

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

STRATFORD DISTRICT COUNCIL
AND MERCURY ENERGY LIMITED
NZBN: 9429037706609

Prepared by: Tara Gannon

Date audit commenced: 23 January 2024

Date audit report completed: 9 April 2024

Audit report due date: 27 April 2024

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EXECUTIVE SUMMARY

This audit of the **Stratford District Council (SDC)** DUML database and processes was conducted at the request of **Mercury Energy Limited (Mercury)** 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.

A RAMM database is held by SDC, who is Mercury's customer. NPE Tech are responsible for fault, maintenance, and upgrade work for streetlights, and maintain the database. Staff update RAMM from the field using Pocket RAMM.

The LED upgrade is complete, and most database updates are replacements of lights with another of the same type as required for maintenance. Few new connections occur, and where they do they are usually initiated by SDC and completed by NPE Tech and updated on installation using Pocket RAMM.

Mercury reconciles this DUML load using the HHR profile, and the volume is calculated using wattages from a monthly RAMM extract from SDC and on hours from a data logger. Mercury were granted exemption No. 233, which allowed them to provide HHR submission information instead of NHH submission information for DUML. Clause 8(g) of Schedule 15.3 of the Code, which the exemption related to was removed from the Code in 2018, and the exemption is no longer valid. Mercury is planning to apply for a new profile which will allow them to continue to submit the DUML load as HHR.

A field audit was conducted of a statistical sample of 133 items of load, and no discrepancies were identified.

Accuracy improvements have been made since the previous audit, but some accuracy issues still remain, including a small number of festive and decorative lights which are not recorded in the database and a handful of other discrepancies. SDC have recruited a Graduate Roading Engineer who is working with the Roading Asset Manager and NPE Tech to investigate and resolve these issues. The database will be updated as soon as the correct information is confirmed.

The audit found five non-compliances and makes three recommendations to ensure that the actions required to resolve the current issues are clear. The future risk rating of ten indicates that the next audit be completed in 12 months. I have considered this in conjunction with Mercury's comments and recommend that the next audit be in at least 12 months on 27 April 2025.

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	<p>The DUML load is submitted using HHR profile, without an exemption in place.</p> <p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p> <p>25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.</p> <p>Festive and decorative lights are not recorded in the database.</p> <p>The database extracts do not track changes at a daily basis and are provided as a snapshot.</p>	Moderate	Low	2	Investigating
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	<p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p>	Moderate	Low	2	Investigating
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>Festive and decorative lights are not recorded in the database.</p>	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p> <p>25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.</p> <p>Festive and decorative lights are not recorded in the database.</p>	Moderate	Low	2	Investigating
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>The DUML load is submitted using HHR profile, without an exemption in place.</p>	Moderate	Low	2	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			<p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p> <p>25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.</p> <p>Festive and decorative lights are not recorded in the database.</p> <p>The database extracts do not track changes at a daily basis and are provided as a snapshot.</p>				
Future Risk Rating						10	

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	Response
Correct use of the lamp wattage and gear wattage fields	2.1	<p>If practical, update the way that wattage information is recorded so that the lamp and gear wattage fields accurately reflect the lamp and gear wattage.</p> <p>In the meantime, there is no impact on submission because Mercury is aware that the gear wattage reflects the total wattage for each light.</p>	We have discussed with Stratford DC and they are investigating, we will follow up.
Provision of information on changes to load as part of the monthly database extract provided to Mercury.	2.1	Investigate the best way to identify changes to database wattages for DUML ICPs during the month; and communicate those changes and the impact on the daily load connected to each DUML ICP to Mercury.	We have discussed with Stratford DC and they are investigating, we will follow up.
Add festive and decorative lights to RAMM	2.5	<p>Once lamp information is confirmed, update the decorative and festive light data in RAMM.</p> <p>Develop a process to communicate festive light on and off dates to Mercury.</p>	We have discussed with Stratford DC and they are investigating, we will follow up.

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

Current code exemptions were reviewed on the Electricity Authority website.

