

# **Electricity Generation and Retail Corporation trading as Synergy**

**Electricity Generation Licence  
(EGL7)**

**2017 Asset Management System  
Review**

**Report**

May 2017

Mr Simon Thackray  
Manager Regulation and Compliance  
Electricity Generation and Retail Corporation trading as Synergy  
Forrest Centre, 219 St Georges Terrace  
Perth WA 6000

16 May 2017

Dear Simon


**Electricity Generation and Retail Corporation T/A Synergy (Synergy) Electricity Generation Licence No. 7 (EGL7) – 2017 Asset Management System (AMS) review report**

We have completed the Electricity Generation Licence Asset Management System review for Synergy for the period 1 April 2013 to 31 October 2016 and are pleased to submit our report to you.

I confirm that this report is an accurate presentation of the findings and conclusions from our review procedures.

If you have any questions or wish to discuss anything raised in the report, please contact Andrew Baldwin on 0414 924 346 or me on 0411 603 644.

Yours sincerely



**Richard Thomas**  
Partner  
Deloitte Risk Advisory Pty Ltd

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# 1 Independent Reviewer's report

With the approval of the Economic Regulation Authority (the **ERA**), the Electricity Generation and Retail Corporation T/A Synergy (**Synergy**) engaged Deloitte Risk Advisory Pty Ltd (**Deloitte**) to conduct a review of the effectiveness of Synergy's asset management system (**AMS**) relating to its Electricity Generation Licence No. 7 (EGL7) (the **Licence**) for the period 1 April 2013 to 31 October 2016 (**review period**).

Deloitte conducted the review as a limited assurance engagement in accordance with the specific requirements of the Licence and the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* issued by the ERA (**Guidelines**).

## **Synergy's responsibility for maintaining an effective asset management system**

Synergy is responsible for establishing and maintaining an effective asset management system for the assets subject to the Licence as measured by the effectiveness criteria in the Guidelines. This responsibility includes implementing and maintaining policies, procedures and controls, which are designed to provide for an effective asset management system for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines.

## **Deloitte's responsibility**

Our responsibility is to express a conclusion, based on our procedures, on the effectiveness of Synergy's asset management system for assets subject to the Licence. The limited assurance engagement has been conducted in accordance with the Guidelines and the Australian Standard on Assurance Engagements (**ASAE**) 3500 Performance Engagements issued by the Australian Auditing and Assurance Standards Board, in order to state whether, in all material respects, based on the work performed, anything has come to our attention to indicate that Synergy had not established and maintained an effective asset management system for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and in operation during the review period.

ASAE 3500 also requires us to comply with the relevant ethical requirements of the Australian professional accounting bodies.

Our procedures consisted primarily of:

- Utilising the Guidelines as a guide for development of a risk assessment, which involved discussions with key staff and review of documents to perform a preliminary controls assessment
- Development of a Review Plan for approval by the ERA and an associated work program
- Interviews with and representations from relevant Synergy staff to gain an understanding of the development and maintenance of policies and procedural type documentation
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Synergy's asset management system requirements and standards
- Physical visits to the Muja Power Station and Gas Turbines & Distributed Generation (**GTDG**) operations at Kwinana
- Consideration of reports and references evidencing activity
- Consideration of the installations' function, normal modes of operation and age
- Reporting of findings to Synergy for review and response.

## **Limitations of use**

This report is made solely for the information and internal use of Synergy and is not intended to be, and should not be, used by any other person or entity. No other person or entity is entitled to rely, in any manner, or for any purpose, on this report.

We understand that a copy of the report will be provided to the ERA for the purpose of reporting on the effectiveness of Synergy's asset management system. We agree that a copy of this report may be provided to the ERA in connection with this purpose but only on the basis that we accept no duty,

liability or responsibility to the ERA in relation to the report. We accept no duty, responsibility or liability to any party, other than Synergy, in connection with the report or this engagement.

### **Inherent limitations**

A limited assurance engagement is substantially more limited in scope than a reasonable assurance engagement conducted in accordance with ASAE 3500 and consequently does not allow us to obtain assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement. Accordingly, we will not express an opinion providing reasonable assurance.

Because of the inherent limitations of any compliance procedure, it is possible that fraud, error or non-compliance may occur and not be detected. We cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and its responsibility to prevent and detect irregularities, including fraud. Accordingly, readers of our reports should not rely on the report to identify all potential instances of asset management system deficiencies, which may occur.

Any projection of the evaluation of the effectiveness of asset management system processes and procedures to future periods is subject to the risk that the processes and procedures may become inadequate because of changes in conditions, or that the degree of compliance with management procedures may deteriorate.

### **Independence**

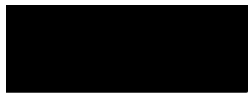
In conducting our engagement, we have complied with the independence requirements of the Australian professional accounting bodies.

### **Conclusion**

Based on our work described in this report, in all material respects, nothing has come to our attention to indicate that Synergy had not established and maintained an effective asset management system for assets subject to the Licence, and in operation during the period 1 April 2013 to 31 October 2016, as measured by the effectiveness criteria in the Guidelines.

Table 3 of this report provides the effectiveness ratings for each of the 12 key processes in the asset management life-cycle assessed by this engagement. For one aspect of Synergy's asset management system that was assessed as having a minor opportunity for improvement, relevant observations, recommendations and action plans are summarised at section 2.5 of this report and detailed at section 4 of this report.

DELOITTE TOUCHE TOHMATSU



**Richard Thomas**

Partner

Perth, 16 May 2017

# 2 Executive summary

## 2.1 Introduction and background

The Economic Regulation Authority (the **ERA**) has under the provisions of the Electricity Industry Act 2004 (**Electricity Act**), issued to Electricity Generation and Retail Corporation T/A Synergy (**Synergy**) the Electricity Generation Licence No.7 (EGL7) (the **Licence**).

Section 14 of the Electricity Act requires Synergy to provide to the ERA an asset management system review (the **review**) conducted by an independent expert acceptable to the ERA not less than once in every 24 month period (or any longer period that the ERA allows). The ERA set the period to be covered by the review as 1 April 2013 to 31 October 2016 (**review period**).

At the request of Synergy, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has undertaken a limited assurance review of Synergy's asset management system.

Synergy has been granted a licence to construct and operate, or operate existing electricity generating works throughout the South West Interconnected System (**SWIS**). Synergy is the largest electricity generator in the SWIS and also had for the duration of the review period the responsibility of providing default balancing and ancillary services, which underpin the reliability of the SWIS.

The review has been conducted in accordance with the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* (the **Guidelines**), which set out 12 key processes in the asset management life-cycle. The limited assurance review was undertaken in order to state whether, based on the work performed, in all material respects, anything has come to our attention to indicate that Synergy had not established and maintained an effective asset management system (**AMS**) for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and in operation during the period 1 April 2013 to 31 October 2016.

