VERITEK

Electricity Industry Participation Code Audit Report

For

Contact Energy Limited

Tasman District Council
Tasman NZTA
Distributed Unmetered Load

Prepared by Rebecca Elliot – Veritek Ltd

Date of Audit: 14/08/17

Date Audit Report Complete: 30/04/18

Executive Summary

This audit of the Tasman District Council (TDC) DUML database and processes was conducted at the request of Contact, 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, which became effective on 01/06/17.

The Tasman District Council database includes the council and NZTA lights for the Tasman area. Network Tasman manages the installation, maintenance and database management for Tasman District Council.

This audit found three non-compliances and makes no recommendations. These relate to three issues which are the use of the incorrect profile for four ICPs and incorrect submission due to the incorrect wattages being recorded for 31 lights, and three incorrect wattages found in the field audit. The difference between the information used for submission and the field and database analysis is resulting in an under submission of approximately 2,025.9 kWh per annum.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this result in conjunction with Contact's responses and I agree with this recommendation.
The matters raised are detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submissions	2.1	11(1) of Schedule 15.3	Incorrect profile recorded for 4 ICPs. Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 & 15.37(b)	Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh.	Moderate	Low	2	Identified

Subject	Section	Clause	Non-compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 & 15.37(c)	Incorrect profile recorded for 4 ICPs. Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh.	Moderate	Low	2	Identified
Future Risk Rating						6	

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

Table of Recommendations

Subject	Section	Recommendation	Description
		Nil	

Persons Involved in This Audit:

Auditor:

Rebecca Elliot
Veritek Limited
Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Peter Hulme	Easement Officer	Network Tasman
Bernie Cross	Energy Reconciliation Manager	Contact Energy
Aaron Wall	HDM Team Leader	Contact Energy

Contents

1. Adminstrative

1.1 List of ICPs

The following ICPs are relevant to the scope of this audit.

ICP	Description	NSP	No. of items of load
0000090005NTAE5	Tasman DC	KIK0111	71
0000090003NTB6A	Tasman DC	STK0661	825
0000090004NT6A0	Tasman DC	STK0661	256
0000090006NT625	Tasman DC	MCH0111	46
0000090002NT72F	Tasman DC	STK0331	1,807
0000090007NTA60	NZ TRANSPORT AGENCY	STK0331	304
0000090009NT9FB	NZ TRANSPORT AGENCY	STK0661	153
0000090010NTD07	NZ TRANSPORT AGENCY -	STK0661	57
0000090012NTD82	NZ TRANSPORT AGENCY	MCH0111	58
0000090011NT142	NZTA STREETLIGHTING KIKIWA	KIK0111	11
		TOTAL items of load	3,726

1.2 Exemptions from Obligations to Comply With Code (Section 11 of Electricity Industry Act 2010)

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.

Contact confirms that is an exemption is in place relevant to the scope of this audit:

- Exemption No. 177. Exemption to clause 8(g) of schedule 15.3 of the Electricity Industry Participation Code 2010 ("Code") in respect of providing half-hour ("HHR") submission information instead of non half-hour ("NHH") submission information for distributed unmetered load ("DUML"). This exemption expires at the close of 31 October 2023.

Six of the ICPs are reconciled using the HHR profile. The remaining four ICPs are reconciled using the RPS profile therefore this exemption does not apply to those ICPs.

