

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

WESTERN BAY OF PLENTY DISTRICT
COUNCIL
AND MANAWA ENERGY LIMITED

Prepared by: Rebecca Elliot

Date audit commenced: 5 September 2023

Date audit report completed: 17 October 2023

Audit report due date: 1 November 2023

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EXECUTIVE SUMMARY

This audit of the **Western Bay of Plenty District Council (WBOP DC)** DUML database and processes was conducted at the request of **Manawa Energy Limited (Manawa)**, previously known as Trustpower Limited, in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

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

A RAMM database is managed by Westlink on behalf of WBOP DC and monthly reporting is provided to Manawa. The field work is carried out by Horizon.

The processes in place to manage this database are generally good but there is room for improvement in the new streetlight connection process and I have recommended that Manawa work with WBOP DC, Westlink and Powerco.

The field audit found some wattage errors resulting in the database not falling within the allowable +/-5% threshold resulting in an estimated over submission of 17,200 kWh per annum.

The audit found three non-compliances and made one recommendation. The future risk rating of 12 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Manawa's responses and agree with this recommendation.

The matters raised are shown in the tables 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 within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection.	Moderate	Medium	4	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection.	Moderate	Medium	4	Investigating
Volume information accuracy	3.2	15.2 and 15.37B(c)	Database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection.	Moderate	Medium	4	Investigating
Future Risk Rating						12	

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

RECOMMENDATIONS

Subject	Section	Recommendation
Database accuracy	3.1	Work with WBOP DC, Westlink and Powerco to ensure that the new streetlight connection process is working as expected,

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

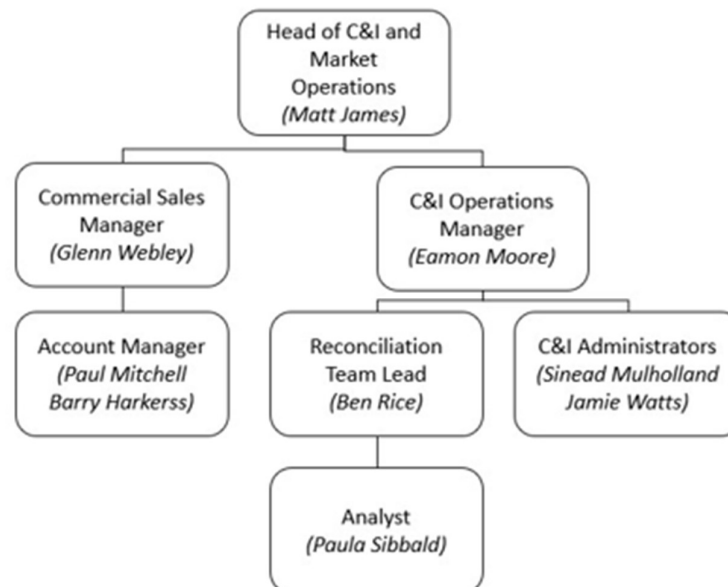
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Manawa provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Eamon Moore	C&I Operations Manager	Manawa
Jamie Watts	C&I Administrator	Manawa
Jill Brightwater	Asset Information Manager	Westlink BOP

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as “RAMM” which stands for “Roading Asset and Maintenance Management”.

Westlink confirmed that the database back-up is in accordance with standard industry procedures. 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	Profile	Number of items of load	Database wattage (watts)
0001264707UN697	Mount Maunganui/Papamoa	MTM0331	STL	67	10,116
1000524996PC530	Welcome Bay/Ohauiti/Hairini	KMO0331	STL	18	969
1000524997PC975	Tauranga City	TGA0111	STL	4	152
1000524998PC6AB	North of Tauranga	TGA0111	STL	1,133	48,236
1000524999PCAEE	Te Puke area	TMI0331	STL	1,057	60,463
TOTAL				2,279	119,936