## 2.2 Findings

In considering Synergy's internal control procedures, structure and environment, its compliance arrangements and its information systems specifically relevant to those effectiveness criteria subject to review and with a focus on its Generation Business Unit (**GBU**) activity, we observed that Synergy:

- Has made ongoing improvements to its asset management framework including:
  - The engagement of external consultants to assist Synergy in enhancing its AMS and framework, including revising its risk and cost based approach to asset management
  - Further development and focused revision on its suite of supporting policies and procedures
  - The roll out of a new risk management system 'Empower' across the organisation
  - Streamlining its information system framework by transitioning the GBU from Ellipse to SAP in July 2016 (in line with the remainder of the organisation), which has enhanced maintenance reporting capabilities
- Has maintained staff resources who appear to have a good understanding of their roles, particularly displaying an understanding of the asset management processes within their area of responsibility
- Benefits from a Document Management (**DM**) system, which operates with uniform naming conventions and in-document cross referencing standards
- Has increased its focus on visibility and administration of correspondence with the ERA, led by the Regulation and Compliance function.

This review assessed that of the 56 elements of Synergy's asset management system:

- For the asset management process and policy definition adequacy ratings:
  - 54 are rated as "Adequately defined"
  - One element is rated as "Requires some improvement"
  - One element is not rated
- For the asset management performance ratings:
  - 55 are rated as "Performing effectively"

- One element is not rated
- There is one opportunity for improvement where further action is recommended.

Specific assessments for each criterion are summarised at **Table 3** in section 3 “Summary of ratings” of this report.

Detailed findings, including relevant observations, recommendations and action plans are located in section 4 “Detailed findings, recommendations and action plans” of this report.

### 2.3 Asset portfolio

Synergy operates in a competitive market with significant compliance obligations. Synergy’s asset management philosophy<sup>1</sup> is to ensure the continued long term economic operation of its portfolio of assets within an acceptable risk criteria to deliver over the short, medium and long term. This portfolio approach enables the management of planned outages from a whole of portfolio perspective, within the boundaries of asset specific capacity requirements.

This review was designed to consider whether anything has come to our attention to indicate that Synergy had not established and maintained an effective asset management system for assets subject to the Licence, in accordance with the Guidelines during the review period. We specifically considered Synergy’s management of its power stations at Muja and its gas turbine and distributed generation operations (managed from Synergy’s Kwinana site).

The significant changes in Synergy’s asset portfolio (covered by the Licence) during the review period were:

- Certification of Muja AB Unit 3 to commence commercial operations on 1 April 2013
- Completion of the refurbishment of Muja AB Units 1 and 2 in 2014
- Retirement of the Kwinana Power Station Stage C in 2015
- Retirement of the Geraldton Gas Turbine Power Station in 2015.

### 2.4 Synergy’s response to previous review recommendations

This review considered Synergy’s progress in completing the action plans detailed in the 2013 AMS review report.

Based on our examination of relevant documents, discussion with staff and consideration of the results of this review’s testing against the criteria, we determined that all four action plans were fully completed during this review period.

Refer to section 5 of this report for further detail.

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<sup>1</sup> As referenced in Synergy’s Asset Management Plans

## 2.5 Recommendations and action plans

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 1/2017
<b>Asset Maintenance</b> 6(e) Risk management is applied to prioritise maintenance tasks	Requires some improvement (B)	Synergy's risk based approach to maintenance activities includes a priority level output rating ( <b>priority rating</b> ) ranging from 1 to 5 (with 1 requiring immediate action).  As part of its monitoring processes, Synergy runs a SAP Weekly Maintenance Measures report which provides a summary of Work Order status, presented as: <ul style="list-style-type: none"> <li>• Unexecuted</li> <li>• Cancelled before execution</li> <li>• Closed incorrectly</li> <li>• % completed in accordance with the Schedule.</li> </ul> In its present state, the report does not differentiate or highlight high priority work orders. By presenting work orders by priority rating, management will be alerted to high priority orders which require action. Such a report will also help to validate the prioritisation of work orders.
	<b>Performance rating</b>	
	Performing Effectively (1)	
<b>Recommendation 1/2017</b> Synergy consider: <ol style="list-style-type: none"> <li>(a) Updating its SAP Weekly Maintenance Measures report to highlight the relative priority of outstanding work orders, including summary statistics by priority rating</li> <li>(b) Using the report to review all open Priority 1 and Priority 2 Work Orders to determine whether they are appropriately categorised.</li> </ol>	<b>Action Plan 1/2017</b> The SAP weekly maintenance measures report will be revised to include summary statistics of priority 1 and 2 work orders. Non-executed priority 1 and 2 work orders will be highlighted for review.	
		<b>Responsible Person:</b> Asset Performance Manager <b>Target Date:</b> 30 June 2017

## 2.6 Scope and objectives

The objective of the review was to independently examine the effectiveness and performance of the asset management system established for assets subject to Synergy's Licence during the review period.

In accordance with the Guidelines, the review considered the effectiveness of Synergy's existing control procedures within the following 12 key processes in the asset management life-cycle.

**Table 1 – AMS key processes and effectiveness criteria**

#	Key processes	Effectiveness criteria
1	Asset planning	<ul style="list-style-type: none"> <li>• Asset management plan covers key requirements</li> <li>• Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning</li> <li>• Service levels are defined</li> <li>• Non-asset options (e.g. demand management) are considered</li> <li>• Lifecycle costs of owning and operating assets are assessed</li> <li>• Funding options are evaluated</li> <li>• Costs are justified and cost drivers identified</li> <li>• Likelihood and consequences of asset failure are predicted</li> <li>• Plans are regularly reviewed and updated.</li> </ul>



#	Key processes	Effectiveness criteria
2	Asset creation and acquisition	<ul style="list-style-type: none"> <li>• Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</li> <li>• Evaluations include all life-cycle costs</li> <li>• Projects reflect sound engineering and business decisions</li> <li>• Commissioning tests are documented and completed</li> <li>• Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.</li> </ul>
3	Asset disposal	<ul style="list-style-type: none"> <li>• Under-utilised and under-performing assets are identified as part of a regular systematic review process</li> <li>• The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken</li> <li>• Disposal alternatives are evaluated</li> <li>• There is a replacement strategy for assets.</li> </ul>
4	Environmental analysis (all external factors that affect the system)	<ul style="list-style-type: none"> <li>• Opportunities and threats in the system environment are assessed</li> <li>• Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved</li> <li>• Compliance with statutory and regulatory requirements</li> <li>• Achievement of customer service levels.</li> </ul>
5	Asset operations	<ul style="list-style-type: none"> <li>• Operational policies and procedures are documented and linked to service levels required</li> <li>• Risk management is applied to prioritise operations tasks</li> <li>• 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</li> <li>• Operational costs are measured and monitored</li> <li>• Staff resources are adequate and staff receive training commensurate with their responsibilities.</li> </ul>
6	Asset maintenance	<ul style="list-style-type: none"> <li>• Maintenance policies and procedures are documented and linked to service levels required</li> <li>• Regular inspections are undertaken of asset performance and condition</li> <li>• Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</li> <li>• Failures are analysed and operational/maintenance plans adjusted where necessary</li> <li>• Risk management is applied to prioritise maintenance tasks</li> <li>• Maintenance costs are measured and monitored.</li> </ul>
7	Asset management information system	<ul style="list-style-type: none"> <li>• Adequate system documentation exists for users and IT operators</li> <li>• Input controls include appropriate verification and validation of data entered into the system</li> <li>• Logical security access controls appear adequate, such as passwords</li> <li>• Physical security access controls appear adequate</li> <li>• Data backup procedures appear adequate and backups are tested</li> <li>• Key computations related to licensee performance reporting are materially accurate</li> <li>• Management reports appear adequate for the licensee to monitor licence obligations.</li> </ul>

