

**ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT**

For

NZTA OTAGO AND TRUSTPOWER

Prepared by: Steve Woods

Date audit commenced: 4 August 2020

Date audit report completed: 14 September 2020

Audit report due date: 15 September 2020

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EXECUTIVE SUMMARY

This audit of the NZTA Otago (NZTA) Aurora network DUMML database and processes was conducted at the request of Trustpower Limited (Trustpower) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

The database is managed by Aurora and the data is held in their GIS system. McKay Electrical have been engaged by NZTA as the streetlight contractor for the Queenstown Lakes DC area, but as they have no relationship with Aurora, they have not been providing Aurora with any field updates. Delta is the contractor for the Central Otago area and database updates have not occurred for this area either.

Database accuracy is described as follows:

| Result | Percentage | Comments |
|-------------------------|------------|---|
| The point estimate of R | 95.3 | Wattage from survey is lower than the database wattage by 4.7% |
| R _L | 89.8 | With a 95% level of confidence it can be concluded that the error could be between -10.2% and -1.5% |
| R _H | 98.5 | |

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 1.5% lower and 10.2% lower than the wattage recorded in the DUMML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates, resulting in over submission.

Most of the database accuracy issues are incorrect wattages. The remedial action may be to conduct a complete field audit of all items of load, in conjunction with ensuring field changes are populated in the database.

The future risk rating of 16 indicates that the next audit be completed in six months. I agree with this recommendation, as six months should allow sufficient time to establish a process for updating the database and to conduct a full field audit.

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 | In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates, as recorded in section 3.1. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. | Weak | Medium | 6 | Investigating |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | The database is inaccurate. In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates. 29 items of load with incomplete lamp descriptions. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. | Weak | Medium | 6 | Investigating |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates, as recorded in section 3.1. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. | Weak | Medium | 6 | Investigating |
| Future Risk Rating | | | | | | 18 | |

| | | | | | | |
|-----------------------------------|-----------|-----------|-----------|-----------|----------|----------|
| 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 | Clause | Recommendation |
|---------|---------|--------|----------------|
| | | | 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

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

Audit commentary

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

1.2. Structure of Organisation

Trustpower provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

| Name | Title | Company |
|-----------------|------------------------|------------|
| Robbie Diederer | Reconciliation Analyst | Trustpower |
| Tammy Dovey | Data Architect | Aurora |

1.4. Hardware and Software

The GIS database used for the management of DUML is managed by Aurora.

The database back up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

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) |
|-----------------|--------------------------------------|---------|---------|-------------------------|--------------------------|
| 0000027638CECB5 | Central Otago State Highways FKN0331 | FKN0331 | STL | 309 | 67,123 |
| 0000486694CE943 | Central Otago State Highways CYD0331 | CYD0331 | STL | 226 | 35,648 |
| 0000486695CE506 | Central Otago State Highways CML0331 | CML0331 | STL | 87 | 15,041 |
| TOTAL | | | | 633 | 117,812 |

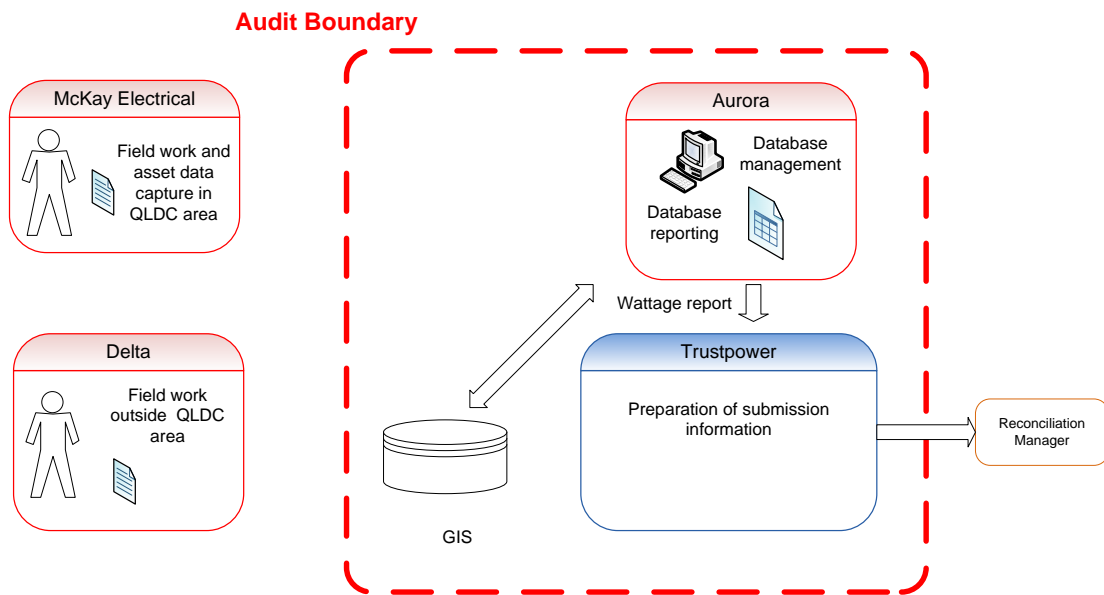
1.7. Authorisation Received

All information was provided directly by Trustpower and Aurora.

