

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

The logo for Veritek, featuring the word "VERITEK" in a blue serif font. A vertical blue line is positioned to the left of the text, and a horizontal blue line is positioned below the text, intersecting at the letter 'V'.

For

NAPIER CITY COUNCIL AND
GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 26 April 2022

Date audit report completed: 31 May 2022

Audit report due date: 01-Jun-22

TABLE OF CONTENTS

Executive summary	3
Audit summary	4
Non-compliances	4
Recommendations	8
Issues 8	
1. Administrative	9
1.1. Exemptions from Obligations to Comply with Code	9
1.2. Structure of Organisation	9
1.3. Persons involved in this audit.....	10
1.4. Hardware and Software	10
1.5. Breaches or Breach Allegations.....	10
1.6. ICP Data	10
1.7. Authorisation Received	11
1.8. Scope of Audit	11
1.9. Summary of previous audit	12
1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F).....	14
2. DUML database requirements.....	15
2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)	15
2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)	17
2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)	18
2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)	19
2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)	19
2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)	22
2.7. Audit trail (Clause 11(4) of Schedule 15.3).....	23
3. Accuracy of DUML database	24
3.1. Database accuracy (Clause 15.2 and 15.37B(b))	24
3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))	29
Conclusion	32
Participant response	34

EXECUTIVE SUMMARY

This audit of the **Napier City Council Unmetered Streetlights (NCC)** 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.

A RAMM database is managed by NCC, and monthly reporting is provided to Genesis. The database is remotely hosted by thinkproject New Zealand Ltd. The database management is completed by NCC. Power Solutions Limited continue to produce the monthly report.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated over submission of 41,100 kWh per annum. This inaccuracy will be due to changes made in the field not being updated in the database.

The last audits noted four main issues. I have updated the status of these in the table below:

Issue	2022 Findings
The load for two ICPs is only on for half of the night (turned off at midnight), but submission occurs using the NSP profile, which is a full night profile, therefore the load is spread over the whole night when it should not be.	Still existing
ICP identifiers are linked to pole information not light information in RAMM, therefore PSL makes an adjustment in the monthly report to correct the ICP. Manual manipulation of the database output can lead to errors, and I strongly recommend the database is corrected and manual manipulation ceases as soon as possible.	Still existing
Submission is not occurring for 158 private lights recorded in the database, 44 of the 170 have NCC ICP identifiers.	Submission is not occurring for 158 private lights recorded in the database, 44 of these have NCC ICP identifiers recorded. No progress has been made in relation to this since the last audit. I recommend in this audit that Genesis work with NCC and the EA to determine how these lights get reconciled.
<p>Two of 25 discrepancies from the 2019 audit were not corrected.</p> <p>Four of the six new streets with streetlights not recorded in the database from the 2020 audit are still not corrected.</p> <p>Nine streets found with additional lights in the field in the 2021 audit</p>	<p>The two discrepancies are yet to be corrected in RAMM.</p> <p>Three of the six new streets missing have been corrected.</p> <p>One of the nine streets has been corrected since the last audit.</p> <p>These are detailed in section 2.5. I have repeated the recommendation that the change management process is reviewed to ensure all additions or removals are captured from the correct date.</p>

This audit found six non-compliance and makes three recommendations. The future risk rating of 26 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, particularly in the lack of engagement from the council and I agree with this 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
Audit completion	1.10	16A.26	Audit report not completed within the required timeframe.	Strong	Medium	2	Identified

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>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the previous three audits still to be corrected.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Errors are still present from the last three audits resulting in submission inaccuracy.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p>	Weak	Medium	6	Investigating
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP identifiers in the database are not correct.	Weak	Low	3	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>Errors are still present from the previous three field audit findings.</p> <p>Four additional lights found in the field of 418 items of load sampled.</p>	Weak	Low	3	Investigating
Database accuracy	3.1	15.2 and 15.37B(b)	<p>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>17 items of load with the incorrect ballast recorded resulting in an estimated very minor estimated under submission of 224 kWh.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p>	Weak	Medium	6	Investigating

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the previous three audits still to be corrected.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Errors are still present from the last three audits resulting in submission inaccuracy.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p>	Weak	Medium	6	Investigating
Future Risk Rating						26	

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
Deriving submission information	2.1	Apply for profile to address the incorrect allocation of volume associated with the “half night” lights.
Database accuracy	3.1	Review the change management process to ensure that all changes are recorded in RAMM for the correct date.
		Genesis to work with NCC to determine the correct ICP for the 158 private lights to be reconciled against. For any found to be connected to a customer network, work with the EA to determine how these are to be reconciled.

