# ELECTRICITY INDUSTRY PARTICIPATION CODE
# DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

## WHANGAREI DISTRICT COUNCIL
## AND GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 19 November 2018

Date audit report completed: 14 December 2018

Audit report due date: 1 December2018

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## EXECUTIVE SUMMARY

This audit of the Whanagrei District Council (**WDC**) DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**) 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.

This audit found five non-compliances and one recommendation was made.

Genesis reconciles this load using the streetlight database held by Northpower. This is maintained for the purpose of billing line charges and not for submission purposes. There is no direct mechanism in place for updating load. Genesis have reviewed the WDC RAMM database and found the data accuracy to be too poor for this database to be used for submission. I recommend that Genesis work with the council to bring the database up to date so that a current and more accurate data source can be used for submission.

Genesis are receiving a wattage report intermittently. The November 2018 submissions were calculated using the extract provided in September 2018 and therefore the kW values were different resulting in over submission of 10,299.72 kWh. Annualised this will result in an estimated annual over submission of 123,597 kWh.

The previous audit report included 11 ICPs that are being correctly reconciled as standard unmetered load ICPs and are not recorded in the DUML database, therefore these have been excluded from this audit report.

The database accuracy is assessed to be 93.8% indicating potential over submission of 107,300 kWh per annum.

1,806 items of load have the incorrect ballast applied indicating over submission of 88,009.51 kWh per annum. It is due to this that Genesis calculate the total wattage based on the lamp types provided from the Northpower database report. I checked the accuracy of these and found a minor number of inaccuracies that will be resulting in 13.66 kWh per annum of over submission. The code requires the ballast to be calculated within the database.

The future risk rating of 30 indicates that the next audit be completed in three months. I recommend that the next audit be in six to nine months to allow Genesis time to work with the council and bring RAMM up to date. The matters raised are detailed below:

## AUDIT SUMMARY

### NON-COMPLIANCES

| Subject | Section | Clause | Non-Compliance | Controls | Audit Risk Rating | Breach Risk Rating | Remedial Action |
|---|---|---|---|---|---|---|---|
| DUML Audit | 1.10 | 17.295F of part 17 | Audit not completed within the required timeframe. | Strong | Low | 1 | Cleared |
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | The database accuracy is assessed to be 93.2% indicating potential over submission of 39,600 kWh per annum.<br><br>1,806 items of load have the incorrect ballast applied in the DUML database which would result in over submission of 88,009.51 kWh per annum if used for submission.<br><br>Total kW values are calculated outside of the database.<br><br>Out of date kW report used to calculate submission resulting in a potential 123,597 kWh of over submission per annum. | Weak | High | 9 | Identified |
| All load recorded in database | 2.5 | 11(2A) and (d) of Schedule 15.3 | 6 additional items of load found in the field sample. | Weak | Low | 2 | Investigating |

| Subject | Section | Clause | Non-Compliance | Controls | Audit Risk Rating | Breach Risk Rating | Remedial Action |
|---|---|---|---|---|---|---|---|
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | The database accuracy is assessed to be 93.8% indicating potential over submission of 107,300 kWh per annum.<br>1806 items of permanent load have the incorrect ballast applied indicating over submission of 88,009.51 kWh per annum. | Weak | High | 9 | Identified |
| Volume information accuracy | 3.2 | 15.2 and 15.37B(c) | The database accuracy is assessed to be 93.2% indicating potential over submission of 39,600 kWh per annum.<br>1,806 items of load have the incorrect ballast applied in the DUML database which would result in over submission of 88,009.51 kWh per annum if used for submission.<br>Total kW values are calculated outside of the database.<br>Out of date kW report used to calculate submission resulting in a potential 123,597 kWh of over submission per annum. | Weak | High | 9 | Identified |
| Future Risk Rating | | | | | | 30 | |

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

## RECOMMENDATIONS

| Subject | Section | Description | Recommendation |
|---|---|---|---|
| Tracking of Load Changes | 2.6 | Clause 11(3) of schedule 15.3 | Work with WDC to bring the RAMM database up to date so that it can be used for reconciliation. |