1.8. Scope of Audit

The database is managed by Aurora and the data is held in their GIS system. McKay Electrical have been engaged by NZTA as the streetlight contractor for the Queenstown Lakes DC area, but as they have no relationship with Aurora, they have not been providing Aurora with any field updates. Delta is the contractor for the Central Otago area and database updates have not occurred for this area either.

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 carried out at on 2nd August 2020. The field audit was undertaken of 194 lights using the statistical sampling methodology.

1.9. Summary of previous audit

The previous audit was completed in August 2019 by Steve Woods of Veritek Limited. Four non-compliances were identified, and no recommendations were made. The statuses of the non-compliances and recommendations are described below.

| Subject | Section | Clause | Non-compliance | Status |
|-----------------------------------|---------|---------------------------------|---|-------------------------------|
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | In absolute terms, total annual consumption is estimated to be 25,200 kWh lower than the DUML database indicates, as recorded in section 3.1. Incorrect ballasts applied resulting in an estimated under submission of 807 kWh per annum. | Still existing Cleared |
| All load recorded in the database | 2.5 | 11(2A) and (d) of Schedule 15.3 | 1 additional item of load found in the field sample. | Still existing |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | The database is inaccurate. In absolute terms, total annual consumption is estimated to be 25,200 kWh lower than the DUML database indicates. 22 items of load with incomplete lamp descriptions. Incorrect ballasts applied resulting in an estimated under submission of 807 kWh per annum. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. | Still existing |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | In absolute terms, total annual consumption is estimated to be 25,200 kWh lower than the DUML database indicates, as recorded in section 3.1. Incorrect ballasts applied resulting in an estimated under submission of 807 kWh per annum. | Still existing |

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

Trustpower 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. Compliance is confirmed.

2. DUMML 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:

- DUMML 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

Trustpower reconciles this DUMML load using the STL profile. The on and off times are derived from data logger information. Trustpower receives a monthly wattage report.

I recalculated the submissions for May 2020 using the data logger and the database information. I confirmed that the calculation method was correct and accurate. The kW figure used by Trustpower matches the kW figure in the database extract provided by Aurora.

In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates, as recorded in **section 3.1**. This is an expected result, given that the database content has not changed materially since the last audit, because Aurora is not the streetlight contractor and there is no process in place for them to receive any updates from the field.

Audit outcome

Non-compliant

| Non-compliance | Description |
|---|--|
| Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-19 To: 03-Aug-20 | In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUMML database indicates, as recorded in section 3.1. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Weak Breach risk rating: 6 |
| Audit risk rating | Rationale for audit risk rating |
| Medium | There is no process in place for updates to be provided from the field to Aurora, because Aurora is not the field contractor. The impact is assessed to be medium, based on the kWh differences described above. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|-----------------|------------------------|
| Have spoken to QLDC who McKay Electrical work for and they keep their DB up to date. QLDC believe that their DB for the NZTA lights in the QLDC area is accurate and can be accessed if required. | 1/5/2020 | Investigating |
| Preventative actions taken to ensure no further issues will occur | Completion date | |
| NZTA lights in the QLDC area should be split off from this audit and be a standalone audit. This would mean the we use QLDC DB for these lights | 30/9/2020 | |

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 is recorded for each item of load.

Audit commentary

All items of load had an ICP recorded as required by this clause.

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 either the nearest street address and Global Positioning System (GPS) coordinates for each item of load and users in the office and field can view these locations on a mapping system.

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 contains a field for “Wattage”, “Ballast” and “Capacity”. The Capacity field is the wattage and ballast added together.

