

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

For

**WAKA KOTAHI WAIKATO
AND
GENESIS ENERGY
NZBN: 9429037706609**

Prepared by: Steve Woods and Rebecca Elliot

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Date audit report completed: 2 February 2023

Audit report due date: 3 February 2023

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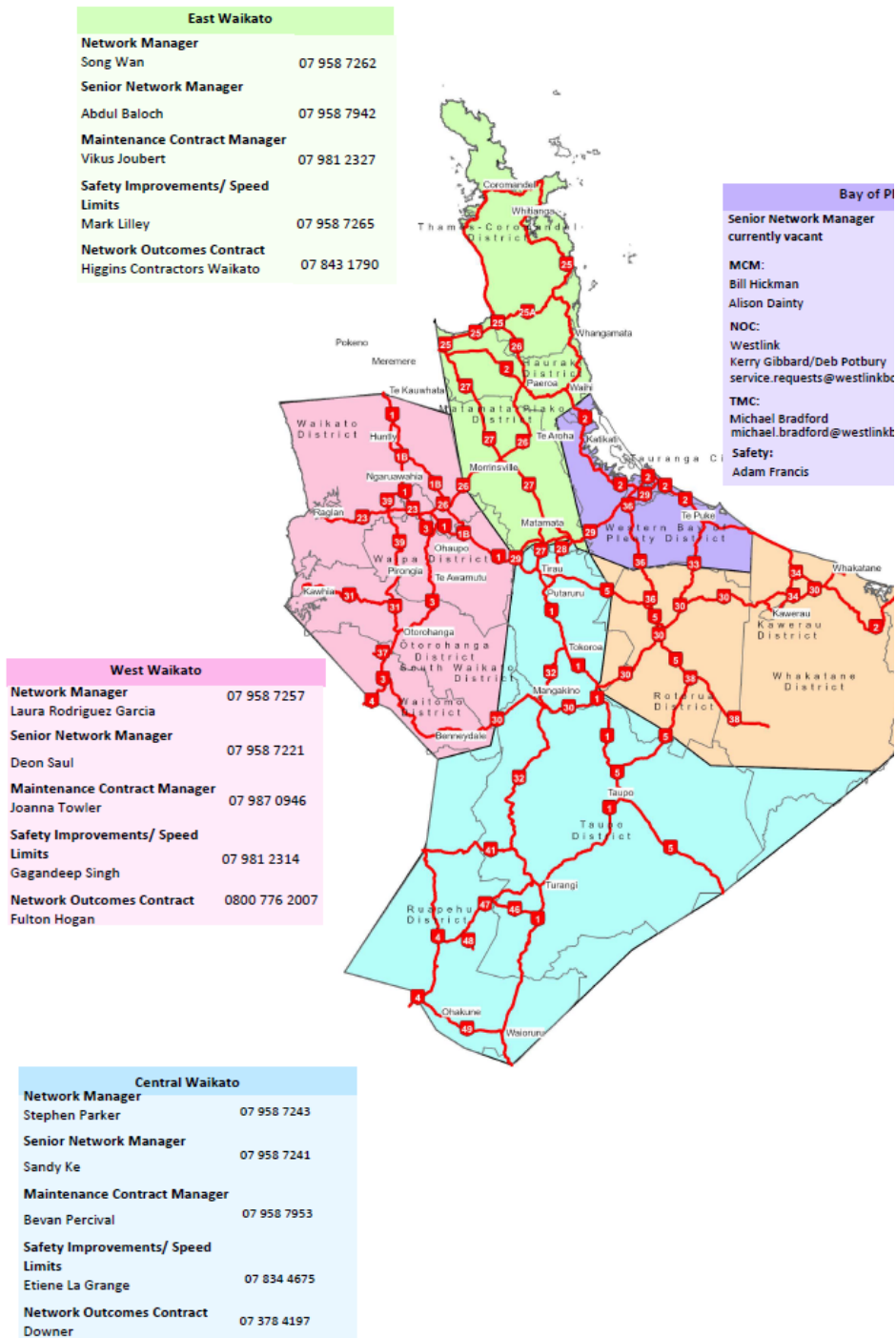
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EXECUTIVE SUMMARY

This audit of the **Waka Kotahi Waikato (NZTA)** 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.

The area covered by this audit includes the green, pink and blue areas detailed in the Waka Kotahi provided map below:



The ICPs associated with this audit are detailed in **section 1.6**.

Waka Kotahi is working to bring the RAMM database up to date. Genesis have used the dataset provided in April until the RAMM database can be used for submission. The data has been reviewed and updated as new information has been provided from Waka Kotahi. A field audit was undertaken to assess that datasets accuracy. The results from this found:

- that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 18.9% to 23% 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 341 kW lower than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 245 kW to 442 kW lower than the database,
- in absolute terms, total annual consumption is estimated to be 1,456,700 kWh lower than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 1,083,500 kWh p.a. to 1,887,300 kWh pa. lower than the database indicates.

This appears to be due to data being duplicated in the Genesis dataset. This also affected submission as the registry values were used for October and not the database extract. This has resulted in an estimated potential under submission of 152,365.64 kWh. Genesis have been working with Waka Kotahi and have now been provided with a current cleansed database extract in February 20232. This will be used to calculate submissions from, and revisions will be carried out back to April 2022 when the RAMM database began being used. Monthly reporting is expected to be provided going forward.

The last audit compared the ICPs being submitted against compared to the data sets provided for the previous three DUML audits and this found that three ICPs were missing from the dataset. I have examined the Genesis dataset and found that:

- the data for the Thames Coromandel area for ICP 0001425637UN339 is now included,
- ICP 0000026694WE641 has been recorded as being “reconciled elsewhere” against ICP 0000011095WE94E since 1 February 2022; these items of load have been confirmed as being reconciled against ICP 0000036247WE323, submission will be corrected through the revision process and ICP 0000026694WE641 should be decommissioned, and
- Genesis was using the registry unmetered load to reconcile the load associated with ICP 0000036254WE54E as there were no assets recorded in the Waka Kotahi RAMM database while the Genesis database has 36 items of load recorded with a kW value of 5.399kW recorded; this is a variance of 0.557 kW from the previous registry figure being used and will have resulted in an estimated under submission of 2,379 kWh per annum (these lights are expected to be transferred to Waikato DC as these are no longer on a State Highway at a future date yet to be determined).

The allocation of load to NSPs was reviewed. The previous audit found seven NSPs with no Waka Kotahi ICP associated and that some of the load is allocated to the incorrect NSP. Genesis and Waka Kotahi have been working on this and four are existing ICPs that have switched from District Council databases to Waka Kotahi. There are three NSPs which need a new ICP created. The load associated with these is allocated to an existing ICP within the same balancing area until the new ICP can be created. There is no impact on reconciliation accuracy because the load has also been reallocated to the correct ICP and therefore NSP since the last audit. Submission will be corrected through the revision process.