## 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

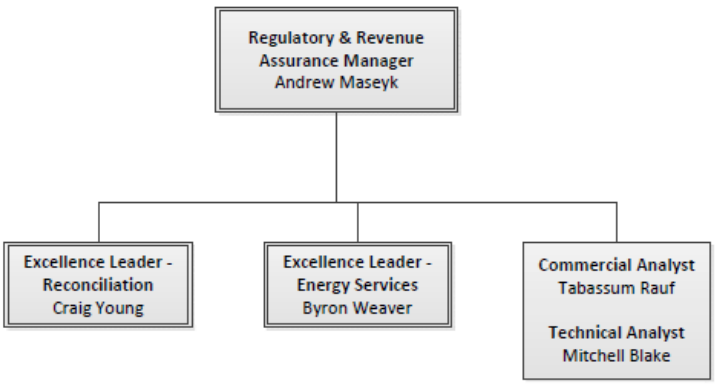
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

### Audit commentary

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

## 1.2. Structure of Organisation

Genesis provided the relevant organisational structure:




## 1.3. Persons involved in this audit

Auditor:

**Rebecca Elliot**

**Veritek Limited**

**Electricity Authority Approved Auditor**

Supporting Auditor:

**Brett Piskulic**

**Veritek Limited**

**Electricity Authority Approved Auditor**

Other personnel assisting in this audit were:

| Name | Title | Company |
|---|---|---|
| Craig Young | Excellence Leader - Reconciliation | Genesis Energy |
| Grace Hawken | Technical Specialist - Reconciliations Team | Genesis Energy |
| Peter Smith | Retail Billing Accountant | Northpower |

## 1.4. Hardware and Software

The streetlight data is held in Northpower's SQL database with an Access interface. This is backed up to industry standards.

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) |
|---|---|---|---|---|---|
| 0000545284NRF73 | Streetlights; Whangarei D C; BRB0331 RAMA ROAD, MARSDEN POINT, RUAKAKA 0116 | BRB0331 | NST | 881 | 34,326.2 |
| 0000545289NR028 | STREETLIGHTS; Whangarei D C; MPE1101 PUKEATUA ROAD, MAUNGATAPERE 0170 | MPE1101 | NST | 4,691 | 369,693.7 |

The ballast values are included in the wattage totals. The previous audit report included 11 ICPs that are being correctly reconciled as standard unmetered load ICPs and are not recorded in the DUML database, therefore these have been excluded from this audit report. .

## 1.7. Authorisation Received

All information was provided directly by Genesis and Northpower.

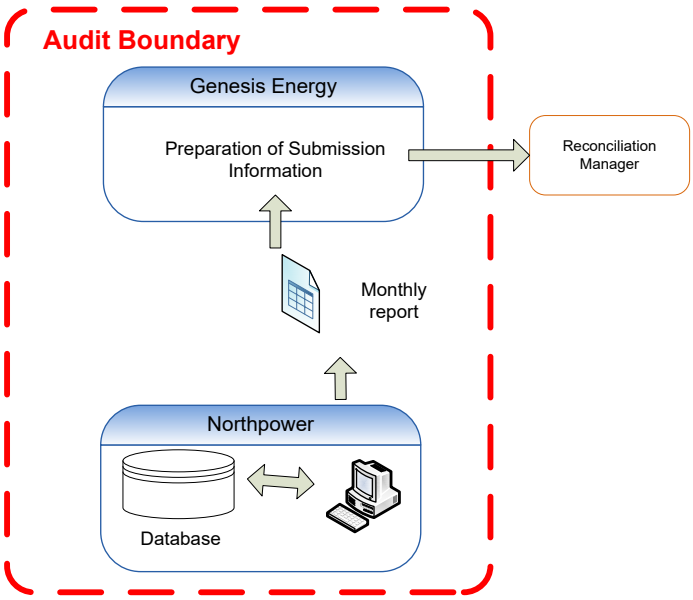
## 1.8. Scope of Audit

This audit of the Whanagrei District Council (**WDC**) DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**) 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.

Whangarei District Council Unmetered Streetlights are located on the Northpower network. Genesis reconciles this load using the streetlight database held by Northpower. This is maintained for the purpose of billing line charges and not for submission purposes. Northpower provide a monthly report to Genesis.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on monthly reporting which are provided intermittently. The diagram below shows the flow of information and the audit boundary for clarity.