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

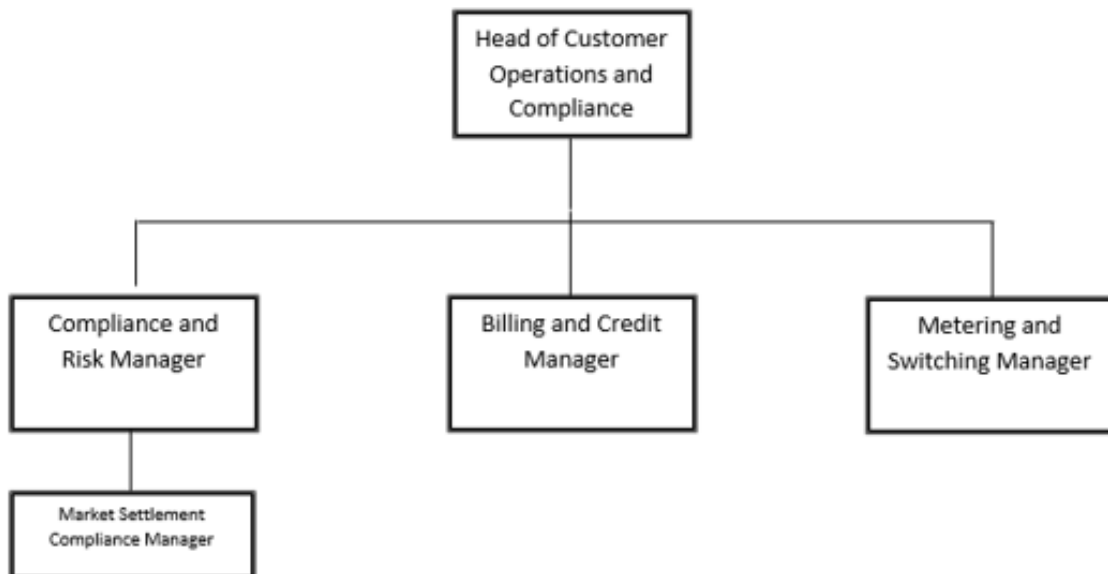
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

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

1.2. Structure of Organisation

Genesis provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Name	Title
Rebecca Elliot	Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Julia Jones	Rubiks SME – Retail Market Interaction	Genesis Energy
Nirav Teli	DUML Data & Stakeholder Lead	Genesis Energy
Jon Stevens	Projects Engineer	Power Solutions

1.4. Hardware and Software

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

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

Systems used by the trader to calculate submissions are assessed as part of their reconciliation participant audits.

1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000939920HB224	Marine Parade Lighting	RDF0331	NST	19	1,840
0000939921HBE61	Carriageway Lighting	RDF0331	NST	162	19,621
0000939923HBEE4	Amenity Lighting	RDF0331	NST	82	5,419
0000939906HBEFE	Road Lighting	RDF0331	NST	7,529	529,061
0000939908HBD65	Amenity Lighting	RDF0331	NST	1,171	89,274
Total				8,963	645,215

As reported in the last audit report there are 159 lights where the ICP is reported as private. This has reduced from 170 lamps recorded in the last audit. 44 of these have one of the NCC unmetered load ICPs recorded. This is discussed in **section 2.2**.

