2017 Performance Audit and Asset Management System Review for Merredin Energy Pty Ltd EGL25

Audit Report	Authorisation	Name	Position	Date
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December 2017
Audit Report No: MEPAR1017_4

GLOSSARY

Abbreviation	Description
AEMO	Australian energy market operator. The national market operator that succeeded IMO.
AMP	Asset Management Plan
AMS	Asset Management System
BoP	Balance of Plant
CCTV	Closed circuit TV
DCS	Distributed Control System
DM	Demand management
EOH	Equivalent operating hours; considers hours, starts and mode of operation
ERA	Economic Regulation Authority
GE	General Electric, GT suppliers
GES	Geographe Environmental Services
GT	Gas turbine
IMO	State independent market operator; superseded by AEMO.
IT	Information Technology
ME	Merredin Energy
MEPL	Merredin Energy Pty Ltd
OEM	Original equipment manufacturer
P&L	Profit and loss
PLC	Programmable logic controller
RCA	Root cause analysis
SWIS	South West Interconnected System
TECH1	Computerised Maintenance Management System
TWPS	TW Power Services
UPS	Uninterruptable power supply
WP	Western Power

Quality Control Record

	CLIENT	DATE
REQUESTED BY	DALE WATERSON	SEPTEMBER 2017
PREPARED BY	NICOLE DAVIES	OCTOBER 2017
CHECKED BY	SIMON ASHBY	OCTOBER 2017
REVISION	4	DECEMBER 2017

1 EXECUTIVE SUMMARY

The Licensee is Merredin Energy Pty Ltd.

Asset Overview

Merredin Energy Pty Ltd (MEPL) is an 82MW open cycle gas turbine power station located in Merredin, Western Australia. It comprises two efficient and low emissions GE Frame 6B gas turbine generators, with associated plant, and operates as a reserve capacity station. The plant runs on average for around 10 hours per year. The station is expected to have an operating life of approximately 25 years.

The project site is located at Lot 191, Robartson Road, Merredin, Western Australia; approximately 240km east of Perth.

The primary plant at the power station consists of two GE Frame-6B Model 6581 gas turbines with Brush Model BDAX 7-290 generator packages with a total nominal capacity of 82 MW.
The major items of ancillary plant that support the operation of the gas turbines comprise:

- Diesel fuel unloading, storage and forwarding system
- Water treatment plant with associated storage for raw water and demineralised water
- Step-up transformer for each generator
- High voltage switchyard with connection through to the adjacent Western Power Merredin Terminal
- Fire protection system
- Integrated Control and Monitoring System

The plant operates on efficient and low emissions fuel only. Merredin Energy Pty Ltd has contracted with a local supplier to provide ultra-low sulphur distillate as required.

The power station is connected to the South West Interconnected System (SWIS) via a single circuit 132kV overhead transmission line to Western Power's Merredin Terminal north of the power station.

Ownership

Merredin Power Station is 100 per cent wholly owned by Merredin Energy Pty Ltd. Asset Management activities are currently undertaken by Palisade Asset Management, and the facility is currently maintained and operated by TW Power Services.

During the Audit period the power station asset management, operations, and maintenance activities were conducted by Perth Energy Pty Ltd.

Palisade Asset Management Pty Ltd has engaged Geographe Environmental Services Pty Ltd to undertake its second Performance Audit and Asset Management System Review as required by the Economic Regulation Authority (ERA). Merredin Energy Pty Ltd. was granted a Generation Licence (Licence Number EGL25) under the *Electricity Industry Act 2004* on 22nd June 2012. Sections 13 and

14 of the Electricity Industry Act 2004 require as a condition of every licence that the licensee must, not less than once in every period of 24 months (or any longer period that the Authority allows) calculated from the grant of the licence, provide the Authority with a performance audit and an asset management system review report by an independent expert acceptable to the Authority.

Geographe Environmental Services has been approved by the Authority to undertake the works subject to development of an audit plan for the period 1st July 2014 to 30th June 2017 for a submission date of prior to the 30th September 2017 or as arranged with the Authority.

The Asset Management System Review and the Performance Audit have been conducted in order to assess the effectiveness of the Merredin Power Station Asset Management Systems and level of compliance with the conditions of its Generation Licence EGL25. Through the execution of the Audit Plan, field work, assessment and testing of the control environment, the information system, control procedures and compliance attitude, the audit team members have gained reasonable assurance that Merredin Energy Pty Ltd had an effective asset management system and has complied with its Generating Licence during the audit period 1st July 2014 to 30th June 2017. Recommendations arising from this audit and review are detailed in Table 4 and Table 12.

However, although the Asset Management System was well documented during the audit period, it is no longer relevant, as from the end of the review period (i.e. 1 July 2017) a different contractor operates and maintains the power station and will be implementing a different asset management system. This is outside the audit scope and has not been reviewed. Historic data has been transferred to the new operator. The data provided is voluminous and difficult to review and it is yet to be fully uploaded to their systems. As such, they are unfamiliar with all the details of the thousands of files provided and in some cases, it proved difficult to locate supporting evidence of performance during this audit period. Due to the change in operators and developmental stage of new systems for the new operator it is difficult to provide opportunities for improvement that are able to be implemented and that are relevant to systems and documents assessed in this audit. It is suggested the licensee uses the findings and recommendations to ensure ongoing compliance and liaises closely with the ERA using the Post Audit Implementation Plan prior to undertaking the next performance audit and asset management review.

The Licensee has implemented the majority of the recommendations of the previous audit report and the effectiveness of the actions is evident in the compliance history during the audit period (refer Table 3 and 9). As noted, it has been difficult to substantiate the implementation date due to the issues sourcing documentation. However, performance records indicate actions implemented.

The site audit was conducted on the 7th of September and this audit report is an accurate representation of the audit team's findings and opinions. The Auditors confirm that the Licensee provided full access as required by the Audit Guidelines (2014), in respect to; access to facilities and business premise, access to data, reports, minutes, documentation, correspondence and process control data. Additionally, the

Licensee ensured the appropriate personnel were available and provided information where possible as requested for external persons relevant to the audit process.

Performance Audit Summary

All licence requirements reviewed were found to be compliant during the audit.

A two-dimensional rating scale (refer Section 11.4.1 of the Audit Guidelines) was used in the Audit report to summarise the compliance rating for each licence condition. Each obligation was rated for both the adequacy of existing controls and the compliance with the relevant licence obligation.

A comprehensive report of the audit findings is included in Appendix 1.

There were Generation Licence compliance elements that were not included in the scope of this audit because they did not eventuate in this audit period or have not been established within licence EGL25. These are defined in Table 1.

The performance audit was conducted in a period over August and September and required 80 hours of Nicole Davies' time.

Table 1 Performance Audit Compliance Summary

Compliance Obligation Reference No.	Licence Reference	Audit Priority	Adequacy of Controls Rating					Compliance Rating				
			A	B	C	D	NP	1	2	3	4	NR
SECTION 8: TYPE 1 REPORTING REQUIREMENTS												
THERE ARE NO TYPE 1 REPORTING REQUIREMENTS APPLICABLE TO EGL25												
SECTION 11: ELECTRICITY INDUSTRY ACT - LICENCE CONDITIONS AND OBLIGATIONS												
101	Electricity Industry Act section 13(1) Generation Licence condition 14.1	5	A					1				
102	Electricity Industry Act, section 14(1)(a) Generation Licence condition 20.1	5	A					1				
103	Electricity Industry Act, section 14(1)(b) Generation Licence condition 20.2 & 20.3	4	A					1				
104	Electricity Industry Act, section 14(1)(c) Generation Licence, condition 20.4	5	A					1				
105	Electricity Industry Act section 17(1) Generation Licence condition 4.1	4	A					1				
106	Electricity Industry Act section 31(3) Generation Licence condition 5.1	4	A					1				
107	Electricity Industry Act section 41(6) Generation Licence condition 5.1	4					NP					NR
SECTION 12: ELECTRICITY LICENCES - LICENCE CONDITIONS AND OBLIGATIONS												
119	Electricity Industry Act section 11 Generation Licence condition 12.1	4	A					1				
120	Electricity Industry Act section 11 Generation Licence condition 13.4	5					NP					NR
121	Electricity Industry Act section 11 Generation Licence condition 14.2	4	A					1				

Compliance Obligation Reference No.	Licence Reference	Audit Priority	Adequacy of Controls Rating					Compliance Rating				
			A	B	C	D	NP	1	2	3	4	NR
122	Electricity Industry Act section 11 Generation Licence condition 20.5	4	A					1				
123	Electricity Industry Act section 11 Generation Licence condition 15.1	4					NP					NA
124	Electricity Industry Act section 11 Generation Licence condition 16.1	4	A					1				
125	Electricity Industry Act section 11 Generation Licence condition 17.1 & 17.2	4					NP					NR
126	Electricity Industry Act section 11Generation Licence condition 18.1	4	A					1				
SECTION 14: ELECTRICITY INDUSTRY METERING CODE - LICENCE CONDITIONS AND OBLIGATIONS												
324	Electricity Industry Metering Code, Cl 3.3B Generation Licence, condition 5.1	4					NP					NR
339	Generation Licence condition 5.1 Electricity Industry Metering Code Cl 3.27	4	A									NR
364	Electricity Industry Metering Code Cl 3.27 Generation Licence condition 5.1	4					NP					NR
371	Electricity Industry Metering Code Cl 4.4(1) Generation Licence condition 5.1	5	A									NR
372	Electricity Industry Metering Code Cl 4.5(1) Generation Licence condition 5.1	5					NP					NR
373	Electricity Industry Metering Code Cl 4.5(2) Generation Licence condition 5.1	4					NP					NR
388	Electricity Industry Metering Code Cl 5.4(2) Generation Licence condition 5.1	5					NP					NR
401	Electricity Industry Metering Code Cl 5.16 Generation Licence condition 5.1	4					NP					NR

Compliance Obligation Reference No.	Licence Reference	Audit Priority	Adequacy of Controls Rating					Compliance Rating				
			A	B	C	D	NP	1	2	3	4	NR
402	Electricity Industry Metering Code Cl 5.17(1) Generation Licence condition 5.1	4					NP					NR
405	Electricity Industry Metering Code clause 5.18 Generation Licence condition 5.1	4					NP					NR
406	Electricity Industry Metering Code Cl 5.19(1) Generation Licence condition 5.1	5					NP					NR
407	Electricity Industry Metering Code Cl 5.19(2) Generation Licence condition 5.1	5					NP					NR
408	Electricity Industry Metering Code Cl 5.19(3) Generation Licence condition 5.1	5					NP					NR
410	Electricity Industry Metering Code Cl 5.19(6) Generation Licence condition 5.1	5					NP					NR
416	Electricity Industry Metering Code Cl 5.21(5) Generation Licence condition 5.1	4					NP					NR
417	Electricity Industry Metering Code Cl 5.21(6) Generation Licence condition 5.1	4					NP					NR
435	Electricity Industry Metering Code Cl 5.27 Generation Licence condition 5.1	4					NP					NR
448	Electricity Industry Metering Code Cl 6.1(2) Generation Licence condition 5.1	4					NP					NR
451	Electricity Industry Metering Code Cl 7.2(1) Generation Licence condition 5.1	5	A					1				
453	Electricity Industry Metering Code Cl 7.2(4) Generation Licence condition 5.1	4					NP					NR
454	Electricity Industry Metering Code Cl 7.2(5) Generation Licence condition 5.1	4					NP					NR

Compliance Obligation Reference No.	Licence Reference	Audit Priority	Adequacy of Controls Rating					Compliance Rating				
			A	B	C	D	NP	1	2	3	4	NR
455	Electricity Industry Metering Code Cl 7.5 Generation Licence condition 5.1	4					NP					NR
456	Electricity Industry Metering Code Cl 7.6(1) Generation Licence condition 5.1	4					NP					NR
457	Electricity Industry Metering Code Cl 8.1(1) Generation Licence condition 5.1	5					NP					NR
458	Electricity Industry Metering Code Cl 8.1(2) Generation Licence condition 5.1	5					NP					NR
459	Electricity Industry Metering Code Cl 8.1(3) Generation Licence condition 5.1	5					NP					NR
460	Electricity Industry Metering Code Cl 8.1(4) Generation Licence condition 5.1	4					NP					NR
461	Electricity Industry Metering Code Cl 8.3(2) Generation Licence condition 5.1	5					NP					NR
SECTION 16: ELECTRICITY LICENCES - LICENSEE SPECIFIC CONDITIONS AND OBLIGATIONS												
THIS SECTION IS NOT APPLICABLE TO MERREDIN ENERGY PTY LTD AS THERE HAVE BEEN NO SPECIFIC CONDITIONS AND OBLIGATIONS ATTACHED TO THE GENERATION LICENCE												

1.1 Asset Management System Review Summary

The asset management system was found to be satisfactory.

As required by section 11.4.2 of the Audit and Review Guidelines – Electricity and Gas Licences (April 2014) Table 2 summarises the auditor's assessment of both the process and policy definition rating and the performance rating for each key process in the licensee's asset management system, using the scales described in Table 7 and Table 8 (refer Section 3.3 Asset Management Review Methodology). The rating was determined by the auditor's judgement based on the execution of the Audit Plan.

The process and policy and asset management system adequacy ratings are summarised below:

Table 2 Asset Management System: Effectiveness Summary

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
1. Asset planning	A	2
2. Asset creation/ acquisition	A	2
3. Asset disposal	A	Not assessed
4. Environmental analysis	A	1
5. Asset operations	A	1
6. Asset maintenance	A	1
7. Asset Management Information System	A	2
8. Risk management	A	1
9. Contingency planning	A	1
10. Financial planning	A	1
11. Capital expenditure planning	A	Not assessed
12. Review of AMS	A	1

The Audit and Review Guidelines – Electricity and Gas Licences (April 2014) require that auditors who have rated the adequacy of the process and policy definition process as C or D or the asset management performance as 3 or 4 also make recommendations to address the issue(s).

2 PERFORMANCE AUDIT

2.1 Performance Audit Scope

Follow-Up from Previous Audit Findings

This is the second audit of EGL25. The organisation has implemented the recommendations of the previous audit and as required by Section 11.3 of the Audit Guidelines (April 2014). Table 3 below details how all recommendations were resolved early in the current audit period

Table 3 Previous Audit Non-compliances and Recommendations

Table of Previous Non-Compliances & Audit Recommendations				
A Resolved before end of previous audit period				
Reference (no./year)	**(Compliance rating/ Legislative Obligation/ details of the issue)**	**Auditors' Recommendation or action taken**	**Date Resolved**	**Further action required**
Not applicable				
B Resolved during the current audit period				
Reference (no./year)	**(Compliance rating/ Legislative Obligation/ details of the issue)**	**Auditors' Recommendation or action taken**	**Date Resolved**	**Further action required**
106/2014	B2/ Electricity Industry Act section 31(3)/The operation of the Merredin Power Station is specific, it has been subject to development to fully implement remote operation and existing contingency/emergency plans need to be reviewed to confirm their suitability to the operation.	Available Contingency Plans/emergency response documentation should be reviewed and if applicable updated, to ensure that it is tailored to the operation of MEPL.	15 March 2015	The effectiveness of the review was not able to be substantiated during the audit as the previous document was not available for review. Ensure the new operator has site specific contingency and emergency response plans established. Note it stated annual reviews will be undertaken however there was no evidence of any further review other than that undertaken in 15 March 2015

C Unresolved at the end of the current audit period				
Reference (no./year)	**(Compliance rating/ Legislative Obligation/ details of the issue)**	**Auditors' Recommendation or action taken**	**Date Resolved**	**Further action required**
103/2014	B2/Electricity Industry Act section 14(1)(b)/The licensee did not advise the Authority details of the	The licensee did not advise the Authority details of the asset management system on completion of	Unresolved	Evidence of Compliance Procedure revision not able to verified during the audit.