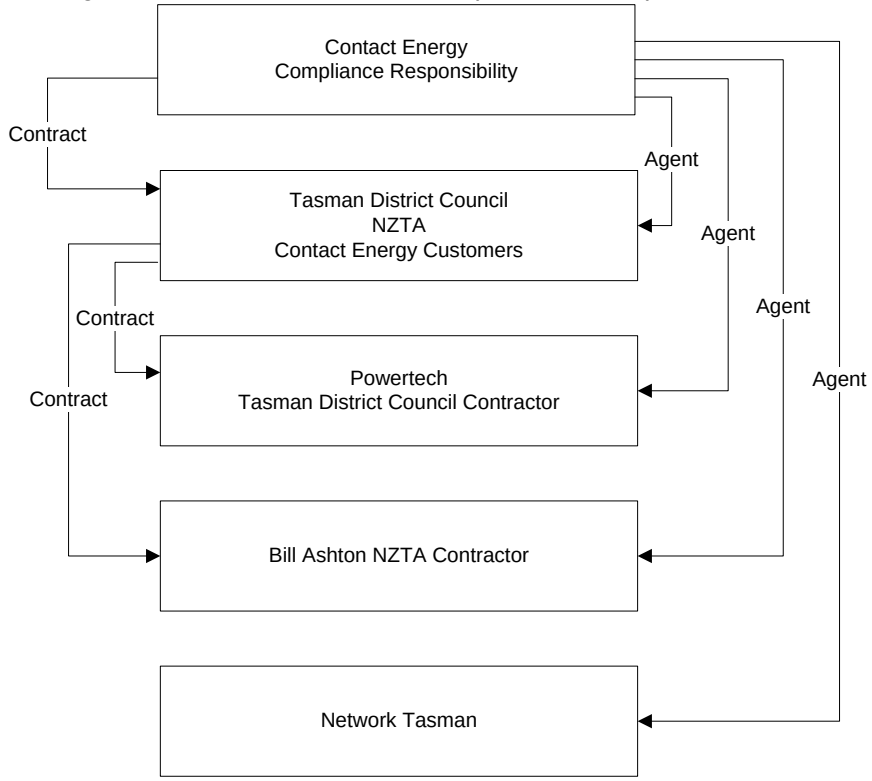
Audit outcome
Compliant

1.3 Supplier List

Network Tasman, NZTA, Tasman District Council, Powertech and Bill Ashton are considered agents under this clause and Contact clearly understands that the use of agents does not release them from their compliance obligations.

There is no direct contractual relationship between Contact and Network Tasman for the provision of DUML services. This is not seen as an issue, if the processes for updating the database are robust and have appropriate validation controls in place. This is discussed further in **section 1.9**.

The diagram below shows the relationships from a compliance and contractual perspective.



1.4 Hardware and Software

The Access database used by Network Tasman is backed-up is in accordance with standard industry procedures. Access to the database is secure by way of password protection. Network Tasman provided a copy of their documentation, which details hardware, software and back-up arrangements.

1.5 Breaches or Breach Allegations

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

1.6 Distributed unmetered load audits (Clauses 16A.26 & 17.295F)

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
Contact 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 particular database within the required timeframe.

Audit outcome
Compliant

1.7 Separate distributed unmetered load audit (Clause 16A.8(4))

Retailers must ensure that DUML audits are reported in a separate audit report.

Audit Observation
This audit report confirms that the requirement to conduct an audit has been met for this particular database.

Audit Commentary
Compliant.

Audit outcome
Compliant

1.8 Summary of Previous Audit

Contact provided a copy of the report of the previous audit conducted in 2016 by Steve Woods of Veritek Limited. One non-compliance was found. The current status of this is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non compliance	Status
Deriving Submission	2.1	11(1) of schedule 15.3	One ICP has the incorrect profile recorded on the registry.	Still existing

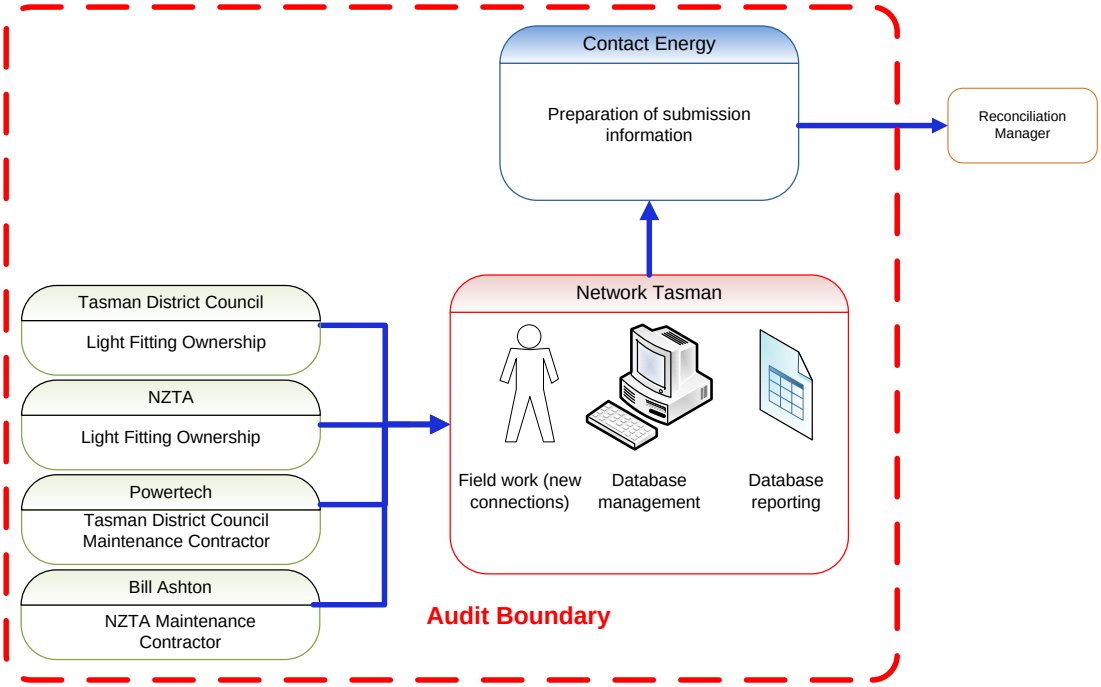
Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Remedial Action
			Nil	