Audit commentary

Mercury were granted exemption No. 233, which allowed them to provide half-hour (“HHR”) submission information instead of non-half-hour (“NHH”) submission information for distributed unmetered load (“DUML”). Clause 8(g) of schedule 15.3 of the Code, which the exemption related to was removed from the Code in 2018, therefore the exemption is no longer valid.

Mercury currently submits the DUML load as HHR, which is non-compliant with clause 8(5) of schedule 15.3 of the Code, because the DUML load does not meet the requirements for use of the HHR profile:

For any unmetered load at an ICP for which it is responsible, regardless of the category of any metering installation at the ICP, a reconciliation participant must provide non-half-hour submission information to the reconciliation manager unless—

(a) the Authority has approved a profile for the unmetered load that allows the reconciliation participant to provide half hour submission information to the reconciliation manager for the unmetered load; and

(b) the reconciliation participant provides half hour submission information in accordance with the profile.

Mercury is planning to apply for a new profile which will allow them to continue to submit the DUML load as HHR.

1.3. Persons involved in this audit

Auditor:

Name	Title	Company
Tara Gannon	Auditor	Provera

Other personnel assisting in this audit were:

Name	Title	Company
Steve Bowden	Roading Asset Manager	Stratford District Council
Frank Hick	Graduate Roothing Engineer	Stratford District Council
Chris Posa	Compliance Reconciliation Analyst	Mercury
Hugo Martin	Account Manager	Mercury

1.4. Hardware and Software

RAMM

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited. The database is commonly known as “RAMM” which stands for “Road Assessment and Maintenance Management”. The specific data used for DUML is held in the Streetlight tables. thinkproject New Zealand Limited backs up the database and assists with disaster recovery as part of their hosting service.

Access to the database is secure by way of password protection.

Mercury systems

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)
0089352004PCE32	SDC Local Streetlights SFD0331	SFD0331	HHR	787	20,956
0089352001PC37D	SDC UVL Streetlights SFD0331	SFD0331	HHR	189	9,232
TOTAL				976	30,188

The database extract provided also included the following ICPs:

ICP Number	Description	Trader	Number of items of load	Database wattage (watts)	Comment
1000544328PCC4B	ONE FLAG LIGHT CNR OF SOLE ROAD/SH3	Decom	1	168	Decommissioned, outside the scope of this audit.
0080011331PC128	Public Toilets - Victoria Park	MERX	1	24	MERX settles the load using RPS profile. Outside of the scope of this audit because the ICP is supplied by a different trader and is not DUML.

1.7. Authorisation Received

All information was provided directly by Mercury or SDC.

1.8. Scope of Audit

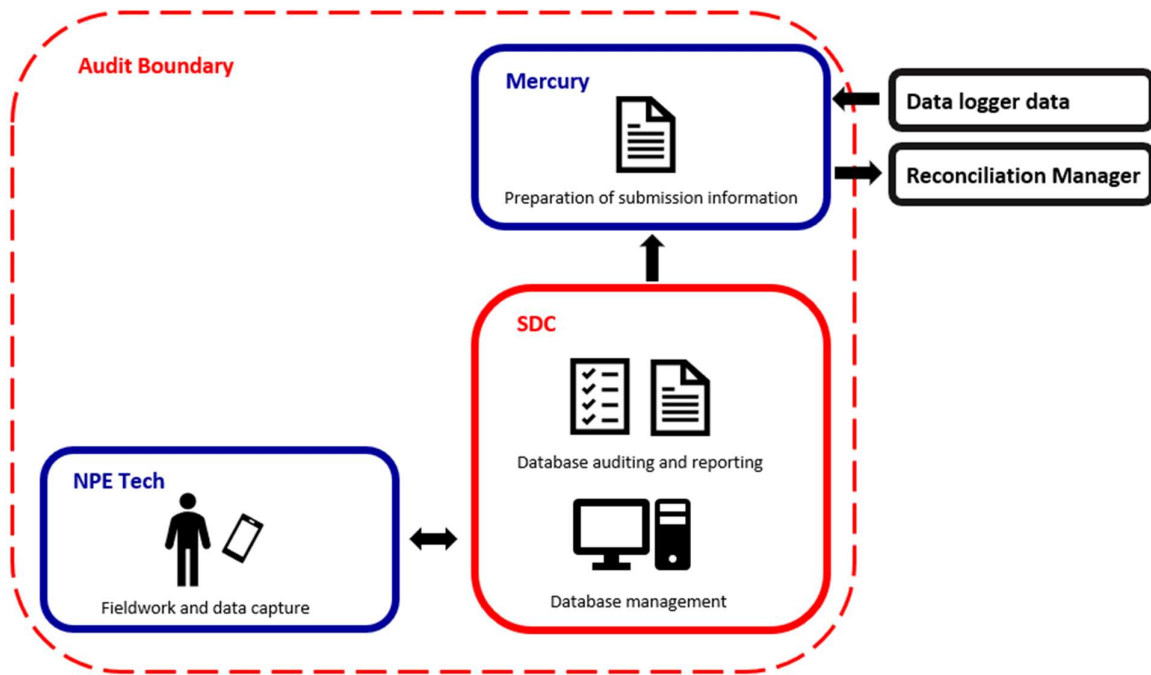
This audit of the SDC DUML database and processes was conducted at the request of Mercury in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied. The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