C Unresolved at the end of the current audit period				
	asset management system on completion of construction.	construction. The compliance procedure need to be revised to ensure that details and significant changes to the asset management system are notified to the Authority.		Evidence to be provided of the asset management system revision to the ERA.

2.2 Post Audit Implementation Plan

There are no audit non-compliances identified that require the development of a post audit implementation plan. This is reflective of the assessment that the Licensee has well established processes for compliance. Recommendations made within the report are detailed below and will be reviewed and may be included as post-audit actions by the licensee to ensure compliance with requirements.

Table 4 Current audit non-compliances and recommendations

CURRENT AUDIT NON-COMPLIANCES/RECOMMENDATIONS			
A. RESOLVED DURING THE CURRENT AUDIT PERIOD			
Reference (no./year)	**Non-Compliance/Controls Improvement (Rating/ Legislative Obligation/ Details of Non-Compliance or Inadequacy of Controls)**	**Auditor's Recommendation**	**Management action taken by end of Audit period**
There are no non-compliances or recommendations raised and resolved during the audit period.			

B. UNRESOLVED AT END OF CURRENT AUDIT PERIOD			
Reference (no./year)	**Non-Compliance/Controls Improvement (Rating/ Legislative Obligation/ Details of Non-Compliance or Inadequacy of Controls)**	**Auditor's Recommendation**	**Management action taken by end of Audit period**
101/2017	**Controls Improvement** - A licensee must provide the ERA with a performance audit conducted by an independent expert acceptable to the ERA, not less than once every 24 months. A compliance schedule is required to ensure key tasks are completed.	Due to the change in operator it is recommended that there is a Compliance Schedule established to ensure ongoing compliance. Processes established to identify changes to legislation.	To be advised

B. UNRESOLVED AT END OF CURRENT AUDIT PERIOD			
Reference (no./year)	**Non-Compliance/Controls Improvement (Rating/ Legislative Obligation/ Details of Non-Compliance or Inadequacy of Controls)**	**Auditor's Recommendation**	**Management action taken by end of Audit period**
102/2017	**Controls Improvement** - A licensee must provide for an asset management system. During the development of the Asset Management System it should be reviewed against compliance requirements to ensure adequacy.	Where practical import history into a new system or implement routine maintenance tasks to OEM specifications or operational parameters. Where changes have been made i.e. Electricity Generator and Turbine frequency checks ensure condition monitoring programs are well established.	In development
103/2017	**Controls Improvement** - A licensee must notify details of the asset management system and any substantial changes to it to the ERA. Liaison with the ERA during the development of the asset management system to ensure adequacy is required.	Ensure the ERA are notified of the new asset management system and where practical import history into a new system or implement routine maintenance tasks to OEM specifications or operational parameters.	In development
104/2017	**Controls Improvement** - A licensee must provide the ERA with a report by an independent expert about the effectiveness of its asset management system every 24 months, or such longer period as determined by the ERA. A compliance schedule is required to ensure key tasks are completed.	Ensure there is a Compliance Schedule established to ensure ongoing compliance. Processes established to identify changes to legislation. As for 101/2017.	To be advised
105/2017	**Controls Improvement** - A licensee must provide the ERA with a report by an independent expert about the effectiveness of its asset management system every 24 months, or such longer period as determined by the ERA. A compliance schedule is required to ensure key tasks are completed including payment of standing charges and license fees.	Ensure payment of and scheduling of payment for licence fees is captured in compliance or accounting systems.	To be advised

B. UNRESOLVED AT END OF CURRENT AUDIT PERIOD			
Reference (no./year)	**Non-Compliance/Controls Improvement (Rating/ Legislative Obligation/ Details of Non-Compliance or Inadequacy of Controls)**	**Auditor's Recommendation**	**Management action taken by end of Audit period**
106/2017	**Controls Improvement** - A licensee must take reasonable steps to minimise the extent, or duration, of any interruption, suspension or restriction of the supply of electricity due to an accident, emergency, potential danger or other unavoidable cause. As the documentation has been transferred a risk review and update of the documents for adequacy is recommended.	Undertake risk review of operations and ensure all contingency plans and emergency response plans are site specific implemented, tested and monitored for effectiveness.	To be advised
123/2017	**Controls Improvement** - In the manner prescribed, a licensee must notify the ERA, if it is under external administration or if there is a significant change in the circumstances that the licence was granted which may affect the licensee's ability to meet its obligations. Review of legal obligations would ensure compliance with requirements.	Ensure these requirements are captured in the compliance system.	To be advised
124/2017	**Controls Improvement** - A licensee must provide the ERA, in the manner prescribed, with any information that the ERA requires in connection with its functions under the Electricity Industry Act. A compliance schedule is required to ensure key tasks are completed.	Ensure Compliance Reporting requirement is captured in the compliance system and reporting times frames are monitored by management	To be advised
339/2017	**Controls Improvement** - A Code participant who becomes aware of an outage or malfunction of a metering installation must advise the network operator as soon as practicable. To ensure the obligations can be met a procedure for checking metering calculations is recommended to be implemented from operational data.	Establish system procedures/calculations to check meter readings for validity based on operational data.	To be advised

B. UNRESOLVED AT END OF CURRENT AUDIT PERIOD			
Reference (no./year)	**Non-Compliance/Controls Improvement (Rating/ Legislative Obligation/ Details of Non-Compliance or Inadequacy of Controls)**	**Auditor's Recommendation**	**Management action taken by end of Audit period**
453/2017	**Controls Improvement** - A Code participant must notify its contact details to a network operator with whom it has entered into an access contract within 3 business days after the network operator's request. Review of legal obligations would ensure compliance with requirements	Ensure licensee has notified the ERA of updated contact details and ensure compliance requirement captured in systems.	To be advised
454/2017	**Controls Improvement** - A Code participant must notify any affected network operator of any change to the contact details it notified to the network operator at least 3 business days before the change takes effect. Review of legal obligations would ensure compliance with requirements	Ensure licensee has notified the ERA of updated contact details and ensure compliance requirement captured in systems.	To be advised

3 ASSET MANAGEMENT SYSTEM EFFECTIVENESS REVIEW

3.1 AMS Review Scope

The scope of the AMS review includes an assessment of adequacy and effectiveness of Merredin Power Station's asset management system by evaluating during the audit period 1st July 2014 to 30th June 2017 the following:

1. Asset Planning
2. Asset creation/acquisition
3. Asset disposal
4. Environmental analysis
5. Asset operations
6. Asset maintenance
7. Asset management information system
8. Risk management
9. Contingency planning
10. Financial planning
11. Capital expenditure planning
12. Review of asset management system

The review has been established as a requirement of the current Generating Licence issued by the Economic Regulation Authority to Merredin Energy Pty Ltd.

The asset management review follows the approved audit plan and uses:

- a risk based approach to auditing using the risk evaluation model set out in ISO31000:2009
- an overall effectiveness rating for an asset management process, based on a combination of the process and policy adequacy rating and the performance rating
- the format and content of the reviewer's report; and post- review plan as described in the Guidelines.

Table 5 Interviewed Personnel during the Review

Terry Robartson	Site Operator Maintainer	TW Power Services Pty Ltd
Steve Morrow	Merredin Contract Support	TW Power Services Pty Ltd
Dale Waterson	Asset Engineer	Palisade Asset Management Pty Ltd
Danny Agnoletto	Chief Financial Officer	Palisade Asset Management Pty Ltd
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd

The key documents and other information sources are detailed below and further in Appendix 2.

Table 6 Key Reference Documents

Ref #	Title
1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
2	2 Merredin Energy ETAC and amendment 16July2012.pdf
3	3 General description of Merredin Power Station.docx
4	4 MOR Operating Data - FY to June 2017.xlsx
5	5 Operation Maintenance Agreement for Merredin Power Station.pdf
6	6 Emergency Response Plan.docx
7	7 Final Merredin Energy Power Station Contingency Plans.docx
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
9	9 Procedure for Vehicle pre journey inspection.docx
10	10 Procedure.HSEQ.002 Crisis Management Preparation.docx
12	12 Procedure.Operations.007 - Emergency Response Procedure (MPEL).docx
13	13 Procedure.Operations.033 - Emergency Response Procedure - Merredin Energy Power Station.docx
14	14 Skills assessment.docx
15	15 2015 07 15 SF.docx
16	16 FW Emailing Pics of firefighting
17	17 FW Merredin - GT starter .msg
18	18 FW Merredin - GT2.msg
19	19 FW Merredin - update.msg
20	20 FW Proposed email to John Delicato.msg
21	21 Merredin - GT2 starter .msg
22	22 Merredin - GT2.msg
23	23 Merredin.msg
24	24 RE Merredin - GT2.msg
25	25 RE Merredin (1).msg
26	26 RE Merredin (2).msg
27	27 Re Merredin (3).msg
28	28 Re Merredin.msg
29	29 2014 Aug 05 - ME EGL 25 Compliance Notice.pdf
30	30 2014 Merredin Energy Compliance Report.docx
31	31 2015 Annual Compliance Report - Merredin Energy - EGL 25.pdf
32	32 2015 Compliance Letter to ERA.docx
33	33 2015 Merredin Energy Compliance Report.docx
34	34 2016 Compliance Letter to ERA.docx
35	35 2016 July 06 - Merredin Energy EGL 25 Compliance.pdf
36	36 2016 Merredin Energy Compliance Report.docx
37	37 Acknowledgement - 2015 Annual Compliance Report - Merredin Energy Pty Ltd - EGL25.msg
38	38 ERA letter 12-08-14 noting no licence contraventions during year ended 30 June 2013.pdf
39	39 Tech1 Asset Management - Strategy - v2.docx
40	40 2014 Sep 30 - Merredin Audit Report.pdf
41	41 2015 Jan 06 - Letter from ERA wrt Performance Audit and AMS Review.pdf
42	42 2015 Mar 20 - ERA letter confirming date of next Audit and Review.pdf
43	43 2015 March 18 - Merredin Energy Contingency Planning.pdf
44	44 AUDITREPORT-361002-ME PAAMSR 2014-02 - Final.pdf
45	45 ERA letter 12-08-14 Approval of Audit Plan - Performance Audit and AM Review Period 22-06-12 to 30-06-14.pdf

Ref #	Title
46	46 POST AUDIT IMPLEMENTATION PLAN-361002-ME PAudit AMSReview-2014-0B - Final.pdf
47	47 2015 Aug 31 - Dan Johnston - Start up issues on GT2 - 850183.pdf
48	48 2015 Feb 17 - GE Service Engineer Report on GT2 fail to start.pdf
49	49 2015 July 10 - GT1 emissions test - SOE MIN OO MAUNG_26 (2).pdf
50	50 2015 July 10 - GT2 emissions test - SOE MIN OO MAUNG_27 (2).pdf
51	51 2015 June 19 - Perth Energy Merredin 2015 Plant Assessment Report FINAL - Paul Gilmurray.pdf
52	52 Notes on Meeting with GE 19 May 2015 and 21 May 2015.docx
53	53 FW Merredin Energy - Consequential Outage.msg
54	54 Consequential Outage 16th September 2014.msg
56	56 Consequential Outage 21 July 2015.pdf
57	57 System Management Dispatch Advisory 11263 21 July 2015.pdf
58	58 Perth Energy GEII SA Contract 190814.pdf
59	59 2014 Apr 04 - GE proposal for Merredin ratchet control 6B CQ584419A 04 04 2014.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
61	61 2016 Feb 04 - Letter to GE.pdf
62	62 20151215 Merredin monthly MOM_rev0.pdf
63	63 GE Battery Preventative Maintenance B53_OMMM1.pdf
64	64 GE Battery System Maintenance B53_OMMM.pdf
65	65 GE MCC B51 OMMM Maintenance.pdf
66	66 GE MCC B51 OMMM1 Preventative Maintenance.pdf
67	67 GE PEECC 10 OMMM Maintenance.pdf
68	68 GE PEECC 10 OMMM1 Preventative Maintenance.pdf
69	69 GER3620M Heavy Duty Gas Turbine Operations and Maintenance.pdf
70	70 GER4217B Uprate Options for the MS6001.pdf
71	71 t1213r2.pdf
72	72 t1585r1.pdf
73	73 t1939.pdf
74	74 t1951.pdf
75	75 t1952.pdf
76	76 t1963.pdf
77	77 850181 GT1 Merredin Energy 7-23-14 GAUM0014 Report.pdf
78	78 850183 GT2 Merredin Energy 7-24-14 GAUM0013 Report.pdf
79	79 91443921 GT preservation.pdf
80	80 GEK28156_E (1) - Preservation Document.pdf
81	81 GEK28156L.pdf
82	82 img-Z12120255-0001.pdf
83	83 850181 Merredin Energy 18 Aug 2015.pdf
84	84 850183 Merredin Energy 20 Aug 2015.pdf
85	85 GT 1 - MERREDIN ENERGY.pdf
86	86 Hoperidge_Merredin Boro.pdf
87	87 MDP Borescope Inspection 2015 - Comparison.pdf
88	88 MT8961-GE EDAX Analysis of Swab Samples of Merredin Energy Power Station Gas Turbines.pdf
89	89 850181 Merredin Energy 13 Dec 2016.pdf
90	90 850183 Merredin Energy 14 Dec 2016.pdf
91	91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx
92	92 Health and Safety Procedure Master.docx
93	93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx
94	94 Procedure for Handling, Reporting and Investigating an Injury.docx

Ref #	Title
95	95 Site Induction - worker.pdf
96	96 Site Induction.pdf
97	97 Merredin - oil analysis results .msg
98	98 Minutes for ME Risk Review 19 Mar 14 (1).docx
99	99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls
100	100 ME Risk Review Minutes 15Apr15.docx
101	101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls
102	102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls
103	103 ME Risk Review Minutes 240914.docx
104	Permission to work, PTW, 23/7/14
105	Permission to work, PTW, 24/7/14
106	Permission to work, PTW, 22/8/14
107	Permission to work, PTW, 17/7/14
108	Permission to work, PTW, 15/11/14
109	Permission to work, PTW, 15/11/14
110	Permission to work, PTW, 17/11/14
111	Permission to work, PTW, 17/11/14
112	Permission to work, PTW, 18/11/14
113	Permission to work, PTW, 18/11/14
114	Permission to work, PTW, 20/11/14
115	Permission to work, PTW, 22/11/14
116	Permission to work, PTW, 22/11/14
117	Permission to work, PTW, 24/11/14
118	Permission to work, PTW, 12/1/15
119	Permission to work, PTW, 24/2/15
120	Permission to work, PTW, 29/2/15 – As dated in log
121	Permission to work, PTW, 20/4/15
122	Permission to work, PTW, 24/8/15
123	Permission to work, PTW, 2/12/15
124	Permission to work, PT, 1/3/16
125	-
126	-
127	127 CMMS ME Upload sheet.xlsx
128	128 MEH Financial Statements at 30 June 2016 v1 - Fully Signed.pdf
129	129 Merredin Work Orders FINAL.xlsx
130	130 http://palisadepartners.com.au/assets/merredin-energy/
131	131 2016 Dec Merredin Quarterly Report v1.pdf
132	132 2017 Mar Merredin Quarterly Report v2.pdf
133	133 2015 June Merredin Monthly Report v1.pdf"
134	134 2016 June Merredin Quarterly Report v2.pdf"
135	135 2017 Jun Merredin Quarterly Report v1.pdf"
136	136 MEH Financial Statements at 30 June 2015.pdf"
137	137 MEH Financial Statements at 30 June 2016.pdf"
138	138 ME Budget FY18 Budget Final.pdf"
140	140 Asset Disposal Procedure.docx
141	Change to maintenance schedule submission

The review was conducted by Power & Energy Services on behalf of Geographe Environmental Services in conjunction with the Performance Audit during August-September 2017 and included desktop review, one day's audit to execute review plan and interview sessions and report writing. In total the review required 80 hours of Simon Ashby's time.