#	Key processes	Effectiveness criteria
8	Risk management	<ul style="list-style-type: none"> <li>• Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system</li> <li>• Risks are documented in a risk register and treatment plans are actioned and monitored</li> <li>• The probability and consequences of asset failure are regularly assessed.</li> </ul>
9	Contingency planning	<ul style="list-style-type: none"> <li>• Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.</li> </ul>
10	Financial planning	<ul style="list-style-type: none"> <li>• The financial plan states the financial objectives and strategies and actions to achieve the objectives</li> <li>• The financial plan identifies the source of funds for capital expenditure and recurrent costs</li> <li>• The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)</li> <li>• The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period</li> <li>• The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services</li> <li>• Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.</li> </ul>
11	Capital expenditure planning	<ul style="list-style-type: none"> <li>• There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates</li> <li>• The plan provides reasons for capital expenditure and timing of expenditure</li> <li>• The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan</li> <li>• There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.</li> </ul>
12	Review of Asset Management System	<ul style="list-style-type: none"> <li>• A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current</li> <li>• Independent reviews (e.g. internal audit) are performed of the asset management system.</li> </ul>

Each key process and effectiveness criterion is applicable to Synergy's Licence and as such was individually considered as part of the review. The Review Plan set out at Appendix A details the risk assessments made for and review priority assigned to each key process and effectiveness criterion.

## 2.7 Approach

Our approach for this review involved the following activities, which were undertaken during the period February and March 2017:

- Utilising the Guidelines as a guide, development of a risk assessment, which involved discussions with key staff and review of documents to undertake a preliminary assessment of relevant controls
- Development of a Review Plan (see Appendix A) for approval by the ERA
- Correspondence and interviews with Synergy staff to gain an understanding of process controls in place (see Appendix B for staff involved)
- Visited the Muja Power Station and GTDG operations (Kwinana) sites with a focus on understanding the facilities, their function, normal mode of operation, age and an assessment of the facility against the AMS review criteria
- Review of documents, processes and controls to assess the overall effectiveness of Synergy's asset management system (see Appendix B for reference listing)

- Consideration of the resourcing applied to maintaining those controls and processes
- Reporting of findings to Synergy for review and response.

### 3 Summary of ratings

In accordance with the Guidelines, the assessment of both the process and policy definition adequacy rating (refer to **Table 1**) and the performance rating (refer to **Table 2**) for each of the key AMS processes is performed using the below ratings.

For the avoidance of doubt, these ratings do not provide reasonable assurance.

**Table 1: Asset management process and policy definition adequacy ratings**

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> <li>Processes and policies are documented</li> <li>Processes and policies adequately document the required performance of the assets</li> <li>Processes and policies are subject to regular reviews, and updated where necessary</li> <li>The asset management information system(s) are adequate in relation to the assets that are being managed.</li> </ul>
B	Requires some improvement	<ul style="list-style-type: none"> <li>Process and policy documentation requires improvement</li> <li>Processes and policies do not adequately document the required performance of the assets</li> <li>Reviews of processes and policies are not conducted regularly enough</li> <li>The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed).</li> </ul>
C	Requires significant improvement	<ul style="list-style-type: none"> <li>Process and policy documentation is incomplete or requires significant improvement</li> <li>Processes and policies do not document the required performance of the assets</li> <li>Processes and policies are significantly out of date</li> <li>The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).</li> </ul>
D	Inadequate	<ul style="list-style-type: none"> <li>Processes and policies are not documented</li> <li>The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed).</li> </ul>

**Table 2: Asset management performance ratings**

Rating	Description	Criteria
1	Performing effectively	<ul style="list-style-type: none"> <li>The performance of the process meets or exceeds the required levels of performance</li> <li>Process effectiveness is regularly assessed and corrective action taken where necessary.</li> </ul>
2	Opportunity for improvement	<ul style="list-style-type: none"> <li>The performance of the process requires some improvement to meet the required level</li> <li>Process effectiveness reviews are not performed regularly enough</li> <li>Process improvement opportunities are not actioned.</li> </ul>
3	Corrective action required	<ul style="list-style-type: none"> <li>The performance of the process requires significant improvement to meet the required level</li> <li>Process effectiveness reviews are performed irregularly, or not at all</li> <li>Process improvement opportunities are not actioned.</li> </ul>
4	Serious action required	<ul style="list-style-type: none"> <li>Process is not performed, or the performance is so poor that the process is considered to be ineffective.</li> </ul>

This report provides:

- A breakdown of each function of the AMS into sub-components as described in the Guidelines. This approach is taken to enable a more thorough review of key processes where individual components within a larger process can be of greater risk to the business therefore requiring different review treatment
- A summary of the ratings applied by the review (**Table 3**) for each of:
  - Asset management process and policy definition adequacy (**definition adequacy rating**)
  - Asset management performance (**performance rating**).
- Detailed findings, including relevant observations, recommendations and action plans (**Section 4**). Descriptions of the effectiveness criteria can be found in section 4 and the Review Plan at Appendix A.

**Table 3: AMS effectiveness summary**

Ref	Consequence	Likelihood	Inherent Risk	Control Risk	Review Priority	Ratings	
						Definition Adequacy	Performance
<b>1. Asset planning</b>						<b>A</b>	<b>1</b>
1(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(b)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(c)	Minor	Unlikely	Low	Moderate	Priority 5	A	1
1(d)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(e)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(f)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(g)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(h)	Major	Probable	High	Moderate	Priority 2	A	1
1(i)	Minor	Unlikely	Low	Moderate	Priority 5	A	1
<b>2. Asset creation and acquisition</b>						<b>A</b>	<b>1</b>
2(a)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
2(b)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
2(c)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
2(d)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
2(e)	Major	Unlikely	High	Moderate	Priority 2	A	1
<b>3. Asset disposal</b>						<b>A</b>	<b>1</b>
3(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
3(b)	Minor	Probable	Low	Moderate	Priority 5	A	1
3(c)	Minor	Probable	Low	Moderate	Priority 5	A	1
3(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
<b>4. Environmental analysis</b>						<b>A</b>	<b>1</b>
4(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
4(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
4(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
4(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
<b>5. Asset operations</b>						<b>A</b>	<b>1</b>
5(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
5(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
5(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
5(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
5(e)	Moderate	Probable	Medium	Moderate	Priority 4	A	1