A RAMM database is held by SDC, who is Mercury's customer. NPE Tech are responsible for fault, maintenance, and upgrade work for streetlights, and maintain the database. Staff update RAMM from the field using Pocket RAMM.

The LED upgrade is complete, and most database updates are replacements of lights with another of the same type as required for maintenance. Few new connections occur, and where they do they are usually initiated by SDC and completed by NPE Tech and updated on installation using Pocket RAMM.

Mercury reconciles this DUML load using the HHR profile, and the volume is calculated using wattages from a monthly RAMM extract from SDC and on hours from a data logger.

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 field audit was undertaken of a statistical sample of 133 items of load on 10 March 2024.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Tara Gannon of Veritek Limited in October 2023. The summary table below shows the statuses of the non-compliances raised in the previous audit. Further comment is made in the relevant sections of this report.

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	<ol style="list-style-type: none"> The best available estimate is not precise enough to conclude that the database is accurate within $\pm 5\%$ resulting in potential under submission of 3,900 kWh per annum. 80 items of load did not have an ICP number recorded resulting in a potential estimated under submission of 24,096 kWh per annum. 24 items of load were updated with DUMIL ICP numbers during the audit. 24 items of load connected to ICP 0089352004PCE32 had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 3,656 kWh per annum. Four items of load connected to ICP 0089352001PC37D had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 1,209 kWh per annum. There were 80 items in the database that have either N/A or blank for the ICP. 37 had a zero or blank gear wattage (total wattage) and 28 had a blank or unknown lamp make and lamp model, and a zero or blank lamp wattage. This could lead to an under submission of 6,564 kWh per annum. 	<ol style="list-style-type: none"> Cleared 2-4. Mostly cleared, some exceptions remain. Cleared. Still existing. Still existing. Still existing. Still existing. Still existing.