1.7. Authorisation Received

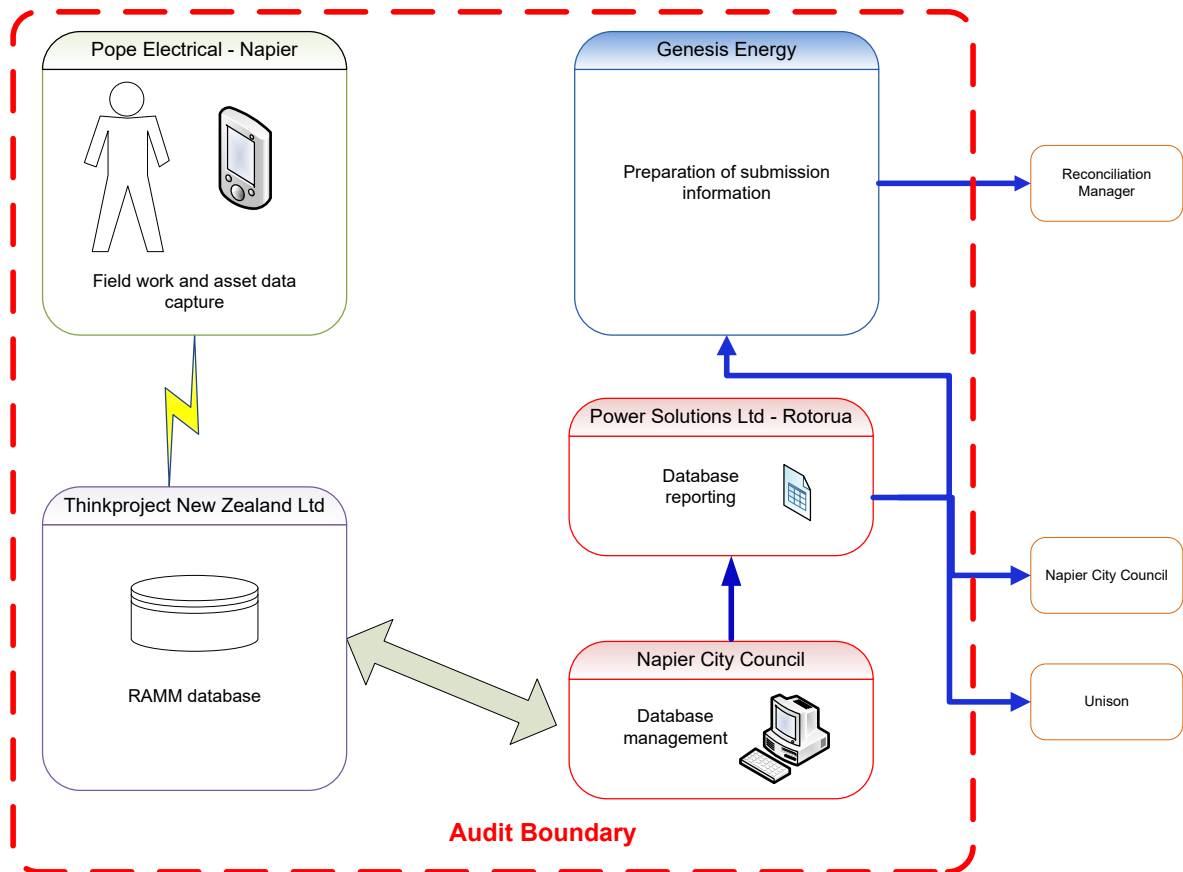
All information was provided directly by Genesis or Power Solutions.

1.8. Scope of Audit

This audit of the Napier City Council Unmetered Streetlights (NCC) 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 database is remotely hosted by thinkproject New Zealand Ltd. The fieldwork and asset data capture is conducted by Pope Electrical. NCC manage the database. Power Solutions produce the monthly report which is provided to NCC, Unison and Genesis. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagram below shows the audit boundary for clarity.



The audit was carried out in Napier on 23rd May 2022. A field audit was conducted of 418 items of load.

1.9. Summary of previous audit

I reviewed that last audit report undertaken by Rebecca Elliot of Veritek Limited in May 2021. The current statuses of that audit's findings are shown in the tables below.

Table of Non-Compliance

Subject	Section	Clause	Non-Compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Two of the 25 errors from the 2019 audit still to be corrected.</p> <p>Errors still present for four of six new roads found in the 2020 audit.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUMML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p>	Still existing
ICP identifier and items of load	2.2	11(2)(a) and (aa) of Schedule 15.3	ICP identifiers in the database are not correct.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	<p>Errors still present for four of six new roads found in the 2020 audit resulting in 11 items of load identified still not recorded in the database.</p> <p>Nine additional lights found in the field.</p>	Still existing

Subject	Section	Clause	Non-Compliance	Status
Database accuracy	3.1	15.2 and 15.37B(b)	<p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates.</p> <p>Some database discrepancies identified in the 2020 audit still to be corrected.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>43 items of load with the incorrect ballast recorded resulting in a very minor estimated under submission of 431 kWh.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p>	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>Two of the 25 errors from the 2019 audit still to be corrected.</p> <p>Errors still present for four of six new roads found in the 2020 audit.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>45 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 28,500 kWh.</p> <p>In absolute terms, total annual consumption is estimated to be 9,400 kWh higher than the DUML database indicates.</p> <p>Database reporting is a monthly snapshot and does not record historic changes.</p>	Still existing