1.9 Scope of Audit

Network Tasman manages the installation, maintenance and database management of all DUML on their network. This includes the Tasman District Council and NZTA streetlights.

Reporting is provided to Contact on a monthly basis. 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 14/08/17 lights using the statistical sampling methodology. The field selection included four different population groups of:

- New
- Urban
- Rural
- NZTA.

1.10 Data Transmission (Clause 20 of Schedule 15.2)

Network Tasman updates Contact Energy on a monthly basis by updating the “distributor unmetered load” field in the Registry therefore there is no data required to be transmitted.

2. DUML database requirements

2.1 Deriving Submission Information (Clause 11(1) of Schedule 15.3)

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

Contact Energy currently reconciles six of the ICPs using the HHR profile. I checked the profile on the registry and found four ICPs that have the incorrect profile recorded on the registry:

ICP	Description	Profile
0000090004NT6A0	Tasman DC	RPS HHR
0000090006NT625	Tasman DC	RPS HHR
0000090002NT72F	Tasman DC	RPS HHR
0000090007NTA60	NZ TRANSPORT AGENCY	RPS HHR

This is recorded as non-compliance below. The remaining four ICPs are reconciled using the RPS profile.

The "total watts" information is taken from the registry updated each month by Network Tasman. The total "on time" is derived from a data logger and is "actual" on time not estimated. I checked the submission accuracy for the month of August and found this to be accurate.

As discussed in **sections 3.1** and **3.2**, the DUML database auditing tool provided a result indicating the field data was 99.7% of the database data. This will result in estimated over submission of 220.65 kWh per annum.

As discussed in **sections 2.4, 3.1** and **3.2**, analysis of the TDC database identified 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: entire audit period	Incorrect profile recorded for 4 ICPs. Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The combined variance of 2,025.9kWh, is considered minor therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Incorrect profile - The incorrect profile on the registry issue is a result of a system defect – currently a fix is underway to prevent this issue from occurring. A manual work around is currently in place to update the registry where required.	July 2018	Identified
Accuracy Ratio – The field audit identified a small number of lights where the field wattage was different to the database wattage – these updates have been completed. It is important to note that the percentage accuracy of the database counts is 99.75% which is well within the respective required meter accuracy for a metered load of a similar size.	Resolved	
Incorrect ballast values – Network Tasman have updated the ballast values to align with the standard values published by the EA.	Resolved	
Preventative actions taken to ensure no further issues will occur	**Completion date**	

2.2 ICP Identifier (Clause 11(2)(a) of Schedule 15.3)

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 all ICPs were recorded against each item of load.

Audit Commentary

The analysis found that all items of load had the correct ICP recorded against them.

Audit outcome
Compliant

2.3 Location of Each Item of Load (Clause 11(2)(b) of Schedule 15.3)

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. This can also include GPS co-ordinates.

Audit Commentary
Network Tasman's database contains the nearest street address for each item of load. The database also contains the GPS co-ordinates for most of the TDC network. Network Tasman's GIS contains the geographical location for all items of load.

Audit outcome
Compliant

2.4 Description of Load Type (Clause 11(2)(c) & (d) of Schedule 15.3)

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 including any ballast or gear wattage has been applied correctly and that it aligns with the published standardised wattage table produced by the Electricity Authority.