The last audit reported duplicate submission was occurring as both the local council and Waka Kotahi were submitting for the same streetlights. Genesis and Waka Kotahi have been working to resolve this as detailed below:

Council Area	Current trader	Council submitted NZTA kWh volume per annum	Status
Ruapehu DC	Meridian until 31 August 2022	-	Meridian have submitted the volumes for the affected load and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have switched from RDC to the Waka Kotahi database as detailed in section 1.6 .
Taupo DC	Meridian	34,719	Duplicated load is still being worked on.
Otorohonga DC	Genesis	-	The Waka Kotahi load has been removed from the ODC database from 1 April 2022 so no duplicate submission will occur.
Matamata Piako DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
Hauraki DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
TOTAL		34,719	

The audit found seven non-compliances and makes four recommendations. The future risk rating of 36 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, and I recommend that the next audit is in seven months to allow sufficient time for the Genesis to work with Waka Kotahi, other trader's and local councils to resolve the matters raised.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>Submission values did not align for the month of October 2022 due to the registry figures being used. This will have resulted in an estimated under submission of 152,365.64 kWh.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p> <p>98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.</p>	Moderate	High	6	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
ICP Identifier	2.2	11(2)(a) & (aa) of Schedule 15.3	20 items of load with no ICP recorded potentially resulting in an estimated under submission of 14,350 kWh p.a.	Moderate	Medium	4	Identified
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	544 items of load (7.7%) of the 7,016 total items of load have no GPS coordinates or location number populated and are not locatable.	Moderate	Low	2	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.	Moderate	High	6	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	23 additional items of load found in the field of a sample of 389 (6% error rate).	Moderate	High	6	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p>	Moderate	High	6	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.				
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Submission values did not align for the month of October 2022 due to the registry figures being used. This will have resulted in an estimated under submission of 152,365.64 kWh.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p> <p>98 items of load missing from ICP 0001111171WM17A</p>	Moderate	High	6	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.				
Future Risk Rating						36	

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
ICP Identifier	2.2	Record "SOLAR" for all solar supplied items of load.
Database Accuracy	3.1	Confirm correct light type for the ten items of load with an invalid description.
		Review quality control processes.
		Genesis to liaise with relevant networks for Waka Kotahi new connections.

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

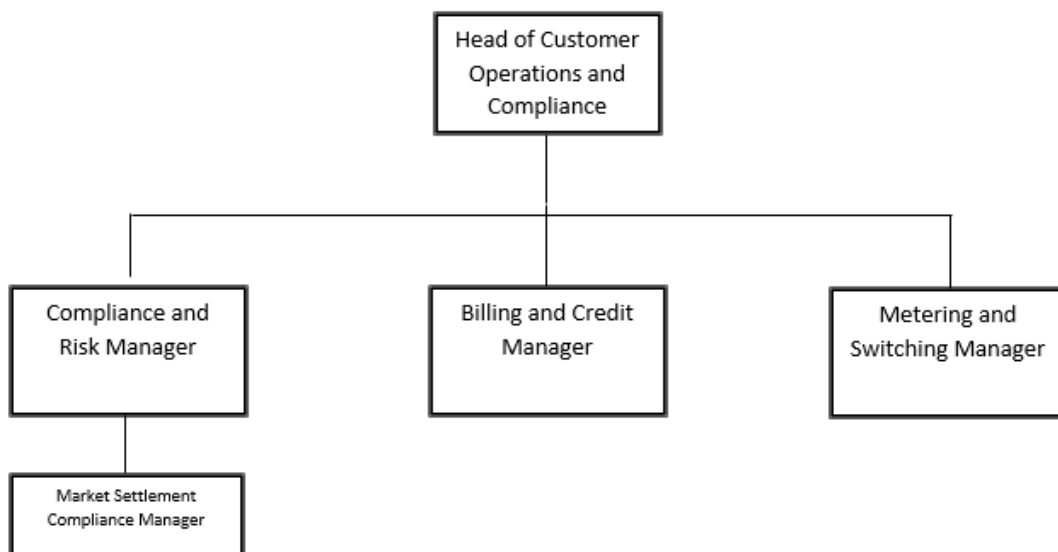
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

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

Auditors:

Name	Company	Title
Steve Woods	Veritek Limited	Lead Auditor
Rebecca Elliot	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Nirav Tali	DUML Data & Stakeholder Lead	Genesis Energy
Craig Young	Rubiks Business Service Owner – Market Settlements and Interactions	Genesis Energy
Martin Lynch	Director	Martin Lynch Consulting

1.4. Hardware and Software

Waka Kotahi is working to bring the RAMM database up to date. Genesis have used the dataset provided in April until the RAMM database can be used for submission. The data has been reviewed and updated as new information has been provided from Waka Kotahi. Regular RAMM reports are expected to be provided monthly from early 2023.

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

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

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

The Genesis Waka Kotahi Waikato DUML database contains the following unmetered ICPs.

ICP Number	NSP	Profile	Number of items of load	Database wattage (watts)	Comment
0000011095WE94E	HAM0331	NST	1,937	379,411	
0000022579WE623	HLY0331	NST	277	64,236	
0000036247WE323	TWH0331	NST	1,034	231,428	
0000036254WE54E	HLY0331	NST	36	5,399	NGARUAWAHIA BYPASS STREETLIGHTS - these are expected to be moved to the Waikato DC DUML database in the near future.
0000036463HR791	ROT0111	NST	17	3,736	STATE HIGHWAY 1, ATIAMURI, BAY OF PLENTY - was South Waikato DC but has switched into Waka Kotahi dB.
0000381313TUB52	WRK0331	NST	62	13,184	
0000400320WAD63	TMU0111	NST	53	9,855	
0000400344WA399	TMU0111	NST	278	49,947	
0000557858UNE30	HIN0331	NST	5	368	
0000557929UNE2C	HIN0331	NST	428	68,697	Assets relating to PAO1101 and WHU0331 are being reconciled against this ICP until ICPs can be created by the network.
0000557952UN5A5	HIN0331	NST	3	460	
0000562185UN32C	HIN0331	NST	21	4,247	Reconciled elsewhere against ICP 0000557929UNE2C.
0000562362UNE5B	HIN0331	NST	268	41,613	
0000806850WAC3E	CBG0111	NST	24	3,371	
0000806950WA53A	CBG0111	NST	77	17,581	
0000806955WA875	CBG0111	NST	70	20,154	

ICP Number	NSP	Profile	Number of items of load	Database wattage (watts)	Comment
0000808803WA036	CBG0111	NST	57	13,155	
0000890166TU7C3	WRK0331	NST	175	39,348	
0001111171WM17A	ONG0331	CST	20	2,875	Previous audit had no load in the database associated with this NSP – Tauramanui.
0001111173WM1FF	NPK0331	CST	22	3,831	Previous audit had no load in the database associated with this NSP - National Park.
0001111175WM070	OKN0111	CST	106	16,927	Previous audit had no load in the database associated with this NSP – Ohakune.
0001425637UN339	KPU0661	NST	754	130,896	Previous audit had no load in the database associated with this NSP - Thames Coromandel.
0001425638UNCE7	WKO0331	NST	484	75,223	
0008806768WM373	HTI0331	NST	377	64,602	
0008809657WMB31	TKU0331	CST	2	336	
0088051901WM4EB	TKU0331	CST	69	11,592	
1000608049PC05C	KIN0331	NST	154	27,397	Previous audit had no load in the database associated with this NSP Kinleith - new ICP 1 July 2022.
1000608050PC4A0	HIN0331	NST	206	40,085	Previous audit had no load in the database associated with this NSP Tirau - new ICP 1 July 2022.
TOTAL			7,016	1,339,953	

Genesis have been working closely with NZTA during the audit period to assign the load to the correct ICP and therefore the correct NSP. This includes additional ICPs as detailed in the table above. They are using their own dataset until such time as the NZTA RAMM database can be brought up to date which is expected in early 2023.