3.2 Objective of the Asset Management System Review

The objective of the review is to examine the effectiveness of the processes used by Merredin Energy Pty Ltd to deliver asset management, the information systems supporting asset management activities and the data and knowledge used to make decisions about asset management. These elements were examined from a life cycle perspective i.e. planning, construction, operation, maintenance, renewal, replacement and disposal using the guidelines developed by the Economic Regulation Authority.

3.3 Methodology for Asset Management System Review

The audit methodology detailed in the Audit Guidelines – Electricity and Gas Licences (April 2014) was used in the execution of the Asset Management System Review and is detailed in the Audit Plan.

Asset Management System Effectiveness Rating

The Audit Guidelines – Electricity and Gas Licences (April 2014) (section 11.4.2) states that the asset management review report must provide a table that summarises the auditor's assessment of both the process and policy definition rating and the performance rating for each key process in the licensee's asset management system using the scales described in Table 7 and Table 8. It is left to the judgement of the auditor to determine the most appropriate rating for each asset management process.

Table 7 Asset Management Process and Policy Definition Adequacy Ratings

Rating	Description	Criteria
A	Adequately defined	• Processes and policies are documented. • Processes and policies adequately document the required performance of the assets. • Processes and policies are subject to regular reviews, and updated where necessary • The asset management information system(s) are adequate in relation to the assets that are being managed.
B	Requires some improvement	• Process and policy documentation requires improvement. • Processes and policies do not adequately document the required performance of the assets. • Reviews of processes and policies are not conducted regularly enough. • The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed).

Rating	Description	Criteria
C	Requires significant improvement	• Process and policy documentation is incomplete or requires significant improvement. • Processes and policies do not document the required performance of the assets. • Processes and policies are significantly out of date. • The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).
D	Inadequate	• Processes and policies are not documented. • The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed).

Table 8 Asset Management Performance Ratings

Rating	Description	Criteria
1	Performing effectively	• The performance of the process meets or exceeds the required levels of performance. • Process effectiveness is regularly assessed and corrective action taken where necessary.
2	Opportunity for improvement	• The performance of the process requires some improvement to meet the required level. • Process effectiveness reviews are not performed regularly enough. • Process improvement opportunities are not actioned.
3	Corrective action required	• The performance of the process requires significant improvement to meet the required level. • Process effectiveness reviews are performed irregularly, or not at all. • Process improvement opportunities are not actioned.
4	Serious action required	• Process is not performed, or the performance is so poor that the process is considered to be ineffective.

3.4 Deviations from the Review Plan

None.

3.5 Follow Up Review Process

This is the second Performance Audit and Asset Management Review conducted since the issue of the licence and all previous audit report findings have been reviewed as part of the content of this report. Review of actions taken in response to corrective actions and recommendations will form part of subsequent audit plans. Actions identified in this report are expected to be undertaken by the new plant operator to ensure ongoing compliance.

Follow-Up from Previous Review Findings

Due to the change in O&M Contractors and AMP these recommendations cannot be easily be addressed for the old asset management system, particularly for the date the action was resolved. This is due to the documentation being provided in an electronic and voluminous format by the previous operator to the current licensee. The auditor has made assessments as to the effectiveness of the management actions taken where documented evidence supports them. However, these items should be considered in preparation of the new AMP by the current licensee and close scrutiny applied to these recommendations in the development of the AMS.

Table 9 Ineffective components recommendations from previous Review Implementation Plan

A Resolved before the end of the previous review period.				
Reference (no. /yr)	**(Asset management effectiveness rating / AMS Component & Criteria / details of issue)**	**Auditor's recommendation or action taken**	**Date resolved**	**Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable**
10/2014	B1 / 8.1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system. While there are documentation and processes addressing risk management such as: • policies and process directives in the asset management system; • procedures for risk analysis at PE and • an acceptable process for risk analysis at MEPL which generates documented outcomes, • the MEPL risk analysis process is not fully documented.	Provide a reference to existing procedures or document the risk analysis process at MEPL.	July 2014	No.- Process established. Ref Asset Management System and Plans\2014 - July - Asset Management System - V3.docx" Risk reviews carried out regularly and minuted.

B Resolved during the current review period.				
Reference (no. /yr)	**(Asset management effectiveness rating / AMS Component & Criteria / details of issue)**	**Auditor's recommendation or action taken**	**Date resolved**	**Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable**
2/2014	B2 / 3.2 The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken. There have been failures to start-up and synchronise the GTs on start-up. The Review noted that the change in operation was noted in the monthly reports however, while the Merredin Power Station Asset Management System (MPSAMS) for 2014/2015 noted the objective of start up and running on load in accordance with maintenance instructions, the change in operation had not been sufficiently documented in the operational plans.	Following the failures to start/synchronise the GTs, the audit noted that the change in operation was noted in the monthly reports and the objective of reliable starts and running on load was noted in the MPS Asset Management System for 2014/2015. The change in operation should be further defined in operational plans.	Dec 2016	Ref 1. 2017-18 AMP.

B Resolved during the current review period.				
Reference (no. /yr)	**(Asset management effectiveness rating / AMS Component & Criteria / details of issue)**	**Auditor's recommendation or action taken**	**Date resolved**	**Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable**
3/2014	A2 / 4.4 Achievement of customer service levels. There were a number of instances when the plant was not able to achieve start up as requested by System Management as reported under EC 3.2. The issues have been corrected and operational processes changed to improve performance.	Refer to Recommendation 2.	Dec 2016 Nov 2014	Yes – Ref 1. 2017-18 AMP Installed trace heating on fuel lines Although improved GT2 still suffers starting failures. Refer this report App 2 Table 12 Criteria 1.2
4/2014	C2 / 5.3 Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data. The Asset Register is being progressively compiled and was not in full operation at the time of the review.	Complete the implementation of the Asset Register (this work is in progress).	Prior to April 2017	No – Tech1 no longer available to view but a printout indicates this is complete. Ref 127 CMMS ME Upload sheet.xlsx" Sample dated April 2017
5/2014	B1 / 6.3 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule. Maintenance plans had been prepared but not fully entered in the Asset Management System (TechOne) in the review period.	Complete the upload into the TechOne system and the documentation of the maintenance plans (this activity is in progress).	Prior to April 2017	No – Tech1 no longer available to view but a printout indicates this is complete. Ref 127 CMMS ME Upload sheet.xlsx" Sample dated April 2017
6/2014	C1 / 6.5 Risk management is applied to prioritise maintenance tasks. At present the maintenance prioritisation process on the basis of risk is reactive and the procedure has not been formalised.	Prepare a procedure or provide reference to an existing procedure for the prioritisation of maintenance tasks on the basis of risk.	April 2016	No – OEM recommendations generally followed for routine maintenance. In view of the limited operation of the plant a submission to the Board was made to extend some inspection intervals. It is not known whether these all have OEM approval. Ref 141 "Change to maintenance submission.pdf" but their "preservation" procedures were considered.

B Resolved during the current review period.				
Reference (no. /yr)	**(Asset management effectiveness rating / AMS Component & Criteria / details of issue)**	**Auditor's recommendation or action taken**	**Date resolved**	**Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable**
11/2014	B1 / 8.2 Risks are documented in a risk register and treatment plans are actioned and monitored. The MPSAMS notes that a risk register should exist, however the risk register had not been created during the review period. A risk register is not in use. One aspect of the risk analysis process that will require further improvement has to do with the registering of new risks as they arise, which may need immediate treatment and recognition by management at an early stage, this will require the use of a risk register. In addition, higher level risks resulting from external factors such as changes in market operating conditions etc are not readily captured by the asset risk matrix.,	Assess whether the risk analysis process covers sufficiently all risks and whether a risk register is required.	Sept 2014	No – Risk assessments are used including JSA and review of the risk register Ref. 101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls"
12/2014	B3 / 9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks. While the use of Perth Energy's contingency plans will be acceptable if they are appropriate to the Merredin Power Station operation, in view of the changing operation of the power station there was not sufficient evidence that appropriate documented plans have been implemented at Merredin.	Assess the suitability of existing Contingency Plans and Emergency Responses to the Merredin Power Station operation and proceed with documentation / identification of plans and testing regime.	April 2016	Yes – Completed for fire Ref. \16 FW Emailing Pics of firefighting.msg" Consider testing other contingency plans. Refer this report App 2 Table 12 Criteria 9.1
13/2014	B1 / 12.1 A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current. The AMP has been approved by the required authorities but the draft status has not been removed.	Remove draft status from the asset management plan.	N/A	No – Subsequent AMP have been finalized. Reviewed regularly

C. Unresolved at end of the current review period			
Reference (no. /yr)	**(Asset management effectiveness rating / AMS Component & Criteria / details of issue)**	**Auditor's recommendation or action taken**	**Further action required (Yes/No/Not Applicable) & Details of further action required**
1/2014	A2 / 2.4 Commissioning tests are documented and completed. Some of the Balance of Plant (BOP) commissioning test that were to be completed by the construction contractor were not signed off because of the contractor going into receivership. These tests are being re-run and documented through a warranty claim.	1/2014 Some of the Balance of Plant (BOP) commissioning tests that were to be completed by the construction contractor were not signed off because of the contractor going into receivership. These tests are being re-run and should be documented.	Yes – Unclear whether tests have been rerun. The new operator is investigating this.
7/2014	C1 / 7.2 Input controls include appropriate verification and validation of data entered into the system. While there are processes in place for verification and validation of data entered into the system the processes need to be formalised.	7/2014 Document the processes for verification and validation of data entered into the system.	Yes – Tech1 no longer available to view. Maintenance Connection Asset Management database being developed.
8/2014	B1 / 7.3 Logical security access controls appear adequate, such as passwords. There should be either a reference or more information in the AMS on the policies for computer system access.	8/2014 Provide a reference in the asset management system to existing policies or more information on computer system access policies.	Yes – Unable to confirm. Should be incorporated in new AMS
9/2014	B1 / 7.5 Data backup procedures appear adequate and backups are tested. Information on system back- ups relies on Perth Energy's systems, however there should be reference to the applicable procedures in the asset management system.	9/2014 Provide a reference in the asset management system to existing back-up policies/ procedures or more information on system back- ups.	Yes – Unable to confirm. Should be incorporated in new AMS

3.6 2017 Post Review Implementation Plan

As stipulated in section 11.8 of the Audit Guidelines – Electricity and Gas Licences (April 2014), the Audit Team notes that the Asset Management Review Post Implementation Plan does not form part of the Audit Opinion. It is the responsibility of the licensee to ensure actions are undertaken as determined by Merredin Energy Pty Ltd.

3.7 2017 Review Asset System Deficiencies/Recommendations

Table 10 Current Review Asset System Deficiencies/Recommendations.

Table of Current Review Asset System Deficiencies/Recommendations			
A. Resolved during current Review period			
Ref.	**Asset System Deficiency (Rating / Asset Management System Component & Effectiveness Criteria / Details of Asset System Deficiency)**	**Date Resolved (& management action taken)**	**Auditors comments**
None			

B. Unresolved at end of current Review period			
Ref. (no./year)	**Asset System Deficiency (Rating / Asset Management System Component & Effectiveness Criteria / Details of Asset System Deficiency)**	**Auditors' Recommendation**	**Management action taken by end of Audit period**
01/2017	A2 **Asset creation/acquisition** 2.4 Commissioning tests are documented and completed	Merredin Energy to complete the commissioning tests if the tests were not completed as per the 2014 Post Audit Implementation Plan.	The recommendation has not been addressed yet.
02/2017	A1 **Key process - Asset maintenance** 6.2 Regular inspections are undertaken of asset performance and condition	Investigate, rectify and prove GT2 poor starting issues.	This has been an ongoing issue and is continuing being investigated.
03/2017	A2 **Key process - Asset Management Information System (MIS)** 7.2 Input controls include appropriate verification and validation of data entered into the system	Consideration be given again to storing historical DCS data.	The recommendation has not been addressed yet.

B. Unresolved at end of current Review period			
Ref. (no./year)	**Asset System Deficiency (Rating / Asset Management System Component & Effectiveness Criteria / Details of Asset System Deficiency)**	**Auditors' Recommendation**	**Management action taken by end of Audit period**
04/2017	A2 **Key process - Asset Management Information System (MIS)** 7.5 Data backup procedures appear adequate and backups are tested schedule	Merredin Energy investigate and assess its data backup requirements and procedures.	The recommendation has not been addressed yet.
05/2017	A1 **Key Process - Contingency Planning** 9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks,	Undertake risk review of operations and ensure all contingency plans and emergency response plans are site specific implemented, tested and monitored for effectiveness.	The recommendation has not been addressed yet.