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

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

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

Audit observation

Genesis have requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report was not completed within the required timeframe due to information not being provided.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 1.10 With: Clause 16A.26 From: 01-Jun-20 To: 30-May-22	Audit report not completed within the required timeframe. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Strong Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as Genesis has appointed a dedicated resource to manage streetlight databases including the audit process. . The impact is assessed to medium as the inaccurate submission continues to occur as audits maintain visibility and track progress to address inaccuracies.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis Energy has appointment a DUML Data & Stakeholder Lead to provide information		01/08/2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis Energy has appointment a DUML Data & Stakeholder Lead to provide information		01/08/2022	

2. DUMML DATABASE REQUIREMENTS

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

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

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

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Genesis reconciles this DUMML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the “burn time” which is sourced from data loggers installed on the Unison network. I checked the July 2022 submission and found as reported in the last audit that the content matched the database.

As reported in the two last audits, the methodology is compliant for the “full night” items of load but there are 244 items of load subject to “half night” switching. These lights are turned off at midnight, but the kWh is allocated over the entire night period. This does not achieve compliance with the rules of the profile and there is no approved profile that will meet this requirement. I repeat the last audit’s recommendation that a new profile be applied for to address this.

Recommendation	Description	Audited party comment	Remedial action
Deriving submission information	Apply for profile to address the incorrect allocation of volume associated with the “half night” lights.	Genesis Energy are in the process of discussing with Napier City Council if they are willing to have these lights metered or if they are willing to assist with installation of a check meter so data can be validated before an application can be made for a new profile shape.	Investigating

I rechecked the discrepancies from the last three audits and found not all have been corrected. The field audit again found evidence of new lights being installed and not recorded in the database. This is detailed in **section 2.5**. I repeat the recommend made in the last audit in **section 3.1** that the new connection process is reviewed. This is recorded as non-compliance.

In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUMML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

There are 158 private lights in the database. 44 of these have one of the NCC ICPs recorded against them. These are excluded from reporting to Genesis. This will result in an estimated under submission of 26,630 kWh. I repeat the last audit’s recommendation in **section 3.1**, that Genesis work with NCC to get the connection of these lights investigated.

Database reporting is provided and includes changes made at a daily level and therefore meets compliance with this code requirement.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3</p> <p>From: 01-Jun-20 To: 30-May-22</p>	<p>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the previous three audits still to be corrected.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p> <p>Potential impact: High Actual impact: Medium Audit history: Three times previously Controls: Weak Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p>Medium</p>	<p>The controls are rated as weak as the field findings indicate that the database management processes have weakened further during the audit period and I have recommended that the change management process is reviewed.</p> <p>The impact is assessed to medium due to the potential impact on settlement accuracy.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Right of way, Amenity and park lighting will need to be confirmed by the council.</p> <p>Genesis will be reviewing whether to be non-compliant by continuing to use the NST profile for submission as all other profiles will result in the same outcome, or bill/settle full nights and be non-compliant for over submission.</p> <p>Genesis will be advising the council that it will be looking into private lights until the trader; council and the distributor agree on a solution.</p> <p>Genesis Energy has highlighted to third party that change management process should be reviewed so all information is captured.</p>		<p>30/11/2022</p>	<p>Investigating</p>

Preventative actions taken to ensure no further issues will occur	Completion date	
<p>For the half night compliance issue to be resolved, the half night assets will require a check meter to be installed or become a metered installation.</p> <p>Genesis will revise the private lighting assets</p>	30/11/2022	

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 DUMML database must contain:

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

Audit observation

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

Audit commentary

There are 158 items of load where the owner is recorded as private (a reduction of one light recorded in the last audit). 44 of these have an NCC ICP identifier assigned (a reduction of one light recorded in the last audit). These are excluded from reconciliation. This will be resulting in an estimated under submission of 26,630 kWh per annum. The remaining 114 items of load have "PRIVATE" recorded as the ICP. No progress has been made to determine the ownership of the private lights by NCC and I have raised a recommendation that Genesis work with NCC to get this progressed in **section 3.1**.

As detailed in **section 2.1**, there are some right of way, amenity and car park lights that are recorded incorrectly against the unmetered council ICPs; these are corrected in the monthly report.