The load associated with ICP 1000522354PCD90 has been reallocated to ICP 0000557929UNE2C as this is a UNM profiled ICP and has one 24-hour variable speed sign assigned to it. A new ICP is being created to allocate the load to NSP PAO1101.

The load associated with ICP 0000557951UN965 included in the previous audit, is recorded as “inactive - reconciled elsewhere”. This load has been reassigned to ICPs 0001425638UNCE7 and 0001425637UN339 based on their physical connection point.

ICP 0000026694WE641 has been recorded as being “reconciled elsewhere” against ICP 0000011095WE94E since 1 February 2022. These items of load have been confirmed as being reconciled against ICP 0000036247WE323 and submission will be corrected through the revision process.

1.7. Authorisation Received

All information was provided directly by Genesis and Waka Kotahi.

1.8. Scope of Audit

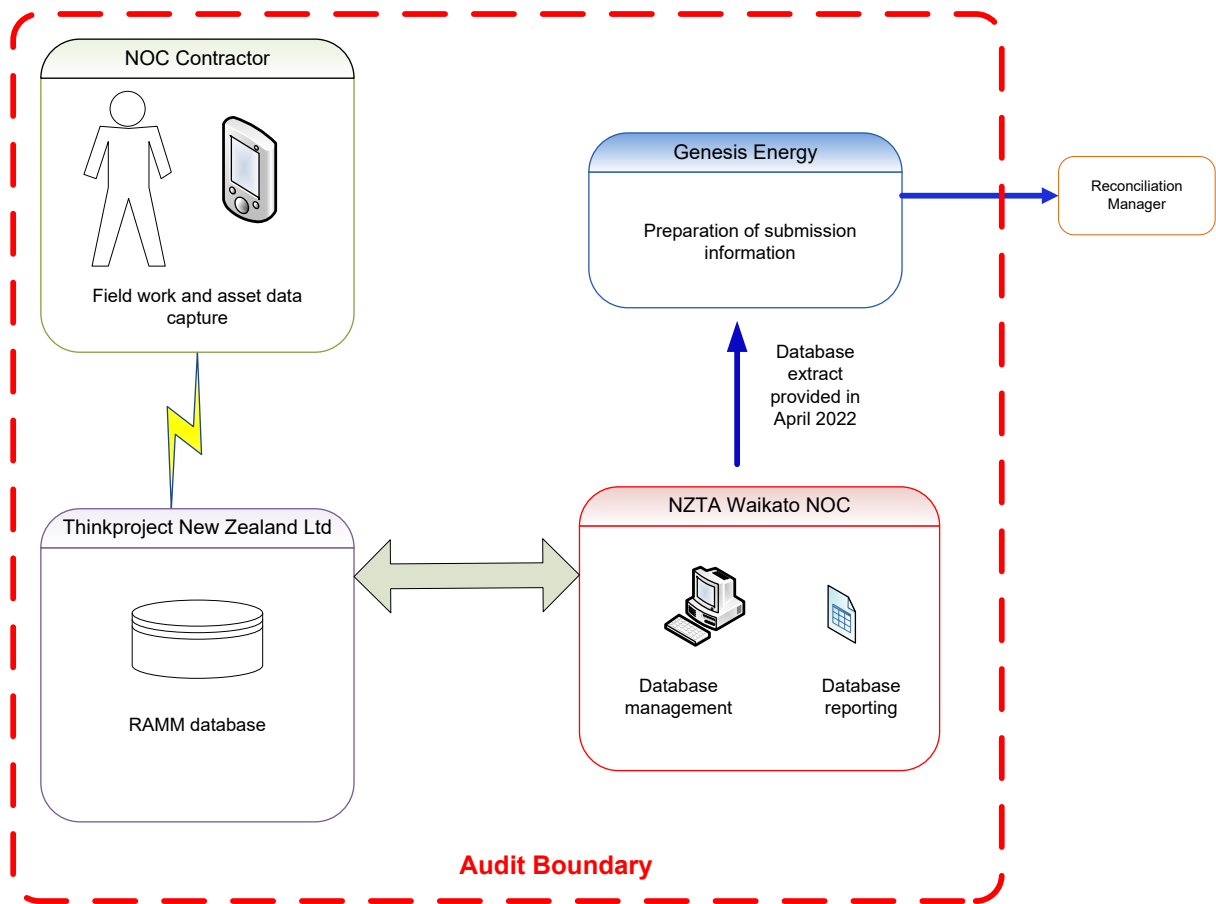
This audit of the Waka Kotahi Waikato (Waka Kotahi) DUMML database and processes was conducted at the request of Genesis Energy Limited (Genesis) in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have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

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

Genesis was provided a database extract from Waka Kotahi for the Waikato area in April 2022 and revised all submissions for the previous 14 months. Waka Kotahi was expected to start sending a monthly database extract from July 2022, but the work to bring the RAMM database up to date has taken longer than expected. Genesis have used the April 2022 dataset to submit volumes from. The dataset has been reviewed and updated as new information has been provided from Waka Kotahi. Regular data extracts are expected to be provided monthly from early 2023.

Contractors are assigned on an area basis but the processes to manage change in the database as are the same. The contractors for each area are detailed in the Waka Kotahi diagram in the Executive Summary.

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:



A field audit was undertaken of a statistical sample of 389 items of load in the month of November 2022.

