

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

For

NZTA HAWKES BAY AND GENESIS ENERGY

Prepared by: Steve Woods

Date audit commenced: 1 February 2021

Date audit report completed: 31 March 2021

Audit report due date: 1 March 2021

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EXECUTIVE SUMMARY

This audit of the NZTA Napier (NZTA) DUML database and processes was conducted at the request of Genesis Energy (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 relevant ICPs are shown below. These are new ICPs for NZTA items of load previously recorded in Hastings and Central Hawkes Bay Council databases.

Both ICPs are now in a RAMM database managed by Stantec on behalf of NZTA. New connection, fault and maintenance work is completed by Pope Electrical. Monthly reports are received by Genesis.

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000048330HB687	STREETLIGHTING MASTER ICP GXP - WTU0331	WTU0331	CST	97	16,885
0000048331HBAC2	STREETLIGHTING MASTER ICP GXP - FHL0331	FLH0331	CST	129	22,423

The 100% field audit found the database accuracy was 98.3%, indicating that compliance is achieved because the error is within 5%. Whilst the accuracy is within 5%, there were 43 other errors (20%). There were 21 items of load where the wattage was under recorded by 2.644 kW and 22 items of load where the wattage was over recorded by 1.975 kW.

I checked the submission calculation provided by Genesis for December 2020 and found the incorrect kW figures were used. This was caused by a centreline being inadvertently deleted from the database, which led to 43 lights being deleted in December 2020 across the Genesis and Meridian ICPs. Meridian was notified but it appears Genesis was not notified and therefore Genesis used incorrect data. Under submission occurred of 1,646 kWh for the month.

This audit found four non-compliances and no recommendations were made. The future risk rating of nine indicates that the next audit be completed in 12 months' time. I have considered this in conjunction with Genesis's response and the size of the database and I agree with the 12-month recommendation.

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	Under submission occurred by 1,646 kWh for December 2020 due to incorrect data. The current monthly report does not include asset removal dates, so if a light is removed during the month, it does not appear for the entire month.	Moderate	Low	2	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional items of load identified by the field audit.	Moderate	Low	2	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	56 items of load have the incorrect ballast applied. Delays in updating the database for new connections. 23 items of load missing from the database for December 2020 due to a centreline being deleted. 43 errors identified by the field audit.	Weak	Low	3	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	Under submission occurred by 1,646 kWh for December 2020 due to incorrect data. The current monthly report does not include asset removal dates, so if a light is removed during the month, it does not appear for the entire month.	Moderate	Low	2	Investigating
Future Risk Rating						9	

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

Subject	Section	Description	Recommendation
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

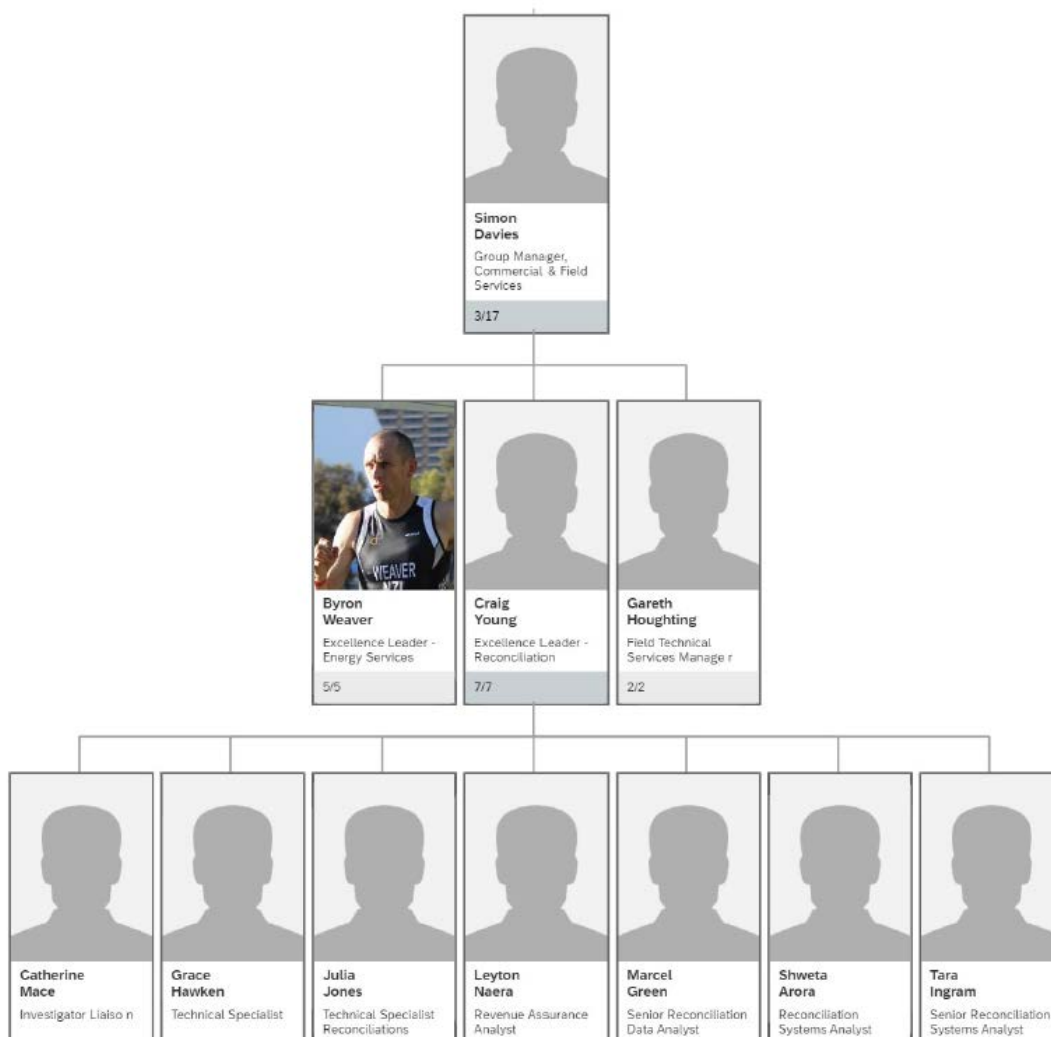
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Genesis Energy provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader - Reconciliation	Genesis Energy
Kara Atkinson		NZ Streetlighting
Martin Hunter	Technical Specialist RAMM	Stantec