The ICP is against the pole not the light and PSL adjusts the kWh per ICP to cater for this. The ICPs in the database are therefore not correct. This is recorded as non-compliance.

The accuracy of the ICPs allocated is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.2 With: Clause 11(2)(a) and (aa) of Schedule 15.3 From: 01-Oct-18 To: 30-May-22	ICP identifiers in the database are not correct. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as weak because the design of the database does not ensure ICP identifiers are correct. The audit risk rating is low because the total kWh is correct and there is only one relevant GXP.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis will highlight the auditor's findings to the council and will work with the council to correct ICP identifiers in the database		30/11/2022	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis will work with NCC to have correct information populated		30/11/2022	

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

There are 182 items of load that do not have GPS co-ordinates, but all have a road name and displacement value which enables these to be located.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

The DUMML database must contain:

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

Audit observation

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

Audit commentary

The database contains two records for wattage, firstly the lamp wattage and secondly the gear wattage, which represents ballast losses. Analysis of the database found no blank records and no discrepancies.

The issue where the ballast in RAMM was not being used for submission has been corrected. The wattage report is calculated using the wattage and ballast from RAMM.

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 DUMML for which it is responsible is recorded in this database.

Audit observation

The last audit was undertaken during the COVID 19 pandemic and therefore the 2019 field audit findings were checked to confirm they had been corrected. There were six streets found to be missing from the database. For completeness I rechecked these for this audit.

A field audit was undertaken of 418 items of load on 23rd May 2022. The discrepancies found in the field are detailed below.

Audit commentary

The field audit discrepancies from 2019 were rechecked and found that the same two items recorded in the last audit are still to be corrected. These are detailed in the table below.

Road Name	Pole ID	Database Watts	Field Watts	Notes	2022 Comments
LANARK CRESCENT	14063	45	83	70W HPS	Not updated
MARINE PARADE PARKING PRECINCT	3289	278	0	Not there	Not updated
Remaining discrepancy:		323	83	+240	

This will be resulting in an estimated over submission of 1,025 kWh per annum. This is recorded as non-compliance in **section 3.1**.

I rechecked the new light discrepancies found in the 2020 audit. Three of the six roads have been corrected. The three streets below have yet to be fully updated as detailed below:

Street	Livening date	2021 comments	2022 comments
Kaituna Place (Off Hurunui)	Unknown	No database records. Streetview shows 4 LED lights.	Not updated
Pelorus Ave	25/06/2019	Ten records indicating two lights are still missing.	Not updated
Ruahine Rd	27/02/2018	Five items now added with electrical connection date of 15/02/2021 when Unison have indicated that the lights were livened on 27/02/2018.	The connection date has been updated to 29/03/2020.

I rechecked the additional light discrepancies found in the 2021 audit. Only one of the nine roads identified with additional lights have been corrected. The missing lights are detailed below:

Street	Database count	Field count	Light count differences	2021 Comments	2022 Comments
ARGYLL CRESCENT	15	16	+1	1x additional 20W LED found in the field.	Not updated
LEE ROAD CAR PARK SERVICE LANE	5	7	+2	2 x additional 100W HPS found in the field.	Not updated
MAADI ROAD	19	20	+1	1x additional 80W LED found in the field.	Not updated
NORWICH CRESCENT	10	11	+1	1x additional 20W LED found in the field.	Not updated
SELWYN ROAD	7	8	+1	1x additional 70W HPS found in the field.	Not updated
WEST PLACE	3	5	+2	2x additional 19W LEDs found in the field.	Not updated
TOTAL			+8		

This year's field audit also found new lights that have not been recorded in the database. This is detailed in the table below.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
BREWSTER STREET	4	3	-1		1x 20W LED not found in the field.
EWAN PLACE	6	5	-1		1x 20W LED not found in the field.
HUNTER DRIVE RIGHT ARM	3	7	+4		4x 58W decorative LED found in the field not recorded in the database as the road has been extended.
RAGLAN STREET	2	1	-1		1x 20W LED not found in the field.
SEAPOINT ROAD	26	25	-1	1	1x 80W MV not found in the field. 6x 20W LED recorded in the database as 80W MV.
THOMPSON ROAD	21	21		1	1x 20W LED recorded in the database as 80W MV.
Grand Total	418	418	8 (+4-4)	2	

Four additional lights were found in the field. This is recorded as non-compliance.