APPENDIX 1

MERREDIN ENERGY PTY LTD PERFORMANCE AUDIT SEPTEMBER 2017

Table 11 Performance Audit

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
SECTION 8: TYPE 1 REPORTING REQUIREMENTS							
THERE ARE NO TYPE 1 REPORTING REQUIREMENTS APPLICABLE TO EGL25							
SECTION 9: ELECTRICITY INDUSTRY CUSTOMER TRANSFER CODE - PART 3 - CUSTOMER/ CONNECTION INFORMATION/DATA							
101	Generation Licence *condition 14.1*	*Electricity Industry Act section 13(1)*	A licensee must provide the ERA with a performance audit conducted by an independent expert acceptable to the ERA, not less than once every 24 months.	5	This is the second Audit conducted by an independent expert since the licence was granted in June 2012. The requirement for the audit is monitored by the Asset Engineer. Additionally, it is raised in email communications and correspondence with the Secretariat. ▪ ERA correspondence ▪ Personnel interviewed **Recommendation** – Ensure there is a Compliance Schedule established to ensure ongoing compliance. Processes established to identify changes to legislation.	A	1

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
102	Generation Licence condition 20.1	*Electricity Industry Act, section 14(1)(a)*	A licensee must provide for an asset management system.	5	The licensee maintained an Asset Management System for the duration of the audit period which was continually monitored and updated in response to plant conditions. A detailed maintenance history is contained in TECH1 output. Condition monitoring and maintenance were verified. The system was not available for review however, printout sighted indicated compliance. **Recommendation** – Where practical import history into a new system or implement routine maintenance tasks to OEM specifications or operational parameters. Where changes have been made i.e. Electricity Generator and Turbine frequency checks ensure condition monitoring programs are well established.	A	1
103	Generation Licence condition 20.2 and 20.3	*Electricity Industry Act, section 14(1)(b)*	A licensee must notify details of the asset management system and any substantial changes to it to the ERA.	4	There have been no substantial changes to the Asset Management System which have required notification to the ERA during the audit period. A document detailing changes to the Merredin Maintenance schedule was sighted for Board Approval and detailed changes to maintenance program due to the infrequent running of the plant. It is noted that the operator changed hands and as	A	1

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
					such the next audit will require a review of this requirement. **Recommendation** – Ensure the ERA are notified of the new asset management system and where practical import history into a new system or implement routine maintenance tasks to OEM specifications or operational parameters.		
104	Generation Licence, condition 20.4	*Electricity Industry Act, section 14(1)(c)*	A licensee must provide the ERA with a report by an independent expert about the effectiveness of its asset management system every 24 months, or such longer period as determined by the ERA.	5	GES was appointed, with the Authority's approval to undertake the asset management system review for the period 1 July 2014 to 30 June 2017. The technical aspects of the review have been addressed by Power & Energy Services, as detailed in the Audit Plan and approved by the Authority. This is the second review of the asset management system in accordance with licence EGL25. The 2014 asset management system review report was provided to the Authority in September 2014 and met the requirements of the Authority. **Recommendation** – Ensure there is a Compliance Schedule established to ensure	A	1

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
					ongoing compliance. Processes established to identify changes to legislation.		
105	***Generation Licence condition 4.1***	**Electricity Industry Act section 17(1)**	A licensee must pay the prescribed licence fees to the ERA according to clauses 6, 7 and 8 of the Economic Regulation Authority (Licensing Funding) Regulations 2014.	**4**	The licence was granted on 22 June 2012 and the requirement is for the invoices to be paid by 22 July of each year. Annual Licence fees that were due to be paid within the audit period were compliant and paid in accordance with requirements as follows; - July 2014 ERA Invoice ERA100175 (Issued on 13/06/14) and Paid 11/07/14 - July 2015 ERA Invoice ERA100349 (Issued on 09/06/15) and Paid 26/06/15 - July 2016 ERA Invoice ERA100790 (Issued on 20/06/16) and Paid 15/07/16 In addition, the Standing Charge Fees, which were introduced in Quarter 1 of 2015 were paid within the 30-Day requirement of date of issue and were paid as follows during the audit period.; - ERA Q1 2015 Invoice ERA100407 (Issued on 29/06/15) and Paid 21/07/15	A	1

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
					- ERA Q2 2015 Invoice ERA100488 (issued on 26/08/15) and Paid 25/09/15 - ERA Q3 2015 Invoice ERA100588 (issued on 30/11/15) and Paid 30/12/15 - ERA Q4 Invoice ERA100651 (issued on 15/02/16) and Paid 11/03/16 - ERA Q1 2016 Invoice ERA100743 (issued on 05/05/16) and Paid 03/06/16 - ERA Q2 2016 Invoice ERA100856 (issued on 26/08/16) and Paid 19/09/16 - ERA Q3 2016 Invoice ERA100963 (issued on 30/12/16) and Paid 27/01/16 - ERA Q4 2016 Invoice ERA101040 (issued on 27/02/16) and Paid 24/03/16 - ERA Q1 2017 Invoice ERA101151 (issued on 31/05/17) and Paid 30/6/17 It is noted that all of the invoices were paid in accordance with the compliance requirements. Although in some instances payment was very close to due date. Invoices issued by the Authority Record of Payment in accounts system. Verification of receipt of payment was confirmed through		

REF*	LICENCE CONDITION	RELATED LEGISLATION	LEGISLATIVE/LICENCE REQUIREMENT	AUDIT PRIORITY	AUDITING FINDING ▪ RELATED DOCUMENTATION &/OR CONTROL SYSTEMS/AUDIT EVIDENCE → CORRECTIVE ACTION (CA) OPPORTUNITY FOR IMPROVEMENT	ADEQUACY OF CONTROLS	COMPLIANCE RATING
					discussions with the Finance Officer of the ERA as documentation not readily available due to change in operator. **Recommendation** - ensure payment of and scheduling of payment for licence fees is captured in compliance or accounting systems.		

106	Generation Licence condition 5.1	*Electricity Industry Act section 31(3)*	A licensee must take reasonable steps to minimise the extent, or duration, of any interruption, suspension or restriction of the supply of electricity due to an accident, emergency, potential danger or other unavoidable cause.	4	Through discussions with the General Manager EMR and review of the licensee's systems and documentation it is noted that there are; ▪ Risk analysis has been undertaken. ▪ Contingency planning and business continuity processes in place to manage the impact of unplanned outages and unplanned events. However, these could have been reviewed for applicability. Licensee no longer operator as such this will need to be reviewed in the next audit period. ▪ Condition monitoring systems have been implemented and were reviewed for suitability as a result of the plant being run more infrequently than planned. Board approved. ▪ Detailed schedule for planned outages, which is regularly reviewed and monitored. **Recommendation** – Undertake risk review of operations and ensure all contingency plans and emergency response plans are site specific implemented, tested and monitored for effectiveness.	A	1
107	Generation Licence condition 5.1	*Electricity Industry Act section 41(6)*	A licensee must pay the costs of taking an interest in land or an easement over land.	4	Land has been purchased by the licensee and Certificate of Title substantiates this.	NP	NR
SECTION 12: ELECTRICITY LICENCES - LICENCE CONDITIONS AND OBLIGATIONS							

119	Generation Licence condition 12.1	*Electricity Industry Act section 11*	A licensee and any related body corporate must maintain accounting records that comply with the Australian Accounting Standards Board Standards or equivalent International Accounting Standards.	4	▪ MEH Financial Statements at 30 June 2016 (Approved by Board of Directors 1/9/16) ▪ MEH Financial Statements at 30 June 2015 (Approved by Board of Directors 9/9/15) ▪ MEH Financial Statement 2014 - Not sighted The special purpose Financial Statements reviewed for 2015 & 2016 included statements of compliance with Australian Accounting Standards for the period 1 July 2014 to 30 June 2017. Based upon the reports statements the licensee was compliant with the Australian Accounting Standards Board (AASB) standards. Only the 2015 & 2016 Reports were provided for review.	A	1
120	Generation Licence condition 13.4	*Electricity Industry Act section 11*	A licensee must comply with any individual performance standards prescribed by the ERA.	4	For the period 1 July 2014 to 30 June 2017, the licensee was not prescribed individual performance standards by the Authority. As, no activity has taken place to exercise the obligation during the audit period and this requirement has not been assessed.	NP	NR
121	Generation Licence condition 14.2	*Electricity Industry Act section 11*	A licensee must comply, and require its auditor to comply, with the ERA's standard audit guidelines for a performance audit.	4	The Authority approved (ERA Approval Ref D176331) the audit and review plan which ensure that the licensee and the Auditor comply with the prescribed audit guidelines and reporting manual. The audit and review were undertaken using the framework from the Audit and Review Guidelines: Electricity and Gas Licences, April 2014.	A	1

122	Generation Licence condition 20.5	*Electricity Industry Act section 11*	A licensee must comply, and must require the licensee's expert to comply, with the relevant aspects of the ERA's standard audit guidelines for an asset management system review.	4	As above	A	1
123	Generation Licence condition 15.1	*Electricity Industry Act section 1*	In the manner prescribed, a licensee must notify the ERA, if it is under external administration or if there is a significant change in the circumstances that the licence was granted which may affect the licensee's ability to meet its obligations.	4	Under Licence clause 15.1 the licensee is required to report relevant information to the Authority in the event that it: (a) Is under external administration (b) Experiences a change in its corporate, financial or technical circumstances upon which this license was granted; and that change may materially affect the licensee's ability to perform its obligations under this license (c) Changes its name, ABN or address. Confirmed that for the period 1 July 2017 to 30 June 2017, no such changes arose. However, operation of the power station has changed as of 1 July 2017. This is outside the audit scope. **Recommendation** – Ensure these requirements are captured in the compliance system.	NP	NA
124	Generation Licence condition 16.1	*Electricity Industry Act section 11*	A licensee must provide the ERA, in the manner prescribed, with any information that the ERA requires in connection with its functions under the Electricity Industry Act.	4	Discussions with the General Manager EMR confirm that the licensee has processes in place to respond to requests for information from the Authority.	A	1

					Communication between the licensee and the Authority was sighted, such as: ▪ submission of required information and reports ▪ Monitoring compliance with the license obligations and PAIPs ▪ Developing and submitting the Annual Compliance reports to the Authority by 31 August each year The Licensee has established a compliance scheduling system within its Tech 1 system to ensure compliance with its regulatory obligations relevant to its License. Additionally, document ERA General License Compliance MEPL-00-PROC-00008 outlines requirements for annual reporting. The annual compliance reports were sighted for: ▪ 1 July 2013 to 30 June 2014 (dated 5/8/14) ▪ 1 July 2014 to 30 June 2015 (dated 15/7/15) ▪ 1 July 2015 to 30 June 2016 (dated 6/7/16) Verification of the dates received by the ERA were not able to be validated by the documents reviewed. **Recommendation** – Ensure requirement is captured in the compliance system and reporting times frames are monitored by management.		

125	Generation Licence condition 17.1 and 17.2	*Electricity Industry Act section 11*	A licensee must publish any information it is directed by the Authority to publish, within the timeframes specified.	4	Discussions with the General Manager EMR confirmed that, for the period 1 July 2014 to 30 June 2017, the Authority did not direct the licensee to publish any information with regards to its Licence. As such, no activity has taken place to exercise the obligation during the audit period and this requirement was not assessed.	NP	NR
126	Generation Licence condition 18.1	*Electricity Industry Act section 11*	Unless otherwise specified, all notices must be in writing.	4	A review of documentation and emails sighted confirmed that Merredin Energy Pty Ltd maintains records to evidence formal communications with the Authority within its Document Management System. It is noted that all responses to requests from the Authority have been made in writing, unless otherwise requested. During the audit period 1 July 2014 to 30 June 2017 there were no formal requests made from the Authority to Licensee.	A	1
SECTION 14: ELECTRICITY INDUSTRY METERING CODE - LICENCE CONDITIONS AND OBLIGATIONS							
324	Generation Licence, condition 5.1	*Electricity Industry Metering Code, clause 3.3B*	If a user is aware of bi-directional electricity flows at a metering point that was not previously subject to bi-directional flows or any changes in a customer's or user's circumstances in a metering point that will result in bi-directional flows, the user must notify the network operator within 2 business days.	4	**NOTE 1**: The Licensee has no meters and Western Power owns the meters at its Merredin Energy Terminal substation and is responsible for their quality control. The General Manager confirmed that during the period 1 July 2014 to 30 June 2017, no metering installations were commissioned which are subject to bi-directional electricity flows. As such, no activity has taken place to exercise the obligation	NP	NR

					during the audit period and this requirement cannot be assessed. Bi-directional flow only occurs for the power station minor house load when units are not operating. This process has been established since commissioning and as such is not applicable as it was previously subject to bi-directional flows.		
339	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 3.11(3)*	A Code participant who becomes aware of an outage or malfunction of a metering installation must advise the network operator as soon as practicable.	4	Refer to note 1 in item 324 The network operator is responsible for metering installations and manages all aspects of the metering services. A verification check is undertaken by the Licensee using production control systems to confirm data provided by the Network Operator. The General Manager EMR confirmed that during the period 1 July 2014 to 30 June 2017, no metering installation malfunctions were identified. **Recommendation** – establish system procedures/calculations to check meter readings for validity based on operational data.	A	NR
364	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 3.27*	A person must not install a metering installation on a network unless the person is the network operator or a registered metering installation provider for the network operator doing the type of work authorised by its registration.	4	Refer to note 1 in item 324 The Licensee is not responsible for installing and managing all metering installations on the site. Additionally, the Licensee has not installed any metering installations on the network. The Network Operator has independent access to metering installations. Discussions with the General Manager EMR also confirmed no	NP	NR

					installation of meters. As such, no activity has taken place to exercise the obligation during the audit period and its requirement cannot be assessed.		
371	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 4.4(1)*	If there is a discrepancy between energy data held in a metering installation and in the metering database, the affected Code participants and the network operator must liaise to determine the most appropriate way to resolve the discrepancy.	5	Refer to note 1 in item 324 General Manager EMR confirmed that during the audit period they were not aware of any discrepancy between energy data held in a metering installation and data held in the metering database. It is noted that although the metering database is not the Licensees responsibility they perform meter check calculations subject to error acceptance in order to confirm charges and balance production data. No discrepancies were identified during the audit period.	A	NR
372	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 4.5(1)*	A Code participant must not knowingly permit the registry to be materially inaccurate.	5	Refer to note 1 in item 324 Merredin Energy Pty Ltd does not maintain any standing data or energy data in relation to the metering installations captured under the Metering Code. These activities are managed by the Network Operator and are outside the control of the Licensee. As the Network operator maintains sole responsibility for the management of standing data within the registry and/or metering database, these obligations are not relevant to the Licensee's operations for the period 1 July 2014 to 30 June 2017.	NP	NR