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”. The specific module used for DUML is called RAMM Contractor.

Stantec 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

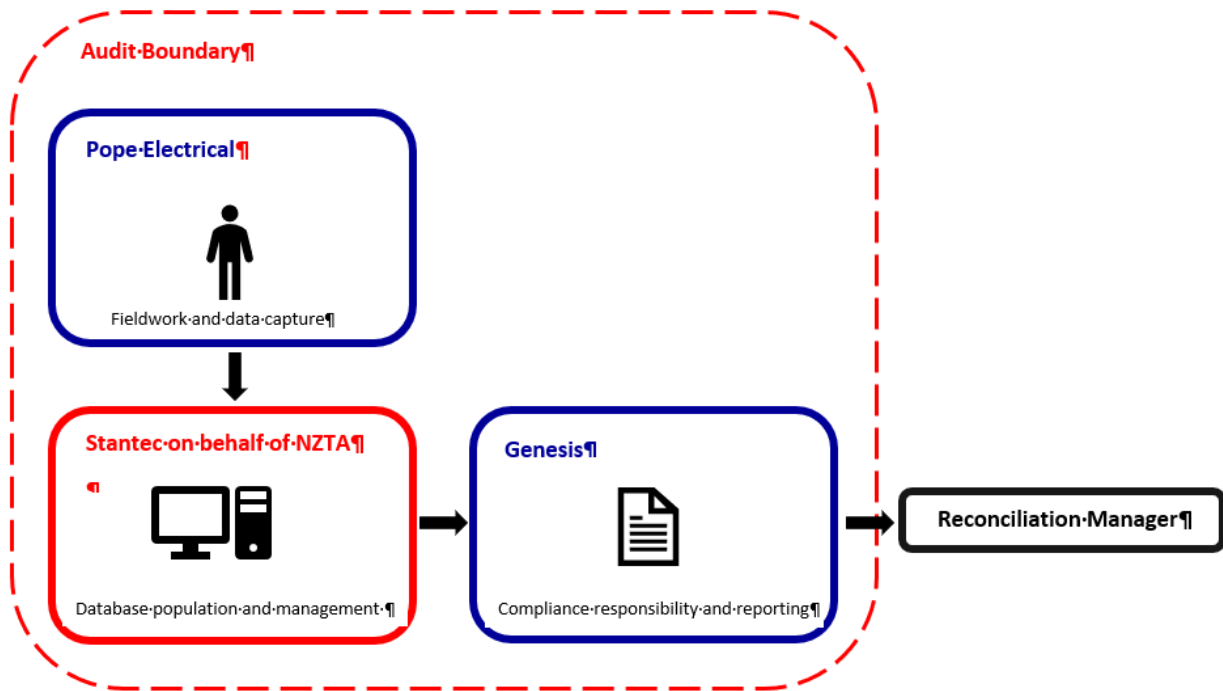
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1.7. Authorisation Received

All information was provided directly by Genesis, NZ Streetlighting and Stantec.