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

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 27-Feb-18 To: 30-May-22	Errors are still present from the previous three field audit findings. Four additional lights found in the field of 418 items of load sampled. Potential impact: Medium Actual impact: Low Audit history: Twice previously Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as weak as the processes in place do not ensure that the changes in the database are updated. The impact is assessed to be low based on number of additional lights found in the field in comparison to the overall number of lights checked.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis has reviewed the auditors finding and will provide directive to PSL and NCC to have missing assets added to the database.		30/11/2022	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Genesis has discussed with PSL & is seeking further understanding of the NCC new connection/tracking of change processes. Genesis is unable to predict new connections or changes and therefore rely heavily on the council's processes to ensure assets information is accurate and timely		30/11/2022	

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

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

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

Audit observation

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

Audit commentary

The RAMM database functionality achieves compliance with the code.

Audit outcome

Compliant

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

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

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

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

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

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

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

Audit observation

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

Plan Item	Comments
Area of interest	Napier City Council streetlights
Strata	The database contains items of load in the Napier City Council area. The processes for the management of items of load are the same, but I decided to place the items of load into four strata, as follows: <ul style="list-style-type: none"> • A-EI, • Em-La, • Le-Pa, and • Pe-Y.
Area units	I created a pivot table of the roads in each area, and I used a random number generator in a spreadsheet to select a total of 58 sub-units.
Total items of load	418 items of load were checked.

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

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

Audit commentary

Database accuracy based on the field audit

A field audit was conducted of a statistical sample of 418 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	98.2	Wattage from survey is lower than the database wattage by 3.3%
R _L	94.4	With a 95% level of confidence, it can be concluded that the error could be between -5.6% and +2.1%
R _H	102.1	

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 and the table below shows that Scenario C (detailed below) applies.

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 5.6% lower and 2.1% higher 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 1 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is between 29 kW lower and 11 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 125,700 kWh p.a. lower to 48,000 kWh p.a. higher than the database indicates.

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

Database Accuracy findings

As detailed in **section 2.5**, the discrepancies found from the 2019-2021 audits were rechecked and found:

- two discrepancies found in the 2019 audit are still to be updated,
- three of the six roads missing from the database in the 2020 audit still have discrepancies, and
- eight of the nine roads with additional lights found in the 2021 audit are still to be updated.

This is recorded as non-compliance below.

ICP Accuracy

As detailed in **section 2.2**, all but 114 “private” records have an ICP, but as recorded in **section 2.1**, the ICP is against the pole not the light and PSL adjusts the kWh per ICP to cater for this. The ICPs in the database are therefore not correct. This is recorded as non-compliance.

As detailed in **section 2.1**, there are some right of way, amenity and car park lights that are recorded incorrectly against the unmetered council ICPs. These are corrected in the monthly report. This is recorded as non-compliance.

Wattage and ballast accuracy findings

The database contains two records for wattage, firstly the lamp wattage and secondly the gear wattage, which represents ballast losses. Analysis of the database found no blank records and a small number of incorrect ballasts as detailed below:

Light Type	Ballast applied	Correct ballast	No. of lights	Wattage Difference
14W Fluorescent	2	3.8	3	5.4
23W Compact Fluorescent	0	2	6	12
36W Fluorescent	7	10	7	28
58W Fluorescent	7	14	1	7
Total			17	52.4

This will be resulting in an estimated very minor under submission of 224 kWh per annum.

Change management process findings

The database is managed by NCC. PSL produce the monthly wattage report.

As was found in the last audit, I made multiple attempts to meet with the council to discuss how the change management processes are being managed and was unable to arrange a meeting. The field audit results indicate that not all changes/new connections in the field are being updated in the database in all instances. I repeat the last audit’s recommendation that the change management process is reviewed to ensure all changes are captured for the correct date.

Description	Recommendation	Audited party comment	Remedial action
Database Accuracy	Review the change management process to ensure that all changes are recorded in RAMM for the correct date.	Genesis Energy has discussed this with third party with an intention that any changes reflect in a timely manner on the dataset	Identified

Private lights

As recorded in the last audit there are 158 private lights in the database, which are excluded from reporting to Genesis. 44 of these have one of the NCC ICPs recorded against them. These lights fit into many different categories, as follows:

- rest home lighting,
- council flats lighting,
- flood lights mounted on the same pole as the streetlight for carpark lighting, and
- commercial building forecourt decorative lighting.