						Ratings	
Ref	Consequence	Likelihood	Inherent Risk	Control Risk	Review Priority	Definition Adequacy	Performance
<b>6. Asset maintenance</b>						<b>A</b>	<b>1</b>
6(a)	Major	Unlikely	High	Moderate	Priority 2	A	1
6(b)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
6(c)	Major	Probable	High	Moderate	Priority 2	A	1
6(d)	Major	Probable	High	Moderate	Priority 2	A	1
6(e)	Major	Probable	High	Moderate	Priority 2	B	1
6(f)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
<b>7. Asset management information system</b>						<b>A</b>	<b>1</b>
7(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
7(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
7(c)	Minor	Probable	Low	Moderate	Priority 5	A	1
7(d)	Minor	Probable	Low	Moderate	Priority 5	A	1
7(e)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
7(f)	Minor	Probable	Low	Moderate	Priority 5	Not performed	
7(g)	Minor	Probable	Low	Moderate	Priority 5	A	1
<b>8. Risk management</b>						<b>A</b>	<b>1</b>
8(a)	Major	Probable	High	Moderate	Priority 2	A	1
8(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
8(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
<b>9. Contingency planning</b>						<b>A</b>	<b>1</b>
9(a)	Major	Probable	High	Moderate	Priority 2	A	1
<b>10. Financial planning</b>						<b>A</b>	<b>1</b>
10(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
10(b)	Minor	Probable	Low	Moderate	Priority 5	A	1
10(c)	Minor	Probable	Low	Moderate	Priority 5	A	1
10(d)	Minor	Probable	Low	Moderate	Priority 5	A	1
10(e)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
10(f)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
<b>11. Capital expenditure planning</b>						<b>A</b>	<b>1</b>
11(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
11(b)	Minor	Probable	Low	Moderate	Priority 5	A	1
11(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
11(d)	Minor	Probable	Low	Moderate	Priority 5	A	1
<b>12. Review of AMS</b>						<b>A</b>	<b>1</b>
12(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
12(b)	Minor	Probable	Low	Moderate	Priority 5	A	1

# 4 Detailed findings, recommendations and action plans

## Summary of generation works subject to review

### Synergy's asset portfolio

Synergy operates in the competitive Western Australian wholesale electricity market. Its generation portfolio includes generating units with a diverse range of technology, fuel type, age and role.

A key component of Synergy's asset management philosophy is to ensure the continued long term economic operation of its portfolio of assets within an acceptable risk criteria to deliver over the short, medium and long term. Where commercially and technically feasible, Synergy undertakes plant enhancements to its portfolio of assets in order to increase capacity revenue returns to the business as well as meet its obligations relating to compliance with:

- Wholesale Electricity Market Rules
- All relevant safety, environmental and legal requirements
- Capacity requirements as directed by the Minister for Energy
- Western Australian Government's efficiency dividend obligations.

Synergy's portfolio approach enables the management of planned outages from a whole of portfolio perspective, within the boundaries of asset specific capacity requirements.

Key details relating to Synergy's generation operations are as follows:

### Thermal generation

- Muja CD Power Station is comprised of Muja Units 5 to 8 and accounts for approximately 32% of Synergy's generation capacity. The current forecast retirement date is 2030 for Units 5 & 6 and 2035 for Units 7 & 8
- Collie Power Station accounts for approximately 12.5% of Synergy's generation capacity and has a forecast retirement date of 2040
- Muja AB Power Station, which Synergy operates through a 100% equity interest in Vinalco Energy, is comprised of Muja Units 1 to 4 and accounts for approximately 9% of Synergy's generation capacity. After a significant refurbishment project (refer to the 2013 AMS Review report for further detail), Unit 3 commenced commercial operations on 1 April 2013 and Units 1 and 2 were commissioned in February 2014. The current forecast retirement date for Muja AB is 2022.

### Gas turbine and distributed generation

- Cockburn Power Station accounts for approximately 9% of Synergy's generation capacity and has a forecast retirement date of 2033
- Kwinana High Efficiency Gas Turbines account for approximately 7.5% of Synergy's generation capacity and have a forecast retirement date of 2040
- Industrial frame type gas turbines operating at regional sites including Pinjar, Mungarra and West Kalgoorlie account for approximately 28% of Synergy's generation capacity. The current forecast retirement date for these turbines ranges from 2021 to 2037

- The Kwinana Power Station Stage C was decommissioned in 2015. During its operation, Kwinana Power Station Stage C accounted for approximately 11% of Synergy's generation capacity
- Synergy also operates wind turbine wind/diesel power stations at a number of regional sites.

This review specifically considered Synergy's management of its power stations at Muja and its gas turbine and distributed generation operations (managed from Synergy's Kwinana site), with a focus on understanding the relevant installations, their function and normal modes of operation, their age and an assessment of the installation against the AMS review criteria.

The following tables contain:

- *Findings*: the reviewer's understanding of the process and any issues that have been identified during the review
- *Recommendations (where applicable)*: recommendations for improvement or enhancement of the process or control
- *Action plans (where applicable)*: Synergy's formal response to review recommendations, providing details of action to be implemented to address the specific issue raised by the review.



## 4.1 Asset planning

**Key process:** Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price)

**Expected 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

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
1(a)	Asset management plan covers key requirements	<p>Through discussions with the Asset Performance Manager and consideration of Synergy's GBU asset management framework, system, policies and processes, we determined that:</p> <ul style="list-style-type: none"> <li>Asset Management Plans (<b>AMP</b>) and supporting Asset Life Cycle Plans (<b>ALCP</b>) have been developed for each of Synergy's generation assets. Those plans are based on equipment maintenance plans that roll up to support the generating unit's plans and missions</li> <li>Each AMP is updated on an annual basis and provides for: <ul style="list-style-type: none"> <li>High level asset management and maintenance philosophies &amp; strategies</li> <li>Assumptions from the current operating regime</li> <li>Power station risks and how these are addressed</li> <li>Whole of life costs including decommissioning costs</li> <li>Categorisation of power station equipment into plant systems</li> </ul> </li> <li>Each ALCP defines equipment-specific maintenance strategies, risks, performance and whole of life costs.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	<p>Through discussions with the Asset Performance Manager and consideration of Synergy's planning processes, we determined that:</p> <ul style="list-style-type: none"> <li>Synergy's asset management framework: <ul style="list-style-type: none"> <li>Follows the principles of the ISO55000:2014 standard for asset management</li> <li>Provides a systematic approach to optimising the elements of risk, cost and performance</li> <li>Integrates with Synergy's business planning processes</li> </ul> </li> <li>The GBU Asset Management Policy provides the guiding principles for GBU to manage its assets to deliver customer and stakeholder expectations for safe, reliable and affordable electricity</li> <li>The GBU Portfolio Asset Mission Statement translates Synergy's strategic requirements at the portfolio level into specific generating station, unit mission and performance targets</li> <li>Asset planning is based on a demand forecast model, which accommodates input from all stakeholders involved, including: <ul style="list-style-type: none"> <li>AEMO – providing demand and availability requirements</li> </ul> </li> </ul>

