

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

INVERCARGILL CITY COUNCIL AND
MERCURY NZ LIMITED
NZBN: 9429041941881

Prepared by: Steve Woods

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Date audit report completed: 28 June 2022

Audit report due date: 12-Aug-22

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EXECUTIVE SUMMARY

This audit of the **Invercargill City Council (ICC)** Unmetered Streetlights DUML database and processes was conducted at the request of **Mercury NZ 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.

The database is remotely hosted by thinkproject New Zealand Limited. ICC provide a monthly report to Mercury of this database. Mercury reconciles the ICC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from a RAMM database extract. On and off times are derived from a data logger.

ICC's contractor for streetlight installation and maintenance is Network Electrical Servicing.

The field audit was undertaken of a statistical sample of 390 items of load on 21st June 2022.

This found that the database is not within the allowable +/-5% accuracy threshold and over submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 9 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 2 kW lower and 60 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 8,100 and 256,200 kWh p.a. lower than the database indicates.

The audit found four non-compliances and makes no recommendations. The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Mercury's responses and recommend that the next audit be in 12 months.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates as recorded in section 3.1 . Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum.	Moderate	Medium	4	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Ten additional lights were found in the field of the 390 items of load sampled.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates. Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates. Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum.	Moderate	Medium	4	Identified
Future Risk Rating						14	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Action
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

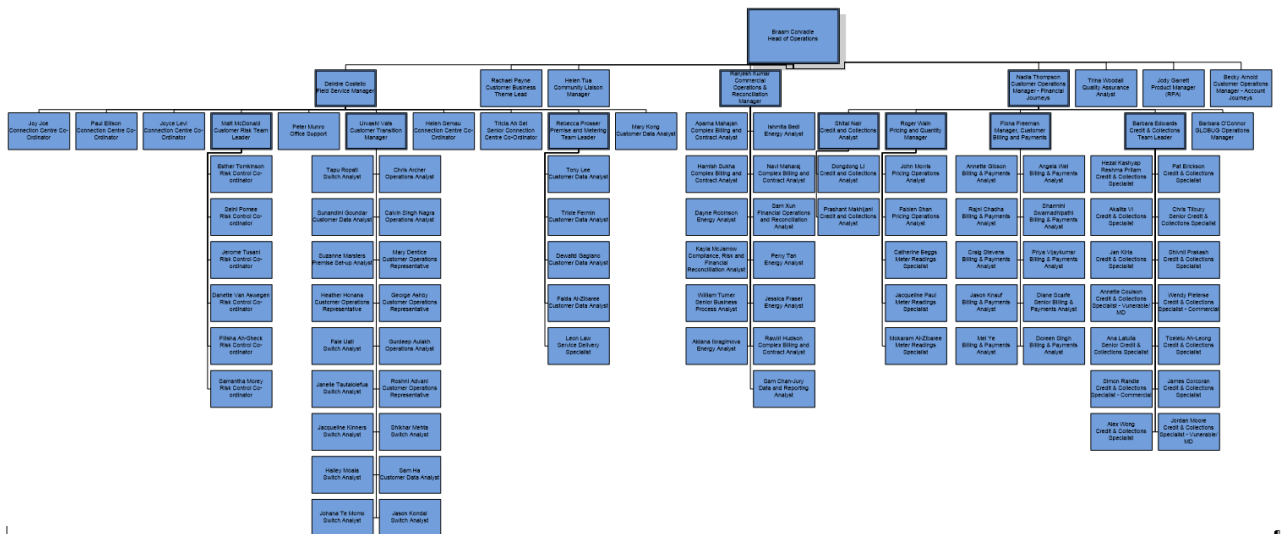
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

Mercury has been granted exemption No. 233. This allows them to provide half-hour (“HHR”) submission information instead of non-half-hour (“NHH”) submission information for distributed unmetered load (“DUML”). This exemption expires on 31 October 2023.

1.2. Structure of Organisation

Mercury provided a copy of their organisational structure:



1.3. Persons involved in this audit

Auditors:

Name	Title	Company
Steve Woods	Auditor	Veritek
Claire Stanley	Supporting Auditor	Veritek

Other personnel assisting in this audit were:

Name	Title	Company
Chris Posa	Compliance Reconciliation Analyst	Mercury NZ Ltd
Gama Rajapaksa	Senior Roading Assets Engineer	Invercargill City Council

1.4. Hardware and Software

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.

Pocket RAMM is used in the field by Network Electrical Servicing.