Subject	Section	Clause	Non-compliance	Status
			<p>Three items of load had their wattages correctly updated during the audit and the remainder are to be corrected.</p> <p>6. Festive and decorative lights are not recorded in the database.</p> <p>7. Four items of load have gear wattages inconsistent with the expected value, resulting in over submission of 367.3 kWh per annum.</p> <p>8. The database extracts do not track changes on a daily basis and are provided as a snapshot.</p> <p>9. The unmetered load is submitted as HHR, and no exemption is in place.</p>	
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	80 items of load did not have an ICP number recorded resulting in a potential estimated under submission of 24,096 kWh per annum. 24 items of load were updated with DUML ICP numbers during the audit.	Cleared. An ICP number was recorded against each item of load in the database extract provided.
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	<p>24 items of load connected to ICP 0089352004PCE32 had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 3,656 kWh per annum.</p> <p>Four items of load connected to ICP 0089352001PC37D had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 1,209 kWh per annum.</p> <p>There were 80 items in the database that have either N/A or blank for the ICP. 37 had a zero or blank gear wattage (total wattage) and 28 had a blank or unknown lamp make and lamp model, and a zero or blank lamp wattage. This could lead to under submission of 6,564 kWh per annum.</p> <p>Three items of load had their wattages correctly updated during the audit and the remainder are to be corrected.</p>	Mostly cleared, some exceptions remain.
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>1. Two 24W LED situated on the western side of the private carpark between pole IDs 135 and 1261 on Portia St (North) are not recorded in the database.</p> <p>2. Festive and decorative lights are not recorded in the database.</p>	<p>1. Cleared</p> <p>2. Still existing.</p>
Database accuracy	3.1	15.2 and 15.37B(b)	<p>1. The best available estimate is not precise enough to conclude that the database is accurate within $\pm 5\%$ resulting in potential under submission of 3,900 kWh per annum.</p> <p>2. 80 items of load did not have an ICP number recorded resulting in a potential estimated under submission of 24,096 kWh per annum. 24 items of load were updated with DUML ICP numbers during the audit.</p> <p>3. 24 items of load connected to ICP 0089352004PCE32 had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 3,656 kWh per annum.</p> <p>4. Four items of load connected to ICP 0089352001PC37D had missing descriptions, lamp and/or gear (total) wattages</p>	<p>1. Cleared</p> <p>2-4. Mostly cleared, some exceptions remain.</p> <p>5. Cleared.</p> <p>6. Still existing.</p> <p>7. Still existing.</p> <p>8. Still existing.</p>

Subject	Section	Clause	Non-compliance	Status
			<p>resulting in potential under submission of 1,209 kWh per annum.</p> <p>5. There were 80 items in the database that have either N/A or blank for the ICP. 37 had a zero or blank gear wattage (total wattage) and 28 had a blank or unknown lamp make and lamp model, and a zero or blank lamp wattage. This could lead to under submission of 6,564 kWh per annum.</p> <p>Three items of load had their wattages correctly updated during the audit and the remainder are to be corrected.</p> <p>6. Festive and decorative lights are not recorded in the database.</p> <p>7. Pole IDs 1319 and 1320 are located on Macbeth Street but have a road name of Bianca Crescent. The GPS coordinates were correct.</p> <p>8. Four items of load have gear wattages inconsistent with the expected value, resulting in over submission of 367.3 kWh per annum.</p>	
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>1. The best available estimate is not precise enough to conclude that the database is accurate within $\pm 5\%$ resulting in potential under submission of 3,900 kWh per annum.</p> <p>2. 80 items of load did not have an ICP number recorded resulting in a potential estimated under submission of 24,096 kWh per annum. 24 items of load were updated with DUML ICP numbers during the audit.</p> <p>3. 24 items of load connected to ICP 0089352004PCE32 had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 3,656 kWh per annum.</p> <p>4. Four items of load connected to ICP 0089352001PC37D had missing descriptions, lamp and/or gear (total) wattages resulting in potential under submission of 1,209 kWh per annum.</p> <p>5. There were 80 items in the database that have either N/A or blank for the ICP. 37 had a zero or blank gear wattage (total wattage) and 28 had a blank or unknown lamp make and lamp model, and a zero or blank lamp wattage. This could lead to under submission of 6,564 kWh per annum. Three items of load had their wattages correctly updated during the audit and the remainder are to be corrected.</p> <p>6. Festive and decorative lights are not recorded in the database.</p> <p>7. Four items of load have gear wattages inconsistent with the expected value, resulting in over submission of 367.3 kWh per annum.</p> <p>8. The database extracts do not track changes at a daily basis and are provided as a snapshot.</p> <p>9. The unmetered load is submitted as HHR, and no exemption is in place.</p>	<p>1. Cleared</p> <p>2-4. Mostly cleared, some exceptions remain.</p> <p>5. Cleared.</p> <p>6. Still existing.</p> <p>7. Still existing.</p> <p>8. Still existing.</p> <p>9. Still existing.</p>