The field audit was undertaken of a statistical sample of 462 items of load between 23rd and 27th November 2018.

### 1.9. Summary of previous audit

The previous audit was completed in May 2018 by Rebecca Elliot of Veritek Limited. The current status of that audit's findings is detailed below:

## Table of Non-Compliance

| Subject | Section | Clause | Non-compliance | Status |
|---|---|---|---|---|
| Deriving submission information | 2.1 | 11(1) of Schedule 15.3 | Accuracy ratio is 75.2% indicating over submission of 714,900 kWh per annum.<br>2,722 items of load with the incorrect ballast applied indicating under submission of 149,555.5 kWh per annum.<br>Combined value of 864,456 kWh under submitted per annum. | Still existing |
| Tracking of load change | 2.6 | 11(3) of Schedule 15.3 | Tracking of load change not carried out, there is no direct mechanism for updates to be recorded. | Cleared |
| Database accuracy | 3.1 | 15.2 and 15.37B(b) | Accuracy ratio is 75.2% indicating over submission of 714,900 kWh per annum.<br>2,722 items of load with the incorrect ballast applied indicating under submission of 149,555.5 kWh per annum.<br>Combined value of 864,456 kWh under submitted per annum. | Still existing |
| Volume information accuracy | 3.2 | 15.2 and 15.37(c) | 2722 items of permanent load have the incorrect ballast applied indicating over submission of 149555.5 kWh per annum. | Still existing |

## Table of Recommendations

| Subject | Section | Recommendation for Improvement | Status |
|---|---|---|---|
| Deriving submission information | 2.1 | Liaise with Northpower to determine if the UNM reconciled ICPs are standard UNM load and confirm the correct daily kWh figure. | Cleared |
| | | Investigate using WDC RAMM database to derive submission from. | 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

Genesis 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. Genesis were unable to complete this audit by the required timeframe as a database extract was not able to be obtained within time to complete the audit by the due date.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 1.10<br>Clause 17.295F of part 17<br><br>From: 01-Dec-18<br>To: 1-Dec-18 | Audit not completed within the required timeframe.<br><br>Potential impact: Low<br>Actual impact: Low<br>Audit history: None<br>Controls: Strong<br>Breach risk rating: 1 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | The controls are rated as strong, as Genesis are reliant on the database provider to supply the data and in this case the delay caused this report to be late.<br>The impact is assessed to be low, as this has no direct impact on reconciliation. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Genesis Energy liaised with WDC to provide Genesis with the information pertaining to the Whangarei DC streetlighting assets | 01/11/2018 | Cleared |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Genesis have requested monthly reporting to analyze, Which will be utilized for future submissions. | 01/11/2018 | |

## 2. DUML DATABASE REQUIREMENTS

### 2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

**Code reference**

*Clause 11(1) of Schedule 15.3*

**Code related audit information**

*The retailer must ensure the:*

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

**Audit observation**

The process for calculation of consumption was examined.

**Audit commentary**

Genesis reconciles this DUML load using the NST profile.

The total volume submitted to the Reconciliation Manager is based on the most recently received database report provided by Northpower. These are not provided monthly and therefore Genesis has to use the most recent available report to calculate the submission figures.

I compared the submission volumes with the load recorded in the database extract provided for this audit in November against the volumes submitted by Genesis and found:

| ICPs | Fittings number from Nov submission | Fittings number from database extract | Differences | kWh value submitted | Calculated kWh value from database | Differences |
|---|---|---|---|---|---|---|
| 0000545284NRF73 | 881 | 881 | 0 | 10,133.31 | 9,484.89kWh | 647.42 |
| 0000545289NR028 | 4,691 | 4,691 | 0 | 107,919.40 | 98,260.70kWh | 9,652.30 |
| **Total month kWh difference- over submission** | | | | | | 10,299.72 |

Annualised this will result in an estimated annual over submission of 123,597 kWh. As detailed above the wattage report is not always received monthly or in time and in this instance, Genesis used the September data for November due to data not being available. The light volumes are the same but analysis of the light types in the field from the last audit to this indicate that LED are being rolled out and this is likely to be why the kW value figure is less between the database extract and the wattage report.