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

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	Number of items of load	Database wattage (watts)
0008801003TPFE8	ICC LIGHTS – TPC URBAN	INV0331	1,124	51,647
0008801013TP545	ICC LIGHTS - TPC RURAL	INV0331	99	9,055
0008803002NV4BD	ICC LIGHTS - EIL INVERCARGILL	INV0331	4626	254,135
0008803012NVE10	ICC LIGHTS - EIL INVERCARGILL	INV0331	436	18,492
0008801050TPB20	ICC HIGHWAY LIGHTS - TPC URBAN	INV0331	173	44,992
0008801051TP765	ICC HIGHWAY LIGHTS - TPC RURAL	INV0331	87	18,278
0008803013NV255	ICC HIGHWAY LIGHTS EIL BLUFF	INV0331	70	11,871
0088030031NVB6F	ICC HIGHWAY LIGHTS EIL INVERCARGILL	INV0331	421	119,427
Total			7,036	527,898

1.7. Authorisation Received

All information was provided directly by Mercury and ICC.

1.8. Scope of Audit

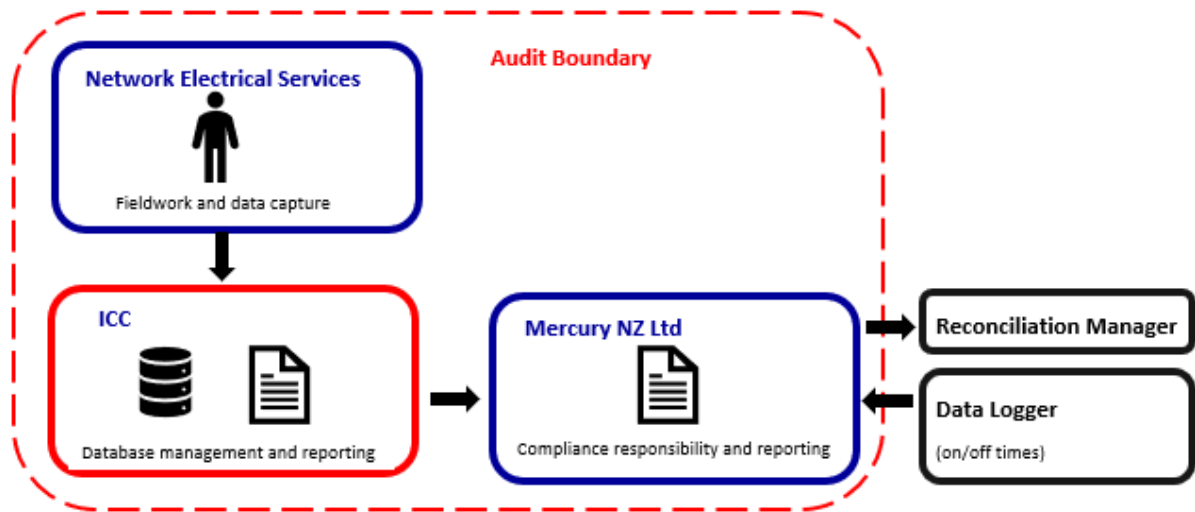
This audit of the ICC DUML database and processes was conducted at the request of Mercury, in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

Mercury use ICC's RAMM database for submission. ICC provide a monthly report to Mercury of this database. Mercury reconciles the ICC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from a RAMM database extract. On and off times are derived from a data logger.

New connection, fault, and maintenance work is completed by Network Electrical Servicing. Pocket RAMM is used in the field to issue work and record changes in the field into RAMM.

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 390 items of load on 21st June 2022.

1.9. Summary of previous audit

The previous audit was undertaken by Steve Woods of Veritek Limited in February 2022 for Mercury. Four non-compliances were identified, and no recommendations were made. The status of the non-compliances and recommendation are described below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 101,800 kWh lower than the DUML database indicates as recorded in section 3.1 Incorrect ballast applied for one lamp.	Still existing Still existing for different lamps
All load recorded in database	2.5	11(2A) of Schedule 15.3	Seven additional lights were found in the field.	Still existing for different lamps
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 101,800 kWh lower than the DUML database indicates. Incorrect ballast applied for one lamp resulting in an estimated very minor over submission of 30 kWh per annum.	Still existing Still existing for different lamps

Subject	Section	Clause	Non-Compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 101,800 kWh lower than the DUML database indicates as recorded in section 3.1 Incorrect ballast applied for one lamp.	Still existing Still existing for different 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 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

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

Audit commentary

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. On and off times are derived from a data logger. Changes are tracked on a daily basis within the database. This is then multiplied by the logger hours to produce the kWh value. I confirmed the calculation for May 2022 was correct.

The current monthly report is compliant, and Mercury completes revision submissions where corrections are required.

As detailed in **section 3.1**, there are five items of load with the incorrect ballasts being applied, this will be resulting in an estimated annual over submission of 1,234 kWh per annum.