1.9. Summary of previous audit

The last audit report undertaken by Rebecca Elliot of Veritek Limited in May 2022 was reviewed. The status of those audit findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Distributed unmetered load audits	1.10	17.295F	Audit not completed within the required timeframe.	Cleared

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>Incorrect volume submitted for ICP 0001425638UNCE7 resulting in an estimated over submission of 1,018.54 kWh for May 2022.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 150,200 kWh per annum.</p> <p>An unknown number of items of load allocated to the incorrect ICP and therefore the incorrect NSP and possibly balancing area and network including an estimated 22 NZTA lights or 19,540 kWh per annum reconciled to the Lines Company network instead of the Waipa network.</p> <p>ICP 0000026694WE641 incorrectly recorded as “reconciled elsewhere” resulting in an estimated under submission of 3,255 kWh per month since February 2022.</p> <p>295 items of load with the incorrect ballast applied resulting an estimated over submission of 1,627 kWh per annum.</p> <p>One item of load with no wattage recorded.</p> <p>Duplicated submission with five local council databases resulting in an estimated over submission of 733,494 kWh per annum.</p>	Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	<p>30 items of load with no lamp description.</p> <p>One item of load with no wattage recorded.</p>	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>31 additional items of load found in the field of a sample of 325 (10% error rate).</p>	Still existing

Subject	Section	Clause	Non-compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 150,200 kWh per annum.</p> <p>30 items of load with no lamp description.</p> <p>One item of load with no wattage recorded.</p> <p>Ten items of load with an invalid lamp description.</p> <p>295 items of load with the incorrect ballast applied resulting an estimated over submission of 1,627 kWh per annum.</p> <p>One item of load with no wattage recorded.</p> <p>ICP 0000026694WE641 incorrectly recorded as reconciled elsewhere resulting in an estimated under submission of 3,255 kWh per month since February 2022.</p> <p>An unknown number of items of load allocated to the incorrect ICP and therefore the incorrect NSP and possibly balancing area and network including an estimated 22 NZTA lights or 19,540 kWh per annum reconciled to the Lines Company network instead of the Waipa network.</p> <p>Duplicated submission with five local council databases resulting in an estimated over submission of 733,494 kWh per annum.</p>	Still existing

Subject	Section	Clause	Non-compliance	Status
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Incorrect volume submitted for ICP 0001425638UNCE7 resulting in an estimated over submission of 1,018.54 kWh for May 2022.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 150,200 kWh per annum.</p> <p>An unknown number of items of load allocated to the incorrect ICP and therefore the incorrect NSP and possibly balancing area and network including an estimated 22 NZTA lights or 19,540 kWh per annum reconciled to the Lines Company network instead of the Waipa network.</p> <p>ICP 0000026694WE641 incorrectly recorded as reconciled elsewhere resulting in an estimated under submission of 3,255 kWh per month since February 2022.</p> <p>295 items of load with the incorrect ballast applied resulting an estimated over submission of 1,627 kWh per annum.</p> <p>One item of load with no wattage recorded.</p> <p>ICP 0000026694WE641 incorrectly recorded as reconciled elsewhere resulting in an estimated under submission of 3,255 kWh per month since February 2022.</p> <p>Duplicated submission with five local council databases resulting in an estimated over submission of 733,494 kWh per annum.</p>	Still existing

Table of Recommendations

Subject	Section	Recommendation for Improvement	Status
GPS coordinates	2.3	Populate GPS coordinates for the 12 items of load with no GPS coordinates.	Not adopted
Database Accuracy	3.1	Confirm correct light type for the ten items of load with an invalid description.	Not adopted
		Investigate what load if any is associated with ICP 0000036254WE54E.	Cleared
		Review ICP allocation for all items of load.	Not adopted

Subject	Section	Recommendation for Improvement	Status
		Liaise with Meridian to switch ICP 0000036463HR791 (NSP ROT0111) in for the same date as the data is added to the NZTA RAMM database.	Cleared
		Review quality control processes.	Repeated

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.

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.

Audit commentary

Genesis reconciles this DUML load using the CST and NST profiles as indicated in **section 1.6** above. Waka Kotahi is working to bring the RAMM database up to date. Genesis have created a database to manage this DUML load until the RAMM database can be used for submission.

I reviewed the submission for the month of October 2022 and found that the values did not match as detailed in the table below:

ICP Number	Oct 2022 kWh volume submitted	Database extract calculated volume	Difference
0000011095WE94E	27,844.82	122,788.57	94,943.75
0000022579WE623	70,365.66	20,788.66	-49,577.00
0000036247WE323	19,685.62	74,896.92	55,211.30
0000036254WE54E	1,760.18	1,747.28	-12.90
0000036463HR791	100.44	1,278.32	1,177.88
0000381313TUB52	5,547.76	4,405.39	-1,142.37
0000400320WAD63	5,274.03	3,212.29	-2,061.74
0000400344WA399	17,076.97	16,280.52	-796.45
0000557858UNE30	211.42	119.10	-92.32
0000557929UNE2C	5,521.72	22,232.37	16,710.65
0000557952UN5A5	9,196.77	148.87	-9,047.90
0000562362UNE5B	17,772.61	13,467.29	-4,305.32
0000806850WAC3E	802.90	1,098.80	295.90

ICP Number	Oct 2022 kWh volume submitted	Database extract calculated volume	Difference
0000806950WA53A	9,058.20	5,730.63	-3,327.57
0000806955WA875	6,514.65	6,569.31	54.66
0000808803WA036	3,680.01	4,287.95	607.94
0000890166TU7C3	10,347.49	13,148.00	2,800.51
0001111171WM17A	275.28	1,005.53	730.25
0001111173WM1FF	275.28	1,339.89	1,064.61
0001111175WM070	275.28	5,920.04	5,644.76
0001425637UN339	24,929.27	42,773.94	17,844.67
0001425638UNCE7	1,348.19	25,135.38	23,787.19
0008806768WM373	22,913.96	22,594.53	-319.43
0008809657WMB31	113.15	117.52	4.37
0088051901WM4EB	14,483.20	4,054.30	-10,428.90
1000608049PC05C	4,557.00	9,374.23	4,817.23
1000608050PC4A0	5,934.02	13,715.59	7,781.57
Difference			152,365.34

This is due to the registry figures being used for submission as the database extract in hand was determined to have duplicates and not able to be used. This resulted in an estimated potential under submission of 152,365.64 kWh for the month of October 2022. Genesis have been working with Waka Kotahi and have now been provided with a current cleansed database extract. This will be used to calculate submissions from, and revisions will be carried out back to April 2022 when the RAMM database began being used.

As reported in the last audit, the data loggers used to calculate the burn hours are from the incorrect network are being used as the burn hours will be different between networks:

ICP Number	NSP	Logger No.	Network
0000381313TUB52	WRK0331	206558603	HAWK
0000890166TU7C3	WRK0331	206558603	HAWK
0001425638UNCE7	WKO0331	206558603	POCO

ICP Number	NSP	Logger No.	Network
0000557858UNE30	HIN0331	206558444	POCO
0000557929UNE2C	HIN0331	206558444	POCO
0000557951UN965	HIN0331	206558444	POCO
0000557952UN5A5	HIN0331	206558444	POCO
0000562185UN32C	HIN0331	206558444	POCO
0000562362UNE5B	HIN0331	206558444	POCO
1000522354PCD90	PAO1101	206558444	POCO
0000011095WE94E	HAM0331	206558444	WEL
0000022579WE623	HLY0331	206558444	WEL
0000036247WE323	TWH0331	206558444	WEL

As discussed in **section 3.1**:

- the field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh p.a.,
- 256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.,
- five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.,
- 78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a., and
- 98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3</p> <p>From: 02-May-22 To: 11-Nov-22</p>	<p>Submission values did not align for the month of October 2022 due to the registry figures being used. This will have resulted in an estimated under submission of 152,365.64 kWh.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p> <p>98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.</p> <p>Potential impact: High Actual impact: High</p> <p>Audit history: Three times previously Controls: Moderate Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p>High</p>	<p>The controls are rated as moderate as Genesis and Waka Kotahi are working to improve the data quality and once complete the data capture going forward is expected to be good.</p> <p>The impact is assessed to be high due to the estimated kWh impact however once RAMM is used for submission on a regular basis I expect the database accuracy to improve, and volume corrections will flow through the revision process.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis has been helping NZTA with asset reallocation and will be revising submissions once asset reallocation has been completed.</p> <p>Genesis will identify the loggers which the auditor is concerned about and try to find if there is another logger available which is closer. If no other loggers are available Genesis will arrange for a quote for installing a new logger and send it to NZTA Waikato for approval.</p> <p>The database provided to the auditor is no longer being used. NZTA have started providing and managing their own dataset from January 2023. Genesis relies on NZTA to accurately maintain its database.</p>		<p>01/07/2023</p>	<p>Identified</p>

Preventative actions taken to ensure no further issues will occur	Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.	01/07/2023	

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

The database extract provided had an ICP recorded for all but 20 items of load. These could be solar powered lights, but this needs to be confirmed and if correct I recommend recording "SOLAR" as the ICP identifier.

Recommendation	Description	Audited party comment	Remedial action
ICP Identifier	Record "SOLAR" for all solar supplied items of load.	NZTA have advised Solar has been listed in ICP field for relevant load. All remaining items have been allocated ICP's	Identified

These had no lamp details or wattage recorded but assuming these are 150W HPS (the most common light type for the DUML load) this could be resulting in an estimated under submission of 14,350 kWh p.a. This is recorded as non-compliance below. The accuracy of the ICP allocation to the items of load is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.2 With: Clause 11(2)(a) & (aa) of Schedule 15.3 From: 02-May-22 To: 11-Nov-22	20 items of load with no ICP recorded potentially resulting in an estimated under submission of 14,350 kWh p.a. 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 Genesis and Waka Kotahi have worked together to ensure that ICPs are correctly allocated. I expect this to move to strong once the Waka Kotahi RAMM database is being provided on a regular basis. The impact is assessed to be medium due to the potential impact on reconciliation.		
Actions taken to resolve the issue		Completion date	Remedial action status
NZTA have advised Solar has been listed in ICP field for relevant load. All remaining items have been allocated ICP's		25/01/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.		25/01/2023	

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUMML database must contain the location of each DUMML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for the road name, location number, and GPS coordinates. 544 items of load (7.7%) of the 7,016 total items of load have no GPS coordinates or location number populated and are not locatable. This is expected to be rectified once the RAMM database can be used for submission but is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3 From: 02-May-22 To: 11-Nov-22	544 items of load (7.7%) of the 7,016 total items of load have no GPS coordinates or location number populated and are not locatable. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate as contractors use pocket RAMM to update the field and the historic data missing has or is being populated. The impact is assessed to be low as the database quality is continually being improved so the number of unlocatable items is expected to decline and data accuracy improve.		
Actions taken to resolve the issue		Completion date	Remedial action status
NZTA have advised that the RAMM currently with them only has 59 items of load with no GPS coordinates. 90% of these are related to the new Hamilton expressway lights recently added. GPS locations will be determined from physical checks by matching pole IDs and location.		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.		01/07/2023	

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 light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

The database contains fields for lamp make model description, lamp wattage and gear wattage.

256 items of load have zero wattage recorded. 254 of these had no or “unknown” lamp details. The remaining two items of load had a light type of GL600. Some of these may be solar supplied lights so they need the ICP to be updated to “SOLAR” as recommended in **section 2.2**. Assuming these are 150W HPS (the most common light type for the DUMML load) this could be resulting in an estimated under submission of 183,687 kWh p.a. This is recorded as non-compliance below and in **sections 2.1, 3.1 and 3.2**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(c) & (d) of Schedule 15.3 From: 02-May-22 To: 11-Nov-22	256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a. Potential impact: High Actual impact: High Audit history: Twice previously Controls: Moderate Breach risk rating: 6		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as moderate as Genesis and Waka Kotahi are working to improve the data quality and once complete the data capture going forward is expected to be good. The impact is assessed to be high based on the kWh difference identified.		
Actions taken to resolve the issue		Completion date	Remedial action status
NZTA have advised that in the updated RAMM file there are only 22 items of load with zero wattage. NZTA will be investigating these and arrange for site visits where necessary so accurate information is updated in RAMM		01/07/2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.		01/07/2023	

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

A field audit was undertaken of a statistical sample of 389 items of load in the month of November 2022.

Audit commentary

The table below shows a summary of findings.

Finding	Quantity
Lights missing from the database	23
Lights missing from the field	114
Incorrect or missing wattage in database	5

The large number of lights missing in the field appears to be due to datasets being duplicated in the Genesis database. The database accuracy is discussed in **section 3.1**.

The field audit found 23 more lamps in the field than were recorded in the database. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 02-May-22 To: 11-Nov-22	23 additional items of load found in the field of a sample of 389 (6% error rate). Potential impact: High Actual impact: High Audit history: Once previously Controls: Moderate Breach risk rating: 6		
Audit risk rating	Rationale for audit risk rating		
High	The controls are rated as moderate as Genesis and Waka Kotahi are cleansing the RAMM database and the most recent data extract provided to Genesis is close to being usable. The impact is assessed to be high, as the current dataset being used for submission has duplications and not all changes made since April have been updated in the Genesis dataset. This is expected to improve once monthly RAMM extracts are provided. This is expected to commence in early 2023.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has reviewed the auditors finding and have advised NZTA of the discrepancy with the intent that NZTA makes every effort to ensure the exceptions are rectified.		01/07/2023	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.		1/07/2023	

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 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 RAMM database contains a compliant 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

A field audit was undertaken of 389 items of load. I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Waka Kotahi Waikato
Strata	The Waka Kotahi RAMM database covers the Waikato area. The management of the Waka Kotahi items of load are the same, but I decided to place the items of load into three similarly sized strata by network as follows: <ol style="list-style-type: none"> 1. Strata 1 – HAWK, LINE and WAIP, 2. Strata 2 – POCO, and 3. Strata 3 – WAIK.
Area units	I created a pivot table of the area units, and I used a random number generator in a spreadsheet to select a total of 27 sub-units or 9% of the database.
Total items of load	389 items of load were checked.

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

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

Audit commentary

A field audit was conducted of a statistical sample of 389 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	105.0%	Wattage from survey is higher than the database wattage by 5%
R _L	94.8%	With a 95% level of confidence, it can be concluded that the error could be between -5.2% and +27.6%
R _H	127.6%	

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 with statistical significance, that the true wattage (installed in the field) could be between 18.9% to 23% 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 341 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 245 kW to 442 kW lower than the database.

In absolute terms, total annual consumption is estimated to be 1,456,700 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 1,083,500 kWh p.a. to 1,887,300 kWh pa. lower than the database indicates. This appears to be due to datasets being duplicated in the Genesis dataset.

