

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

HAURAKI DISTRICT COUNCIL AND
GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 22 February 2018

Date audit report completed: 25 May 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the Hauraki District Council Unmetered Streetlights (**HDC**) 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, which became effective on 1 June 2017.

There is almost no new development occurring in the Hauraki DC area therefore there were no new areas to examine. HDC manage the database accuracy and Power Solutions produce the monthly wattage report on behalf of the council and provide this to Genesis on a monthly basis. Analysis of the database confirmed that ballasts are correctly applied.

The field audit found some inaccurate data within the database used to calculate submissions.

This audit found four non-compliances and no recommendations were made. The future risk rating of 14 indicates that the next audit be completed in 12 months 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
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database.	Moderate	Medium	4	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	One additional item of load found in the field audit.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database.	Moderate	Medium	4	Identified
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database.	Moderate	Medium	4	Identified
Future Risk Rating						14	

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

RECOMMENDATIONS

Subject	Section	Description	Action
		Nil	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

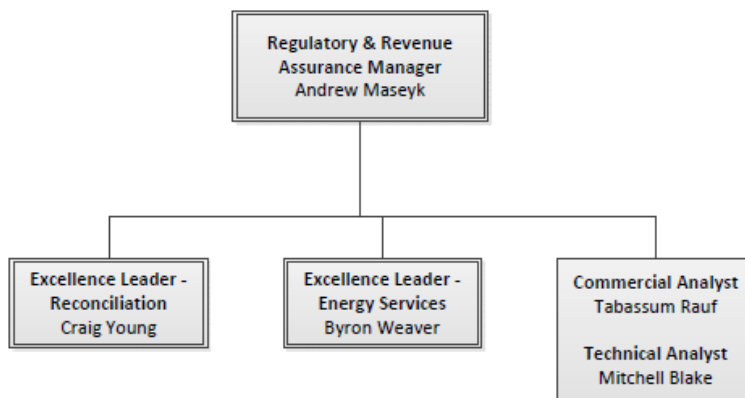
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

Genesis confirms that 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:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader- Reconciliation	Genesis Energy
Grace Hawken	Technical Specialist - Reconciliations Team	Genesis Energy
Jon Stevens	Projects Engineer	Power Solutions

1.4. Hardware and Software

Section 1.8 records that Roding Asset and Maintenance Management database, commonly known as RAMM continues to be used the management of DUML. This is remotely hosted by RAMM Software Ltd. The specific module used for DUML is called “SLIMM” which stands for “Streetlighting Inventory Maintenance Management”.

Power Solutions confirmed that 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	Profile	Number of items of load	Database wattage (watts)
1000508887PC891	ST_LIGHTS- Powerco	WKO0331	NST	1,875	157,456
1099570384CNB6C	Hauraki Streetlights Counties	BOB0331	NST	33	3,510

1.7. Authorisation Received

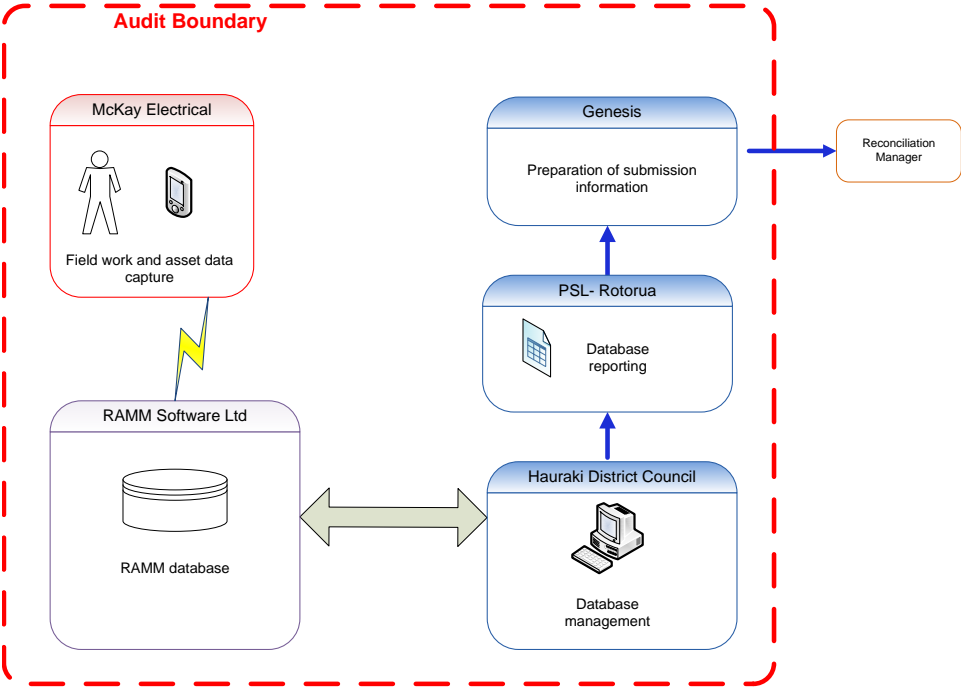
All information was provided directly by Genesis or Power Solutions.