The lamp ballast is not recorded correctly for 1,806 lamps when compared to the standardised wattage table. The incorrect capacities would result in an estimated over submission of 88,009.51 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if used for submission. Genesis do not used the ballasts from the wattage report but calculate the ballasts and therefore the total kW value in a separate spreadsheet based on the light types provided in the report. These lamp wattage values applied by Genesis have a much higher accuracy than those recorded in the database. The code requires this to be calculated within the database. This is recorded as non-compliance below.

The field audit against the database quantities found potential over submission of 107,300 kWh. This is detailed in **section 3.1**.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.1<br>With: Clause 11(1) of Schedule 15.3<br><br>From: 01-May-18<br>To: 30-Sep-18 | The database accuracy is assessed to be 93.2% indicating potential over submission of 39,600 kWh per annum.<br>1,806 items of load have the incorrect ballast applied in the DUML database which would result in over submission of 88,009.51 kWh per annum if used for submission.<br>Total kW values are calculated outside of the database.<br>Out of date kW report used to calculate submission resulting in a potential 123,597 kWh of over submission per annum.<br>Potential impact: High<br>Actual impact: High<br>Audit history: Once previously<br>Controls: Weak<br>Breach risk rating: 9 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **High** | The controls are rated as weak as the submission is not calculated from an up to date monthly wattage report, and ballast is not calculated from the database.<br>The impact is assessed to be high due to the kWh volumes. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Genesis have been working with the council and North Power regarding the datasets being provided. The information in the council data was incomplete with a vast amount of accuracy issues. The North Power data was based on North Powers information and being the two entities did not converse the Distributor was unaware of the LED upgrades being implemented, as this information was not being provided by the council to the distributor or the trader. The Council are now providing the assets information from their RAMM database. | 01/04/2019 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Genesis have been working with both the council and North Power. The information being supplied by NPOW is now showing upgrades. Genesis will continue to work with the council to provide feedback on accuracy issues with their dataset, if required. | 01/04/2019 | |

### 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 the correct ICP was recorded against each item of load.

**Audit commentary**

All items of load had an ICP recorded.

**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 has the nearest street address for all items of load.

**Audit outcome**

Compliant

### 2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

**Code reference**

*Clause 11(2)(c) and (d) of Schedule 15.3*

**Code related audit information**

*The 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 lamp type and wattage capacity and included any ballast or gear wattage.

### Audit commentary

The database contains fields for lamp type and lamp wattage. There is a field which records the total wattage including any ballasts for each fitting. All fields were populated.

### 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 462 items of load between 23rd and 27th November 2018.

### Audit commentary

The field audit findings are detailed in the table below.

There were five lamps not found in the field that were recorded in the database, there were six additional lamps found in the field that were not recorded in the database and 15 lamp wattage differences.