No	Effectiveness Criteria	Findings		
		<ul style="list-style-type: none"> <li>• Synergy’s Wholesale Trading business unit and GBU’s Fuel branch – providing fuel assumptions for input into the modelling process</li> <li>• GBU’s Thermal and GTDG operations – providing relevant information from life cycle plans</li> <li>• Market intelligence</li> <li>• Government – in relation to renewable energy targets.</li> <li>• Synergy’s PowrSym operation-simulation model is used for forecasting and planning</li> <li>• Five year production targets are based on: <ul style="list-style-type: none"> <li>• Demand</li> <li>• Supply</li> <li>• Fuel availability</li> <li>• Fuel cost</li> <li>• Market intelligence</li> <li>• Plant constraints</li> <li>• Synergy’s strategy</li> </ul> </li> <li>• Each AMP and supporting ALCP is developed in conjunction with and communicated to individual assets to facilitate operational planning.</li> </ul>		
		<table border="1"> <tr> <td><b>Adequacy Rating:</b> Adequately defined (A)</td> <td><b>Performance Rating:</b> Performing effectively (1)</td> </tr> </table>	<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)			
1(c)	Service levels are defined	<p>Through discussions with the Asset Performance Manager and an examination of a sample of AMPs and supporting ALCPs, we determined that:</p> <ul style="list-style-type: none"> <li>• The plans provide considerable detail on the asset management and maintenance strategies for each plant system, including business requirements and operational service levels, including plant production and outage/capacity factor targets</li> <li>• Service levels are determined by the respective Operations teams on the basis of: <ul style="list-style-type: none"> <li>• Relevant operational information from each asset</li> <li>• Actual data on plant output and condition.</li> </ul> </li> <li>• Service levels are defined in Synergy’s maintenance standards and integrated into the SAP maintenance management module.</li> </ul>		
		<table border="1"> <tr> <td><b>Adequacy Rating:</b> Adequately defined (A)</td> <td><b>Performance Rating:</b> Performing effectively (1)</td> </tr> </table>	<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
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1(d)	Non-asset options (e.g. demand management) are considered	<p>Through discussions with the Asset Performance Manager and consideration of Synergy’s planning, procurement and business case approval processes, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy’s business case approval process for instigating new projects requires asset alternatives and non-asset options to be considered</li> </ul>		

No	Effectiveness Criteria	Findings
		<ul style="list-style-type: none"> <li>In the environment where demand has fallen over the review period, Synergy has had limited opportunity to consider and act on additional asset options. Synergy's asset portfolio is also structured to enable some modification in the performance loads of its generators.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
1(e)	Lifecycle costs of owning and operating assets are assessed	<p>Through discussions with the Manager - Financial Planning and the Asset Performance Manager, and consideration of Synergy's planning processes, we determined that Synergy has the following processes in place to assess lifecycle costs of owning and operating assets during the asset planning phase:</p> <ul style="list-style-type: none"> <li>Assessments of lifecycle costs of owning and operating assets are undertaken in the preparation of ALCPs, which identify, predict and rank plant condition, degradation and residual life, and provide an indication of the optimum spending program</li> <li>ALCPs detail the expected maintenance and required enhancements to the asset based on inspection and condition data, OEM recommendations, risk mitigation and Synergy's overarching output targets</li> <li>Project evaluations are conducted with both engineering and finance personnel input and with evaluation results detailed and approved by relevant personnel to ensure all engineering, finance, environmental, health and safety aspects are addressed</li> <li>Relevant economic measures are taken into account within project evaluations.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
1(f)	Funding options are evaluated	<p>Through discussions with the Manager - Financial Planning and Performance and consideration of Synergy's asset planning processes, we determined that:</p> <ul style="list-style-type: none"> <li>Synergy's evaluation of funding options considers a number of key inputs, such as: <ul style="list-style-type: none"> <li>Internal financial position and funding options</li> <li>Availability of government debt</li> <li>Government policy</li> <li>Suitability of finance.</li> </ul> </li> <li>Project evaluations also require the sources of funds to be considered and outlined for approval.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
1(g)	Costs are justified and cost drivers identified	<p>Through discussions with the Manager - Financial Planning and Performance and consideration of Synergy's asset planning processes, we determined that the approval process for new assets requires the costs and cost drivers (in the form of a business case and supporting financial model) to be identified, considered and justified.</p>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
1(h)	Likelihood and consequences of asset failure are predicted	<p>Through discussion with the Asset Performance Manager and the PI System Specialist, and consideration of Synergy's processes and review of relevant supporting documentation, we observed that Synergy has applied the following mechanisms for identifying consequence and likelihood of asset failure:</p>

No	Effectiveness Criteria	Findings
		<ul style="list-style-type: none"> <li>• In 2014, Synergy updated its Asset Management Framework which included the development of a full suite of AMPs and ALCPs to accommodate all of its generation assets. Each ALCP is designed to:               <ul style="list-style-type: none"> <li>• Identify the key functional failures for each sub system</li> <li>• Align functional failures to the current maintenance strategy to manage such failures (i.e. routines, inspections or testing conducted) and to meet the asset’s objectives and mission</li> <li>• Identify key historical events, significant failures and upgrade works/projects and referencing relevant reports, condition assessments and recommendations</li> <li>• Identify and review current and potential future risks, which may impact the asset management strategy over the asset’s lifecycle</li> <li>• List improvement opportunities and new failure modes when they occur for ongoing continuous improvement</li> <li>• Reference the current whole of life budget as it applies to each system</li> </ul> </li> <li>• Synergy’s ALCPs utilise information compiled in its Engineering Risk Management System (and previously, its Engineering Risk Assessment Process (<b>ERAP</b>) engineering risk evaluation tool) and Optimum Maintenance Spend Plan (<b>OMSP</b>), which include:               <ul style="list-style-type: none"> <li>• Quantification of likelihood and impact of risks relating to safety, operational, commercial and environmental performance</li> <li>• Analysis and optimisation of maintenance expenditure.</li> </ul> </li> </ul> <p>Our examination of a sample of ALCPs for Muja CD and Kwinana Power Station (prior to decommissioning) and GBU risk registers indicate that the likelihood and consequence (impact) of asset failure has been assessed and subject to ongoing review.</p>
1(i)	Plans are regularly reviewed and updated	<p>Through discussions with the Asset Performance Manager, consideration of Synergy’s asset planning processes and examination of Synergy’s AMS and sample AMPs and ALCPs for Muja and Kwinana power stations, we determined that:</p> <ul style="list-style-type: none"> <li>• The AMS (last approved July 2015) is reviewed on a two year basis (with the next review scheduled for July 2017)</li> <li>• AMPs are reviewed on an annual basis. Amendments made to the AMP flow through to the specific ALCPs where applicable</li> <li>• Maintenance Plans are reviewed weekly on site and work order status dashboard reports are produced out of SAP on a weekly basis.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