The field audit found that the database was not within the allowable +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates.

The RAMM database contains a “replacement date” and a “lamp install date”. The monthly reporting includes the replacement date so that it is clear in the reporting to the trader there has been a change in the field.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 14-Dec-21 To: 07-Jun-22	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUMML database indicates as recorded in section 3.1 . Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum. Potential impact: Medium Actual impact: Medium Audit history: Multiple time previously Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be medium, based on the database accuracy detailed in section 3.1 .		
Actions taken to resolve the issue		Completion date	Remedial action status
We have asked ICC to correct the incorrect ballast. We have also suggested that the ICC carry out a review of their DUMML database in order to clear any discrepancies and ensure accuracy.		August 2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We will continue to follow up with ICC on the ballast corrections and review of the database.		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 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 RAMM database contains a field for the nearest street address and there are GPS coordinates. There is a total of 290 items of load with no GPS coordinates recorded. The street address was sufficient to locate those. ICC have advised that they intend to update the missing co-ordinates in RAMM.

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 all items of load were recorded.

Audit commentary

The extract provided has fields for lamp make, lamp model and lamp notes, which records the total wattage for the lamp including wattage and ballast, and all were populated.

The accuracy of the lamp wattages and ballasts 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 DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of 390 lights using the statistical sampling methodology. The population was divided into the following strata:

- Local Authority A-G,
- Local Authority H-P,
- Local Authority Q-Z,
- NZTA A-M, and
- NZTA N-Z.

Audit commentary

The field audit findings for the sample of lamps was accurate with the exception of the streets detailed in the table below:

Location	Database Count	Field Count	Count differences	Wattage differences	Comments
BAXTER ST	4	5	+1		1 additional 23W LED not recorded in the database but located in the field
BENMORE ST	3	7	+4	3	1 x 21.4W LED recorded in the database but 1 x 77W LED located in the field 2 x 70W HPS recorded in the database but 2 x 77W LED located in the field 4 additional 77W LEDs not recorded in the database but located in the field.
CHARLES ST	4	9	+5	1	1 x 70W HPS recorded in the database but 1 x 22W LED located in the field 5 additional 22W LEDs not recorded in the database but located in the field
FOX ST	16	16		1	1 x 70W HPS recorded in the database but 1 x 77W LED located in the field
WALLACETOWN - LORNVILLE HWY (SH99)	23	22	-1		1 x 97W LED recorded in the database but not located in the field
GRAND TOTAL	7036	7045	11 (+10, - 1)	5	

The field audit found ten additional lights in the field of the 390 items of 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: 14-Dec-21 To: 07-Jun-22	Ten additional lights were found in the field of the 390 items of load sampled. Potential impact: Low Actual impact: Low Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate because they ensure most information is accurate. The impact is assessed to be low due to the small number of additional lights found in the field in relation to the overall count of the items of load.		
Actions taken to resolve the issue		Completion date	Remedial action status
We have asked ICC to correct the database in line with the field audit findings. We have also suggested that the ICC carry out a review of their DUMML database in order to clear any discrepancies and ensure accuracy.		August 2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We will continue to follow up with ICC on the ballast corrections and review of the database.		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 DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database.*

Audit observation

The database was checked for audit trails.

Audit commentary

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, 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	Invercargill City Council region
Strata	The database contains items of load in the Invercargill City Council area. The processes for the management of ICC items of load are the same, but I decided to place the items of load into five strata, as follows: <ol style="list-style-type: none"> 1. Local Authority A-G, 2. Local Authority H-P, 3. local Authority Q-Z, 4. NZTA A-M, and 5. NZTA N-Z.
Area units	I created a pivot table of the roads in each area, and I used a random number generator in a spreadsheet to select a total of 33 sub-units.
Total items of load	390 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 to track changes and timeliness of database updates was evaluated.

Audit commentary

A field audit was conducted of a statistical sample of 390 items of load. The “database auditing tool” was used to analyse the results, which are shown in the table below.

Result	Percentage	Comments
The point estimate of R	101.7	Wattage from survey is higher than the database wattage by 1.7%
R _L	99.6	With a 95% level of confidence, it can be concluded that the error could be between -0.4% and 11.4%.
R _H	111.4	

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between -0.4 lower and 11.4% higher than the average wattage recorded in the database. Non-compliance is recorded because the potential error is greater than +/-5.0%.

In absolute terms the installed capacity is estimated to be 9 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 2 kW lower and 60 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 8,100 and 256,200 kWh p.a. lower than the database indicates.