1.7. Authorisation Received

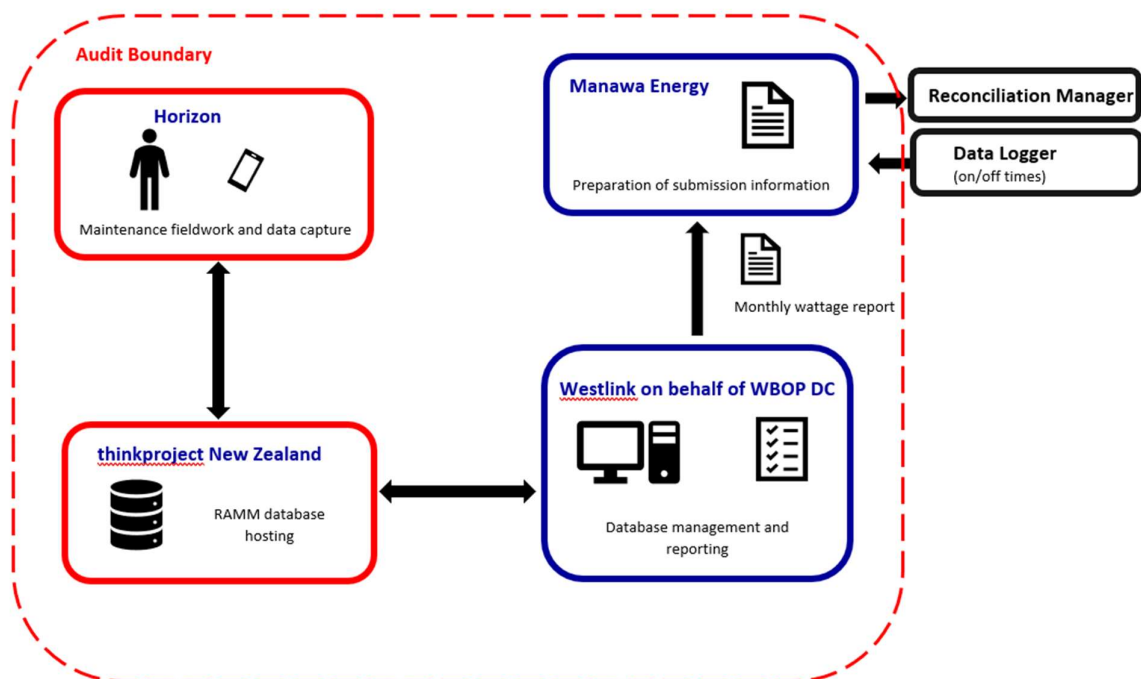
All information was provided directly by Manawa or Westlink.

1.8. Scope of Audit

This audit of the Western Bay of Plenty District Council (WBOPDC) DUML database and processes was conducted at the request of Manawa Limited (Manawa), 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 RAMM Software Ltd. The asset data capture and database population are conducted by Westlink. The field work is carried out by Horizon. 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 198 items of load on 6th September, 2023.

1.9. Summary of previous audit

The previous audit was completed in November 2020 by Steve Woods of Veritek Limited, and compliance was confirmed.

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

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

Audit observation

Manawa 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

Manawa reconciles this DUML load using the STL profile. Manawa receive monthly wattage reports. Submissions are based on the monthly wattage report, with on and off times derived from data logger information.

I recalculated the submissions for August 2023 using the data logger and database information. Changes made during the month are taken into account from the date the light has changed.

New connection information is still slow to be provided, resulting in new items of load being entered long after the date they are electrically connected and I recommend in **section 3.1**, that Manawa work with WBOP DC, Westlink and Powerco to review this process. No examples of these were found in the field audit.

The field audit found that the database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: 01-Nov-20 To: 31-Aug-23	Database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate as there is room for improvement when new load is added to the database and with the quality of information being provided by the field contractor. The audit risk rating is assessed to be medium based on the estimated the kWh impact detailed above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Manawa to work with WBOP DC to identify and update the inaccuracies in the database. Any retrospective (14 month) adjustments will be conducted in December.		15/12/2023	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Manawa to work with WBOP DC to improve database management processes including working with them to update the process for contractors providing new and updated information.		01/04/2024	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- each ICP identifier for which the retailer is responsible for the DUML,
- the items of load associated with the ICP identifier.