Audit Commentary
The TDC database contains two fields for wattage, firstly the manufacturers rated wattage and secondly the "total wattage". All were populated.

Audit outcome
Compliant

2.5 Tracking of Load Changes (Clause 11(3) of Schedule 15.3)

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

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

Audit Commentary

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

The processes were reviewed for ensuring that changes in the field are notified to Network Tasman. When any new subdivisions are completed an "as built" drawing is supplied, and the GIS and the database are both populated.

All new or altered streetlight connections require a "streetlight advice form" to be supplied to Network Tasman. These connections then follow the "new connections" process, which ensures the livening dates are accurately recorded and populated in the database. These are updated on a daily basis in the database. The registry is updated each month to reflect any changes that have occurred during the previous month.

The controls in place are robust and the accuracy of the field audit is reflective of this.

Audit outcome

Compliant

2.6 Audit Trail (Clause 11(4) of Schedule 15.3)

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

Network Tasman demonstrated a complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

2.7 All load recorded in database (Clause 11(2A) of Schedule 15.3)

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 332 lights using the statistical sampling methodology.

Audit Commentary

The field audit findings are detailed in the table below:

Street	Field count	Network Tasman database count	Light count differences	Wattage recorded incorrectly	Comments
New- Richmond					
Bramley St	5	5			
Melfield Pl	5	5			
Fairose Dr	28	28			
Angelus Dr	5	5			
Park Dr	9	9			
Urban- Existing					
Arbor Lea Dr	14	12			
Arrow St	8	8			
Bastin Tce	3	3			
Beach Rd	10	10			
Blair Tce	9	9			
Chelsea Ave	21	21			
Croucher St	15	15			
D'Arcy St	11	11		1	1 x 70W HPS SON recorded in the database not found - all were 35W LED.
Green Lane	2	2			
Rowling Rd	10	10			
Riwaka-Kaiteriteri Rd	4	4		1	1x 53W LED recorded in the database but light head is same as 37W Led recorded in Rowling Rd
Goodall Pl	2	2			
Kotare Pl	6	6			
King Edward St	13	13			
Lammas St	4	4			
Maple Cres	9	9			
Surrey St	7	7			
Queen Victoria St	14	14			
Sanderland Dr	15	15			
Squire Way	3	3			
Surrey Rd	7	7			
Thorp St	7	7			
Tillson Cres	2	2			
Tui Close	2	2			
Swamp Rd	1	1			
Windlesham	3	3			
Pigeon Valley Rd	3	3			

Street	Field count	Network Tasman database count	Light count differences	Wattage recorded incorrectly	Comments
Wensley Rd	3	3			
Woodland Ave	14	14			
Rural					
Rata St	5	5			
Main Rd Tapawera	2	2			
Totara St	5	5			
Matai Cres	10	10			
Tawa Pl	3	3			
Underpass SH60/Stagecoach Rd	4	4			
Petra Way	6	6			
Ridgeview Rd	12	12		1	1 53W LED recorded in database as 50W bollard
11 Moutere Highway	1	1			
Westdale Rd	2	2			
Cnr Moutere Highway & Neudorf Rd	1	1			
Cnr Moutere Highway & Harley Rd	1	1			
Ngatimoti	1	1			
NZTA					
Cnr SH6 & Motueka Valley Highway	1	1			
SH60 Motueka between Tudor St & Woodland Ave	9	9			
Queen St intersection with SH6	7	7			
TOTALS	332	332	0	3	

The three wattage discrepancies found are recorded as non-compliance in **sections 2.1, 2.4, 3.1** and **3.2.** No light count discrepancies were found.

Audit outcome

Compliant

3. Accuracy of DUML database

3.1 Database Accuracy (Clause 15.2 & 15.37(b))

The 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	Tasman DC region
Strata	The database contains items of load in the Tasman District, including NZTA. The area covers both urban and rural areas. I decided to place the items of load into three strata, as follows: 1. New 2. Urban 3. Rural 4. NZTA.
Area units	I gridded a geographical map for each population group and then selected 28 blocks containing 50 roads proportionally across the different strata.
Total items of load	332 items of load were checked.

The database was examined for light wattage and ballast accuracy.

Audit Commentary

The DUML database auditing tool provided a result showing there were no light discrepancies, but three wattage discrepancies, which indicates 99.7% accuracy. This will result in estimated over submission of 220.65 kWh per annum.