1.8. Scope of Audit

The database is remotely hosted by RAMM Software Ltd and is managed by Stantec on behalf of NZTA, who is Genesis's customer. Reporting is provided by Stantec to Genesis on a monthly basis. The fieldwork and asset data capture are conducted by Pope Electrical. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagram below shows the audit boundary for clarity.



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

The field audit was undertaken of all 226 items of load in February 2021.

1.9. Summary of previous audit

This is the first audit for this database.

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 within the required timeframe. Compliance is confirmed.

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, and*
- *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 profile. The on and off times are derived from a data logger read by AMS.

I checked the submission calculation provided by Genesis for December 2020 and found the incorrect kW figures were used. This was caused by a centreline being inadvertently deleted from the database, which led to 43 lights being deleted in December 2020 across the Genesis and Meridian ICPs. Meridian was notified but it appears Genesis was not notified and therefore Genesis used incorrect data. Under submission occurred of 1,646 kWh for the month.

The 100% field audit found the database accuracy was 98.3%, indicating that compliance is achieved because the error is within 5%. Whilst the accuracy is within 5%, there were 43 other errors (20%). There were 21 items of load where the wattage was under recorded by 2.644 kW and 22 items of load where the wattage was over recorded by 1.975 kW.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

Genesis imports the data into a database and uses asset install dates to calculate active days for each item of load. Where the dates are null, a historic date is entered to ensure the item of load is recorded for the full month. The database report does not include asset removal dates where a light is removed or replaced with another light. Genesis has requested this date be provided.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-May-20 To: 08-Feb-21	Under submission occurred by 1,646 kWh for December 2020 due to incorrect data. The current monthly report does not include asset removal dates, so if a light is removed during the month, it does not appear for the entire month. 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 recorded as moderate because whilst the deleted lamps were identified, they were not notified to Genesis. Controls are rated as moderate to strong with regard to the processing by Genesis. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has made the adjustments to include the extra lamps not notified to Genesis, which will ensure the volume is accounted for in the Dec-20 revision.		22/02/2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis has implemented asset count reporting to monitor streetlighting total assets		01/03/2021	

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, and
- the items of load associated with the ICP identifier.

Audit observation

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

Audit commentary

An ICP is recorded for each item of load.

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that it contained a field for lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

Lamp make, lamp model, lamp wattage and ballast wattage fields are included in the database.

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 all 226 items of load.

Audit commentary

The field audit discrepancies are summarised in the table below.

Error type	Quantity
Additional lights found in the field	3
Incorrect wattage	29
Lights not found in the field	11
Total	43

Three examples were found of additional lights in the field therefore non-compliance is recorded.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-May-20 To: 08-Feb-21	Three additional items of load identified by the field audit. 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 recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has advised the NZTA of its additional field assets and NZTA are reviewing the database and will make the necessary adjustments.		01/03/2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis has notified the NZTA of the asset discrepancies. Genesis relies on the NZTA to accurately maintain its database.			

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.

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

Audit outcome

Compliant

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

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

Audit observation

The database was checked for audit trails.

Audit commentary

The database contains a complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

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

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

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

Audit observation

The field audit was undertaken of all 226 items of load.

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 and timeliness of database updates was evaluated.

Audit commentary

Field audit

The 100% field audit found the database accuracy was 98.3%, indicating that compliance is achieved because the error is within 5%. Whilst the accuracy is within 5%, there were 43 other errors (20%). There were 21 items of load where the wattage was under recorded by 2.644 kW and 22 items of load where the wattage was over recorded by 1.975 kW.

Lamp description and capacity accuracy

Make	Ballast applied	Correct ballast	No. of lights	Wattage difference
150W HP Sodium	28	18	1	+10
100W HP Sodium	12	14	55	-110
Total				-100
Total annual kWh				-427

Stantec is making progress with database updates.

Database accuracy

A centreline was deleted from the database, which led to 43 lights being deleted in December 2020 across the Genesis and Meridian ICPs. Meridian was notified but it appears Genesis was not notified and therefore Genesis used incorrect data.

Change management process findings.

The processes were reviewed for new lamp connections and the tracking of load changes due to faults and maintenance. All fault and maintenance work is controlled by Stantec and conducted by Pope Electrical. Once each job is completed the notification is provided in a template for Stantec to update RAMM.