The lamp description is in the ‘Device type’ field and contains sufficient information for non-LED lights. For example, “150W HP Sodium streetlight” is sufficient to denote this is a High-Pressure Sodium streetlight with a capacity of 150 watts. LED lights are recorded as “LED” or as “Light Emitting Diode” with the wattage. There are often several different wattages available with same shape of fitting, which makes it difficult to determine if the wattage is correct when the labels are not attached in the field. During the previous audit, I recommend a naming convention with the following fields:

| Field | Description |
|----------------|--|
| Manufacturer | For example, “Cree” |
| Model | For example, “Ledway” |
| Number of LEDS | One make and model of light may have many different variants with different LED quantities. Ledway, for example, have between 20 and 120 LEDs. |
| Driver | This is the LED power supply and different drivers result in different power outputs. |
| Wattage | The rated wattage |

The recommended format for the field is: *Cree;Ledway;60LED;525mA;100W*

I have not repeated this recommendation for two reasons. Firstly, Aurora is not the contractor for streetlights, and they do not have any further information and secondly, this is something that I think needs to be managed at a global level for all DUMML databases.

The accuracy of these details 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 a statistical sample of 194 items of load.

Audit commentary

The field audit was accurate for all, but the following items detailed in the table below:

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|----------------------------|----------------|-------------|-------------------------|------------------------------|--|
| Ettrick-Raes Junction Road | 18 | 18 | - | 3 | 2 x 70W HPS recorded as 136W LED 1 x 17W LED recorded as 70W HPS |
| Ardmore Street | 5 | 5 | - | 2 | 2 x 150W HPS recorded as 250W HPS |
| Alison Avenue | 3 | 3 | - | 2 | 1 x 150W HPS recorded as 70W HPS 1 x 163W LED recorded as 250W HPS |
| Balneaves Lane | 7 | 7 | - | 6 | 5 x 150W HPS recorded as 250W HPS 1 x 163W LED recorded as 250W HPS |
| Grand Total | | | 0 | 13 | |

No additional items of load were found in the field. The overall database accuracy is detailed in **section 3.1**.

Audit outcome

Compliant

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

The GIS database functionality achieves compliance with the code. There is an “installation date” used for the date of changes and the date of livening for new installations.

The change management process and the compliance of the database reporting provided to Trustpower is detailed in **sections 3.1** and **3.2**.

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

A complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

| Plan Item | Comments |
|---------------------|---|
| Area of interest | NZTA Otago lights on the Aurora network |
| Strata | <p>The database contains items of load Otago Aurora network area.</p> <p>The area has two distinct sub-groups of urban and rural.</p> <p>The processes for the management of NZTA Aurora Otago items of load are the same, but I decided to place the items of load into four geographical strata, as follows:</p> <ol style="list-style-type: none"> 1. Alexandra 2. Frankton 3. Queenstown 4. Small towns |
| 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 39 sub-units. |
| Total items of load | 194 items of load were checked. |

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

Audit commentary

A field audit was conducted of a statistical sample of 194 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 | 95.3 | Wattage from survey is lower than the database wattage by 4.7% |
| R _L | 89.8 | With a 95% level of confidence it can be concluded that the error could be between -10.2% and -1.5% |
| R _H | 98.5 | |

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 01/02/19 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 1.5% lower and 10.2% lower than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms the installed capacity is estimated to be 5.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 2 kW to 12 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 7,700 kWh p.a. lower to 51,500 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

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority in the database and found a small number of errors. 29 items of load had an incomplete lamp description as detailed in the table below:

| Lamp descriptions | Lamp Quantity |
|---|---------------|
| LED | 17 |
| Monument light, or ped cross, no beacons | 2 |
| Pedestrian crossing beacon with floodlights | 6 |
| Pedestrian crossing beacon without flood lights | 4 |

All ballast details are now correct.

Address accuracy

There were no issues found with location information.

ICP number and owner accuracy

There were no issues found with ICP information.

Change management process findings

The current monthly report is provided as a snapshot and this practice is non-compliant. The database contains an “install date”, but if data entry occurs after the monthly report has been run, the items of load will only appear in the report for the next month and revisions do not occur. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

The database is managed by Aurora and the data is held in their GIS system.

NZTA have engaged McKay Electrical to undertake LED replacements. This information and any information on changes to lights is not being provided to Aurora. As mentioned above, the reporting process does not cater for late data entry.

No festive lighting is connected to the Aurora NZTA unmetered streetlight network.

Audit outcome

Non-compliant

| Non-compliance | Description |
|---|--|
| Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-19 To: 03-Aug-20 | The database is inaccurate. In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUML database indicates. 29 items of load with incomplete lamp descriptions. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Weak Breach risk rating: 6 |

| Audit risk rating | Rationale for audit risk rating | | |
|---|--|-----------------|------------------------|
| Medium | <p>There is no process in place for updates to be provided from the field to Aurora because Aurora is not the field contractor. The ballast information was updated following the last audit, indicating there are some controls in place for corrections.</p> <p>The impact is assessed to be medium, based on the kWh differences described above.</p> | | |
| Actions taken to resolve the issue | | Completion date | Remedial action status |
| Have spoken to QLDC who McKay Electrical work for and they keep their DB up to date. QLDC believe that their DB for the NZTA lights in their area is accurate and can be accessed if required | | 1/5/2020 | Investigating |
| Preventative actions taken to ensure no further issues will occur | | Completion date | |
| NZTA lights in the QLDC area should be split off from this audit and be a standalone audit. This would mean the we use QLDC DB for these lights | | 30/9/2020 | |

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 combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Trustpower reconciles this DUML load using the STL profile. The on and off times are derived from data logger information. Trustpower receives a monthly wattage report.