Audit observation

The database was checked to confirm an ICP was recorded against each item of load.

Audit commentary

All items of load had either an ICP or relevant description recorded against them. The accuracy of these is discussed in **section 3.1**.

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 fields for the street address and also GPS coordinates and all were confirmed to be readily locatable.

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 it contained a field for lamp type and wattage capacity and included any ballast or gear wattage and that each item of load had a value recorded in these fields.

Audit commentary

The database contains the manufacturers rated wattage and the ballast wattage. The extract provided has fields for lamp and gear make and model and all 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 198 items of load.

Audit commentary

The field audit found no additional lights but did find 14 incorrect wattages recorded. These have been passed to Manawa to investigate. The database accuracy from the field audit is discussed 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 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

The database has a complete audit trail.

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	Western BOP DC Street Lights
Strata	The databases contain 2,279 items of load in the Western BOP DC area. The processes for the management of all WBOPDC items of load is the same. I selected the following strata of a relatively similar size: <ul style="list-style-type: none"> • Road name A-Ke, • Road name Ki-Pa, • Road name Pe-Y, and • Te Puke Highway
Area units	I created a pivot table of the roads in each database and used a random number generator in each spreadsheet to select a total of 43 sub-units.
Total items of load	198 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.

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 198 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	96.8	Wattage from survey is lower than the database wattage by 0.7%.
R _L	94.2	With a 95% level of confidence, it can be concluded that the error could be between -1.3% and -5.8%.
R _H	98.7	

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 1.7% and 5.8% lower than the wattage recorded in the DUML database. This is recorded as non-compliance as the range is outside of the allowable accuracy threshold of +/-5%.

In absolute terms the installed capacity is estimated to be 4.0 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 2-7 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 17,200 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 6,900 to 29,600 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 and Ballast wattage

The database was checked against the published standardised wattage table and confirmed that ballasts applied, and lamp descriptions were correct.

WBOP DC has no plans to introduce a central management system and therefore no dimming is planned.

NZTA Lighting

NZTA lighting is not included in this audit.

ICP accuracy

All but 20 items of load have an ICP recorded. There are 18 items of load where the ICP is recorded as "PRIVATE ". These are all historical and are recorded in the database to ensure that WBOP DC do not undertake any maintenance of these assets. They have always been excluded from reconciliation. I checked these against the Powerco LIS file to confirm that the load is recorded as standard unmetered load or shared unmetered load and found none had unmetered streetlights recorded against them. I have passed these to Powerco to investigate which is due to the Electricity Authority in October 2024. This will be resulting in an estimated 9,131 kWh per annum. Many of these have been electrically connected for more than ten years so the under submission for this period is likely to be 90,000 kWh. I have not recorded non-compliance for WBOP DC as these have never been owned by the council.

There are two items of load recorded with "WBOP Parks and Res" against them. I checked the existing WBOP DC Parks and Reserves database and found one item is recorded in that database but the light ID 55249 (83W HPS), Park Road (Maketu) is not recorded in either database. This will be resulting in a very minor estimated under submission of 355 kWh per annum. WBOP DC Parks and Reserves ICPs are managed by another trader, and they are reviewing the management these assets. I will pass these findings to that trader.

Location accuracy

The database contains fields for the street address and also GPS coordinates and all were populated.

Change management process findings

The process to add new streetlights was examined. WBOP DC approves all new developments, and the consent is provided once they are satisfied that the development will meet the required standards. Detailed "as built" are required to be provided by the developer and a walk over by council staff of the development is undertaken before the 224 certificate is issued. Once this is issued the "as built" should be sent to Westlink to upload to RAMM. This process continues to be very slow, and it can take some months before this information reaches Westlink. Westlink are working with the development team to expedite this. The date of vesting is used as the start date for the lights. This may not be the date of electrical connection. Powerco have revised their streetlight connection process, and the retailer is sent notification to accept responsibility for the new lights. Once complete Powerco approve livening of the lights. This should be a trigger for the retailer to liaise with the party named to ensure that the additional load is added to the database. I recommend that Manawa work with WBOP DC, Westlink and Powerco to ensure that this process is working as expected.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Work with WBOP DC, Westlink and Powerco to ensure that the new streetlight connection process is working as expected.	Manawa agrees with this recommendation and will work with the involved parties to improve database management processes; in particular, the process for contractors updating WBOP DC when work is complete and accurately identifying the livening date.	Investigating