Scenario	Description
A - Good accuracy, good precision	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - Poor accuracy, demonstrated with statistical significance	This scenario applies if: (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. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level
C - Poor precision	This scenario applies if: (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 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Lamp description and capacity accuracy

As discussed in **section 2.4**, 256 items of load have a blank or unknown light model description and one item of load has no wattage recorded.

Examination of the database found five invalid lamp types:

Lamp Description	No of items of load
153w High Pressure Sodium	1
158w High Pressure Sodium	1
180w High Pressure Sodium	1
26w High Pressure Sodium	2
90w High Pressure Sodium	4
TOTAL	10

I repeat the last audit's recommendation that these are reviewed, and the light type confirmed and updated.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Confirm correct light type for the ten items of load with an invalid description.	Genesis has advised auditors findings to NZTA who will arrange for a field investigation to confirm.	Investigating

As detailed in **section 2.4**, 256 items of load have zero wattage recorded. 254 of these had no or "unknown" lamp details. The remaining two items of load had a light type of GL600. Assuming these are 150W HPS (the most common light type for the DUML load) this could be resulting in an estimated under submission of 183,687 kWh p.a. This is recorded as non-compliance below and in **sections 2.1, 2.4** and **3.2**.

Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a. This is recorded as non-compliance below.

The ballasts accuracy was checked and found 78 incorrect ballasts applied. There are both overs and unders, but the overall estimated impact of these on submission is a very minor under submission of 234 kWh per annum. These have been passed to Genesis to correct.

The check of LED wattages found that lamp descriptions were sufficient to confirm the correct wattage.

ICP Accuracy

The last audit found a number of NSPs had no load associated with them in the Waka Kotahi RAMM database. I analysed the Genesis database and found that all but three NSPs have load recorded against them as detailed below:

NSP POC	Network	Description	NSPs with Waka Kotahi Waikato ICPs associated	Comments
HIN0331	POCO	HINUERA	Yes	
KPU0661	POCO	KOPU	Yes	
OKN0111	POCO	OHAKUNE	Yes	

NSP POC	Network	Description	NSPs with Waka Kotahi Waikato ICPs associated	Comments
PAO1101	POCO	PIAKO 110KV	No	All load has been removed from this the existing ICP 1000522354PCD90 as this is a 24-hour supply UNM profiled ICP and has one variable speed sign associated with it. The load has been reallocated to HIN0331 (ICP 0000557929UNE2C) until the network can provide a new ICP. HIN0331 and PAO1101 are in the same balancing area so there is no effect on submission accuracy.
WHU0331	POCO	WAIHOU	No	Assets for WHU0331 are recorded against HIN0331 (ICP 0000557929UNE2C) until an ICP is created. HIN0331 and WHU0331 are in the same balancing area so there is no effect on submission accuracy.
WKO0331	POCO	WAIKINO	Yes	In the last audit I noted that there were only four items of load recorded against the ICP associated with this NSP. This has been corrected from July 2022 when the load transferred from Hauraki DC to Waka Kotahi.
HAM0111	WAIK	HAMILTON	No	Assets for HAM0111 are allocated to HAM0331 until a new ICP can be provided by the network. HAM0111 and HAM0331 are in the same balancing area so there is no effect on submission accuracy.
HAM0331	WAIK	HAMILTON	Yes	
HLY0331	WAIK	Huntly	Yes	
TWH0331	WAIK	TE KOWHAI	Yes	
HTI0331	LINE	HANGATIKI	Yes	
NPK0331	LINE	NATIONAL PARK	Yes	
OKN0111	LINE	OHAKUNE	Yes	
ONG0331	LINE	ONGARUE	Yes	
TKU0331	LINE	TOKAANU	Yes	
WRK0331	HAWK	WAIRAKEI	Yes	
CBG0111	WAIP	Cambridge	Yes	
TMU0111	WAIP	Te Awamutu	Yes	
HIN0331	POCO	HINUERA	Yes	

Otorohonga DC Waka Kotahi NSP allocation

The last audit found 22 Waka Kotahi lights in the ODC dataset that were incorrectly recorded against the Lines Company but were connected to the Waipa network. This has been corrected in the Genesis Waka Kotahi dataset.

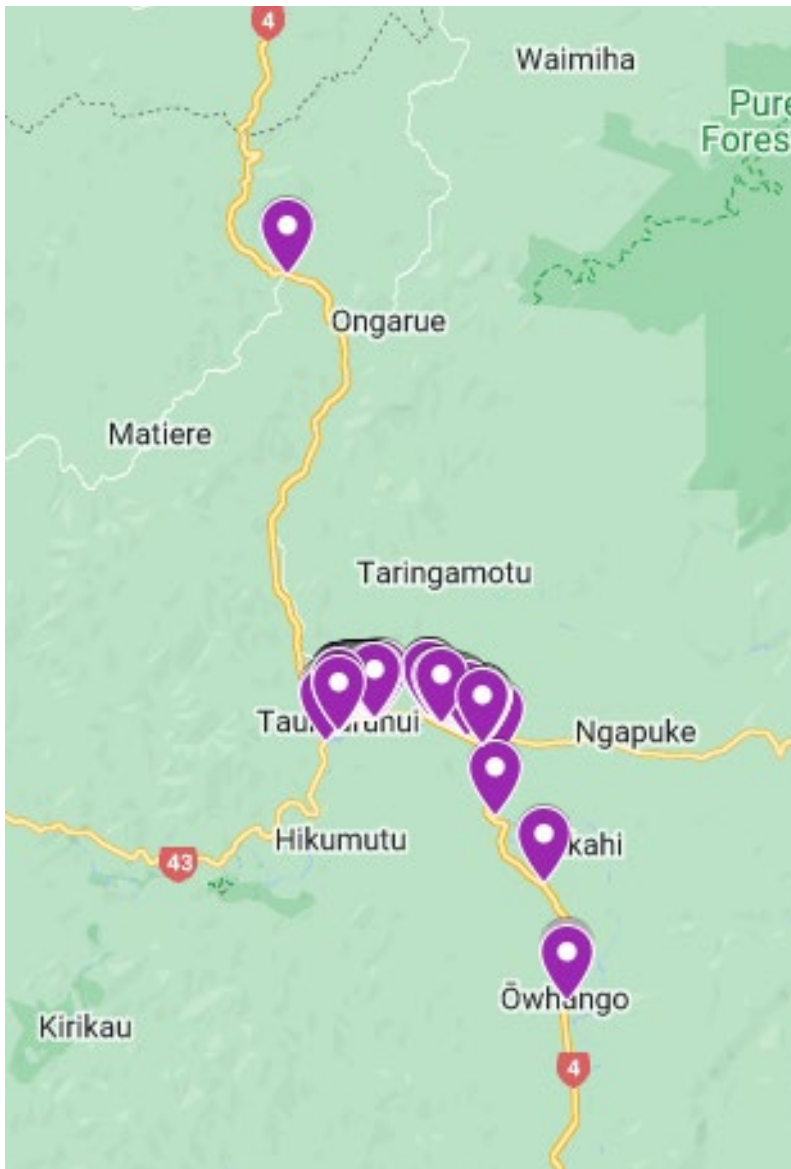
Waka Kotahi and local Council Waka Kotahi lighting loads