Subject	Section	Recommendation	Status
Use of the gear wattage field in the database	2.1	<p>Investigate whether the gear wattage field can be updated to reflect the gear wattage rather than the total wattage.</p> <p>It is important that if the rationale to determine the gear wattage changes, that all lights in the database are updated at the same time to ensure that Mercury can easily determine the total wattage.</p> <p>If the gear wattage field is updated to reflect the gear wattage only, the submission process should be updated to ensure that the lamp + gear wattage is applied as the total wattage.</p>	In progress. SDC intend to work with thinkproject to determine the best way to update the lamp and gear wattage fields so that this can be corrected.
Blank and N/A ICP for 56 items of load	2.2	Investigate and determine where the lights are connected to determine if they should be included in the DUML audit, or the load should be transferred to another ICP.	Adopted.
Christmas lights connected to SDC ICP 0089352004PCE32	2.5	<p>Add the Christmas lights to RAMM for lights connected to 0089352004PCE32 once the wattages are confirmed.</p> <p>Ensure that festive light on and off dates are communicated to Mercury for submission.</p>	In progress. SDC has been trying to confirm the load for these lights with the original supplier. If the next attempt is unsuccessful, they will ask NPE Tech to test a sample of the lights to confirm the correct load so that the database can be updated. On and off dates for the festive lights will then be communicated to Mercury so that the correct values are applied for submission.
Christmas lights connected to NZTA ICP 0080012045PC49C	2.5	Advise NZTA of Christmas lights connected to NZTA ICP 0080012045PC49C and ensure that these are accounted for under their new NZTA ICP before ICP 0080012045PC49C is decommissioned.	
Decorative lights	2.5	Add the decorative lights to RAMM against the appropriate ICP.	

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:

- *by 1 June 2018 (for DUML that existed prior to 1 June 2017),*
- *within three months of submission to the reconciliation manager (for new DUML),*
- *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Mercury have requested Provera 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 and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Submission data accuracy

Mercury reconciles this DUML load using the HHR profile. Mercury were granted exemption No. 233, which allowed them to provide HHR submission information instead of NHH submission information for DUML. Clause 8(g) of schedule 15.3 of the Code, which the exemption related to was removed from the Code in 2018, and the exemption is no longer valid. Mercury is planning to apply for a new profile which will allow them to continue to submit the DUML load as HHR.

Wattages are derived from monthly database extracts provided by SDC, and on and off times are derived from a data logger. I checked the submission information for January 2024 and confirmed that it was correctly calculated based on the on hours and database kW.

Database accuracy

Examination of the database found the following accuracy issues:

Issue	Estimated volume information impact (annual kWh)
Five of the 976 lights recorded in the database have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database.	Under submission of 2,494 kWh p.a.
25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.	Over submission of 1,098 kWh p.a.
14 unmetered Christmas lights are not recorded in RAMM.	Under submission of at least 50.4 kWh p.a.
Ten unmetered decorative lights are not recorded in RAMM.	Under submission of 726 kWh p.a.

The gear wattage field in the database is used to record the total wattage, and this was correctly applied for submission. Previous audits have recommended that the lamp wattage field should be used to record the lamp wattage, and the gear wattage field should record the gear wattage. SDC intend to work with thinkproject to determine the best way to update the lamp and gear wattage fields so that this can be corrected.

Recommendation	Description	Audited party comment	Remedial action
Correct use of the lamp wattage and gear wattage fields	<p>If practical, update the way that wattage information is recorded so that the lamp and gear wattage fields accurately reflect the lamp and gear wattage.</p> <p>In the meantime, there is no impact on submission because Mercury is aware that the gear wattage reflects the total wattage for each light.</p>	We have discussed with Stratford DC and they are investigating, we will follow up.	Investigating

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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 monthly report is provided as a snapshot, and information on load connected each day is not provided. The impact on submission is expected to be low because load changes are rare for SDC. The LED upgrade is complete and few new connections occur. Most database updates are replacements of lights with another of the same type as required for maintenance.

Provision of daily information was discussed with SDC, who will investigate the best way to identify changes to wattages during the month and communicate these to Mercury.