Horizon carries out the field maintenance for Westlink on behalf of WBOP DC and they update RAMM directly. Westlink have robust controls in their contract with Horizon and this ensures that field maintenance is captured in a timely and accurate manner. Outage patrols are in place with the whole network being checked each month. Additional to this Westlink undertake a 20% validation of all assets they are responsible for on an annual basis.

There are no festive lights connected to the unmetered streetlight circuits.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: 15.2 and 15.37B(b) From: 01-Nov-20 To: 31-Aug-23	Database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate as there is room for improvement when new load is added to the database and with the quality of information being provided by the field contractor. The audit risk rating is assessed to be medium based on the estimated the kWh impact detailed above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Manawa to work with WBOP DC to identify and update the inaccuracies in the database. Any retrospective (14 month) adjustments will be conducted in December.		15/12/2023	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Manawa to work with WBOP DC to improve database management processes including working with them to update the process for contractors providing new and updated information.		01/04/2024	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- volume information for the DUML is being calculated accurately,
- profiles for DUML have been correctly applied.

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag; and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Manawa reconciles this DUML load using the STL profile. Manawa receive monthly wattage reports. Submissions are based on the monthly wattage report, with on and off times derived from data logger information.

I recalculated the submissions for August 2023 using the data logger and database information. Changes made during the month are taken into account from the date the light has changed. I confirmed that the calculation method and result was correct.

New connection information is still slow to be provided, resulting in new items of load being entered long after the date they are electrically connected and I recommend in **section 3.1**, that Manawa work with WBOP DC, Westlink and Powerco to review this process. No examples of these were found in the field audit.

The field audit found that the database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: 15.2 and 15.37B(c) From: 01-Nov-20 To: 31-Aug-23	Database is not within the allowable +/-5% accuracy threshold resulting in an estimated over submission of 17,200 kWh per annum. New streetlights not recorded in the database from the date of electrical connection. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate as there is room for improvement when new load is added to the database and with the quality of information being provided by the field contractor. The audit risk rating is assessed to be medium based on the estimated the kWh impact detailed above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Manawa to work with WBOP DC to identify and update the inaccuracies in the database. Any retrospective (14 month) adjustments will be conducted in December.		15/12/2023	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Manawa to work with WBOP DC to improve database management processes including working with them to update the process for contractors providing new and updated information.		01/04/2024	

CONCLUSION

This audit of the Western Bay of Plenty District Council (WBOP DC) DUMML database and processes was conducted at the request of Manawa Energy Limited (Manawa), previously known as Trustpower Limited, 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.

A RAMM database is managed by Westlink on behalf of WBOP DC and monthly reporting is provided to Manawa. The field work is carried out by Horizon.

The processes in place to manage this database are generally good but there is room for improvement in the new streetlight connection process and I have recommended that Manawa work with WBOP DC, Westlink and Powerco.

The field audit found some wattage errors resulting in the database not falling within the allowable +/-5% database threshold resulting in an estimated over submission of 17,200 kWh per annum.

The audit found three non-compliances and made one recommendation. The future risk rating of 12 indicates that the next audit be completed in 12 months. I have considered this in conjunction with Manawa's responses and agree with this recommendation.

PARTICIPANT RESPONSE

Manawa supports the recommendation made by Veritek to work closely with WBOP DC and the other related parties to improve accuracy of this database and to decrease the time it takes for key information to be passed between all parties. In particular, making sure all lamp liveness dates are being promptly passed through to Manawa for inclusion in our submissions.

We have already begun working with WBOP DC to identify wattage issues and to update these in the database, so that we can complete revisions in December. Work with the wider stakeholder group will begin before the end of 2023 with an expectation that we can improve information management and communication processes by the end of March 2024.

Thank you Veritek for taking the time to complete this report and providing clear guidance, as always it is much appreciated.