## 4.2 Asset creation and acquisition

**Key process:** 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

**Expected 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.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
2(a)	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	<p>Through discussions with the Manager, Regulation and Compliance and Asset Performance Manager, and consideration of Synergy's procurement and project management processes we determined that:</p> <ul style="list-style-type: none"> <li>• As a government trading entity, Synergy is required to seek government approval for projects involving new assets</li> <li>• Synergy's Project Management Office governs the asset addition process in accordance with Synergy's delegation of authority framework and procurement policies and procedures</li> <li>• Project evaluations are supported by a business case template, which contains: <ul style="list-style-type: none"> <li>• Commentary on the business need for the asset</li> <li>• Funding components and summary financial analysis (including NPV and payback period)</li> <li>• Alternative options (including non-asset options) and potential impact</li> <li>• Supporting appendices, which include: <ul style="list-style-type: none"> <li>▪ Project estimate costs</li> <li>▪ Risk assessment</li> <li>▪ Project delivery timeline</li> <li>▪ Financial workbook (including lifecycle costs).</li> </ul> </li> </ul> </li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
2(b)	Evaluations include all life-cycle costs	<p>As documented at Asset Planning s.1(e) above, through discussions with the Asset Performance Manager and Manager - Financial Planning, and consideration of Synergy's project planning processes, we determined that Synergy has the following process in place to assess lifecycle costs of owning and operating assets:</p> <ul style="list-style-type: none"> <li>• Assessments of lifecycle costs of owning and operating assets are undertaken in the preparation of ALCPs, which identify, predict and rank plant condition, degradation and residual life, and provide an indication of the optimum spending program by evaluating the interaction between plant condition, maintenance spending, investment spending, operating regime and reliability targets</li> <li>• Project evaluations are conducted with both engineering and finance personnel input and with evaluation results detailed and approved by relevant personnel to ensure all engineering, finance, environmental, health and safety aspects are addressed.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
2(c)	Projects reflect sound engineering and business decisions	<p>Through discussions with the Manager - Financial Planning and Asset Performance Manager, and examination of the Delegated Financial Authority Policy, Procurement Standard and business case templates for asset acquisitions, we determined that Synergy has the following procedures in place to assess the commercial and technical competence of projects:</p> <ul style="list-style-type: none"> <li>• Project evaluations are conducted with both engineering and finance personnel input and with evaluation results detailed and approved by relevant personnel to ensure all engineering, finance, environmental, health and safety aspects are addressed</li> <li>• Project evaluations are designed to be managed using project modelling tools whilst taking into account relevant economic measures.</li> </ul> <p>We also observed that Synergy's Delegated Financial Authority specifies that any project commitment over \$20 million (or 1% of the WDV of Synergy's consolidated fixed assets and investment as appearing in its latest audited accounts) is required to be approved by the Minister.</p>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
2(d)	Commissioning tests are documented and completed	<p>Through discussions with the Asset Performance Manager and consideration of Synergy's relevant procedures, we observed that:</p> <ul style="list-style-type: none"> <li>• Commissioning tests form part of the project lifecycle for all additions to Synergy's assets or asset portfolio</li> <li>• Full documentation of commissioning tests is required to be prepared and maintained in Synergy's DM system.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

No	Effectiveness Criteria	Findings	
2(e)	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	<p>Through discussions with the Manager, Regulation and Compliance and Asset Performance Manager, and consideration of Synergy's policies and procedures and operating systems, we determined that Synergy has the following processes in place to manage the legal, environmental and safety obligations specific to each asset:</p> <ul style="list-style-type: none"> <li>• Synergy maintains a register of "Environmental or Related Licences for all Synergy Power Stations"</li> <li>• Environmental and legal considerations are addressed in Synergy's project evaluation procedures</li> <li>• Synergy's Environmental Team is responsible for comprehensively identifying and managing environmental obligations relevant to GBU's operations</li> <li>• Synergy's safety obligations relevant to GBU's operations are accorded a high priority. We observed that considerable effort is made to address safety issues at the point of employee induction, through specific and ongoing training and formal assignment of responsibilities to supervisory staff. Safety obligations form part of Synergy's ALCPs and are recognised as part of organisation wide risks within its Empower risk management system</li> <li>• Synergy's legal obligations relevant to its operations primarily relate to environmental and safety matters. Other legal obligations are specifically addressed either directly via Synergy's in house legal counsel or with the assistance of external legal advisors.</li> </ul> <p>An examination of practices employed at the Muja power station and GTDG operations at Kwinana indicated that Synergy maintains Environmental Management System (<b>EMS</b>) documentation at a site level. That EMS documentation contains the site's:</p> <ul style="list-style-type: none"> <li>• Environmental Policy</li> <li>• Legal and corporate environmental commitments</li> <li>• Environmental improvement plans</li> <li>• Environmental resources, roles, responsibility and authority.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

### 4.3 Asset disposal

**Key process:** 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.

**Expected outcome:** Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
3(a)	Under-utilised and under-performing assets are identified as part of a regular systematic review process	<p>Through discussions with the Asset Performance Manager and examination of relevant supporting documentation, we observed that Synergy has applied the following mechanisms for identifying under-utilised and under-performing assets:</p> <ul style="list-style-type: none"> <li>Monitoring of asset operational and financial performance is performed on a weekly, monthly, quarterly and annual basis</li> <li>Generation of operational and financial reporting packs, which include: <ul style="list-style-type: none"> <li>Weekly production meeting packs</li> <li>Weekly generation stats</li> <li>Monthly GBU performance reporting</li> </ul> </li> <li>Review of the AMPs and ALCPs for each site are undertaken on an annual basis</li> <li>Independent expert reviews are conducted on capital expenditure relating to maintenance of assets</li> <li>Loss prevention inspections, as a major aspect of Synergy's risk management activities directed at asset operations</li> <li>Results of these assessments and inspections are included in Synergy's rolling five year plans.</li> <li>Continuous updates of forecasts of plant dispatch of all plant operating on the SWIS over a long-term time horizon (e.g. 20 years), for generation/fuel planning and corporate planning (budgeting) purposes</li> <li>Identification of risks associated with the viability of individual generating units, such as Kwinana Power Station Stage C, which had high fixed operating costs.</li> </ul> <p>We sighted supporting documents from the 2015 Kwinana Power Station Stage C decommissioning as evidence of Synergy's application of its strategy and processes associated with the decommissioning.</p>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	<p>Through discussions with the Asset Performance Manager, Manager - Financial Planning and PI System Specialist, and examination of relevant supporting documentation, we observed that Synergy has applied the mechanisms at Asset Disposal [s.3(a)] to facilitate the examination of under-utilised and under-performing assets by:</p> <ul style="list-style-type: none"> <li>Collecting relevant data and information to enable assessment of the root cause of any underutilisation or poor performance of power station assets</li> </ul>



No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> <li>Incorporating assessments into the annual GBU budgeting process, which considers the major projects planned for the coming financial year and required output levels (in line with Synergy strategy). AMPs and ALCPs provide a greater breakdown of assessments including any equipment refurbishment, upgrade or replacement</li> <li>Preparing a business case as part of the capital expenditure process, providing justification for the importance of the upgrade/purchase of equipment to the condition of the asset.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
3(c)	Disposal alternatives are evaluated	<p>Through discussions with the Asset Performance Manager and the Manager - Financial Planning and examination of supporting documentation, we determined that Synergy's processes require:</p> <ul style="list-style-type: none"> <li>The need to address alternatives for decommissioning, removal or storage of key plant</li> <li>AMPs and ALCPs to provide details of the major projects planned for each asset in the coming financial year, including any equipment replacement requirements.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
3(d)	There is a replacement strategy for assets	<p>Through discussions with the Asset Performance Manager and Manager – Financial Planning, we determined that replacement strategies established for Synergy's power station assets are reflected in:</p> <ul style="list-style-type: none"> <li>The GBU Portfolio Asset Mission Statement</li> <li>AMPs and ALCPs established for each asset site.</li> </ul> <p>We also note that Synergy's replacement strategies consider the replacement of generation capacity at the portfolio level by means of retirement and closure rather than replacement of individual assets.</p>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.4 Environmental analysis