The TDC database contains two fields for wattage, firstly the manufacturers rated wattage and secondly the “total wattage”. The “total wattage” is expected to be a calculated figure, which accounts for any variation from the rated wattage and includes losses associated with ballasts. These were checked and found all light descriptions and wattages matched but found 31 items of load with the incorrect ballasts applied resulting in an estimated annual under submission of 2,246.55 kWh (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool).

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: 15.2 & 15.37(b) From: entire audit period	Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The combined variance of 2,025.9kWh, is considered minor therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Accuracy Ratio – The field audit identified a small number of lights where the field wattage was different to the database wattage – these updates have been completed. It is important to note that the percentage accuracy of the database counts is 99.75% which is well within the respective required meter accuracy for a metered load of a similar size. **Incorrect ballast values** – Network Tasman have updated the ballast values to align with the standard values published by the EA.	Resolved Resolved	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

3.2 Volume Information Accuracy (Clause 15.2 & 15.37(c))

The audit must verify that:

• volume information for the DUML is being calculated accurately

• profiles for DUML have been correctly applied.

Audit Observation

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

- checking the registry to confirm that all ICPs have the correct profile and submission flag
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit Commentary

Contact Energy currently reconciles six of the ICPs using the HHR profile. I checked the profile on the registry and found four ICPs that have the incorrect profile recorded on the registry:

ICP	Description	Profile
0000090004NT6A0	Tasman DC	RPS HHR
0000090006NT625	Tasman DC	RPS HHR
0000090002NT72F	Tasman DC	RPS HHR
0000090007NTA60	NZ TRANSPORT AGENCY	RPS HHR

This is recorded as non-compliance below. The remaining four ICPs are reconciled using the RPS profile.

The "total watts" information is taken from the registry updated each month by Network Tasman. The total "on time" is derived from a data logger and is "actual" on time not estimated. I checked the submission accuracy for the month of August and found this to be accurate.

As discussed in **sections 2.1** and **3.2**, the DUML database auditing tool provided a result indicating the field data was 99.7% of the database data. This will result in estimated over submission of 220.65 kWh per annum.

As discussed in **sections 2.1, 2.4** and **3.1**, analysis of the TDC database identified 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: With: 15.2 & 15.37(c) From: entire audit period	Incorrect profile recorded for 4 ICPs. Accuracy ratio is 99.7% indicating over submission of 220.65 kWh per annum. 31 items of load with the incorrect ballast applied resulting in an estimated annual under submission of 2,246.55 kWh. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement. The combined variance of 2,025.9kWh, is considered minor therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Incorrect profile - The incorrect profile on the registry issue is a result of a system defect – currently a fix is underway to prevent this issue from occurring. A manual work around is currently in place to update the registry where required.	July 2018	Identified
Accuracy Ratio – The field audit identified a small number of lights where the field wattage was different to the database wattage – these updates have been completed. It is important to note that the percentage accuracy of the database counts is 99.75% which is well within the respective required meter accuracy for a metered load of a similar size.	Resolved	
Incorrect ballast values – Network Tasman have updated the ballast values to align with the standard values published by the EA.	Resolved	
Preventative actions taken to ensure no further issues will occur	**Completion date**	

4. Conclusions

This audit found three non-compliances and makes no recommendations. These relate to three issues which are the use of the incorrect profile for four ICPs and incorrect submission due to the incorrect wattages being recorded for 31 lights, and three incorrect wattages found in the field audit. The difference between the information used for submission and the field and database analysis is resulting in an under submission of approximately 2,025.9 kWh per annum.

The future risk rating of eight indicates that the next audit be completed in 18 months. I have considered this result in conjunction with Contact's responses and I agree with this recommendation.

5. Contact Energy Comments

Network Tasman's processes supporting their DUML database on behalf of Tasman District Council are sound and robust. The level of inaccuracy is very small and once the legacy ballast values are updated to reflect the Authorities standardised values then the overall submission inaccuracy is well within the allowable accuracy thresholds for an equivalent metered installation that has 7.5 years between inspections and 15 years for certification.

While the audit regime allows an indicative audit frequency to be determined by the future risk rating score from the audit, Contact suggests that in this case a longer audit period be allowed to reflect the strong management and processes that Network Tasman have in relation to its DUML database. Contact believe an Audit period of at least 2 years is more appropriate in this instance.