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| **Whangarei Urban South** | | | | | |
| Highfield Way | 17 | 17 | | 2 | 2x incorrect wattage- 70W HPSV found in the field recorded as a 19W LED in the database |
| Limestone Place | 1 | 1 | | | |
| Lockheed Place | 3 | 3 | | | |
| Isola Street | 6 | 6 | | | |
| Water Street | 9 | 9 | | 2 | 2x incorrect wattage – 158W LED found in the field recorded as a |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| | | | | | 150W HPSV and 250W HPSV in the database |
| Dundonald Street | 6 | 6 | | | |
| Bounty Place | 3 | 3 | | | |
| Otaika Road Lane | 3 | 3 | | 1 | 1x incorrect wattage- 19W LED found in the field recorded as a 70W HPSV in the database |
| Boeing Road | 3 | 3 | | 1 | 1x incorrect wattage- 19W LED found in the field recorded as a 80W MV in the database |
| Ashley Avenue | 6 | 6 | | | |
| Kauika Road West | 6 | 6 | | | |
| Dakota Place | 2 | 2 | | | |
| Anzac Road | 18 | 18 | | | |
| Rawhiti Street | 3 | 3 | | | |
| Lower Dent Street | 14 | 14 | | 1 | 1x incorrect wattage- 19W LED found in the field recorded as a 150W HPSV in the database |
| Kea Place | 3 | 3 | | | |
| Rose Street | 3 | 3 | | | |
| Patiki Street | 2 | 2 | | | |
| Foster Lane | 2 | 2 | | | |
| Herekino Street | 6 | 6 | | | |
| Tennyson Street | 3 | 3 | | 1 | 1x incorrect wattage- 19W LED |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| | | | | | found in the field recorded as a 70W HPSV in the database |
| Clarkson Crescent | 4 | 4 | | | |
| Sunnyside Street | 3 | 3 | | | |
| Glover Place | 3 | 3 | | | |
| Chester Avenue | 3 | 3 | | | |
| **Whangarei Urban South** | | | | | |
| Cleanen Place | 2 | 2 | | | |
| Pebble Beach Boulevard | 22 | 22 | | | |
| Haruru Place | 2 | 2 | | | |
| Wanaka Street | 3 | 3 | | | |
| Heretaunga Street | 7 | 7 | | | |
| Hailes Road | 3 | 3 | | | |
| Eileen Stephens Place | 3 | 3 | | | |
| Maru Lane | 7 | 7 | | | |
| Waipanga Road | 2 | 2 | | | |
| Wentworth Place | 2 | 2 | | | |
| Chatsfield Place | 5 | 5 | | | |
| Oranga Road | 4 | 4 | | | |
| Russell Road | 24 | 27 | +3 | | 3 x additional 19W LED in field |
| Carr Street | 6 | 6 | | | |
| Corns Street | 3 | 3 | | | |
| Miro Street | 3 | 3 | | | |
| Georgia Lane | 5 | 5 | | | |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Ketenikau Road | 2 | 2 | | | |
| Zealandia Street | 3 | 3 | | | |
| Takahe Street | 7 | 7 | | | |
| Taraire Crescent | 9 | 9 | | | |
| Grey Street | 3 | 3 | | | |
| Muirfield Rise | 2 | 2 | | | |
| Croydon Place | 1 | 1 | | | |
| Briden Drive | 10 | 10 | | | |
| Huia Street | 7 | 7 | | | |
| Richmond Street | 1 | 1 | | | |
| Logan Place | 3 | 3 | | | |
| Grand View Road | 1 | 1 | | 1 | 1x incorrect wattage- 19W LED found in the field recorded as a 70W HPSV in the database |
| Grandfield Place | 2 | 2 | | 2 | 2x incorrect wattage- 19W LED found in the field recorded as a 70W HPSV in the database |
| Ridgeway Drive | 19 | 19 | | | |
| Townsend Place | 4 | 4 | | | |
| Tuatara Drive | 7 | 7 | | | |
| Bedlington Street | 7 | 7 | | | |
| Walnut Grove | 4 | 4 | | | |
| Moehau Road | 2 | 2 | | | |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Spedding Road | 5 | 6 | +1 | | 1x additional 150W HPSV in field |
| **Rural** | | | | | |
| The Braigh | 1 | 1 | | | |
| Hukerenui Road | 1 | 1 | | | |
| The Heights | 2 | 2 | | | |
| Roto View | 4 | 4 | | | |
| Theodore Drive | 29 | 29 | | 2 | 2x incorrect wattage- 19W LED found in the field recorded as a 100W HPSV in the database |
| Tamingi Street | 9 | 11 | +2 | 1 | 1x incorrect wattage- 19W LED found in the field recorded as an 80W MV in the database.<br>2x additional 19W LED in field |
| Marina Road | 7 | 7 | | | |
| Sime Road | 2 | 2 | | | |
| Te Kamo Street | 8 | 8 | | | |
| Resolution Place | 3 | 3 | | | |
| Haven Place | 1 | 1 | | | |
| Poaka Place | 2 | 2 | | | |
| Clark Street | 4 | 4 | | | |
| Oakura Road | 7 | 7 | | | |
| Orua Road | 3 | 3 | | | |
| Hall Road | 3 | 3 | | | |

