

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

For

**TAURANGA NZTA AND TRUSTPOWER  
LIMITED**

Prepared by: Steve Woods

Date audit commenced: 19 March 2018

Date audit report completed: 24 May 2018

Audit report due date: 1 June 2018

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## TABLE OF CONTENTS

Executive summary .....	3
Audit summary .....	3
Non-compliances .....	3
Recommendations .....	4
Issues 4	
1. Administrative .....	5
1.1. Exemptions from Obligations to Comply with Code .....	5
1.2. Structure of Organisation .....	5
1.3. Persons involved in this audit.....	6
1.4. Hardware and Software .....	6
1.5. Breaches or Breach Allegations.....	6
1.6. ICP Data .....	6
1.7. Authorisation Received .....	7
1.8. Scope of Audit .....	7
1.9. Summary of previous audit .....	8
1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F).....	8
2. DUML database requirements.....	9
2.1. Deriving submission information (Clause 11(1) of Schedule 15.3) .....	9
2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3) .....	10
2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3) .....	11
2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3) .....	12
2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3) .....	13
2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3) .....	15
2.7. Audit trail (Clause 11(4) of Schedule 15.3).....	15
3. Accuracy of DUML database .....	16
3.1. Database accuracy (Clause 15.2 and 15.37B(b)) .....	16
3.2. Volume information accuracy (Clause 15.2 and 15.37B(c)) .....	17
Conclusion .....	19
Participant response .....	19

## EXECUTIVE SUMMARY

This audit of the Tauranga NZTA DUML database and processes was conducted at the request of Trustpower Limited (Trustpower) 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 1 June 2017.

Tauranga City Council manages a RAMM database, including the Tauranga NZTA data.

The field work and asset data capture is conducted by McKay Electrical and they provide updates to Tauranga City Council.

The future risk rating of 38 indicates that the next audit be completed in 3 months. Non-compliance exists in relation to several of the requirements of the Code and over-submission is occurring of approximately 190,000 kWh per annum. 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	Submission totals different to database totals indicating under submission of 190,000 kWh per annum	None	High	12	Identified
ICP identifier	2.2	11(2)(a) and (aa)	ICP identifier not contained in the database	None	Low	5	Identified
Location of each item of load	2.3	11(2)(b) of Schedule 15.3	11 records without coordinates	Moderate	Low	2	Identified
Capacity of load	2.4	11(2)(b) of Schedule 15.3	Gear wattage not recorded in the database	Weak	Low	3	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	The field audit identified one lamp which was not recorded in the database	Strong	Low	1	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	Database accuracy is 99.3% compared to the field. There are 52 duplicate records (not considered in the	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			99.3% calculation because they were not part of the statistical sample)				
Volume information accuracy	3.2	15.2 and 15.37B(c)	Submission totals different to database totals indicating under submission of 190,000 kWh per annum.	None	High	12	Identified
Future Risk Rating						38	

<b>Future risk rating</b>	1-3	4-6	7-8	9-17	18-26	27+
<b>Indicative audit frequency</b>	36 months	24 months	18 months	12 months	6 months	3 months

## RECOMMENDATIONS

Subject	Section	Clause	Recommendation

## 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

Trustpower 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
Delwyn Jeffrey	Commercial and Industrial Billing Manager	Trustpower
Alan Miller	Commercial Account Manager	Trustpower
Michael Jones	Traffic Systems Engineer	Tauranga City Council

### 1.4. Hardware and Software

The RAMM database used for the management of DUML is managed by TCC.

The database back up is in accordance with standard industry procedures. Access to the database is secure by way of password protection.

### 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	Number of items of load	Database wattage (watts)
1000524102PCBD0	Tauranga City State H/Way TGA 0331	TGA0331	Unknown	Unknown
1000524101PC710	SH 2 & SH 29 SH 36 Outgoing TGA0111	TGA0111	Unknown	Unknown
1000524103PC795	Tauranga Eastern SH's KMO0331	KMO0331	Unknown	Unknown
0001264706UNAD2	Mt Maunganui/Papamoa area MTM0331	MTM0331	Unknown	Unknown
<b>Total</b>			<b>1,078</b>	<b>252,980</b>