373	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 4.5(2)*	If a Code participant (other than a network operator) becomes aware of a change to or an inaccuracy in an item of standing data in the registry, then it must notify the network operator and provide details of the change or inaccuracy within the timeframes prescribed.	4	Refer to note 1 in item 324 As Above.	NP	NR
388	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.4(2)*	A user must, when reasonably requested by a network operator, use reasonable endeavours to assist the network operator to comply with the network operator's obligation.	5	Refer to note 1 in item 324 The network operator has not requested the assistance of Merredin Energy Pty Ltd with respect to their metering installation during the audit period.	NP	NR
401	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.16*	A user that collects or receives energy data from a metering installation must provide the network operator with the energy data (in accordance with the communication rules) within the timeframes prescribed.	4	Refer to note 1 in item 324 The network operator collects the energy data. This requirement is not applicable to the Licensee.	NP	NR
402	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.17(1)*	A user must provide standing data and validated (and where necessary substituted or estimated) energy data to the user's customer, to which that information relates, where the user is required by an enactment or an agreement to do so for billing purposes or for the purpose of providing metering services to the customer.	4	Refer to note 1 in item 324 As previously detailed, there are no meters maintained by the Licensee to collect information or data from billing. The Network Operator is responsible for metering installations.	NP	NR
405	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.18*	A user that collects or receives information regarding a change in the energisation status of a metering point must provide the network operator with the prescribed	4	Refer to note 1 in item 324	NP	NR

			information, including the stated attributes, within the timeframes prescribed		The network operator has access to their own metering installation. This obligation is not applicable to the Licensee.		
406	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.19(1)*	A user must, when requested by the network operator acting in accordance with good electricity industry practice, use reasonable endeavours to collect information from customers, if any, that assists the network operator in meeting its obligations described in the Code and elsewhere.	5	Refer to note 1 in item 324 Discussions with the General Manager EMR confirm that there have been no requests during the audit period to collect information from customers.	NP	NR
407	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.19(2)*	A user must, to the extent that it is able, collect and maintain a record of the address, site and customer attributes, prescribed in relation to the site of each connection point, with which the user is associated	5	Refer to note 1 in item 324 The connection point is with the network operator and there are no meters from which to obtain such data.	NP	NR
408	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.19(3)*	A user must, after becoming aware of any change in a site's prescribed attributes, notify the network operator of the change within the timeframes prescribed.	4	Refer to note 1 in item 324 There is only one connection point with the Network Operator and there have been no changes in attributes during the audit period.	NP	NR
410	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.19(6)*	A user must use reasonable endeavours to ensure that it does not notify the network operator of a change in an attribute that results from the provision of standing data by the network operator to the user.	5	Refer to note 1 in item 324 During the audit period there has been no provision of standing data by the network operator to the user that resulted in the user notifying the network operator of a change in attributes.	NP	NR

416	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.21(5)*	A Code participant must not request a test or audit unless the Code participant is a user and the test or audit relates to a time or times at which the user was the current user or the Code participant is the IMO.	4	Refer to note 1 in item 324 No tests have been requested during the audit period, 1 July 2014 to 30 June 2017.	NP	NR
417	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.21(6)*	A Code participant must not make a test or audit request that is inconsistent with any access arrangement or agreement.	4	Refer to note 1 in item 324 As above	NP	NR
435	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 5.27*	Upon request, a current user must provide the network operator with customer attribute information that it reasonably believes are missing or incorrect within the timeframes prescribed.	4	Refer to note 1 in item 324 The network operator did not make any requests for customer attributes information during the audit period	NP	NR
448	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 6.1(2)*	A user must, in relation to a network on which it has an access contract, comply with the rules, procedures, agreements and criteria prescribed.	4	Refer to note 1 in item 324 Discussions with the General Manager EMR confirm that there have been no breaches of the rules, procedures, agreements and criteria during the audit period.	NP	NR
451	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 7.2(1)*	Code participants must use reasonable endeavours to ensure that they can send and receive a notice by post, facsimile and electronic communication and must notify the network operator of a telephone number for voice communication in connection with the Code.	5	Refer to note 1 in item 324 The Merredin Energy Pty Ltd site has well established communication processes such as a main telephone line & facsimile, mobile telephone coverage, remote system monitoring and wireless	A	1

					internet access. During the audit period, there have been no communication issues arising.		
453	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 7.2(4)*	A Code participant must notify its contact details to a network operator with whom it has entered into an access contract within 3 business days after the network operator's request.	4	Refer to note 1 in item 324 During the period 1 July 2014 to 30 June 2017, the network operator did not request the licensee to provide its contact details. There have been no changes made to Licensee's contact details. **Recommendation** - Ensure licensee has notified the ERA of updated contact details and ensure compliance requirement captured in systems.	NP	NR
454	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 7.2(5)*	A Code participant must notify any affected network operator of any change to the contact details it notified to the network operator at least 3 business days before the change takes effect.	4	Refer to note 1 in item 324 There has been no change in contact details during the audit period. **Recommendation** - Ensure licensee has notified the ERA of updated contact details and ensure compliance requirement captured in systems.	NP	NR
455	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 7.5*	A Code participant must not disclose, or permit the disclosure of, confidential information provided to it under or in connection with the Code and may only use or reproduce confidential information for the purpose for which it was disclosed or another purpose contemplated by the Code.	4	Refer to note 1 in item 324 During the period 1 July 2014 to 30 June 2017, the Licensee was not required to disclose or permit the disclosure of confidential information in connection to the Code.	NP	NR

456	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 7.6(1)*	A Code participant must disclose or permit the disclosure of confidential information that is required to be disclosed by the Code.	4	Refer to note 1 in item 324 As above	NP	NR
457	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 8.1(1)*	Representatives of disputing parties must meet within 5 business days after a notice given by a disputing party to the other disputing parties and attempt to resolve the dispute under or in connection with the Electricity Industry Metering Code by negotiations in good faith	5	Refer to note 1 in item 324 Under the Metering Code, 'disputes' refers to metering disputes between Merredin Energy Pty Ltd as a generator, a Code Participant, another generator, the network operator, a user or the IMO. No disputes have arisen between Merredin Energy Pty Ltd and the network operator or the IMO/AEMO, during the period 1 July 2014 to 30 June 2017.	NP	NR
458	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 8.1(2)*	If a dispute is not resolved within 10 business days after the dispute is referred to representative negotiations, the disputing parties must refer the dispute to a senior management officer of each disputing party who must meet and attempt to resolve the dispute by negotiations in good faith.	5	Refer to note 1 in item 324 As above	NP	NR
459	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 8.1(3)*	If the dispute is not resolved within 10 business days after the dispute is referred to senior management negotiations, the disputing parties must refer the dispute to the senior executive officer of each disputing party who must meet and attempt to resolve the dispute by negotiations in good faith.	5	Refer to note 1 in item 324 As above	NP	NR

460	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 8.1(4)*	If the dispute is resolved by representative negotiations, senior management negotiations or CEO negotiations, the disputing parties must prepare a written and signed record of the resolution and adhere to the resolution.	4	Refer to note 1 in item 324 As above	NP	NR
461	Generation Licence, condition 5.1	*Electricity Industry Metering Code clause 8.3(2)*	The disputing parties must at all times conduct themselves in a manner which is directed towards achieving the objective of dispute resolution with as little formality and technicality and with as much expedition as the requirements of Part 8 of the Code and a proper hearing and determination of the dispute permit.	5	Refer to note 1 in item 324 As above	NP	NR
SECTION 16: ELECTRICITY LICENCES - LICENSEE SPECIFIC CONDITIONS AND OBLIGATIONS							
THIS SECTION IS NOT APPLICABLE TO MERREDIN ENERGY PTY LTD AS THERE HAVE BEEN NO SPECIFIC CONDITIONS AND OBLIGATIONS ATTACHED TO THE GENERATION LICENCE							

Note:
NP - not possible to provide a compliance rating because no activity has taken place to exercise the obligation during the audit period
NA - Not applicable to audit period and as such not assessed.

APPENDIX 2

MERREDIN ENERGY PTY LTD

ASSET MANAGEMENT REVIEW SEPTEMBER 2017

Introduction

The nature of a reserve capacity power station such as Merredin is that they do not run often but require high reliability when called upon. As such there is limited data available to confirm the adequacy of existing operational controls. During the reporting period the power station has not been called upon to supply power to the SWIS apart from for testing purposes[1]. The times that the power station has operated connected to the grid and loaded have been mainly for the bi-annual capacity tests and the annual emissions tests. Starts are forecast at around 40 per year and as such two combustion inspections and no hot gas path inspections are forecast in the lifetime of the plant.

Operations are sound; focusing mainly on starting reliability with regular testing of fuel oil and demineralised water, trace heating fuel oil, start system trials to low speed and full speed no load, (FSNL) and barring as recommended by the OEMs.

Table 12 Effectiveness Criteria Descriptors

1	**Key Process - Asset Planning** *Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).*	**Outcome** *Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised.*
1.1	Asset management plan covers key requirements	
1.2	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	
1.3	Service levels are defined	
1.4	Non-asset options (e.g. demand management) are considered	
1.5	Lifecycle costs of owning and operating assets are assessed	
1.6	Funding options are evaluated	
1.7	Costs are justified and cost drivers identified	
1.8	Likelihood and consequences of asset failure are predicted	
1.9	Plans are regularly reviewed and updated	
2	**Key Process - Asset creation/acquisition** *Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.*	**Outcome** *A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.*
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	
2.2	Evaluations include all life-cycle costs	
2.3	Projects reflect sound engineering and business decisions	
2.4	Commissioning tests are documented and completed	
2.5	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	

[1] GT1 and GT2 run logs since first fire.

3	**Key process - Asset disposal** *Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms*	**Outcome** *Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.*
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process	
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	
3.3	Disposal alternatives are evaluated	
3.4	There is a replacement strategy for assets	

4	**Key Process - Environmental analysis** *Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.*	**Outcome** *The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.*
4.1	Opportunities and threats in the system environment are assessed	
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	
4.3	Compliance with statutory and regulatory requirements	
4.4	Achievement of customer service levels	
5	**Key Process - Asset operations** *Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.*	**Outcome** *Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.*
5.1	Operational policies and procedures are documented and linked to service levels required	
5.2	Risk management is applied to prioritise operations tasks	
5.3	Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	
5.4	Operational costs are measured and monitored	
5.5	Staff resources are adequate and staff receive training commensurate with their responsibilities	
6	**Key process - Asset maintenance** *Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.*	**Outcome** *Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.*
6.1	Maintenance policies and procedures are documented and linked to service levels required	
6.2	Regular inspections are undertaken of asset performance and condition	
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary	
6.5	Risk management is applied to prioritise maintenance tasks	
6.6	Maintenance costs are measured and monitored	
7	**Key process - Asset Management Information System (MIS)** *An asset management information system is a combination of processes, data and software that support the asset management functions.*	**Outcome -** *The asset management information system provides authorised, complete and accurate information for the day-to-date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.*
7.1	Adequate system documentation for users and IT operators	
7.2	Input controls include appropriate verification and validation of data entered into the system	
7.3	Logical security access controls appear adequate, such as passwords	
7.4	Physical security access controls appear adequate	
7.5	Data backup procedures appear adequate	
7.6	Key computations related to licensee performance reporting are materially accurate	

7.7	Management reports appear adequate for the licensee to monitor licence obligations	
8	**Key Process - Risk Management** *Risk management involves the identification of risks and their management within an acceptable level of risk.*	**Outcome** *An effective risk management framework is applied to manage risks related to the maintenance of service standards*
8.1	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	
8.2	Risks are documented in a risk register and treatment plans are actioned and monitored	
8.3	The probability and consequences of asset failure are regularly assessed	
9	**Key Process - Contingency Planning** *Contingency plans document the steps to deal with the unexpected failure of an asset.*	**Outcome-** *Contingency plans have been developed and tested to minimise any significant disruptions to service standards.*
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	
10	**Key Process - Financial Planning** *The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term.*	**Outcome** *A financial plan that is reliable and provides for long-term financial viability of services*
10.1	The financial plan states the financial objectives and strategies and actions to achieve the objectives	
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs	
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	
10.4	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	
10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	
10.6	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	

11	**Key Process - Capital Expenditure Planning** *The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years.* *Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer.* *Projections over the next five years would usually be based on firm estimates.*	**Outcome -** *A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.*
11.1	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	
11.2	The plan provides reasons for capital expenditure and timing of expenditure	
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	
11.4	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	
12	**Key Process - Review of AMS** *The asset management system is regularly reviewed and updated*	**Outcome** *Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.*
12.1	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system	

Table 13 Audit Review Ratings and Recommendations

1.	**Key Process - Asset Planning** *Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).* **Outcome** *Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **2**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
2	2 Merredin Energy ETAC and amendment 16July2012.pdf
3	3 General description of Merredin Power Station.docx
4	4 MOR Operating Data - FY to June 2017.xlsx
5	5 Operation Maintenance Agreement for Merredin Power Station.pdf
6	6 Emergency Response Plan.docx
7	7 Final Merredin Energy Power Station Contingency Plans.docx
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
39	39 Tech1 Asset Management - Strategy - v2.docx
49	49 2015 July 10 - GT1 emissions test - SOE MIN OO MAUNG_26 (2).pdf
50	50 2015 July 10 - GT2 emissions test - SOE MIN OO MAUNG_27 (2).pdf
53	53 FW Merredin Energy - Consequential Outage.msg
54	54 Consequential Outage 16th September 2014.msg
56	56 Consequential Outage 21 July 2015.pdf
57	57 System Management Dispatch Advisory 11263 21 July 2015.pdf
58	58 Perth Energy GEII SA Contract 190814.pdf
58	58 Perth Energy GEII SA Contract 190814.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
98	98 Minutes for ME Risk Review 19 Mar 14 (1).docx
99	99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls
100	100 ME Risk Review Minutes 15Apr15.docx
101	101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls
102	102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls
103	103 ME Risk Review Minutes 240914.docx
130	http://palisadepartners.com.au/assets/merredin-energy/

	133	133 2015 June Merredin Monthly Report v1.pdf"
	134	134 2016 June Merredin Quarterly Report v2.pdf"
	135	135 2017 Jun Merredin Quarterly Report v1.pdf"
	136	136 MEH Financial Statements at 30 June 2015.pdf"
	137	137 MEH Financial Statements at 30 June 2016.pdf"
	138	138 ME Budget FY18 Budget Final.pdf"
	141	141 Change to maintenance schedule submission

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
1.1 Asset management plan covers key requirements	1, 3, 5, 40, 133, 134, 135, 136	The plant is for reserve capacity and is rarely called upon. The AMP aims to ensure availability and reliability in starting and supplying power and covers key requirements.	C	1	LOW	S	5	A	1
1.2 Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	1, 2, 3, 5, 6, 7, 8	The nature of reserve capacity means that the asset gets little use and the original design was fit for purpose and requires little development. There is provision for expansion but it is unlikely that this will be taken up in present market conditions. Starting problems have been addressed but there are still some concerns in this area as the infrequent starts means they aren't fully tested.	C	2	MEDIUM	S	4	A	2
1.3 Service levels are defined	1, 2, 3, 5, 50, 51, 54, 55, 56, 57, 58, 60	System Management and the supply contracts define service levels.	C	2	MEDIUM	S	4	A	1
1.4 Non-asset options (e.g. demand management) are considered	1, 2, 3, 5, 58, 60	DM is not applicable as the power station is near the last resort.	C	1	LOW	Not Assessed	5	A	Not Assessed
1.5 Lifecycle costs of owning and operating assets are assessed	1, 138	Life cycle costing was employed for the original development. GT service contract budgeted for. No evidence to substantiate this being applied to other capital works was presented	C	2	MEDIUM	S	4	A	2
1.6	1, 130	Currently negotiating re-financing	C	2	MEDIUM	S	4	A	1

Funding options are evaluated									
1.7 Costs are justified and cost drivers identified	1, 5	Procurement process requires several quotes or tender for larger contracts. No evidence to substantiate this was presented, as no major capital upgrades were undertaken during the reporting period.	C	2	MEDIUM	S	4	A	2
1.8 Likelihood and consequences of asset failure are predicted	1, 6, 7, 8, 98, 99, 100, 101, 102, 103	With new plant asset failure is rare. Duplicate GTs within a single facility provide some reserve. Stock of spares held and ME participate in a network of users of similar GTs. DCS and BoP have high levels of redundancy.	C	2	MEDIUM	S	4	A	1
1.9 Plans are regularly reviewed and updated	1, 4, 8, 98, 99, 100, 101, 102, 103, 141	The AMP is continually monitored and updated annually. Maintenance history retained in TECH1 output.	C	1	LOW	S	5	A	1

Comments & Recommendations
Capacity factor of reserve capacity plant is very low and thus wear and tear is low. The design is proven, based on other plant, and the main asset planning process is complete. Routine inspections and OEM's "preservation" advice is followed and the maintenance schedule was revised in April 2016.