1.8. Scope of Audit

This audit of the Hauraki District Council Unmetered Streetlights (**HDC**) 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, which became effective on 1 June 2017.

The database is remotely hosted by RAMM Software Ltd. The field work and asset data capture is conducted by McKay Electrical using Pocket RAMM. HDC manage the database and Power Solutions produce the monthly wattage report, on behalf of the HDC, and provide this to Genesis 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 at the time of the site audit.



The field audit was undertaken of a statistical sample of 214 items of load on 22nd February 2018.

1.9. Summary of previous audit

Genesis provided a copy of the last audit report undertaken by Rebecca Elliot of Veritek Limited in May 2017 this audit report was undertaken for Genesis as part of their 2017 reconciliation participant audit. This audit wasn't submitted due to the audit regime change that occurred on 1st June 2017. For completeness I have included the findings for reference below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of schedule 15.3	Inaccurate submission due to inaccurate database.	Still existing
ICP Identifier	2.2.1	11(2)(a) of schedule 15.3	ICP not recorded against each item of load.	Cleared

Subject	Section	Clause	Non-compliance	Status
Tracking of load change	2.2.4 refer section 3.1	11(2)(d) of schedule 15.3	Discrepancies found in field audit resulting in a potential error rate of 8%.	Still existing refer section 2.5 & 3.1

Table of Recommendations

Subject	Section	Clause	Recommendation for Improvement	Status
Tracking of Load Change	2.3	11(3) of schedule 15.3	Put a process of notification in place to ensure if festive lighting is connected to the unmetered street light circuit, it is captured for reconciliation and billing purposes.	Cleared-confirmed that no festive lighting is connected to unmetered circuits

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

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

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

Audit observation

Genesis have requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe. Compliance is confirmed.

2. DUML DATABASE REQUIREMENTS

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

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *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 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 Counties and Powerco networks. I checked the accuracy of the submission and confirm compliance.

As detailed in **section 2.4**, the ballast capacities are not recorded in RAMM but are added in the monthly report. This is recorded as non-compliance.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **section 3.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Jun-17 To: 30-Apr-18	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be medium, based on the kWh differences described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis will advise HDC of the issues outlined in this Audit.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Where possible Genesis will help HDC assign the ballast correct values enabling reporting accuracies to meet requirements.		10/2018	

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 the correct ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP recorded against them.

Audit outcome

Compliant

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

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

The 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. The Hauraki DC database has the lamp wattage recorded in both the lamp and gear wattage fields. All were populated. As discussed in **section 3.1**, the ballast in RAMM is not used for submission. The correct wattages are added in the monthly report. The correct ballasts are applied but this needs to be in the database. This is recorded as non-compliance in **section 3.1**.

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 field audit was undertaken of a statistical sample of 214 items of load on 22nd February 2018.

Audit commentary

The field audit findings are detailed in the table below:

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Amenity and carparks					
KAIHERE RD	4	4			
MORESBY AVE SERVICE LANE (RP62 RHS)	1	1			
SILVERTON RD SERVICE LANE (RP138 LHS)	2	2			
SILVERTON RD SERVICE LANE (RP44 LHS)	2	2			
Counties					
KOWHAI AVE EXTENSION	4	4			
POHUTUKAWA AVE	1	1			
RUA ONE PL	4	4			
NZTA					
KAIHERE RD	1	1			
MARGARET ST	1	1			
NORMANBY RD (SH 2)	25	25			
PARK LANE	1	1			
PIPIROA RD	1	1			
WILLOUGHBY ST	1	1			
Rural					
KAIKAHU RD NORTH	2	2			
MAKO AVE	5	5			
PAPATUROA AVE	2	2			
RAKINO DR	2	2			