This matter was raised with Unison during their distributor audit, and they had evidence for a small number of lights that were originally owned by NCC when they were installed. Many of the lights in rest homes, council flats or commercial premises could be the responsibility of the owner of the customer network, depending on how they are connected. If they are connected to a customer network, then there is an issue with how these are recorded as they are not connected to Unison network so cannot be created as unmetered load and do not belong to the council. I recommend that Genesis work with NCC to determine how these are connected and to work with the EA for any found to be connected to customer networks be recorded.

Recommendation	Description	Audited party comment	Remedial action
Database accuracy	Genesis to work with NCC to determine the correct ICP for the 158 private lights to be reconciled against. For any found to be connected to a customer network, work with the EA to determine how these are to be reconciled.	Where the private lights need to be addressed is at a distributor level to ensure that these lights, if not under Council ownership are assigned to the correct site/sites depend if SUML or UML.	Investigating

I’ve have repeated the non-compliance for the under submission, because these 44 items of load have ICPs, therefore alternative arrangements need to be made for reconciliation before Genesis excludes them from their reconciliation. This will result in an estimated under submission of 26,630 kWh per annum.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b)</p> <p>From: 13-May-21 To: 30-May-22</p>	<p>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the previous three audits still to be corrected.</p> <p>Incorrect ICP identifiers because they are against the pole not the light.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>17 items of load with the incorrect ballast recorded resulting in an estimated very minor estimated under submission of 224 kWh.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p> <p>Potential impact: High Actual impact: Medium Audit history: Once previously Controls: Weak Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>The controls are rated as weak as the field findings indicate that the database management processes do not track changes made in the field especially in relation to the addition of new lights to the database.</p> <p>The impact on settlement and participants is assessed to be medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>Genesis continues to work with the council to mitigate the risk surrounding +/- settlement submissions</p> <p>Genesis Energy will have a discussion with Napier City Council if they are willing to have these lights metered or if they are willing to assist with installation of a check meter so data can be validated. NCC will need to provide this validated data and an application for new profile shape.</p> <p>Right of way, Amenity and park lighting will need to be confirmed by the council</p> <p>Genesis will be advising the council that it will be looking into private lights until the trader; council and the distributor agree on a solution.</p> <p>Genesis Energy has highlighted to third party that change management process should be reviewed so all information is captured.</p>		30/11/2022	Investigating

Preventative actions taken to ensure no further issues will occur	Completion date	
<p>For the half night compliance issue to be resolved, the half night assets will require a check meter to be installed or become a metered installation.</p> <p>Genesis will revise the private lighting assets</p> <p>Genesis Energy will work with third party to identify and rectify new connections and improve change management process.</p>	30/11/2022	

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

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

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

Audit observation

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

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

Audit commentary

Genesis reconciles this DUML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on a monthly database report derived from RAMM and the “burn time” which is sourced from data loggers installed on the Unison network. I checked the July 2022 submission and found as reported in the last audit that the content matched the database.

As reported in the last two audits, the methodology is compliant for the “full night” items of load but there are 244 items of load subject to “half night” switching. These lights are turned off at midnight, but the kWh is allocated over the entire night period. This does not achieve compliance with the rules of the profile and there is no approved profile that will meet this requirement. I recommend in **section 2.1**, that a new profile be applied for to address this.

I rechecked the discrepancies from the last three audits and found not all have been corrected. The field audit again found evidence of new lights being installed and not recorded in the database. This is detailed in **section 2.5**. I repeat the recommend made in the last audit in **section 3.1** that the new connection process is reviewed. This is recorded as non-compliance.

In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates. This is outside the allowable +/- 5% variance threshold and is recorded as non-compliance below.

There are 158 private lights in the database. 44 of these have one of the NCC ICPs recorded against them. These are excluded from reporting to Genesis. This will result in an estimated under submission of 26,630 kWh. I repeat the last audit’s recommendation in **section 3.1**, that Genesis work with NCC to get the connection of these lights investigated.

Database reporting is provided and includes changes made at a daily level and therefore meets compliance with this code requirement.