2.	**Key Process - Asset creation/acquisition** *Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.* **Outcome** *A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **2**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

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3 3 General description of Merredin Power Station.docx
5 5 Operation Maintenance Agreement for Merredin Power Station.pdf
8 8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
15 15 2015 07 15 SF.docx
17 17 FW Merredin - GT starter .msg
18 18 FW Merredin - GT2.msg
19 19 FW Merredin - update.msg
20 20 FW Proposed email to John Delicato.msg
21 21 Merredin - GT2 starter .msg
22 22 Merredin - GT2.msg
23 23 Merredin.msg
24 24 RE Merredin - GT2.msg
25 25 RE Merredin (1).msg
26 26 RE Merredin (2).msg
27 27 Re Merredin (3).msg
28 28 Re Merredin.msg
29 29 2014 Aug 05 - ME EGL 25 Compliance Notice.pdf
30 30 2014 Merredin Energy Compliance Report.docx
31 31 2015 Annual Compliance Report - Merredin Energy - EGL 25.pdf
32 32 2015 Compliance Letter to ERA.docx
33 33 2015 Merredin Energy Compliance Report.docx
34 34 2016 Compliance Letter to ERA.docx
35 35 2016 July 06 - Merredin Energy EGL 25 Compliance.pdf
36 36 2016 Merredin Energy Compliance Report.docx
37 37 Acknowledgement - 2015 Annual Compliance Report - Merredin Energy Pty Ltd - EGL25.msg
38 38 ERA letter 12-08-14 noting no licence contraventions during year ended 30 June 2013.pdf

	40 40 2014 Sep 30 - Merredin Audit Report.pdf 41 41 2015 Jan 06 - Letter from ERA wrt Performance Audit and AMS Review.pdf 42 42 2015 Mar 20 - ERA letter confirming date of next Audit and Review.pdf 43 43 2015 March 18 - Merredin Energy Contingency Planning.pdf 44 44 AUDITREPORT-361002-ME PAAMSR 2014-02 - Final.pdf 45 45 ERA letter 12-08-14 Approval of Audit Plan - Performance Audit and AM Review Period 22-06-12 to 30-06-14.pdf 46 46 POST AUDIT IMPLEMENTATION PLAN-361002-ME PAudit AMSReview-2014-0B - Final.pdf 49 49 2015 July 10 - GT1 emissions test - SOE MIN OO MAUNG_26 (2).pdf 50 50 2015 July 10 - GT2 emissions test - SOE MIN OO MAUNG_27 (2).pdf 51 51 2015 June 19 - Perth Energy Merredin 2015 Plant Assessment Report FINAL - Paul Gilmurray.pdf 52 52 Notes on Meeting with GE 19 May 2015 and 21 May 2015.docx 53 53 FW Merredin Energy - Consequential Outage.msg 54 54 Consequential Outage 16th September 2014.msg 56 56 Consequential Outage 21 July 2015.pdf 57 57 System Management Dispatch Advisory 11263 21 July 2015.pdf 58 58 Perth Energy GEII SA Contract 190814.pdf 59 59 2014 Apr 04 - GE proposal for Merredin ratchet control 6B CQ584419A 04 04 2014.pdf 60 60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf 61 61 2016 Feb 04 - Letter to GE.pdf 62 62 20151215 Merredin monthly MOM_rev0.pdf 71 71 t1213r2.pdf 72 72 t1585r1.pdf 73 73 t1939.pdf 74 74 t1951.pdf 75 75 t1952.pdf 76 76 t1963.pdf 91 91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx 92 92 Health and Safety Procedure Master.docx 93 93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx 94 94 Procedure for Handling, Reporting and Investigating an Injury.docx 95 95 Site Induction - worker.pdf

	96	96 Site Induction.pdf
	133	133 2015 June Merredin Monthly Report v1.pdf"
	134	134 2016 June Merredin Quarterly Report v2.pdf"
	135	135 2017 Jun Merredin Quarterly Report v1.pdf"

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
2.1 Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	1, 3, 8, 133, 134, 135	Data historian was evaluated but not found economic so final execution was cancelled by the Board.	C	2	MEDIUM	S	4	A	1
2.2 Evaluations include all life-cycle costs	1, 133, 134, 135	Life–cycle costs are evaluated as part of the asset acquisition process and the maintenance management process. No evidence to substantiate this being applied to other capital works was presented	C	1	LOW	S	5	A	2
2.3 Projects reflect sound engineering and business decisions	1, 2, 3, 5, 8, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 52, 53, 58, 59, 60, 61, 62, 71, 72, 73, 74, 75, 76	The OEM and/or other reputable suppliers are normally involved with engineering decisions and implementation.	C	2	MEDIUM	S	4	A	1
2.4 Commissioning tests are documented and completed	1, 52	Capacity tests are carried twice a year to meet System Management requirements. No evidence of commissioning tests to substantiate this were presented. It is still not clear whether some original commissioning tests have been completed as per the previous audit recommendations.	C	2	MEDIUM	S	4	A	Not assessed
2.5 Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	1, 2, 3, 5, 8, 15, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46,	Regulatory reporting and testing requirement are incorporated in TECH1 and reported in the quarterly reports.	C	2	MEDIUM	S	4	A	1

	47, 50, 51, 54, 55, 56, 57, 91, 92, 93, 94, 95, 96								

Comments & Recommendations
Merredin Energy to complete the commissioning tests if the tests were not completed as per the 2014 Post Audit Implementation Plan

3.	**Key process - Asset disposal** *Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms* **Outcome** *Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **Not assessed**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1 1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
17 17 FW Merredin - GT starter .msg
18 18 FW Merredin - GT2.msg
19 19 FW Merredin - update.msg
20 20 FW Proposed email to John Delicato.msg
21 21 Merredin - GT2 starter .msg
22 22 Merredin - GT2.msg
23 23 Merredin.msg
24 24 RE Merredin - GT2.msg
25 25 RE Merredin (1).msg
26 26 RE Merredin (2).msg
27 27 Re Merredin (3).msg
28 28 Re Merredin.msg
51 51 2015 June 19 - Perth Energy Merredin 2015 Plant Assessment Report FINAL - Paul Gilmurray.pdf
52 52 Notes on Meeting with GE 19 May 2015 and 21 May 2015.docx
140 140 Asset Disposal Procedure.docx"

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
3. 1 Under-utilised and under-performing assets are identified as part of a regular systematic review process	1, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 52, 53	Reserve capacity plant inherently has a low capacity factor. Fuel oil pre-heating and compressor poor performance were identified and upgraded.	C	1	LOW	S	5	A	1
3.2 The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	1, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 52, 53	Internal expertise, OEM suppliers and consultants are used for root cause analysis and corrective action.	C	2	MEDIUM	S	4	A	1
3.3 Disposal alternatives are evaluated	1, 140	Not applicable at this stage. A broad disposal policy is documented.	C	1	LOW	Not assessed	5	Not assessed	
3.4 There is a replacement strategy for assets	1,	A stocked of vulnerable spares is held; Frame 6 users forum and OEM provide back up.	C	2	MEDIUM	M	4	A	1

Comments & Recommendations
With new, reliable plant operating on a minimal capacity factor there has been no requirement for asset disposal this early in the project.

4.	**Key Process - Environmental analysis** *Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.* **Outcome** *The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

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Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

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2	2 Merredin Energy ETAC and amendment 16July2012.pdf
3	3 General description of Merredin Power Station.docx
4	4 MOR Operating Data - FY to June 2017.xlsx
4	4 MOR Operating Data - FY to June 2017.xlsx
5	5 Operation Maintenance Agreement for Merredin Power Station.pdf
5	5 Operation Maintenance Agreement for Merredin Power Station.pdf
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
15	15 2015 07 15 SF.docx
17	17 FW Merredin - GT starter .msg
18	18 FW Merredin - GT2.msg
19	19 FW Merredin - update.msg
20	20 FW Proposed email to John Delicato.msg
21	21 Merredin - GT2 starter .msg
22	22 Merredin - GT2.msg
23	23 Merredin.msg
24	24 RE Merredin - GT2.msg
25	25 RE Merredin (1).msg
26	26 RE Merredin (2).msg
28	28 Re Merredin.msg
29	29 2014 Aug 05 - ME EGL 25 Compliance Notice.pdf
30	30 2014 Merredin Energy Compliance Report.docx
31	31 2015 Annual Compliance Report - Merredin Energy - EGL 25.pdf
32	32 2015 Compliance Letter to ERA.docx
33	33 2015 Merredin Energy Compliance Report.docx
34	34 2016 Compliance Letter to ERA.docx
35	35 2016 July 06 - Merredin Energy EGL 25 Compliance.pdf
36	36 2016 Merredin Energy Compliance Report.docx
37	37 Acknowledgement - 2015 Annual Compliance Report - Merredin Energy Pty Ltd - EGL25.msg

	38 38 ERA letter 12-08-14 noting no licence contraventions during year ended 30 June 2013.pdf 40 40 2014 Sep 30 - Merredin Audit Report.pdf 41 41 2015 Jan 06 - Letter from ERA wrt Performance Audit and AMS Review.pdf 42 42 2015 Mar 20 - ERA letter confirming date of next Audit and Review.pdf 43 43 2015 March 18 - Merredin Energy Contingency Planning.pdf 44 44 AUDITREPORT-361002-ME PAAMSR 2014-02 - Final.pdf 45 45 ERA letter 12-08-14 Approval of Audit Plan - Performance Audit and AM Review Period 22-06-12 to 30-06-14.pdf 46 46 POST AUDIT IMPLEMENTATION PLAN-361002-ME PAudit AMSReview-2014-0B - Final.pdf 46 46 POST AUDIT IMPLEMENTATION PLAN-361002-ME PAudit AMSReview-2014-0B - Final.pdf 49 49 2015 July 10 - GT1 emissions test - SOE MIN OO MAUNG_26 (2).pdf 50 50 2015 July 10 - GT2 emissions test - SOE MIN OO MAUNG_27 (2).pdf 53 53 FW Merredin Energy - Consequential Outage.msg 54 54 Consequential Outage 16th September 2014.msg 56 56 Consequential Outage 21 July 2015.pdf 57 57 System Management Dispatch Advisory 11263 21 July 2015.pdf 91 91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx 92 92 Health and Safety Procedure Master.docx 93 93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx 94 94 Procedure for Handling, Reporting and Investigating an Injury.docx 95 95 Site Induction - worker.pdf 96 96 Site Induction.pdf 98 98 Minutes for ME Risk Review 19 Mar 14 (1).docx 99 99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls 100 100 ME Risk Review Minutes 15Apr15.docx 101 101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls 102 102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls 103 103 ME Risk Review Minutes 240914.docx 133 133 2015 June Merredin Monthly Report v1.pdf" 134 134 2016 June Merredin Quarterly Report v2.pdf" 135 135 2017 Jun Merredin Quarterly Report v1.pdf"

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
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4.1 Opportunities and threats in the system environment are assessed	1, 3, 8, 133, 134, 135	High operating cost of a diesel fuelled GT results in few opportunities for trading. Carbon Tax was responded to but had little impact. Overcapacity of the WEM reduces opportunities for generation.	B	2	MEDIUM	S	4	A	1
4.2 Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	1, 3, 4, 5, 133, 134, 135	Performance standards are achieved and included in quarterly reports. As the reserve capacity was never called upon during the review period this cannot be assessed. Availability, forced outage rate and engine start reliability have improved throughout the review period although GT2 still has a lower start reliability. Capacity tests have been successful.	B	2	MEDIUM	S	4	A	2
4.3 Compliance with statutory and regulatory requirements	1, 2, 4, 5, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 54,	Customer service levels are documented in the quarterly reports. Reserve capacity was never called upon but availability has been >94% since initial bedding down issues were resolved.	C	2	MEDIUM	S	4	A	1

Criteria Effectiveness			Post Review Audit Priority						
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	55, 56, 57, 98, 99, 100, 101, 102, 103								
4.4 Achievement of customer service levels	1, 2, 4, 5, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 54, 55, 56, 57, 98, 99, 100, 101, 102, 103	Customer service levels are documented in the quarterly reports. Reserve capacity was never called upon but availability has been >94% since initial bedding down issues were resolved.	C	2	MEDIUM	S	4	A	1

Comments & Recommendations

5.	**Key Process - Asset operations** *Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.* **Outcome** *Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

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4 4 MOR Operating Data - FY to June 2017.xlsx
5 5 Operation Maintenance Agreement for Merredin Power Station.pdf
8 8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
9 9 Procedure for Vehicle pre journey inspection.docx
10 10 Procedure.HSEQ.002 Crisis Management Preparation.docx
12 12 Procedure.Operations.007 - Emergency Response Procedure (MPEL).docx
13 13 Procedure.Operations.033 - Emergency Response Procedure - Merredin Energy Power Station.docx
14 14 Skills assessment.docx
15 15 2015 07 15 SF.docx
39 39 Tech1 Asset Management - Strategy - v2.docx
59 59 2014 Apr 04 - GE proposal for Merredin ratchet control 6B CQ584419A 04 04 2014.pdf
62 62 20151215 Merredin monthly MOM_rev0.pdf
63 63 GE Battery Preventative Maintenance B53_OMMM1.pdf
64 64 GE Battery System Maintenance B53_OMMM.pdf
65 65 GE MCC B51 OMMM Maintenance.pdf
66 66 GE MCC B51 OMMM1 Preventative Maintenance.pdf
67 67 GE PEECC 10 OMMM Maintenance.pdf
68 68 GE PEECC 10 OMMM1 Preventative Maintenance.pdf
69 69 GER3620M Heavy Duty Gas Turbine Operations and Maintenance.pdf
70 70 GER4217B Uprate Options for the MS6001.pdf
71 71 t1213r2.pdf
72 72 t1585r1.pdf
73 73 t1939.pdf
74 74 t1951.pdf
75 75 t1952.pdf
76 76 t1963.pdf