| Street | Database count | Field count | Light count differences | Wattage recorded incorrectly | Comments |
|---|---|---|---|---|---|
| Omana Road | 1 | 1 | | | |
| Beck Place | 1 | 1 | | | |
| Pipiwai Road | 1 | 1 | | | |
| Powhaitere Road | 6 | 6 | | 1 | 1x incorrect wattage 19W LED found in the field recorded as an 80W LED in the database |
| Scott Road | 7 | 7 | | | |
| Wharua Road | 2 | 2 | | | |
| **Amenity and toilets** | | | | | |
| Kiripaka Road | 8 | 8 | | | |
| Percy Street | 4 | 0 | -4 | | 2x 65W INC and 2x 250W MV not found in field |
| Carr Street | 1 | 1 | | | |
| Paramount Parade | 1 | 0 | -1 | | 1x 70W HPSV not found in field |
| Rust Avenue | 4 | 4 | | | |
| **Grand Total** | **456** | **457** | **+6 -5** | **15** | |

I found an additional six lamps in the field than were recorded in the database. The database accuracy is discussed in **section 3.1**. The additional items found in the field are recorded as non-compliance below.

### Audit outcome

Compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 2.5<br>With: Clause 11(2A) and (d) of Schedule 15.3<br><br>From: 01-May-18<br>To: 30-Nov-18 | 6 additional items of load found in the field sample.<br>Potential impact: High<br>Actual impact: Low<br>Audit history: None<br>Controls: Moderate<br>Breach risk rating: 2 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **Low** | The controls are rated as moderate due to the volume of additional lights found in the field.<br>The impact is assessed to be low due to the low number of differences found in the field and total estimated kWh difference detailed in **section 3.1**. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Genesis believes this to be a potential timing issue regarding the LED roll out. As the information has not been supplied to NPOW, the asset information held by NPOW has not been updated.<br>Genesis will provide the auditors findings to the council for further investigation. | 01/06/2019 | Investigating |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Genesis has requested monthly extractions to help identify potential issues, however rely on the accuracy of field information provided by the WDC contractors. | 01/06/2019 | |

## 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

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. On 20 September 2012, the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required if the database contained an audit trail. I have interpreted this to mean that the production of a monthly "snapshot" report is sufficient to achieve compliance.

The database tracks additions and removals as required by this clause.

The streetlight database held by Northpower is maintained for the purpose of billing line charges and not for submission purposes. When new installations are completed or changes are made there is not a direct mechanism for updated information to be provided from the contractors who complete the installations to Northpower. Therefore, changes are gathered in a haphazard manner as Northpower comes across them in the course of their management of the network. Genesis have examined the WDC RAMM database but found the information recorded is less accurate than that being provided by Northpower. I recommend that Genesis work with the council to bring their data up to date so that the RAMM data can be used for submission and then the tracking of load changes will be managed in a more systematic way.

| Recommendation | Description | Audited party comment | Remedial action |
|---|---|---|---|
| **Regarding:** Clause 11(3) of schedule 15.3 | Work with WDC to bring the RAMM database up to date so that it can be used for reconciliation. | This process has been initiated, Genesis will feed back any accuracy issues found relating to the WDC RAMM dataset. | Identified |

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

### 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

The Northpower database has an 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 | Whangarei District Council area |
| Strata | The database contains items of load in the Whangarei area. The area has two distinct sub regions of Whangarei urban and rural.<br>The processes for the management of all WDC items of load are the same, but I decided to place the items of load into four strata:<br>1. Whangarei Urban South<br>2. Whangarei Urban North<br>3. Rural<br>4. Amenity and Toilet Blocks |
| 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 89 sub-units. |
| Total items of load | 462 items of load were checked. |

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

**Audit commentary**

A statistical sample of 462 items of load found that the field data was 93.8% of the database data for the sample checked. This is not within the required database accuracy of 2.5%+/-. The statistical sampling tool reported with 95% confidence the precision of the sample was 12.3% and the true load in the field will be between 86.8% to 99.1% of the load recorded in the database. The sample is not sufficiently precise to be able to determine the database accuracy but indicates that the database is likely to be over submitting largely due to incorrect wattages being recorded in the field.

The tool indicated that there is potentially 107,300 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool) of over submission. The statistical sampling tool reported with 95% confidence that there is a potential estimated submission variance range of between 16,100 kWh and 228,700kWh over submission. This is recorded as non-compliance.