**Key process:** Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.

**Expected outcome:** The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
4(a)	Opportunities and threats in the system environment are assessed	<p>Through discussions with the Asset Performance Manager and other relevant staff during site visits, and examination of applicable procedures, we determined that Synergy has developed a risk based management system to identify and assess opportunities and threats to the system environment for its assets. Those procedures:</p> <ul style="list-style-type: none"> <li>• Apply to all of Synergy’s key assets and operational aspects within those assets</li> <li>• Facilitate the identification and assessment of risks associated with Synergy’s power station operations</li> <li>• Ensure systematic review of environmental aspects and impacts</li> <li>• Align to ISO 14001 (where possible/relevant), Dangerous Goods regulations and health and safety requirements</li> <li>• Outline the method of logging, maintaining and reporting on environmental aspects and associated impacts.</li> </ul> <p>Through discussions with the Muja Environmental Advisor and consideration of Synergy’s environmental assessment procedures, we determined that:</p> <ul style="list-style-type: none"> <li>• A risk register has been developed to identify all activities of its assets and associated risks. The risks are then thoroughly assessed, leading to a focused plan for monitoring circumstances, which is reviewed annually</li> <li>• Risks and incidents are logged onto the Generation Incident Reporting System (GIRS), which are then assessed by the Environmental Team</li> <li>• Incidents logged via the GIRS are reviewed at site meetings for each asset.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	<p>Through discussions with the Asset Performance Manager, Plant Managers at Kwinana and Muja and other site staff, we determined that Synergy has established the following processes to ensure that performance standards are planned, measured and achieved:</p> <ul style="list-style-type: none"> <li>• AMPs and ALCPs contain considerable detail for the planning aspects of the respective assets as per GBU’s operational requirements, which are guided by plant production and outage/capacity factor targets determined by AEMO</li> <li>• Weekly performance reports are reviewed at site and managerial level</li> <li>• Live condition monitoring through the PI database</li> </ul>

No	Effectiveness Criteria	Findings		
		<ul style="list-style-type: none"> <li>Synergy has developed a series of system recovery plans, including black/brown start procedures for each asset, in the event of a major failure of site assets or key systems. System recovery plans are subject to a detailed review when triggered by a major equipment change or reconfiguration, and otherwise subject to high level review. Where relevant and possible, emergency response plans are subject to testing in accordance with timeframes specified in the relevant plan [consistent with Contingency Planning 9(a)]</li> <li>Engaging independent specialist consultants to assist in monitoring aspects of GBU's operations, for example assessment of planned maintenance works.</li> </ul>		
		<table border="1"> <tr> <td><b>Adequacy Rating:</b> Adequately defined (A)</td> <td><b>Performance Rating:</b> Performing effectively (1)</td> </tr> </table>	<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
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4(c)	Compliance with statutory and regulatory requirements	<p>Through discussions with the Asset Performance Manager and Muja Environmental Advisor, and consideration of relevant supporting documentation, we determined that Synergy has applied the following mechanisms for managing and monitoring its operations in accordance with its statutory and regulatory requirements:</p> <ul style="list-style-type: none"> <li>Use of an online compliance register that details all of Synergy's compliance obligations, including those relevant to its electricity generation licence, the Electricity Act and related legislation</li> <li>Periodic evaluation of compliance with relevant environmental legislation and regulations</li> <li>Certification to the ISO-14001 standard, which requires Synergy to maintain an effective Environmental Management System (<b>EMS</b>) that monitors environmental obligations. To ensure that Synergy is performing appropriately against various statutory legislation and licences, including the Environmental Protection Act 1986 and its operating environment licenses, there are different types of audits conducted, including an audit for re-certification at regular intervals</li> <li>Use of external consultants to perform a legal compliance and control review for key environmental conditions. Such a review was performed for Muja in 2016</li> <li>Continuous plant improvements to better manage environmental obligations. During the site visit to the Muja Power Station, we observed Synergy's improvements to the governor system, control systems and upgrades to the electrical board and dust system.</li> </ul>		
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4(d)	Achievement of customer service levels	<p>As Synergy's Licence is limited to power generation, it does not have specific customer service levels to attain in relation to its electricity generation operations. In the context of its obligations to the community, Synergy operates and monitors its operations in accordance with the statutory legislation and licences detailed at 4(c) above.</p>		
		<table border="1"> <tr> <td><b>Adequacy Rating:</b> Adequately defined (A)</td> <td><b>Performance Rating:</b> Performing effectively (1)</td> </tr> </table>	<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)			

## 4.5 Asset operations

**Key process:** Operational functions relate to the day-to-day running of assets and directly affect service levels and costs.

**Expected outcome:** Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
5(a)	Operational policies and procedures are documented and linked to service levels required	<p>Through discussions with the Asset Performance Manager, Station Managers for Muja and Kwinana power stations, plus key managers and staff at Kwinana, Muja and Cockburn; and examination of documented policies, procedures and protocols, we observed that Synergy has:</p> <ul style="list-style-type: none"> <li>Comprehensively documented policies, procedures and protocols for each of its asset sites designed to facilitate the effective operation of its assets. All asset related policies, procedures and protocols are documented within the Synergy's DM system</li> <li>Developed procedures which specifically refer to required service levels (where appropriate) for the operation of the specific item of equipment, or specific electrical or mechanical procedures</li> <li>Developed plant operating instructions and control plans for major items of plant, such as boilers, generators and condensers for each asset.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
5(b)	Risk management is applied to prioritise operations tasks	<p>Through discussions with the Asset Performance Manager, managers and staff at Kwinana, Cockburn and Muja, and consideration of Synergy's risk management practices and operational activities, we determined that Synergy's operational methodology utilises the following risk management techniques:</p> <ul style="list-style-type: none"> <li>Application of risk based processes to manage key assets, with higher risk tasks given priority over lower risk tasks</li> <li>Management of risks through professional and appropriately qualified personnel adopting good processes and procedures as set by Synergy's overall asset management framework</li> <li>Management of assets' risk profile by investing in optimal plant improvements through its OMSP.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
5(c)	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	<p>Synergy uses the SAP asset management and maintenance system to manage its assets (the Ellipse system was used until the SAP system's full implementation in July 2016). SAP contains the following information for major equipment:</p> <ul style="list-style-type: none"> <li>Unique asset identification (asset ID)</li> <li>Equipment details (including type, location, components, operational capacity, age, expected life)</li> <li>Equipment history, including condition, service history and expenditure on labour and materials</li> <li>Maintenance procedures and intervals</li> <li>Relevant risk ratings.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
5(d)	Operational costs are measured and monitored	<p>Through discussion with the Asset Performance Manager and examination of Synergy's reporting processes, we determined that:</p> <ul style="list-style-type: none"> <li>• Dashboard reports are produced on a monthly basis for each asset, enabling management to specifically assess actual v budgeted expenditure for each asset, identify sites that are over budget or problematic and determine necessary corrective action</li> <li>• Synergy's reporting processes compare actual performance against budgeted expenditure for each asset site. Reasons for significant variances at the cost centre level are examined and scrutinised by management.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
5(e)	Staff receive training commensurate with their responsibilities	<p>Through discussion with the Asset Performance Manager, Station Managers and other managers and staff at Muja, Kwinana and Cockburn; and consideration of Synergy's staff training processes, we determined that:</p> <ul style="list-style-type: none"> <li>• An organisation chart is maintained for each asset site with clearly defined roles and responsibilities linked with appropriate qualifications and training of personnel</li> <li>• Synergy has maintained training programs to ensure its plant operators are fully trained in all key aspects of asset operations, relevant to each individual's position</li> <li>• GBU staff appear to have a clear understanding of the asset management processes within their area of responsibility and are consistent in their reference to relevant corporate information and strategy</li> <li>• Records of qualifications and training are maintained for all GBU staff and contractors</li> <li>• Operations trainees are trade based and/or are sourced from other power industries.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.6 Asset maintenance