	77 77 850181 GT1 Merredin Energy 7-23-14 GAUM0014 Report.pdf 78 78 850183 GT2 Merredin Energy 7-24-14 GAUM0013 Report.pdf 79 79 91443921 GT preservation.pdf 80 80 GEK28156_E (1) - Preservation Document.pdf 81 81 GEK28156L.pdf 91 91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx 92 92 Health and Safety Procedure Master.docx 93 93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx 94 94 Procedure for Handling, Reporting and Investigating an Injury.docx 95 95 Site Induction - worker.pdf 96 96 Site Induction.pdf 97 97 Merredin - oil analysis results .msg 98 98 Minutes for ME Risk Review 19 Mar 14 (1).docx 99 99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls 100 100 ME Risk Review Minutes 15Apr15.docx 101 101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls 102 102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls 103 103 ME Risk Review Minutes 240914.docx 104 Permission to work, PTW 105 Permission to work, PTW 106 Permission to work, PTW 107 Permission to work, PTW 108 Permission to work, PTW 109 Permission to work, PTW 110 Permission to work, PTW 111 Permission to work, PTW 112 Permission to work, PTW 113 Permission to work, PTW 114 Permission to work, PTW 115 Permission to work, PTW 116 Permission to work, PTW 117 Permission to work, PTW 118 Permission to work, PTW 119 Permission to work, PTW 120 Permission to work, PTW 121 Permission to work, PTW

	122 Permission to work, PTW 123 Permission to work, PTW 124 Permission to work, PTW 125 Permission to work, PTW 126 Permission to work, PTW 127 CMMS ME Upload sheet.xlsx 129 Merredin Work Orders FINAL.xlsx 131 131 2016 Dec Merredin Quarterly Report v1.pdf 132 132 2017 Mar Merredin Quarterly Report v2.pdf 133 133 2015 June Merredin Monthly Report v1.pdf" 134 134 2016 June Merredin Quarterly Report v2.pdf" 135 135 2017 Jun Merredin Quarterly Report v1.pdf" 136 136 MEH Financial Statements at 30 June 2015.pdf" 137 137 MEH Financial Statements at 30 June 2016.pdf" 138 138 ME Budget FY18 Budget Final.pdf"

Criteria Effectiveness			Post Review Audit Priority						
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			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
5.1 Operational policies and procedures are documented and linked to service levels required	1, 4, 5, 9, 10, 12, 13, 14, 15, 40, 59, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 91, 92, 93, 94, 95, 96, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126	Operations are largely automated with System Management remotely starting the units. Procedures are documented but many are still "in review". The new AMP will supersede these.	C	2	MEDIUM	S	4	A	1
5.2 Risk management is applied to prioritise operations tasks	1, 8, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126	Maintenance work is programmed through TECH1 based on historical performance, OEM recommendations and condition monitoring. OEM manufacturers and GT users Group provide regular updates on similar GT's performance. Trading is risk based and regularly reviewed but generally the high operating costs of liquid fuelled generation make it uncompetitive.	C	2	MEDIUM	S	5	A	1
5.3 Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	1, 3, 40, 97, 127, 129, 131, 132, 133, 134, 135, 136, 137, 138.	TECH1 has records of asset maintenance from when the plant was built. New assets are added to TECH1. No new assets are anticipated, server replacements have been budgeted, and depreciation is applied to existing assets.	C	2	MEDIUM	S	4	A	1

Criteria Effectiveness			Post Review Audit Priority						
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5.4 Operational costs are measured and monitored	1, 3, 4, 40	Operational costs and revenue are included in the Quarterly Reports and mainly consist of preventive maintenance, compliance and overheads.	C	2	MEDIUM	S	4	A	1
5.5 Staff resources are adequate and staff receive training commensurate with their responsibilities	1, 8, 14, 133, 134, 135	Training is reported in the quarterly Reports. Operators have responded knowledgably and safely when required. Training is reported in quarterly reports. Staffing levels are adequate considering the level of automation, at times of potential demand staff are on standby in Perth.	C	2	MEDIUM	S	4	A	1

Comments & Recommendations

6.	**Key process - Asset maintenance** *Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.* **Outcome** *Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

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23	23 Merredin.msg
24	24 RE Merredin - GT2.msg
25	25 RE Merredin (1).msg
26	26 RE Merredin (2).msg
27	27 Re Merredin (3).msg
28	28 Re Merredin.msg
39	39 Tech1 Asset Management - Strategy - v2.docx
47	47 2015 Aug 31 - Dan Johnston - Start up issues on GT2 - 850183.pdf
48	48 2015 Feb 17 - GE Service Engineer Report on GT2 fail to start.pdf
51	51 2015 June 19 - Perth Energy Merredin 2015 Plant Assessment Report FINAL - Paul Gilmurray.pdf
52	52 Notes on Meeting with GE 19 May 2015 and 21 May 2015.docx
58	58 Perth Energy GEII SA Contract 190814.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
62	62 20151215 Merredin monthly MOM_rev0.pdf

	83	83 850181 Merredin Energy 18 Aug 2015.pdf
	84	84 850183 Merredin Energy 20 Aug 2015.pdf
	85	85 GT 1 - MERREDIN ENERGY.pdf
	86	86 Hoperidge_Merredin Boro.pdf
	87	87 MDP Borescope Inspection 2015 - Comparison.pdf
	88	88 MT8961-GE EDAX Analysis of Swab Samples of Merredin Energy Power Station Gas Turbines.pdf
	89	89 850181 Merredin Energy 13 Dec 2016.pdf
	90	90 850183 Merredin Energy 14 Dec 2016.pdf
	97	97 Merredin - oil analysis results .msg
	98	98 Minutes for ME Risk Review 19 Mar 14 (1).docx
	99	99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls
	100	100 ME Risk Review Minutes 15Apr15.docx
	101	101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls
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	104	Permission to work, PTW
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	107	Permission to work, PTW
	108	Permission to work, PTW
	109	Permission to work, PTW
	110	Permission to work, PTW
	111	Permission to work, PTW
	112	Permission to work, PTW
	113	Permission to work, PTW
	114	Permission to work, PTW
	115	Permission to work, PTW
	116	Permission to work, PTW
	117	Permission to work, PTW
	118	Permission to work, PTW
	119	Permission to work, PTW
	120	Permission to work, PTW
	121	Permission to work, PTW
	122	Permission to work, PTW
	123	Permission to work, PTW
	124	Permission to work, PTW
	125	Permission to work, PTW
	126	Permission to work, PTW

	133 133 2015 June Merredin Monthly Report v1.pdf" 134 134 2016 June Merredin Quarterly Report v2.pdf" 135 135 2017 Jun Merredin Quarterly Report v1.pdf" 141 141 Change to maintenance schedule submission

Criteria Effectiveness			**Post Review Audit Priority**						
	Evidence Ref#	**Performance**	**Likelihood**	**Consequence**	**Inherent Risk rating**	**Adequacy of existing controls**	**Review priority**	**Adequacy Rating**	**Performance Rating**
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
6.1 Maintenance policies and procedures are documented and linked to service levels required	1, 3, 5, 9, 10, 12, 13, 58, 60	Maintenance plans, policy and procedures are and are based on OEM recommendations, historical records and condition monitoring. The low capacity factor of reserve capacity plant means that number of starts are often the dominating consideration.	C	2	MEDIUM	S	4	A	1
6.2 Regular inspections are undertaken of asset performance and condition	1, 4, 5, 40, 52, 53, 58, 60, 97, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126	The GE Mk6 DCS monitors online the GT and compressor plant. Borescope inspections have been carried out. Balance of plant is regularly inspected with thermograph, vibration etc. and visual inspections. GT2 still has unreliable starting.	C	2	MEDIUM	S	4	A	1
6.3 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	1, 5, 6, 7, 58, 60, 62, 98, 99, 100, 101, 102, 103	Maintenance of the plant is planned and reported in the Quarterly Reports. No combustion inspections or hot path inspections are currently anticipated in the life of the plant. Work orders are monitored in TECH1 and reported.	C	2	MEDIUM	S	4	A	1
6.4 Failures are analysed and operational/maintenance plans adjusted where necessary	1, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 48, 49, 52, 53, 58, 60, 62, 83, 84, 85, 86, 87, 88, 89, 90	Failures are analysed and responded to and reported in the quarterly reports. Expert advice is called on as required. Maintenance and/or operational plans are modified as required.	C	2	MEDIUM	S	4	A	1
6.5 Risk management is applied to prioritise maintenance tasks	1, 8, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 52, 58, 60, 97, 98, 99, 100, 101, 102, 103, 104,	The limited operation of the plant allows for most maintenance to be planned. Starting issues have been responded to promptly.	C	2	MEDIUM	S	4	A	1

	105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 141	Day to day maintenance tasks are programmed and monitored via TECH1. Maintenance intervals extended in light of limited plant operation taking into account the OEM's "preservation" recommendations. It is not known whether the OEM has endorsed these changes.							
6.6 Maintenance costs are measured and monitored	1, 5, 40, 129	Maintenance costs for materials and contractors are monitored in TECH1 and reported in quarterly reports.	C	2	MEDIUM	S	4	A	1

Comments & Recommendations
The low capacity factor of reserve capacity plant means most maintenance can be planned and carried out without being under pressure. Investigate, rectify and prove GT2 poor starting issues.

7.	**Key process - Asset Management Information System (MIS)** *An asset management information system is a combination of processes, data and software that support the asset management functions.* **Outcome** *The asset management information system provides authorised, complete and accurate information for the day-to-date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **2**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
6	6 Emergency Response Plan.docx
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
9	9 Procedure for Vehicle pre journey inspection.docx
29	29 2014 Aug 05 - ME EGL 25 Compliance Notice.pdf
30	30 2014 Merredin Energy Compliance Report.docx
31	31 2015 Annual Compliance Report - Merredin Energy - EGL 25.pdf
32	32 2015 Compliance Letter to ERA.docx
33	33 2015 Merredin Energy Compliance Report.docx
34	34 2016 Compliance Letter to ERA.docx
35	35 2016 July 06 - Merredin Energy EGL 25 Compliance.pdf
36	36 2016 Merredin Energy Compliance Report.docx
37	37 Acknowledgement - 2015 Annual Compliance Report - Merredin Energy Pty Ltd - EGL25.msg
38	38 ERA letter 12-08-14 noting no licence contraventions during year ended 30 June 2013.pdf
39	39 Tech1 Asset Management - Strategy - v2.docx
91	91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx
92	92 Health and Safety Procedure Master.docx
93	93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx
94	94 Procedure for Handling, Reporting and Investigating an Injury.docx
95	95 Site Induction - worker.pdf
96	96 Site Induction.pdf

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
7.1 Adequate system documentation for users and IT operators	1	The GE Controls Mk6 DCS and Tech1 are reputable proprietary software packages with OEM support. GE support contract is in place.	C	2	MEDIUM	S	4	A	1
7.2 Input controls include appropriate verification and validation of data entered into the system	1, 6, 9, 40	Data is collected by the DCS and reported. Availability is broadcast to System Management via the DCS. No historian is installed.	C	2	MEDIUM	S	4	A	2
7.3 Logical security access controls appear adequate, such as passwords	1	Computer access is limited to staff and passwords are in place. Similarly access to the DCS and its data acquisition system is also controlled to ensure validity of data entry. Firewalls and virus protection are in place.	C	2	MEDIUM	S	4	A	1
7.4 Physical security access controls appear adequate	1	The power station is located well out of town adjacent to Western Power's Merredin Terminal Substation. The compound is fenced and gates and doors kept locked.	C	2	MEDIUM	S	4	A	1
7.5 Data backup procedures appear adequate and backups are tested	1	Limited information presented to assess performance.	C	2	MEDIUM	S	4	A	2
7.6 Key computations related to licensee performance reporting are materially accurate	1	Monitoring of availability to AEMO is via the DCS. Electrical energy transfer between ME and the SWIS is with Western Power calibrated duplicate metering.	C	2	MEDIUM	S	4	A	1

7.7 Management reports appear adequate for the licensee to monitor licence obligations	1, 8, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 91, 92, 93, 94, 95, 96	Regulatory reporting is initiated in TECH1 and the DCS and was carried out in a timely manner during the reporting period.	C	2	MEDIUM	S	4	A	1

Comments & Recommendations
Consideration be given again to storing historical DCS data. Merredin Energy investigate and assess its data backup requirements and procedures.

8.	**Key Process - Risk Management** *Risk management involves the identification of risks and their management within an acceptable level of risk.* **Outcome** *An effective risk management framework is applied to manage risks related to the maintenance of service standards*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
6	6 Emergency Response Plan.docx
7	7 Final Merredin Energy Power Station Contingency Plans.docx
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
9	9 Procedure for Vehicle pre journey inspection.docx
10	10 Procedure.HSEQ.002 Crisis Management Preparation.docx
12	12 Procedure.Operations.007 - Emergency Response Procedure (MPEL).docx
13	13 Procedure.Operations.033 - Emergency Response Procedure - Merredin Energy Power Station.docx
16	16 FW Emailing Pics of firefighting
17	17 FW Merredin - GT starter .msg
18	18 FW Merredin - GT2.msg
19	19 FW Merredin - update.msg
20	20 FW Proposed email to John Delicato.msg
21	21 Merredin - GT2 starter .msg
22	22 Merredin - GT2.msg
23	23 Merredin.msg
24	24 RE Merredin - GT2.msg
25	25 RE Merredin (1).msg
26	26 RE Merredin (2).msg
27	27 Re Merredin (3).msg
28	28 Re Merredin.msg
58	58 Perth Energy GEII SA Contract 190814.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
91	91 Health and Safety Procedure - Workplace Inspections and Hazard Reporting.docx
92	92 Health and Safety Procedure Master.docx
93	93 MPS Enclosed Space Entry Permit 90 MEPL-00-PRMT-ESE-0001 (Rev 0)01Oct2012.xlsx
94	94 Procedure for Handling, Reporting and Investigating an Injury.docx
95	95 Site Induction - worker.pdf
96	96 Site Induction.pdf
98	98 Minutes for ME Risk Review 19 Mar 14 (1).docx

	99 99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls 100 100 ME Risk Review Minutes 15Apr15.docx 101 101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls 102 102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls 103 103 ME Risk Review Minutes 240914.docx 104 Permission to work, PTW, 23/7/14 105 Permission to work, PTW, 24/7/14 106 Permission to work, PTW, 22/8/14 107 Permission to work, PTW, 17/7/14 108 Permission to work, PTW, 15/11/14 109 Permission to work, PTW, 15/11/14 110 Permission to work, PTW, 17/11/14 111 Permission to work, PTW, 17/11/14 112 Permission to work, PTW, 18/11/14 113 Permission to work, PTW, 18/11/14 114 Permission to work, PTW, 20/11/14 115 Permission to work, PTW, 22/11/14 116 Permission to work, PTW, 22/11/14 117 Permission to work, PTW, 24/11/14 118 Permission to work, PTW, 12/1/15 119 Permission to work, PTW, 25/2/15 120 Permission to work, PTW, 29/2/15 121 Permission to work, PTW, 20/4/15 122 Permission to work, PTW, 24/8/15 123 Permission to work, PTW, 2/12/15 124 Permission to work, PTW, 1/3/16