I checked the ballasts being applied in the database and found that 1,806 lamps had a discrepancy when compared to the standardised wattage table. This is detailed in the table below:

| Lamp Type | Database Total Lamp Wattage | EA Standardised Total Wattage | Variance | Database Quantity | Estimated Annual kWh effect on consumption |
|---|---|---|---|---|---|
| 150w HPSV | 180.1000 | 168 | 12.1000 | 885 | 45736.0035 |
| 250w MH | 294.5 | 278 | 16.5000 | 18 | 1268.487 |
| 250w HPSV | 294.5 | 278 | 16.5000 | 178 | 12543.927 |
| 100w HPSV | 120.1 | 114 | 6.1000 | 49 | 1276.6019 |
| 100w MH | 114.4 | 114 | 0.4000 | 38 | 64.9192 |
| 125w MV | 151.5 | 136 | 15.5000 | 55 | 3641.0275 |
| 150w MH | 180.1 | 168 | 12.1000 | 12 | 620.1492 |
| 18w LPSV | 20 | 24.5 | -4.5000 | 4 | -76.878 |
| 250w MV | 294.5 | 270 | 24.5000 | 16 | 1674.232 |
| 2 x 30w Fluro | 68.6 | 77 | -8.4000 | 3 | -107.6292 |
| 400w MH | 457.4 | 438 | 19.4000 | 4 | 331.4296 |
| 50w HPSV | 65.8 | 61 | 4.8000 | 16 | 328.0128 |
| 50w MV | 71.5 | 59 | 12.5000 | 22 | 1174.525 |
| 70w MH | 91.5 | 83 | 8.5000 | 37 | 1343.2295 |
| 80w MV | 102.9 | 90 | 12.9000 | 62 | 3415.9458 |
| 70w HPSV | 91.5 | 83 | 8.5000 | 407 | 14775.5245 |
| Total estimated annual effect on submission | | | | | 88,009.51 |

The incorrect capacities would result in an estimated over submission of 88,009.51 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if used for submission. It is due to the high level of inaccuracy that Genesis calculate the total wattage based on the lamp types provided from the database extract. I checked the accuracy of these and found a minor number of inaccuracies that will be resulting in 13.66 kWh per annum of over submission. These have been passed to Genesis to correct.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.1<br>With: Clause 15.2 and 15.37B(b)<br><br>From: 01-May-18<br>To: 30-Nov-18 | The database accuracy is assessed to be 93.8% indicating potential over submission of 107,300 kWh per annum.<br>1,806 items of load have the incorrect ballast applied in the DUML database which would result in over submission of 88,009.51 kWh per annum if used for submission.<br>Potential impact: High<br>Actual impact: High<br>Audit history: Once<br>Controls: Weak<br>Breach risk rating: 9 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **High** | The controls are rated as weak as the submission is not calculated from an up to date monthly wattage report, and there is a large volume of incorrect total wattages recorded in the database.<br>The impact is assessed to be high due to the kWh volumes. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Both Genesis and Whangarei DC are eager to ensure the volume reporting is based on information supplied by the RAMM dataset. Genesis will be working closely to ensure that WDC are engaged in ensuring all recommendation corrections/updates are reviewed and updated in RAMM. | 01/06/2019 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Genesis has requested monthly extractions to help identify areas of concern. | 01/06/2019 | |

## 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
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

### Audit commentary

Genesis reconciles this DUML load using the NST profile.

The total volume submitted to the Reconciliation Manager is based on the most recently received database report provided by Northpower. These are not provided monthly and therefore Genesis has to use the most recent available report to calculate the submission figures. As detailed in **section 2.1**, the database extract did not match the volumes submitted by Genesis resulting in an over submission of 10,299.72 kWh for the month of November 2018. Annualised this will result in an estimated annual over submission of 123,597 kWh. As detailed above the wattage report is not always received monthly or in time and in this instance, Genesis used the September data for November due to data not being available. The light volumes are the same but analysis of the light types in the field from the last audit to this indicate that LED are being rolled out and this is likely to be why the kW value figure is less between the database extract and the wattage report.