Recommendation	Description	Audited party comment	Remedial action
Provision of information on changes to load as part of the monthly database extract provided to Mercury.	Investigate the best way to identify changes to database wattages for DUML ICPs during the month and communicate those changes and the impact on the daily load connected to each DUML ICP to Mercury.	We have discussed with Stratford DC and they are investigating, we will follow up.	Investigating

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 2.1</p> <p>With: Clause 11(1) of Schedule 15.3</p>	<p>The DUML load is submitted using HHR profile, without an exemption in place.</p> <p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p>

Non-compliance	Description		
From: 01-Jan-24 To: 10-Mar-24	<p>25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.</p> <p>Festive and decorative lights are not recorded in the database.</p> <p>The database extracts do not track changes at a daily basis and are provided as a snapshot.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are moderate because they ensure most information is accurate. The impact is low based on the kWh differences described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Stratford DC are aware of the discrepancies and are investigating with the intention to correct any issues, we will follow up. Regarding the DUML load being submitted using the HHR profile, Mercury is working on a profile application which will allow HH submission for DUML.		August 2024	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Stratford DC are aware of the importance of having an accurate database and we will continue to liaise with them on this.		Ongoing	

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 an ICP was recorded against each item of load.

Audit commentary

An ICP number is recorded against each item of load in the database extract provided.

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 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

The database contains the road name, location number, and Global Positioning System (GPS) coordinates. 11 of the 976 items of load connected to DUML ICPs do not have GPS co-ordinates recorded, but there is sufficient information recorded in the road name and location number fields to locate these 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 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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

The database contains a lamp make and model description, lamp wattage and gear wattage. The gear wattage field records the total wattage for each item of load, including lamp and gear wattage.

The following items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database:

Pole ID	Road	Gear Model	Lamp Model	Gear Model: Gear Wattage	Lamp Model: Lamp Wattage	Expected gear (total) wattage
792	SH 3 (2 BROADWAY)	LIND	Linda	Blank	40	40

Pole ID	Road	Gear Model	Lamp Model	Gear Model: Gear Wattage	Lamp Model: Lamp Wattage	Expected gear (total) wattage
724	SH 3 (2 BROADWAY)	Blank	NHT150I	Blank	150	168
875	SH 3 (2 BROADWAY)	Blank	40WLED	Blank	40	40
1342	JULIET STREET	Blank	NHT150I	Blank	150	168
1342	JULIET STREET	Blank	Blank	Blank	Blank	168*

*believed to be a 150W SON based on a lamp make of Phillips and being connected to the same pole as the light above.

The accuracy of recorded lamp and gear wattages is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 2.4</p> <p>With: Clause 11(2)(c) and (d) of Schedule 15.3</p> <p>From: 01-Jan-24</p> <p>To: 08-Mar-24</p>	<p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>Controls are moderate because most lamps have a valid lamp and total wattage recorded but there is room for improvement. The impact is low based on the estimated kWh impact of the items of load connected to settled ICPs.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Stratford are investigating with a view to updating the database to include the relevant missing information, we will follow up.		August 2024	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Stratford DC are aware of the importance of having an accurate database and we will continue to liaise with them on this.		Ongoing	

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 a statistical sample of 133 items of load on 10 March 2024. The sample was selected from two strata, as follows:

- road names A-Pem, and
- road names Per-Z.

Audit commentary

Field audit findings

No field audit discrepancies were identified.

Festive and decorative lights

Festive and decorative lights are not currently recorded in the database.

14 festive motif lights are connected in the start of December and disconnected in the first working week of January, four are confirmed to be 15W Christmas tree motifs, four are confirmed to be 15W bell motifs and wattages for the other six lights are being confirmed.

Ten poles in the town centre are believed to have Inari 200 17W decorative lights installed and operate year-round.

SDC has been trying to confirm the load for these lights with the original supplier. If the next attempt is unsuccessful, they will ask NPE Tech to test a sample of the lights to confirm the correct load so that the database can be updated. On and off dates for the festive lights will then be communicated to Mercury so that the correct values are applied for submission.