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
8.1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	1, 6, 7, 8, 9, 10, 12, 13, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 58, 60, 91, 92, 93, 94, 95, 96, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124	Risk management is integral with the management and safety policies. Contingency planning, service contract with GE and the GT users forum reduce risks Duplication of GTs within one facility reduces risk.	B	2	MEDIUM	S	4	A	1
8.2 Risks are documented in a risk register and treatment plans are actioned and monitored	1, 6, 7, 8, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124	A risk register is kept and maintained with annual reviews and 6 monthly review of “Action” items.	C	2	MEDIUM	S	4	A	1
8.3 The probability and consequences of asset failure are regularly assessed	1, 8, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 98, 99, 100, 101, 102, 103	The probability and consequences of asset failure are reviewed regularly.	B	2	MEDIUM	S	4	A	1

Comments & Recommendations

9.	**Key Process - Contingency Planning** *Contingency plans document the steps to deal with the unexpected failure of an asset.* **Outcome-** *Contingency plans have been developed and tested to minimise any significant disruptions to service standards.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
6	6 Emergency Response Plan.docx
7	7 Final Merredin Energy Power Station Contingency Plans.docx
8	8 Merredin Energy Power Station - OHS Risks Hazards Inspection Report.pdf
10	10 Procedure.HSEQ.002 Crisis Management Preparation.docx
12	12 Procedure.Operations.007 - Emergency Response Procedure (MPEL).docx
13	13 Procedure.Operations.033 - Emergency Response Procedure - Merredin Energy Power Station.docx
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19	19 FW Merredin - update.msg
20	20 FW Proposed email to John Delicato.msg
21	21 Merredin - GT2 starter .msg
22	22 Merredin - GT2.msg
23	23 Merredin.msg
24	24 RE Merredin - GT2.msg
25	25 RE Merredin (1).msg
26	26 RE Merredin (2).msg
27	27 Re Merredin (3).msg
28	28 Re Merredin.msg
43	43 2015 March 18 - Merredin Energy Contingency Planning.pdf
58	58 Perth Energy GEII SA Contract 190814.pdf
60	60 2014 Aug 19 - Revised Perth Energy GEII SA Contract 190814.pdf
98	98 Minutes for ME Risk Review 19 Mar 14 (1).docx
99	99 MERREDIN-RISK ANALYSIS-07 190314 (1).xls
100	100 ME Risk Review Minutes 15Apr15.docx
101	101 MERREDIN-RISK ANALYSIS-08 240914 (1).xls
102	102 Copy of MERREDIN-RISK ANALYSIS-09 150415 (1).xls
103	103 ME Risk Review Minutes 240914.docx

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	1, 6, 7, 8, 10, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 44, 58, 60, 98, 99, 100, 101, 102, 103	The contingency plan has been reviewed and marked as updated. Not clear what changes made as previous document unavailable. Discussions and practice held with the fire services, including access and sharing evap pond water and procedures tested. Similar testing of other contingency plans is recommended. CO^2 deluge for GTs, "safe" gas suppression in the switchroom. Site is mainly unattended. Duplication of most critical BOP items and triple DCS. Insured for loss of production	C	3	HIGH	S	4	A	1

Comments & Recommendations
Undertake risk review of operations and ensure all contingency plans and emergency response plans are site specific implemented, tested and monitored for effectiveness.

10.	**Key Process - Financial Planning** *The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term.* **Outcome** *A financial plan that is reliable and provides for long-term financial viability of services*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management Pty Ltd
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS
Danny Agnoletto	Chief Financial Officer	Palisade Asset Management Pty Ltd

Relevant documentation:

1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
131	131 2016 Dec Merredin Quarterly Report v1.pdf
132	132 2017 Mar Merredin Quarterly Report v2.pdf
133	133 2015 June Merredin Monthly Report v1.pdf"
134	134 2016 June Merredin Quarterly Report v2.pdf"
135	135 2017 Jun Merredin Quarterly Report v1.pdf"
136	136 MEH Financial Statements at 30 June 2015.pdf"
137	137 MEH Financial Statements at 30 June 2016.pdf"
138	138 ME Budget FY18 Budget Final.pdf"

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
10.1 The financial plan states the financial objectives and strategies and actions to achieve the objectives	131, 132, 133, 134, 135, 136, 137, 138	Budget prepared annually with a forward budget based on 5 years as basis. Reserve capacity payments, set by AEMO, are the main source of revenue.	C	2	MEDIUM	S	4	A	1
10.2 The financial plan identifies the source of funds for capital expenditure and recurrent cost	137	Currently negotiating new financing prior to the expiration of existing.	C	2	MEDIUM	S	4	A	1
10.3 The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	131, 132, 133, 134, 135, 136, 137, 138	Financials are reported in Monthly Reports with operating costs, P&L and Balance actuals compared against budgeted. Any variances are investigated.	C	2	MEDIUM	S	4	A	1
10.4 The financial plan provides firm predictions on income for the next five years and reasonable	131, 132, 133, 134, 135, 136, 137, 138	Budget prepared annually with a forward budget based on 5 years as basis. Revenue based on reserve capacity rate set by AEMO. Financing is the largest cost.	C	2	MEDIUM	S	4	A	1

indicative predictions beyond this period									
10.5 The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	131, 132, 133, 134, 135, 136, 137, 138	O&M, admin and overheads are incorporated in the plan together with some forecast capital expenditure.	C	2	MEDIUM	S	4	A	1
10.6 Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	131, 132, 133, 134, 135, 136, 137, 138	Financials are reported in Quarterly Reports with operating costs, P&L and Balance actuals compared against budgeted. Any variances are investigated.	C	2	MEDIUM	S	4	A	1
Comments & Recommendations									

11.	**Key Process - Capital Expenditure Planning** *The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years.* *Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer.* *Projections over the next five years would usually be based on firm estimates.* **Outcome -** *A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **Not assessed**

Interviewees:		
Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS
Danny Agnoletto	Chief Financial Officer	Palisade Asset Management Pty Ltd

Relevant documentation:	
1	1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx
128	*128 MEH Financial Statements at 30 June 2016 v1 - Fully Signed.pdf*
131	131 2016 Dec Merredin Quarterly Report v1.pdf
132	132 2017 Mar Merredin Quarterly Report v2.pdf
133	133 2015 June Merredin Monthly Report v1.pdf"
134	134 2016 June Merredin Quarterly Report v2.pdf"
135	135 2017 Jun Merredin Quarterly Report v1.pdf"
136	136 MEH Financial Statements at 30 June 2015.pdf"
137	137 MEH Financial Statements at 30 June 2016.pdf"
138	138 ME Budget FY18 Budget Final.pdf"

Criteria Effectiveness			Post Review Audit Priority						
	Evidence Ref#	Performance	Likelihood	Consequence	Inherent Risk rating	Adequacy of existing controls	Review priority	Adequacy Rating	Performance Rating
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
11.1 There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates		Planned works mentioned in quarterly reports but no execution plans provided during the reporting period seen.	C	2	MEDIUM	S	4	A	Not assessed
11.2 The plan provide reasons for capital expenditure and timing of expenditure		No evidence to substantiate this being applied to other capital works was presented.	C	2	MEDIUM	S	4	A	Not assessed
11.3 The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan		Low capacity factor means little capital expenditure is anticipated in the next five years	C	2	MEDIUM	S	4	A	1
11.4 There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned		Quarterly reports report capital projects	C	1	LOW	S	5	A	1

Comments & Recommendations
No documentation was provided showing the execution of a capital project during the reporting period.

12.	**Key Process - Review of AMS** *The asset management system is regularly reviewed and updated* **Outcome** *Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.*	**Asset management process and policy definition adequacy rating** **A**	**Asset management performance rating** **1**

Interviewees:

Dale Waterson	Asset Engineer	Palisade Asset Management
Patrick Peake	General Manager EMR	Perth Energy Pty Ltd
Terry Robartson	Site Operator Maintainer	TWPS

Relevant documentation:

1 1 2014/15, 2015/16, 2016/17, 2017-18 Asset Management Plans.docx

Criteria Effectiveness			**Post Review Audit Priority**						
	Evidence Ref#	**Performance**	**Likelihood**	**Consequence**	**Inherent Risk rating**	**Adequacy of existing controls**	**Review priority**	**Adequacy rating**	**Performance Rating**
			A=likely B=probable C=unlikely	1=minor 2=moderate 3=major	L=low M=medium H=high	S=strong M=moderate W=weak			
12.1 A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current		AMP were revised each year.	C	2	MEDIUM	S	4	A	1
12.2 Independent reviews (eg internal audit) are performed of the asset management system		ERA requires AMS review as part of the licensing renewal. Insurance external audits/reviews have been conducted Annually. Internal reviews are carried out. Insurers review the installation	C	2	MEDIUM	S	4	A	1

Comments & Recommendations

APPENDIX 3

AUDIT PLAN ASSET REVIEW PRIORITIES

Table 14 Effectiveness Criteria Pre-audit Review

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
1	**Asset Planning**	Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).					0	0	0	7	2	0
1.1		Asset management plan covers key requirements	2	C	MEDIUM	M				4		
1.2		Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	2	C	MEDIUM	M				4		
1.3		Service levels are defined	2	C	MEDIUM	M				4		
1.4		Non-asset options (eg demand management) are considered	1	C	LOW	M					5	
1.5		Lifecycle costs of owning and operating assets are assessed	2	C	MEDIUM	M				4		
1.6		Funding options are evaluated	2	C	MEDIUM	M				4		
1.7		Costs are justified and cost drivers identified	2	B	MEDIUM	M				4		
1.8		Likelihood and consequences of asset failure are predicted	2	C	MEDIUM	M				4		
1.9		Plans are regularly reviewed and updated	1	B	LOW	M					5	
2	**Asset creation/acquisition**	Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.					0	0	0	4	1	0
2.1		Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	2	C	MEDIUM	M				4		

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
2.2		Evaluations include all life-cycle costs	1	C	LOW	M					5	
2.3		Projects reflect sound engineering and business decisions	2	C	MEDIUM	M				4		
2.4		Commissioning tests are documented and completed	2	C	MEDIUM	M				4		
2.5		Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	2	C	MEDIUM	M				4		
3	**Asset disposal**	Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms					0	0	0	3	1	0
3.1		Under-utilised and under-performing assets are identified as part of a regular systematic review process	2	C	MEDIUM	M				4		
3.2		The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	2	C	MEDIUM	M				4		
3.3		Disposal alternatives are evaluated	1	C	LOW	M					5	
3.4		There is a replacement strategy for assets	2	C	MEDIUM	M				4		
4	**Environmental analysis**	Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.					0	0	0	3	1	0
4.1		Opportunities and threats in the system environment are assessed	1	C	LOW	M					5	
4.2		Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved	2	C	MEDIUM	M				4		
4.3		Compliance with statutory and regulatory requirements	2	C	MEDIUM	M				4		

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
4.4		Achievement of customer service levels	2	C	MEDIUM	M				4		
5	**Asset operations**	Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.					0	0	0	3	2	0
5.1		Operational policies and procedures are documented and linked to service levels required	1	C	LOW	M					5	
5.2		Risk management is applied to prioritise operations tasks	1	C	LOW	M					5	
5.3		Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	2	C	MEDIUM	M				4		
5.4		Operational costs are measured and monitored	2	C	MEDIUM	M				4		
5.5		Staff resources are adequate and staff receive training commensurate with their responsibilities	2	C	MEDIUM	M				4		
6	**Asset maintenance**	Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.					0	0	0	6	0	0
6.1		Maintenance policies and procedures are documented and linked to service levels required	2	B	MEDIUM	M				4		
6.2		Regular inspections are undertaken of asset performance and condition	2	B	MEDIUM	M				4		
6.3		Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	2	C	MEDIUM	M				4		
6.4		Failures are analysed and operational/maintenance plans adjusted where necessary	2	C	MEDIUM	M				4		
6.5		Risk management is applied to prioritise maintenance tasks	2	C	MEDIUM	M				4		

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
6.6		Maintenance costs are measured and monitored	2	C	MEDIUM	M				4		
7	**Asset Management Information System**	An asset management information system is a combination of processes, data and software that support the asset management functions.					0	0	0	5	2	0
7.1		Adequate system documentation for users and IT operators	2	B	MEDIUM	M				4		
7.2		Input controls include appropriate verification and validation of data entered into the system	1	B	LOW	M					5	
7.3		Logical security access controls appear adequate, such as passwords	2	C	MEDIUM	M				4		
7.4		Physical security access controls appear adequate	2	B	MEDIUM	M				4		
7.5		Data backup procedures appear adequate and backups are tested	2	C	MEDIUM	M				4		
7.6		Key computations related to licensee performance reporting are materially accurate	2	B	MEDIUM	M				4		
7.7		Management reports appear adequate for the licensee to monitor licence obligations	1	C	LOW	M					5	
8	**Risk Management**	Risk management involves the identification of risks and their management within an acceptable level of risk.					0	0	0	3	0	0
8.1		Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	2	B	MEDIUM	M				4		
8.2		Risks are documented in a risk register and treatment plans are actioned and monitored	2	C	MEDIUM	M				4		
8.3		The probability and consequences of asset failure are regularly assessed	2	B	MEDIUM	M				4		

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
9	**Contingency Planning**	Contingency plans document the steps to deal with the unexpected failure of an asset.					0	0	0	1	0	0
9.1		Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	2	C	MEDIUM	M				4		
10	**Financial Planning**	The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term.					0	0	0	0	6	0
10.1		The financial plan states the financial objectives and strategies and actions to achieve the objectives	1	C	LOW	M					5	
10.2		The financial plan identifies the source of funds for capital expenditure and recurrent costs	1	C	LOW	M					5	
10.3		The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	1	C	LOW	M					5	
10.4		The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	1	C	LOW	M					5	
10.5		The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	1	B	LOW	M					5	
10.6		Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	1	C	LOW	M					5	

Ref	Asset management system component	Details/Requirements	Consequence 1=minor, 2=moderate, 3=major	Risk Likelihood A=likely, B=probable, C=unlikely	Inherent Risk low, medium, high	Adequacy of existing controls S=strong, M=moderate, W=weak			Review Priority			
							1	2	3	4	5	N/A
11	**Capital Expenditure Planning**	The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next five years would usually be based on firm estimates					0	0	0	0	4	0
11.1		There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	1	C	LOW	M					5	
11.2		The plan provides reasons for capital expenditure and timing of expenditure	1	C	LOW	M					5	
11.3		The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	1	C	LOW	M					5	
11.4		There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	1	C	LOW	M					5	
12	**Review of AMS**	The asset management system is regularly reviewed and updated.					0	0	0	2	0	0
12.1		A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	2	C	MEDIUM	M				4		
12.2		Independent reviews (e.g. internal audit) are performed of the asset management system	2	B	MEDIUM	M				4		
	TOTAL OF EACH PRIORITY						0	0	0	37	19	0