The lamp ballast is not recorded correctly for 1,806 lamps which had a discrepancy when compared to the standardised wattage table. The incorrect capacities would result in an estimated over submission of 88,009.51 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if used for submission. Genesis do not used the ballasts from the wattage report but calculate the ballasts and therefore the total kW value in a separate spreadsheet based on the light types provided in the report. These lamp wattage values applied by Genesis have a much higher accuracy than those recorded in the database. The code requires this to be calculated within the database. This is recorded as non-compliance below.

The field audit against the database quantities found potential over submission of 107,300 kWh. This is detailed in **section 3.1**.

### Audit outcome

Non-compliant

| Non-compliance | Description |
|---|---|
| Audit Ref: 3.2<br>With: Clause 15.2 and 15.37B(c)<br><br>From: 01-May-18<br>To: 30-Nov-18 | The database accuracy is assessed to be 93.2% indicating potential over submission of 39,600 kWh per annum.<br>1,806 items of load have the incorrect ballast applied in the DUML database which would result in over submission of 88,009.51 kWh per annum if used for submission.<br>Total kW values are calculated outside of the database.<br>Out of date kW report used to calculate submission resulting in a potential 123,597 kWh of over submission per annum.<br>Potential impact: High<br>Actual impact: High<br>Audit history: Once previously<br>Controls: Weak<br>Breach risk rating: 9 |
| **Audit risk rating** | **Rationale for audit risk rating** |
| **High** | The controls are rated as weak as the submission is not calculated from an up to date monthly wattage report, and ballast is not calculated from the database.<br>The impact is assessed to be high due to the kWh volumes. |

| Actions taken to resolve the issue | Completion date | Remedial action status |
|---|---|---|
| Both Genesis and Whangarei DC are eager to ensure the volume reporting is based on information supplied by the RAMM dataset. Genesis will be working closely to ensure that WDC are engaged in ensuring all recommendation corrections/updates are reviewed and updated in RAMM. | 01/06/2019 | Identified |
| **Preventative actions taken to ensure no further issues will occur** | **Completion date** | |
| Genesis has requested monthly extractions to help identify potential issues. | 01/06/2019 | |

## CONCLUSION

This audit found five non-compliances and one recommendation was made.

Genesis reconciles this load using the streetlight database held by Northpower. This is maintained for the purpose of billing line charges and not for submission purposes. There is no direct mechanism in place for updating load. Genesis have reviewed the WDC RAMM database and found the data accuracy to be too poor for this database to be used for submission. I recommend that Genesis work with the council to bring the database up to date so that a current and more accurate data source can be used for submission.

Genesis are receiving a wattage report intermittently. The November 2018 submissions were calculated using the extract provided in September 2018 and therefore the kW values were different resulting in over submission of 10,299.72 kWh. Annualised this will result in an estimated annual over submission of 123,597 kWh.

The previous audit report included 11 ICPs that are being correctly reconciled as standard unmetered load ICPs and are not recorded in the DUML database, therefore these have been excluded from this audit report.

The database accuracy is assessed to be 93.8% indicating potential over submission of 107,300 kWh per annum.

1,806 items of load have the incorrect ballast applied indicating over submission of 88,009.51 kWh per annum. It is due to this that Genesis calculate the total wattage based on the lamp types provided from the Northpower database report. I checked the accuracy of these and found a minor number of inaccuracies that will be resulting in 13.66 kWh per annum of over submission. The code requires the ballast to be calculated within the database.

The future risk rating of 30 indicates that the next audit be completed in three months. I recommend that the next audit be in six to nine months to allow Genesis time to work with the council and bring RAMM up to date.

PARTICIPANT RESPONSE

Genesis have been proactive with the council, however, due to resource constraints with the council the accuracy issues identified have not been corrected. This has meant the data received has not been at the level of standard Genesis required and therefore continued to utilise the information being provided by the distributor. Genesis wish to change the data source and will be working closely with Whangarei DC in order to achieve this. Ove r the last few months Genesis and WDC have had good engagement and believe Genesis will be using WDC RAMM information in the very near future.

Genesis Believes that the 3-month revision on this is justified, however do not believe that re auditing in 3 months will achieve the desired result. Genesis and WDC are working well on the remaining RAMM issues and believe a 6 to 9-month review period would see clear progress results.