Recommendation	Description	Audited party comment	Remedial action
Add festive and decorative lights to RAMM	Once lamp information is confirmed, update the decorative and festive light data in RAMM. Develop a process to communicate festive light on and off dates to Mercury.	We have discussed with Stratford DC and they are investigating, we will follow up.	Identified

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3	Festive and decorative lights are not recorded in the database. Potential impact: Low

From: 01-Jun-23 To: 08-Mar-24	Actual impact: Low Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
Low	Controls over database completeness are moderate. Lights are consistently recorded in the database apart from festive lights and decorative lights. The impact is low based on the kWh differences described above. The festive lights are expected to be included in the database by the time they are next connected.	
Actions taken to resolve the issue	Completion date	Remedial action status
Stratford DC are trying to get the festive lights sorted, we will follow up.	August 2024	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Stratford DC are aware of the importance of having an accurate database and we will continue to liaise with them on this.	Ongoing	

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 process for tracking of changes in the database was examined.

Audit commentary

The RAMM 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

RAMM records audit trail information of changes made.

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

A database extract was provided for January 2024, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Stratford District Council streetlights
Strata	The database contains the SDC items of load DUML in the Stratford region. The processes for the management of all SDC items of load are the same, and I decided to place the items of load into two strata: <ul style="list-style-type: none">• Road names A-Pem, and• Road names Per-Z.
Area units	I created a pivot table of the roads, and I used a random number generator in a spreadsheet to select a total of 18 sub-units.
Total items of load	133 items of load were checked

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database or in the case of LED lights against the LED light specification.

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

Audit commentary

Field audit findings

A field audit was conducted of a statistical sample of 133 items of load, which found full accuracy. Confidence interval data could not be calculated because there were no discrepancies.

Light description and capacity accuracy

As discussed in **section 2.4** five of the 976 lights recorded in the database have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 584 W or 2,494 kWh p.a.

Apart from the items of load with missing lamp wattages, all items had a lamp wattage consistent with their lamp make and model. The 25 items of load listed in the table below had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.

Lamp make and model	Expected gear (total) wattage	Applied gear (total) wattage	Items of load	Impact	Comment
Evolve LED 40WLED	40	50	22	+220 W	Gear make = Phillips, lights of the same type with correct gear wattage have gear make = Evolve
Evolve LED 40WLED	40	81	2	+122 W	Gear make = Putney, lights of the same type with correct gear wattage have gear make = Evolve
Phillips NHT150I	168	83	1	-85 W	83 is total wattage for 70W sodium.
Total			25	+257 W	

ICP accuracy

No ICP number inaccuracies were identified.

Address accuracy

No missing or inaccurate addresses were identified.

Change management process

NPE Tech are responsible for fault, maintenance, and upgrade work for streetlights, and maintain the database. Staff update RAMM from the field using Pocket RAMM.

The LED upgrade is complete, and most database updates are replacements of lights with another of the same type as required for maintenance. Few new connections occur, and where they do they are usually initiated by SDC, completed by NPE Tech, and updated on installation using Pocket RAMM.

For new connections, plans must be approved by SDC prior to installation, Powerco must approve the connection and Mercury must agree to take responsibility for the lights. RAMM is updated by NPE Tech if they have completed the connection, or by SDC on receipt of the "as built" plans, certificate of compliance and record of inspection. Field checks are conducted to ensure that the lights installed match the plan.

Outage patrols are completed by NPE Tech every three months. Outages are also reported by residents and work orders are raised with NPE Tech as required.

Festive and decorative lights

Festive and decorative lights are not currently recorded in the database. A recommendation to confirm the light details and add them to the database is made in **section 2.5**.

Private lights

As far as SDC is aware, all private lights are recorded in the database with a DUML ICP number.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-23 To: 02-Oct-23	Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a. 25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a. Festive and decorative lights are not recorded in the database. Potential impact: Medium Actual impact: Medium Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
Low	The controls are moderate because they ensure most information is accurate. The impact is low based on the kWh differences described above.	
Actions taken to resolve the issue	Completion date	Remedial action status
Stratford are investigating with a view to updating the database to include the relevant missing information and update the incorrect information, we will follow up.	August 2024	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
Stratford DC are aware of the importance of having an accurate database and we will continue to liaise with them on this.	Ongoing	

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 on hours against the submitted figure to confirm accuracy.

