is calculated as the sum of wattages for all phases at the location, plus the wattages for routers, CCTV and any other equipment installed. Daily kWh is provided and used by Meridian to calculate reconciliation submissions.

The database accuracy is confirmed to be within the allowable +/-5% threshold. Compliance is confirmed.

I checked and found that the most recently provided version of the database (26 May 2021) has a daily kWh value of 329 kWh per day, however the kWh value recorded on the registry is 317 kWh per day, a difference of 4,380 kWh per annum:

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jun-22 To: 30-Apr-23	50 items of load incorrectly assigned to NSP TKR0331. Under submission of approx. 4,380 kWh due to not using the current database capacities. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate, as the process to revise Meridian’s database capacity is not robust resulting in out-of-date information being used. The volume impact is small therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Meridian will work with WCC and Wellington Electricity to have additional ICPs created for each NSP the load is connected to. Meridian will request for the current database with the correct capacities to use moving forward and will revise any backdated submissions where possible.		30/8/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

CONCLUSION

Wellington City Council maintains an Excel spreadsheet of traffic lights. Traffic light installation and maintenance is completed by Downer as a contractor.

Wellington City Council's SCATS system is used to determine the wattages. Total wattage is calculated as the sum of wattages for all phases at the location, plus the wattages for routers, CCTV and any other equipment installed. Daily kWh is provided and used by Meridian to calculate reconciliation submissions.

There is a large programme of work associated with the "Let's get Wellington moving" campaign. This may result in some changes to the existing unmetered signals. These are expected to be managed via the excel spreadsheet. Any new signals being installed by the council are planned to be metered supplies.

Meridian reconciles the load for ICP 0001259560UN5A6 (TRK0331) as NHH using the UML profile. The NSP assignment was found to be incorrect for the majority of the items of load when these lights were plotted on a map and compared to metered connections in the same proximity. This will however have little effect on submission as Wellington Electricity has one balancing area.

The audit found four non-compliance issues and makes one recommendation. The future risk rating of seven indicates that the next audit be completed in 18 months. I have considered this in conjunction with Meridian Energy's responses and agree with this recommendation.

PARTICIPANT RESPONSE