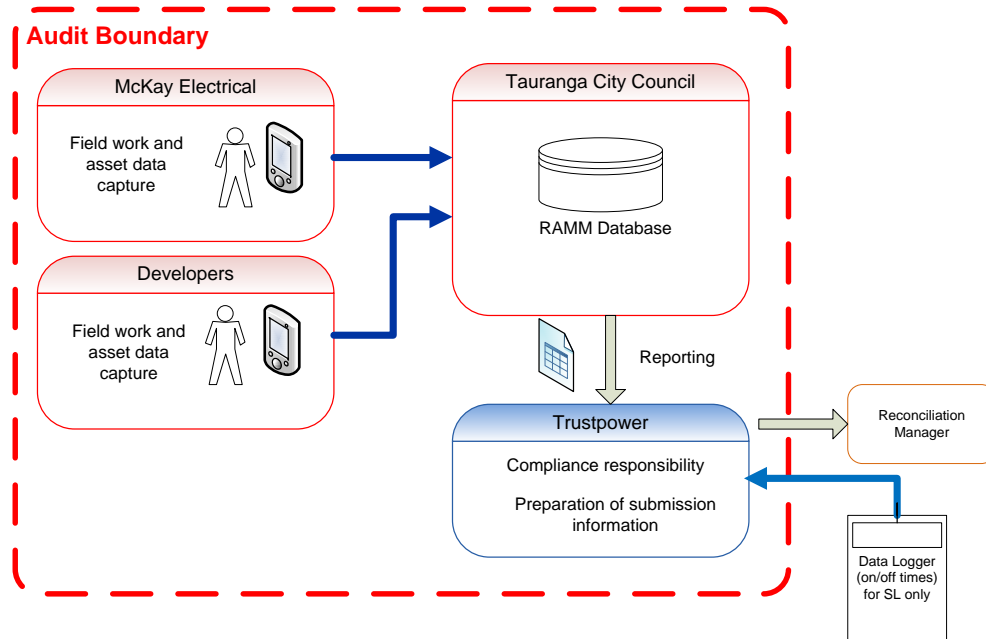
### 1.7. Authorisation Received

All information was provided directly by Trustpower and TCC.

### 1.8. Scope of Audit

The database used for submission is managed by TCC. The field work and asset data capture is conducted by McKay Electrical and they update the TCC RAMM database using “Pocket RAMM”.

The diagram below shows the current flow of information and the audit boundary for clarity.



The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017

## 1.9. Summary of previous audit

The previous audit was completed in May 2016 by Alan Miller of Trustpower. Three non-compliances were identified. The statuses of the non-compliances are described below.

Subject	Section	Clause	Non-compliance	Status
ICP identifiers	2.2	11(2)(a) of schedule 15.3	ICPs not in database.	Still existing
Database Contents	2.6	11(3) of schedule 15.3.	RAMM Database not up to date. Total number of streetlights does not match totals send on monthly spreadsheet	Still existing
Description of load type	2.4	11(3) of schedule 15.3.	Populate gear wattage in the OPUS database	Still existing

Subject	Section	Clause	Recommendation	Status
			Nil	

## 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

Trustpower have requested Veritek to undertake this DUML 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*
- *methodology for deriving submission information complies with Schedule 15.5.*

#### Audit observation

The process for calculation of consumption was examined.

#### Audit commentary

Trustpower reconciles this DUML load using the STL profile. The on and off times are derived from data logger information.

I recalculated the submissions for April 2018 using the data logger and database information. I confirmed that the calculation method was correct, but the total kWh figure I calculated was 107,162 kWh and the submitted figure was 80,563. A difference of 26,599 kWh for the month or approx. 300,000 kWh per annum. There is a further issue to factor in to this calculation; the database contains 52 duplicate records and when these are taken into account the under submission is actually 190,000 kWh.

The field audit found an accuracy of 99.3% indicating an over submission of 7,100 kWh per annum if the database wattage was used for submission and it doesn't seem it is based on the paragraph above.

#### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: 11(1) of Schedule 15.3 From: 20-May-16 To: 30-Apr-18	Submission totals different to database totals indicating under submission of 190,000 kWh per annum. Potential impact: High Actual impact: High Audit history: Once Controls: None Breach risk rating: 12		
Audit risk rating	Rationale for audit risk rating		
<b>High</b>	There don't appear to be any controls in place to ensure the database figures are used for submission. The impact is rated as high because the impact on settlement is approx. 190,000 kWh per annum.		
Actions taken to resolve the issue		Completion date	Remedial action status

TRUS will work with Tauranga City Council to review and validate this database and ensure updated information is used for submission data calculation	Ongoing	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	
Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	

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

### Code reference

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

### Code related audit information

The DUML database must contain:

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

### Audit observation

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

### Audit commentary

ICPs are not contained in the database.

### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.2 With: 11(2)(a) and (aa) From: 20-May-16 To: 30-Apr-18	ICP identifier not contained in the database Potential impact: Medium Actual impact: Low Audit history: Once Controls: None Breach risk rating: 5		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	There don't appear to be any controls in place to ensure the ICP is populated The impact is rated as low because there is a minor impact of not being able to confirm if the database contains the correct information.		
Actions taken to resolve the issue		Completion date	Remedial action status

TRUS to work with Tauranga City Council to ensure ICPS are added to the database for each item of load	31/7/18	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	
Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	

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

#### Audit commentary

The database contains coordinates for the location of items of load, but this is blank for 11 records.

#### Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 2.3 With: Clause 11(2)(b) of Schedule 15.3  From: 20-May-16 To: 30-Apr-18	11 records without coordinates  Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
<b>Low</b>	The controls are recorded as moderate because they mitigate risk most of the time.  The impact on settlement and participants is minor; therefore the audit risk rating is low.	
Actions taken to resolve the issue		Completion date
TRUS will work with Tauranga City Council to ensure location information is added to the database for each item of load		31/7/18
Preventative actions taken to ensure no further issues will occur		Completion date

Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	
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## 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.

### Audit commentary

The database contains a field for lamp wattage and these were confirmed as correct in relation to the description. None of the records contained gear wattage, which is added by Trustpower. Whilst the gear wattages used are correct, this clause requires them to be in the database. There were two blank lamp descriptions.

### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(b) of Schedule 15.3 From: 20-May-16 To: 30-Apr-18	Gear wattage not recorded in the database 2 blank lamp descriptions Potential impact: Medium Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	Controls are rated as weak because the gear wattage data is not present at all The impact is rated as low because of the low numbers and because Trustpower adds the ballast wattage to ensure submission is correct.		
Actions taken to resolve the issue		Completion date	Remedial action status
TRUS includes ballast in submission data as standard practice, but will work with Tauranga City Council to include ballast in their database.		31/7/18	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	

## 2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

### Code reference

Clause 11(2A) of Schedule 15.3

### Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

### Audit observation

A field audit of 166 items of load was undertaken.

### Audit commentary

The field audit findings are detailed in the table below.

Wattages for lamps found in the field but not the database were based on lamp label information where available and estimated based on physical characteristics and other surrounding lamps where unlabelled.

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
Rural					
002-0164-R1	5	5			
002-0166-R3	5	5			
002-0167-R2	6	6			
002-0171-R1	6	6			
002-0171-R3	11	11			
002-0171-R4	6	6			
002-0171-R5	3	3			
036-0000/02.18	22	22			
036-0002-W	8	8			
Urban					
HAIRINI STREET- WELCOME BAY ROAD (SH 29A/SOUTH	17	17			

Address	Database Count	Field Count	Count differences	Wattage differences	Comments
MARSH STREET (SH 2) (363)	20	20			
MIRRIELES ROAD (SH 2) (393)	19	19			
TAKITIMU DRIVE (029-0014/01.47) (2205)	26	26			One missing and one extra at a different location
TAKITIMU TEMP #2 (2204)	12	11	-1		
<b>Total</b>	<b>166</b>	<b>165</b>	<b>-1</b>		

I found one less lamp in the field than were recorded in the database (net difference). This clause relates to items of load in the field not recorded in the database, so the only non-compliance for this clause is that there was one extra light found on Takatimu drive.

#### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3  From: unknown To: 30-Apr-18	The field audit identified one lamp which was not recorded in the database. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are rated as strong, as they are sufficient to ensure that most database information is recorded correctly.  The impact is rated as low because the impact on settlement is minor for one light		
Actions taken to resolve the issue		Completion date	Remedial action status
TRUS will work with Tauranga City Council to ensure the database is up to date		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Database, maintenance and validation processes to be reviewed and implemented where needed.		Ongoing	

## 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 DUMML 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 PowerNet 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 20 September 2012, the Authority sent a memo to retailers and auditors advising that tracking of load changes at a daily level was not required if the database contained an audit trail. I have interpreted this to mean that the provision of a copy of the report to Trustpower when changes occur is sufficient to achieve compliance.

McKay Electrical has the maintenance contract for streetlights and data is entered directly into the RAMM database via pocket RAMM. McKay Electrical submits Service Orders immediately after the work has been completed and this is in turn checked by Tauranga City Council to validate the claims.

I did not identify any problems with the tracking of load changes.

### 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 database contains a complete audit trail of all additions and changes.

### 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

An audit of 166 lights was undertaken.

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

##### Audit commentary

The RAMM database was found to contain some inaccuracies. The database contains 52 duplicate records. The field audit found an accuracy of 99.3%.

Wattages for all items of load were checked against the published standardised wattage table produced by the Electricity Authority and found to be correct.

##### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: unknown To: 30-Apr-18	Database accuracy is 99.3% compared to the field. There are 52 duplicate records (not considered in the 99.3% calculation because they were not part of the statistical sample) Potential impact: Medium Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as weak, because they are not sufficient to ensure that lamp details are correct most of the time The impact is rated as low because the database does not appear to be used for submission.		
Actions taken to resolve the issue		Completion date	Remedial action status
TRUS will work with Tauranga City Council to ensure the database is up to date		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	



Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	
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### 3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

#### Code reference

Clause 15.2 and 15.37B(c)

#### Code related audit information

The audit must verify that:

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

#### Audit observation

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

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

#### Audit commentary

Trustpower reconciles this DUML load using the STL profile. The on and off times are derived from data logger information.

I recalculated the submissions for April 2018 using the data logger and database information. I confirmed that the calculation method was correct, but the total kWh figure I calculated was 107,162 kWh and the submitted figure was 80,563. A difference of 26,599 kWh for the month or approx. 300,000 kWh per annum. There is a further issue to factor in to this calculation; the database contains 52 duplicate records and when these are taken into account the under submission is actually 190,000 kWh.

The field audit found an accuracy of 99.3% indicating an over submission of 7,100 kWh per annum if the database wattage was used for submission and it doesn't seem it is based on the paragraph above.

#### Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 15.2 and 15.37B(c) From: 20-May-16 To: 30-Apr-18	Submission totals different to database totals indicating under submission of 190,000 kWh per annum. Potential impact: High Actual impact: High Audit history: Once Controls: None Breach risk rating: 12
Audit risk rating	Rationale for audit risk rating

<b>High</b>	<p>There don't appear to be any controls in place to ensure the database figures are used for submission.</p> <p>The impact is rated as high because the impact on settlement is approx. 190,000 kWh per annum.</p>	
<b>Actions taken to resolve the issue</b>	<b>Completion date</b>	<b>Remedial action status</b>
TRUS will work with Tauranga City Council to review and validate this database and ensure updated information is used for submission data calculation	31/7/18	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	
Database, maintenance and validation processes to be reviewed and implemented where needed.	Ongoing	

## CONCLUSION

Tauranga City Council manages a RAMM database, including the Tauranga NZTA data.

The field work and asset data capture is conducted by McKay Electrical and they provide updates to Tauranga City Council.

The future risk rating of 38 indicates that the next audit be completed in 3 months. Non-compliance exists in relation to several of the requirements of the Code and over-submission is occurring of approximately 190,000 kWh per annum.

## PARTICIPANT RESPONSE

When Trustpower audited this database in 2016 it was being administered by Opus Consultants, since then Tauranga City Council have taken over the database maintenance with McKays contracted to do the fieldwork. Trustpower has not received a new copy of the database since the Council took it over despite numerous requests, the reason being that the Council wanted to confirm the inventory before doing so.

Trustpower has advised the Tauranga City Council Financial Controller of the risk/cost of multiple audits if they do not maintain the database accurately or provide the information monthly for submission data. Trustpower expects the majority of the database work and the processes for data provision to be in place by the next audit.