I recalculated the submissions for May 2020 using the data logger and the database information. I confirmed that the calculation method was correct and accurate.

In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUML database indicates, as recorded in **section 3.1**.

Audit outcome

Non-compliant

| Non-compliance | Description | | |
|---|--|-----------------|------------------------|
| <p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Sep-19 To: 03-Aug-20</p> | <p>In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUML database indicates, as recorded in section 3.1.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Potential impact: Medium Actual impact: Medium Audit history: Three times Controls: Weak Breach risk rating: 6</p> | | |
| Audit risk rating | Rationale for audit risk rating | | |
| Medium | <p>There is no process in place for updates to be provided from the field to Aurora, because Aurora is not the field contractor. A small number of updates occur if the work is conducted by Aurora.</p> <p>The impact is assessed to be medium, based on the kWh differences described above.</p> | | |
| Actions taken to resolve the issue | | Completion date | Remedial action status |
| Have spoken to QLDC who McKay Electrical work for and they keep their DB up to date. QLDC believe that their DB for the NZTA lights in the QLDC area is accurate and can be accessed if required. | | 1/5/2020 | Investigating |
| Preventative actions taken to ensure no further issues will occur | | Completion date | |
| NZTA lights in the QLDC area should be split off from this audit and be a standalone audit. This would mean the we use QLDC DB for these lights | | 30/9/2020 | |

CONCLUSION

The database is managed by Aurora and the data is held in their GIS system. McKay Electrical have been engaged by NZTA as the streetlight contractor, but as they have no relationship with Aurora, they have not been providing Aurora with any field updates.

Database accuracy is described as follows:

| Result | Percentage | Comments |
|-------------------------|------------|---|
| The point estimate of R | 95.3 | Wattage from survey is lower than the database wattage by 4.7% |
| R _L | 89.8 | With a 95% level of confidence it can be concluded that the error could be between -10.2% and -1.5% |
| R _H | 98.5 | |

The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 1.5% lower and 10.2% lower than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than 5.0%.

In absolute terms, total annual consumption is estimated to be 23,400 kWh lower than the DUML database indicates, resulting in over submission.

Most of the database accuracy issues are incorrect wattages. The remedial action may be to conduct a complete field audit of all items of load, in conjunction with ensuring field changes are populated in the database.

Participant response

The NZTA lights in the QLDC are maintained by QLDC on behalf of NZTA. QLDC contract McKay Electrical to do all the maintenance on street lighting in their area.

There has been a problem as Aurora has kept the DB in the past, but after McKay Electrical took over the contract for QLDC they only report to QLDC and have refused to pass that information onto Aurora. This has meant that any changes to the street lighting in the QLDC area have not been updated on the Aurora DB. However the changes have been recorded on the QLDC DB.

To get around this problem we suggest that we split the NZTA lights in the QLDC area off to an individual DB and use the QLDC DB for the audit. This would alleviate the communication problem we have presently between McKay Electrical and Aurora.

This audit would then be as follows

Separate audit using this ICL which covers the NZTA lights in the QLDC area

| | |
|-----------------|--------------------------------------|
| 0000027638CECB5 | Central Otago State Highways FKN0331 |
|-----------------|--------------------------------------|

The other audit would cover the remaining NZTA lights in the Central Otago area which is maintained by Delta who have a proven record of updating any changes to Aurora who keeps the DB on behalf of NZTA

| | |
|-----------------|--------------------------------------|
| 0000486694CE943 | Central Otago State Highways CYD0331 |
| 0000486695CE506 | Central Otago State Highways CML0331 |

By splitting this audit in two parts we will have two separate DB which are held by QLDC and Aurora and two different maintenance contactors which should put an end to DB's not getting updated.

The DB used for this audit differs from the information provided to Trustpower on a monthly basis from Aurora. Trustpower has spoken with Aurora and it appears that the DB extract provided to Veritek may not have been provided by the person normally responsible for that data and therefore may have been inaccurate or out of date. A number of the errors noted in this audit (notably section 2.5) are not present in the most recent data provided to Trustpower. Trustpower suggests the auditor confirms this with Aurora.