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jun-20 To: 30-May-22</p>	<p>In absolute terms, total annual consumption is estimated to be 41,100 kWh lower than the DUML database indicates.</p> <p>Some database discrepancies identified in the previous three audits still to be corrected.</p> <p>Some right of way, amenity and car park lights are incorrectly recorded as connected to the NCC unmetered streetlight ICPs.</p> <p>NST profile used for ICPs 0000939921HBE61 and 0000939923HBEE4 which are turned off at midnight.</p> <p>44 private lights recorded against NCC ICPs excluded from submission resulting in an estimated under submission of 26,630 kWh.</p> <p>Potential impact: High Actual impact: Medium Audit history: Three times previously Controls: Weak Breach risk rating: 6</p>
Audit risk rating	Rationale for audit risk rating
<p>Medium</p>	<p>The controls are rated as weak as the field findings indicate that the database management processes have weakened further during the audit period and I have recommended that the change management process is reviewed.</p> <p>The impact is assessed to medium due to the potential impact on settlement accuracy.</p>

Actions taken to resolve the issue	Completion date	Remedial action status
<p>Genesis continues to work with the council to mitigate the risk surrounding +/- settlement submissions</p> <p>Genesis Energy will have a discussion with Napier City Council if they are willing to have these lights metered or if they are willing to assist with installation of a check meter so data can be validated. NCC will need to provide this validated data and an application for new profile shape.</p> <p>Right of way, Amenity and park lighting will need to be confirmed by the council</p> <p>Genesis will be advising the council that it will be looking into private lights until the trader; council and the distributor agree on a solution.</p> <p>Genesis Energy has highlighted to third party that change management process should be reviewed so all information is captured.</p>	30/11/2022	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>For the half night compliance issue to be resolved, the half night assets will require a check meter to be installed or become a metered installation.</p> <p>Genesis will revise the private lighting assets</p> <p>Genesis Energy will work with third party to identify and rectify new connections and improve change management process.</p>	30/11/2022	

CONCLUSION

A RAMM database is managed by NCC, and monthly reporting is provided to Genesis. The database is remotely hosted by thinkproject New Zealand Ltd. The database management is completed by NCC. Power Solutions Limited continue to produce the monthly report.

A field audit was undertaken, and this found that the database was outside of the +/-5% allowable threshold resulting in an estimated over submission of 41,100 kWh per annum. This inaccuracy will be due to changes made in the field not being updated in the database.

The last audits noted four main issues. I have updated the status of these in the table below:

Issue	2022 Findings
<p>The load for two ICPs is only on for half of the night (turned off at midnight), but submission occurs using the NSP profile, which is a full night profile, therefore the load is spread over the whole night when it should not be.</p>	<p>Still existing</p>
<p>ICP identifiers are linked to pole information not light information in RAMM, therefore PSL makes an adjustment in the monthly report to correct the ICP. Manual manipulation of the database output can lead to errors, and I strongly recommend the database is corrected and manual manipulation ceases as soon as possible.</p>	<p>Still existing</p>
<p>Submission is not occurring for 158 private lights recorded in the database, 44 of the 170 have NCC ICP identifiers.</p>	<p>Submission is not occurring for 158 private lights recorded in the database, 44 of these have NCC ICP identifiers recorded. No progress has been made in relation to this since the last audit. I recommend in this audit that Genesis work with NCC and the EA to determine how these lights get reconciled.</p>
<p>Two of 25 discrepancies from the 2019 audit were not corrected.</p> <p>Four of the six new streets with streetlights are not recorded in the database from the 2020 audit are still not corrected.</p> <p>Nine streets found with additional lights in the field in the 2021 audit</p>	<p>The two discrepancies are yet to be corrected in RAMM.</p> <p>Three of the six new streets missing have been corrected.</p> <p>One of the nine streets has been corrected since the last audit.</p> <p>These are detailed in section 2.5. I have repeated the recommended that the change management process is reviewed to ensure all additions or removals are captured from the correct date.</p>

This audit found six non-compliance and makes three recommendations. The future risk rating of 26 indicates that the next audit be completed in three months. I have considered this in conjunction with Genesis' comments, particularly in the lack of engagement from the council and I agree with this recommendation.

PARTICIPANT RESPONSE

Genesis has done error reporting and highlighted its findings to Power Solutions Limited and will work with PSL with the intent that PSL and council are able to improve the change management process.

Genesis has recruited a permanent position in order to assist in maintaining their current DUML portfolio, to increase Genesis' customer engagement to help Genesis maintain its responsibilities under the DUML regime moving forward.

Genesis will work with the council in have correct ICP identifiers and to identify if a distributor ICP should be administered for SUML and where potential UML (Daily kWh figure) should be added to that sites ICP, removing the ownership from the council.