The last audit reported duplicate submission was occurring as both the local council and Waka Kotahi were submitting for the same streetlights. Genesis and Waka Kotahi have been working to resolve this as detailed below:

Council Area	Current trader	Council submitted Waka Kotahi kWh volume per annum	Status
Ruapehu DC	Meridian until 31 August 2022 Genesis from 1 September 2022	-	Meridian have submitted the volumes for the affected load and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have switched from RDC to the Waka Kotahi database as detailed in section 1.6 . Some items of load are missing in the Waka Kotahi dataset as detailed below.
Taupo DC	Meridian	34,719	Duplicated load is still being worked on.
Otorohonga DC	Genesis	-	The Waka Kotahi load has been removed from the ODC database from 1 April 2022 so no duplicate submission will occur.
Matamata Piako DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
Hauraki DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
TOTAL		34,719	

ICP 0001111171WM17A

The Waka Kotahi ICPs associated with the RDC database have switched to Genesis from 1 September 2022. Not all the items of load for ICP 0001111171WM17A are recorded in the Genesis database. The RDC database recorded 118 items of load, but the Genesis database has 20 items of load. The 98 items of load in the Tauramanui area missing are detailed below.



This will be resulting in an estimated under submission per month of 6,157 kWh. This has been passed to Genesis to resolve.

Change management process findings

Waka Kotahi requires the NOC to maintain the RAMM database as part of their contract for maintenance carried out on the network. Contractors use pocket RAMM to track changes. Claims are submitted by the 28th of each month for all work carried out for the month prior. Install dates are being used by contractors when tracking changes in RAMM. Reporting of this activity is in development but is expected to provide Genesis with a monthly wattage report that tracks changes at a daily level.

The NOC contractor is required to have an internal quality control process to ensure that updates are accurate. The last audit field audit findings indicated that this process is not working as expected and I recommended that this is reviewed. This is still in progress, so I have repeated the recommendation to maintain visibility.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Review quality control processes.	NZTA has been notified of the auditor's findings. Genesis relies on NZTA to accurately maintain its database.	Investigating

As detailed in the last audit, the new connection process is managed on a project basis. Much like new Council lights, Waka Kotahi only accepts the assets at the end of project and the contractor controls the livening of new lights with the relevant networks. This will be resulting in lights being on and burning before they are being reconciled. I recommend that Genesis work with the relevant networks to ensure there are robust processes in place to ensure new connections are reconciled from the time they are electrically connected.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Genesis to liaise with relevant networks for Waka Kotahi new connections.	Genesis relies on distributors processes when energising a new connection as there is limited or no communication in some cases to the retailer.	Not adopted

Outage patrols are undertaken on a three-monthly basis.

There are no private or festive lights connected to the Waka Kotahi load.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b)</p> <p>From: 02-May-22 To: 11-Nov-22</p>	<p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p> <p>98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.</p> <p>Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p>High</p>	<p>The controls are rated as moderate as Genesis and Waka Kotahi are working to improve the data quality and once complete the data capture going forward is expected to be good.</p> <p>The impact is assessed to be high due to the estimated kWh impact however once RAMM is used for submission on a regular basis I expect the database accuracy to improve, and volume corrections will flow through the revision process.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>The database provided to the auditor is no longer being used. NZTA have started providing and managing their own dataset from January 2023. Genesis relies on NZTA to accurately maintain its database.</p>		<p>01/07/2023</p>	<p>Identified</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Genesis continues to work with NZTA to increase accuracy levels in their database.</p>		<p>01/07/2023</p>	

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

Genesis reconciles this DUML load using the CST and NST profiles as indicated in **section 1.6** above. Waka Kotahi is working to bring the RAMM database up to date. Genesis have created a database to manage this DUML load until the RAMM database can be used for submission.

I reviewed the submission for the month of October 2022 and found that the values did not match as detailed in the table below:

ICP Number	Oct 2022 kWh volume submitted	Database extract calculated volume	Difference
0000011095WE94E	27,844.82	122,788.57	94,943.75
0000022579WE623	70,365.66	20,788.66	-49,577.00
0000036247WE323	19,685.62	74,896.92	55,211.30
0000036254WE54E	1,760.18	1,747.28	-12.90
0000036463HR791	100.44	1,278.32	1,177.88
0000381313TUB52	5,547.76	4,405.39	-1,142.37
0000400320WAD63	5,274.03	3,212.29	-2,061.74
0000400344WA399	17,076.97	16,280.52	-796.45
0000557858UNE30	211.42	119.10	-92.32
0000557929UNE2C	5,521.72	22,232.37	16,710.65
0000557952UN5A5	9,196.77	148.87	-9,047.90
0000562362UNE5B	17,772.61	13,467.29	-4,305.32

ICP Number	Oct 2022 kWh volume submitted	Database extract calculated volume	Difference
0000806850WAC3E	802.90	1,098.80	295.90
0000806950WA53A	9,058.20	5,730.63	-3,327.57
0000806955WA875	6,514.65	6,569.31	54.66
0000808803WA036	3,680.01	4,287.95	607.94
0000890166TU7C3	10,347.49	13,148.00	2,800.51
0001111171WM17A	275.28	1,005.53	730.25
0001111173WM1FF	275.28	1,339.89	1,064.61
0001111175WM070	275.28	5,920.04	5,644.76
0001425637UN339	24,929.27	42,773.94	17,844.67
0001425638UNCE7	1,348.19	25,135.38	23,787.19
0008806768WM373	22,913.96	22,594.53	-319.43
0008809657WMB31	113.15	117.52	4.37
0088051901WM4EB	14,483.20	4,054.30	-10,428.90
1000608049PC05C	4,557.00	9,374.23	4,817.23
1000608050PC4A0	5,934.02	13,715.59	7,781.57
Difference			152,365.34

This is due to the registry figures being used for submission as the database extract in hand was determined to have duplicates and not able to be used. This resulted in an estimated potential under submission of 152,365.64 kWh for the month of October 2022. Genesis have been working with Waka Kotahi and have now been provided with a current cleansed database extract. This will be used to calculate submissions from, and revisions will be carried out back to April 2022 when the RAMM database began being used.