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
RETA CRES	13	13			
Urban					
ALBERT ST (WAIHI)	4	4			
BOB SHAW RD	2	2			
BOYD RD	1	1			
BRADFORD ST	7	7			
BUCHANAN ST (PAEROA)	9	9			
BUCHANAN ST/RATA LANE RAB	2	2			
BUSH ST (PAEROA)	1	1			
CAMBRIDGE RD	6	6			
CARRICK ROBERTSON PL	4	4			
CHRISTENSEN ST	4	4			
DE CASTRO ST (UPPER)	1	1			
DEARLE ST	1	1			
EVANS ST	4	4			
FERN RISE	4	4			
GILMOUR ST	19	19		1	1x LED found in the field and recorded in the database as MH
KAURI GR	5	5			
KEEPA AVE	5	5			
LEE AVE	3	3			
MACKAY ST (PAEROA)	17	15	-2		2x 125W MV not found in the field
MATAURA RD	7	7			
MCDONALD PL	2	2			

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
MOORE ST	1	1			
PRINCES ST (WAIHI)	7	7			
QUEEN ST (PAEROA)	2	2			
SETTLERS DR	3	3			
WAIMAREI AVE	7	7			
WAITETE RD	10	11	1		1x extra LED found in the field
WELLINGTON ST	4	4			
Grand Total	214	213	1	1	

One additional item of load was found in the field. This is recorded as non-compliance below. The database accuracy is discussed and recorded as non-compliance in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Jun-17 To: 30-Apr-18	One additional item of load found in the field audit. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate, because they are sufficient to ensure that lamp information is correctly recorded most of the time. The impact is assessed to be low as only one additional item of load was found in the field audit.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis will advise HDC of the issues outlined in this Audit.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Where possible Genesis will help HDC assign the ballast correct values enabling reporting accuracies to meet requirements.		10/2018	

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

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 20th September 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.

There has been almost no new development, but this is expected to change in the near future. For all new connections, “as built” are required to be submitted to council before connection can occur. These are added to RAMM once the lights have been confirmed as connected.

All fault and maintenance work is controlled by HDC and conducted by McKay Electrical through “RAMM Contractor” and once each job is completed the database is updated via field PDA’s. The network is patrolled on a monthly basis.

HDC are rolling out an LED upgrade across 1,000 lights. This should have been completed by the time of the next audit.

There are no festive lights connected to the street light circuits.

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	Hauraki plains area
Strata	<p>The database contains items of load in Hauraki District Council area.</p> <p>The area is across two networks. There were no new developments identified.</p> <p>The processes for the management of HDC items of load are the same, but I decided to place the items of load into three strata, as follows:</p> <ol style="list-style-type: none"> 1. Amenity and car parks 2. Counties Network 3. NZTA 4. Rural 5. Urban
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 46 sub-units.
Total items of load	214 items of load were checked.

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

Audit commentary

The field data was 97.9% of the database data for the sample checked. The total wattage recorded in the database for the sample was 14,716 watts. The estimated total wattage found in the field for the sample checked was 14,391 watts, a difference of 325 watts. This will result in estimated over submission of 11,100 kWh per annum (based on annual burn hours of 4,271 as detailed in the DUML database auditing tool).

The ballast in RAMM is not correct and is not used for submission. The correct wattages are added in the monthly report. The correct ballasts need to be in the database. This is recorded as non-compliance below.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Jun-17 To: 30-Apr-18	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be medium, based on the kWh differences described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis will advise HDC of the issues outlined in this Audit.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Where possible Genesis will help HDC assign the ballast correct values enabling reporting accuracies to meet requirements.		10/2018	

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
- checking the database extract combined with the burn hours against the submitted figure to confirm 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 Counties and Powerco networks. I checked the accuracy of the submission and confirm compliance.

As detailed in **section 2.4**, the ballast capacities are not recorded in RAMM but are added in the monthly report. This is recorded as non-compliance.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **section 2.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Jun-17 To: 30-Apr-18	The database accuracy is assessed to be 97.9% indicating an estimated over submission of 11,100 kWh per annum (excluding ballast). The ballasts are not recorded correctly in the RAMM database. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be medium, based on the kWh differences described above.		
Actions taken to resolve the issue		Completion date	Remedial action status
Genesis will advise HDC of the issues outlined in this Audit.		10/2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Where possible Genesis will help HDC assign the ballast correct values enabling reporting accuracies to meet requirements.		10/2018	

CONCLUSION

There is almost no new development occurring in the Hauraki DC area therefore there were no new areas to examine. HDC manage the database accuracy and Power Solutions produce the monthly wattage report on behalf of the council and provide this to Genesis on a monthly basis. Analysis of the database confirmed that ballasts are correctly applied.

The field audit found some inaccurate data within the database used to calculate submissions.

This audit found four non-compliances and no recommendations were made. The future risk rating of 14 indicates that the next audit be completed in 12 months and I agree with this recommendation.

PARTICIPANT RESPONSE

Genesis Energy will work with HDC in order to rectify these discrepancies.