Audit commentary

Application of profiles

Correct profiles and submission types are recorded on the registry for each of the DUML ICs.

Submission data accuracy

Mercury reconciles this DUML load using the HHR profile. Mercury were granted exemption No. 233, which allowed them to provide HHR submission information instead of NHH submission information for DUML. Clause 8(g) of schedule 15.3 of the Code, which the exemption related to was removed from the Code in 2018, and the exemption is no longer valid. Mercury is planning to apply for a new profile which will allow them to continue to submit the DUML load as HHR.

Wattages are derived from monthly database extracts provided by SDC, and on and off times are derived from a data logger. I checked the submission information for January 2024 and confirmed that it was correctly calculated based on the on hours and database kW.

Database accuracy

Examination of the database found the following accuracy issues:

Issue	Estimated volume information impact (annual kWh)
Five of the 976 lights recorded in the database have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database.	Under submission of 2,494 kWh p.a.
25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.	Over submission of 1,098 kWh p.a.
14 unmetered Christmas lights are not recorded in RAMM.	Under submission of at least 50.4 kWh p.a.
Ten unmetered decorative lights are not recorded in RAMM.	Under submission of 726 kWh p.a.

The gear wattage field in the database is used to record the total wattage, and this was correctly applied for submission. Previous audits have recommended that the lamp wattage field should be used to record the lamp wattage, and the gear wattage field should record the gear wattage. SDC intend to work with thinkproject to determine the best way to update the lamp and gear wattage fields so that this can be corrected.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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 monthly report is provided as a snapshot, and information on load connected each day is not provided. The impact on submission is expected to be low because load changes are rare for SDC. The LED upgrade is complete and few new connections occur. Most database updates are replacements of lights with another of the same type as required for maintenance.

Provision of daily information was discussed with SDC, who will investigate the best way to identify changes to wattages during the month and communicate these to Mercury.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2</p> <p>With: Clause 15.2 and 15.37B(c)</p> <p>From: 01-Jan-24</p> <p>To: 10-Mar-24</p>	<p>The DUML load is submitted using HHR profile, without an exemption in place.</p> <p>Five of the 976 items of load have missing lamp model, gear model, lamp wattage and/or gear (total) wattages in the database resulting in potential under submission of 2,494 kWh p.a.</p> <p>25 items of the 976 items of load had total wattages which were inconsistent with the lamp make and model description resulting in potential over submission of 257 W or 1,098 kWh p.a.</p> <p>Festive and decorative lights are not recorded in the database.</p> <p>The database extracts do not track changes at a daily basis and are provided as a snapshot.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<p>Low</p>	<p>The controls are moderate because they ensure most information is accurate. The impact is low based on the kWh differences described above.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Stratford DC are aware of the discrepancies and are investigating with the intention to correct any issues, we will follow up. Regarding the DUML load being submitted using the HHR profile, Mercury is working on a profile application which will allow HH submission for DUML.</p>		<p>August 2024</p>	<p>Investigating</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Stratford DC are aware of the importance of having an accurate database and we will continue to liaise with them on this.</p>		<p>Ongoing</p>	

CONCLUSION

A field audit was conducted of a statistical sample of 133 items of load, and no discrepancies were identified.

Accuracy improvements have been made since the previous audit, but some accuracy issues still remain, including a small number of festive and decorative lights which are not recorded in the database and a handful of other discrepancies. SDC have recruited a Graduate Roading Engineer who is working with the Roading Asset Manager and NPE Tech to investigate and resolve these issues. The database will be updated as soon as the correct information is confirmed.

The audit found five non-compliances and makes three recommendations to ensure that the actions required to resolve the current issues are clear. The future risk rating of ten indicates that the next audit be completed in 12 months. I have considered this in conjunction with Mercury's comments and recommend that the next audit be in at least 12 months on 27 April 2025.

PARTICIPANT RESPONSE

It has been good to see improvement since the last audit and based on our discussions with Stratford DC we are confident that they will continue to improve the accuracy of the database. Thank you to Tara for her work on the audit.