For new installations, the database is updated once "as built" are provided, however this can take a long time, sometimes many months or more than a year.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1</p> <p>With: Clause 15.2 and 15.37B(b)</p> <p>From: 01-May-20</p> <p>To: 08-Feb-21</p>	<p>56 items of load have the incorrect ballast applied.</p> <p>Delays in updating the database for new connections.</p> <p>23 items of load missing from the database for December 2020 due to a centreline being deleted.</p> <p>43 errors identified by the field audit.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Weak</p> <p>Breach risk rating: 3</p>		
Audit risk rating	Rationale for audit risk rating		
<p>Low</p>	<p>The controls are recorded as weak because many of these discrepancies were present during previous audits when this load was included in Council databases.</p> <p>The impact on settlement and participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis has been advised that the asset gear wattage anomalies have been corrected, Genesis will review the report once received early March for Feb-2021 processing. Genesis will also review to ensure the deleted assets have been reinstated.</p>		<p>22/02/2021</p>	<p>Identified</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Genesis review the data set prior to settlement procedures and advises the NZTA of the asset's discrepancies. Asset count reporting has been implemented to monitor monthly asset movement.</p>		<p>22/02/2021</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, and
- 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

I checked the submission calculation provided by Genesis for December 2020 and found the incorrect kW figures were used. This was caused by a centreline being inadvertently deleted from the database, which led to 43 lights being deleted in December 2020 across the Genesis and Meridian ICPs. Meridian was notified but it appears Genesis was not notified and therefore Genesis used incorrect data. Under submission occurred of 1,646 kWh for the month.

The 100% field audit found the database accuracy was 98.3%, indicating that compliance is achieved because the error is within 5%. Whilst the accuracy is within 5%, there were 43 other errors (20%). There were 21 items of load where the wattage was under recorded by 2.644 kW and 22 items of load where the wattage was over recorded by 1.975 kW.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

Genesis imports the data into a database and uses asset install dates to calculate active days for each item of load. Where the dates are null, a historic date is entered to ensure the item of load is recorded for the full month. The database report does not include asset removal dates where a light is removed or replaced with another light. Genesis has requested this date be provided.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2</p> <p>With: Clause 15.2 and 15.37B(b)</p> <p>From: 01-May-20</p> <p>To: 08-Feb-21</p>	<p>Under submission occurred by 1,646 kWh for December 2020 due to incorrect data.</p> <p>The current monthly report does not include asset removal dates, so if a light is removed during the month, it does not appear for the entire month.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<p>Low</p>	<p>The controls are recorded as moderate because whilst the deleted lamps were identified, they were not notified to Genesis. Controls are rated as moderate to strong with regard to the processing by Genesis.</p> <p>The impact on settlement and participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis reviews the asset reporting provided and adjusts as required and notifies the NZTA of any corrective actions within their database.</p>			<p>Investigating</p>
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Genesis has communicated to the NZTA the tracking of change requirements. As Genesis has not been able to ascertain whether there has been any upgrades or removals as there is no light/lamp removal date within the reporting to Genesis. Genesis has requested to be notified of new/removed assets in accordance of the DUML regime requirements.</p>		<p>19/02/2021</p>	

CONCLUSION

The relevant ICPs are shown below. These are new ICPs for NZTA items of load previously recorded in Hastings and Central Hawkes Bay Council databases.

Both ICPs are now in a RAMM database managed by Stantec on behalf of NZTA. New connection, fault and maintenance work is completed by Pope Electrical. Monthly reports are received by Genesis.

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000048330HB68 7	STREETLIGHTING MASTER ICP GXP - WTU0331	WTU0331	CST	97	16,885
0000048331HBAC 2	STREETLIGHTING MASTER ICP GXP - FHL0331	FLH0331	CST	129	22,423

The 100% field audit found the database accuracy was 98.3%, indicating that compliance is achieved because the error is within 5%. Whilst the accuracy is within 5%, there were 43 other errors (20%). There were 21 items of load where the wattage was under recorded by 2.644 kW and 22 items of load where the wattage was over recorded by 1.975 kW.

I checked the submission calculation provided by Genesis for December 2020 and found the incorrect kW figures were used. This was caused by a centreline being inadvertently deleted from the database, which led to 43 lights being deleted in December 2020 across the Genesis and Meridian ICPs. Meridian was notified but it appears Genesis was not notified and therefore Genesis used incorrect data. Under submission occurred of 1,646 kWh for the month.

This audit found four non-compliances and no recommendations were made. The future risk rating of nine indicates that the next audit be completed in 12 months' time. I have considered this in conjunction with Genesis's response and the size of the database and I agree with the 12-month recommendation..

PARTICIPANT RESPONSE

NZTA is making efforts to improve the asset database information and has been proactive in doing so. The unfortunate incident leading to deletion of centre line assets has been addressed with the contractor and the asset have been reinstated. Notification unfortunately was only to Meridian and not Genesis. I believe the NZTA will be going to market to find one energy provider which should help and simplify their internal processes.

Genesis has already made the adjustment within their system to cater for the additional load in Dec-20, which will adjust settlement volumes in the next revision.

Genesis would be seeking a 18 month re audit period.