Scenario	Description
<p>A - Good accuracy, good precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 <p>The conclusion from this scenario is that:</p> <ul style="list-style-type: none"> (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
<p>B - Poor accuracy, demonstrated with statistical significance</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. <p>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level</p>
<p>C - Poor precision</p>	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 <p>The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %</p>

Lamp description and capacity accuracy

The database was checked against the published standardised wattage table, and manufacturer’s specifications where available.

LED light specifications were provided in the previous audit by ICC to confirm the correct wattage and ballast is recorded in the database.

The following lights were found to have the incorrect ballast applied:

Lamp model	Expected ballast	Ballast recorded	Count	Difference
Philip 70W Elliptical HPS	13	20	1	-7
Philip 250W Tubular HPS	28	188	1	-160
Philip 150W Tubular HPS	18	128	1	-110
O TEK Ignis 1 PMPE 77w	0	6	2	-12
Totals			5	-289

The incorrect ballasts being applied will be resulting in an estimated annual over submission of 1,234 kWh per annum (based on 4271 hours per annum).

Change management process findings

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

The field contractor is Network Electrical Servicing, and they are responsible for the Network maintenance. Network Electrical Servicing are issued a Service Request for reactive work and complete a regular maintenance programme. Pocket RAMM is used in the field to issue work and record changes in the field into RAMM. ICC complete random audits of fieldwork to check for completeness and accuracy of information, any additional or incorrect information identified is manually updated in RAMM.

New subdivisions require a proposed plan to be provided and an “as built” plan once the development is complete. New streetlights are only electrically connected once they have been vested. When the lights are vested to the council they are added to the database.

Outage patrols are conducted by ICC for the NZTA lights covering the whole network and pedestrian crossings. There are no outage patrols for the LED lights as the failure rate is so low.

Festive lighting has been added to the RAMM database and these items are included in the monthly report to Mercury when electrically connected.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 14-Dec-21 To: 07-Jun-22	Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUMML database indicates. Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum. Potential impact: Medium Actual impact: Medium Audit history: Multiple times previously Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The impact is assessed to be medium, based on the kWh difference described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
We have asked ICC to correct the incorrect ballast. We have also suggested that the ICC carry out a review of their DUMML database in order to clear any discrepancies and ensure accuracy.		August 2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We will continue to follow up with ICC on the ballast corrections and review of the database.		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 DUMML is being calculated accurately*
- *profiles for DUMML 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

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. On and off times are derived from a data logger. Changes are tracked on a daily basis within the database. This is then multiplied by the logger hours to produce the kWh value. I confirmed the calculation for May 2022 was correct.

The current monthly report is compliant, and Mercury completes revision submissions where corrections are required.

As detailed in **section 3.1**, there are five items of load with the incorrect ballasts being applied, this will be resulting in an estimated annual over submission of 1,234 kWh per annum.

The field audit found that the database was not within the allowable +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates.

The RAMM database contains a “replacement date” and a “lamp install date”. The monthly reporting includes the replacement date so that it is clear in the reporting to the trader there has been a change in the field.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)</p> <p>From: 14-Dec-21 To: 07-Jun-22</p>	<p>Database is not confirmed as accurate with a 95% level of confidence. In absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUMML database indicates as recorded in section 3.1</p> <p>Incorrect ballast applied for five lamps resulting in an estimated over submission of 1,234 kWh per annum.</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple time previously</p> <p>Controls: Moderate</p> <p>Breach risk rating: 4</p>		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement.</p> <p>The impact is assessed to be medium, based on the database accuracy detailed in section 3.1.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
We have asked ICC to correct the incorrect ballast. We have also suggested that the ICC carry out a review of their DUMML database in order to clear any discrepancies and ensure accuracy.		August 2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We will continue to follow up with ICC on the ballast corrections and review of the database.		Ongoing	

CONCLUSION

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

The database is remotely hosted by thinkproject New Zealand Ltd. ICC provide a monthly report to Mercury of this database. Mercury reconciles the ICC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from a RAMM database extract. On and off times are derived from a data logger.

ICC's contractor for streetlight installation and maintenance is Network Electrical Servicing.

The field audit was undertaken of a statistical sample of 390 items of load on 21st June 2022.

This found that the database is not within the allowable +/-5% accuracy threshold and over submission is likely to be occurring as a result:

- in absolute terms the installed capacity is estimated to be 9 kW higher than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 2 kW lower and 60 kW higher than the database,
- in absolute terms, total annual consumption is estimated to be 39,000 kWh higher than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 8,100 and 256,200 kWh p.a. lower than the database indicates.

The audit found four non-compliances and makes no recommendations. The future risk rating of 14 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Mercury's responses and recommend that the next audit be in 12 months.

PARTICIPANT RESPONSE

Mercury has reviewed this report and their comments are contained within the report.