As reported in the last audit, the data loggers used to calculate the burn hours are from the incorrect network are being used as the burn hours will be different between networks:

ICP Number	NSP	Logger No.	Network
0000381313TUB52	WRK0331	206558603	HAWK
0000890166TU7C3	WRK0331	206558603	HAWK
0001425638UNCE7	WKO0331	206558603	POCO
0000557858UNE30	HIN0331	206558444	POCO
0000557929UNE2C	HIN0331	206558444	POCO
0000557951UN965	HIN0331	206558444	POCO
0000557952UN5A5	HIN0331	206558444	POCO
0000562185UN32C	HIN0331	206558444	POCO
0000562362UNE5B	HIN0331	206558444	POCO
1000522354PCD90	PAO1101	206558444	POCO
0000011095WE94E	HAM0331	206558444	WEL
0000022579WE623	HLY0331	206558444	WEL
0000036247WE323	TWH0331	206558444	WEL

As discussed in **section 3.1**:

- the field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh p.a.,
- 256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.,
- five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.,
- 78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a., and
- 98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)</p> <p>From: 02-May-22 To: 11-Nov-22</p>	<p>Submission values did not align for the month of October 2022 due to the registry figures being used. This will have resulted in an estimated under submission of 152,365.64 kWh.</p> <p>Data loggers used across more than one network resulting in the incorrect burn hours being applied.</p> <p>Database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 1,456,700 kWh per annum.</p> <p>256 items of load with zero wattage recorded potentially resulting in an estimated under submission of 183,687 kWh p.a.</p> <p>Five 250W HPS light recorded with an incorrect wattage recorded resulting in an estimated under submission of 3,396 kWh p.a.</p> <p>78 items of load with the incorrect ballast applied resulting in a very minor estimated under submission of 234 kWh p.a.</p> <p>98 items of load missing from ICP 0001111171WM17A resulting in an estimated monthly under submission of 6,157 kWh per month since 1 September 2022.</p> <p>Potential impact: High Actual impact: High Audit history: Three times previously Controls: Moderate Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p>High</p>	<p>The controls are rated as moderate as Genesis and Waka Kotahi are working to improve the data quality and once complete the data capture going forward is expected to be good.</p> <p>The impact is assessed to be high due to the estimated kWh impact however once RAMM is used for submission on a regular basis I expect the database accuracy to improve, and volume corrections will flow through the revision process.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis has been helping NZTA with asset reallocation and will be revising submissions once asset reallocation has been completed.</p> <p>Genesis will identify the loggers which the auditor is concerned about and try to find if there is another logger available which is closer. If no other loggers are available Genesis will arrange for a quote for installing a new logger and send it to NZTA Waikato for approval.</p> <p>The database provided to the auditor is no longer being used. NZTA have started providing and managing their own dataset from January 2023. Genesis relies on NZTA to accurately maintain its database.</p>		<p>01/07/2023</p>	<p>Identified</p>

Preventative actions taken to ensure no further issues will occur	Completion date	
Genesis continues to work with NZTA to increase accuracy levels in their database.	01/07/2023	

CONCLUSION

Waka Kotahi is working to bring the RAMM database up to date. Genesis have used the dataset provided in April until the RAMM database can be used for submission. The data has been reviewed and updated as new information has been provided from Waka Kotahi. A field audit was undertaken to assess that datasets accuracy. The results from this found:

- that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 18.9% to 23% 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 341 kW lower than the database indicates,
- there is a 95% level of confidence that the installed capacity is between 245 kW to 442 kW lower than the database,
- in absolute terms, total annual consumption is estimated to be 1,456,700 kWh lower than the DUML database indicates, and
- there is a 95% level of confidence that the annual consumption is between 1,083,500 kWh p.a. to 1,887,300 kWh pa. lower than the database indicates.

This appears to be due to data being duplicated in the Genesis dataset. This also affected submission as the registry values were used for October and not the database extract. This has resulted in an estimated potential under submission of 152,365.64 kWh. Genesis have been working with Waka Kotahi and have now been provided with a current cleansed database extract in February 2023. This will be used to calculate submissions from, and revisions will be carried out back to April 2022 when the RAMM database began being used. Monthly reporting is expected to be provided going forward.

The last audit compared the ICPs being submitted against compared to the data sets provided for the previous three DUML audits and this found that three ICPs were missing from the dataset. I have examined the Genesis dataset and found that:

- the data for the Thames Coromandel area for ICP 0001425637UN339 is now included,
- ICP 0000026694WE641 has been recorded as being “reconciled elsewhere” against ICP 0000011095WE94E since 1 February 2022; these items of load have been confirmed as being reconciled against ICP 0000036247WE323, submission will be corrected through the revision process and ICP 0000026694WE641 should be decommissioned, and
- Genesis was using the registry unmetered load to reconcile the load associated with ICP 0000036254WE54E as there were no assets recorded in the Waka Kotahi RAMM database while the Genesis database has 36 items of load recorded with a kW value of 5.399kW recorded; this is a variance of 0.557 kW from the previous registry figure being used and will have resulted in an estimated under submission of 2,379 kWh per annum (these lights are expected to be transferred to Waikato DC as these are no longer on a State Highway at a future date yet to be determined).

The allocation of load to NSPs was reviewed. The previous audit found seven NSPs with no Waka Kotahi ICP associated and that some of the load is allocated to the incorrect NSP. Genesis and Waka Kotahi have been working on this and four are existing ICPs that have switched from District Council databases to Waka Kotahi. There are three NSPs which need a new ICP created. The load associated with these is allocated to an existing ICP within the same balancing area until the new ICP can be created. There is no impact on reconciliation accuracy because the load has also been reallocated to the correct ICP and therefore NSP since the last audit. Submission will be corrected through the revision process.

The last audit reported duplicate submission was occurring as both the local council and Waka Kotahi were submitting for the same streetlights. Genesis and Waka Kotahi have been working to resolve this as detailed below:

Council Area	Current trader	Council submitted NZTA volume per annum kWh	Status
Ruapehu DC	Meridian until 31 August 2022 Genesis from 1 September 2022	-	Meridian have submitted the volumes for the affected load and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have switched from RDC to the Waka Kotahi database as detailed in section 1.6 .
Taupo DC	Meridian	34,719	Duplicated load is still being worked on.
Otorohonga DC	Genesis	-	The Waka Kotahi load has been removed from the ODC database from 1 April 2022 so no duplicate submission will occur.
Matamata Piako DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
Hauraki DC	Meridian until 30 June 2022 Genesis from 1 July 2022	-	Meridian have submitted the volumes for the affected load for their period of supply and Genesis have removed this from their submissions so no duplicate submission will occur. The Waka Kotahi ICPs have now switched from MPDC to the Waka Kotahi database as detailed in section 1.6 .
TOTAL		34,719	

The audit found seven non-compliances and makes four recommendations. The future risk rating of 36 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, and I recommend that the next audit is in seven months to allow sufficient time for the Genesis to work with Waka Kotahi, other trader's and local councils to resolve the matters raised.

PARTICIPANT RESPONSE

NZTA have pulled out all their assets from the councils and have started to maintain their own database and have a direct relationship with the retailer. Genesis has been assisting NZTA with the asset re-allocation from the past 1 year and have come to a stage where both parties are beginning to agree that the dataset looks clean. There will still be some errors and omissions which NZTA will keep rectifying as they come across it.

Genesis understands that NZ Streetlighting will be taking over from Martin Lynch Consulting and are looking forward to work with NZ Streetlighting and to improve database accuracy.