**Key process:** Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.

**Expected outcome:** Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
6(a)	Maintenance policies and procedures are documented and linked to service levels required	<p>Through discussions with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and examination of documented policies, procedures, protocols and samples of SAP records, we determined that Synergy has:</p> <ul style="list-style-type: none"> <li>Comprehensively documented policies, procedures and protocols for each of its asset sites designed to facilitate the maintenance of Synergy's assets</li> <li>Documented asset related maintenance policies, procedures and protocols within its SAP (previously Ellipse) information system. SAP (and previously Ellipse) incorporates major equipment maintenance procedures, equipment details, maintenance intervals, costs and equipment history</li> <li>Developed procedures which specifically refer to required service levels (where appropriate) for the operation of specific items of equipment, or specific electrical or mechanical procedures.</li> </ul> <p>During our site visits to Muja, Kwinana, and Cockburn power stations, we observed that maintenance processes and procedures are well established and complimented by continuous plant improvements.</p>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
6(b)	Regular inspections are undertaken of asset performance and condition	<p>Through discussions with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and examination of documented policies, procedures, protocols and samples of SAP records, we determined that:</p> <ul style="list-style-type: none"> <li>A structured program is in place for key mechanical and electrical assets (such as turbines, transformers, generators, etc.) to be condition monitored using online vibration, remote monitoring, and oil and water sampling and analysis</li> <li>Electrical systems (including protection systems) are regularly tested to avoid unplanned outages or failures</li> <li>Control system upgrades (including governor and other equipment level control) and electrical system upgrades (including switchboards and protection equipment) provide crucial assistance to Synergy's outage planning works</li> <li>Equipment assessment and inspection reports are generated and made available to staff and management requiring information on equipment condition and performance.</li> </ul> <p><b>Note</b></p> <p>Through discussion with the Asset Performance Manager and Project Manager of the Kwinana decommissioning project, and site visit to Kwinana power station we observed that:</p> <ul style="list-style-type: none"> <li>Kwinana Power Station Units A, B, and C have been officially closed and are currently subject to decommissioning. Access to the old Units A, B, and C is restricted to staff undertaking specific decommissioning or other maintenance work</li> </ul>

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> <li>Shared services that were part of Units A, B, and C and are now used for the HEGTs, old 20MW gas turbine and Cockburn Power Station (such as cooling water system, water treatment plant etc.) are managed under a detailed shared services maintenance plan prepared by Synergy to ensure the ongoing operation of those systems. A future task for the decommissioning project is to determine an effective means of replacing the old shared service with new standalone equipment (where possible and relevant), to enable the more complete decommissioning of the old Units A, B, and C and the ongoing operation of HEGTs and Cockburn Power Station.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	<p>Through discussions with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and examination of documented policies, procedures, protocols and samples of SAP records, we observed that Synergy's maintenance planning function requires:</p> <ul style="list-style-type: none"> <li>For each facility's major equipment, SAP to contain plans for scheduled maintenance as well as required emergency and corrective works</li> <li>Emergency and corrective works to have the highest priority due to the impact on plant availability</li> <li>All maintenance work undertaken to be recorded in SAP</li> <li>Maintenance schedules to be monitored on a weekly basis via a comprehensive internal management reporting of work order completion, backlogs, etc. (including a work order backlog check by planners). This weekly report enables Synergy to rigorously assess work order backlogs, including work orders not yet completed, or rescheduled to ensure the integrity of each asset's maintenance schedule is maintained</li> <li>In relation to maintenance schedules in SAP, maintenance items to be allocated to categories showing their priority and/or type of work, including: <ul style="list-style-type: none"> <li>PM01 – corrective maintenance</li> <li>PM02 – preventative maintenance</li> <li>PM06 – scheduled maintenance to be undertaken at an outage (i.e. nature of the work requires plant shutdown or equivalent).</li> </ul> </li> </ul> <p>In relation to major planned outages, we also observed that:</p> <ul style="list-style-type: none"> <li>In each case, to reduce the duration of the outages, Synergy arranges work on critical path activities to be conducted 24 hours/day where possible</li> <li>Consideration during planned outages is given to the inclusion of other outstanding tasks that can only be performed during an outage, but while also taking into consideration minimisation of the outage duration</li> <li>Synergy's procedure for approval of expenditure requires an adequate level of analysis and scrutiny of business cases against corporate performance criteria</li> <li>A project manager is allocated to major planned outages to ensure work is optimised</li> </ul>	

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> <li>Each outage is concluded with an Outage Report, which forms the basis for the Outage Review meeting that leads to new work orders being raised.</li> </ul> <p>During our site visits to Muja, Kwinana and Cockburn power stations, we observed that incidents (including unplanned outages/faults) are logged in GIRS, with new work orders raised where relevant.</p>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	<p>Through discussions with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and examination of documented policies, procedures, protocols and samples of SAP records, we determined that Synergy has consistently applied the following procedures throughout the review period:</p> <ul style="list-style-type: none"> <li>Equipment failures are investigated and where necessary, associated systems to be modified or corrected to reduce the likelihood of the failure to be repeated</li> <li>The GIRS system is used to report plant incidents and to facilitate the formal process for the incident to be risk rated, reviewed, investigated and relevant actions put into place to address the risk of the incident occurring again. Where relevant, a work order number will be referenced in the GIRS report to identify the corrective actions put in place</li> <li>The significance of the failure is to be a major consideration in the failure investigation and resulting modifications</li> <li>Equipment failures are investigated to determine whether the cause of the failure may be present in other similar Synergy asset. e.g. if HEGT1 had a significant issue, HEGT2 would also be assessed to determine whether or not the same issue was applicable to HEGT2.</li> </ul> <p>In relation to a recent cooling tower failure incident at Muja, we observed that Synergy has commissioned upgrades on all other Muja cooling towers to minimise the risk of a similar failure occurring on the other cooling tower cells.</p>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
6(e)	Risk management is applied to prioritise maintenance tasks	<p>Synergy applies a risk management approach to its prioritisation of asset maintenance tasks. Through discussions with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and consideration of Synergy's risk management practices and operational activities, we determined that Synergy's maintenance methodology utilises the following risk management techniques:</p> <ul style="list-style-type: none"> <li>Application of risk based processes to manage maintenance tasks, with higher risk tasks given priority over lower risk tasks</li> <li>Management of risks through professional and appropriately qualified personnel adopting good processes and procedures as set by Synergy's overall asset management framework</li> <li>Management of assets' risk profile by investing in optimal plant improvements through its OMSP.</li> </ul> <p>We note that significant investment has been made at Muja to upgrade some key systems, which Synergy anticipate should increase performance and reliability of the asset.</p> <p><b>Improvement opportunity</b></p>	



No	Effectiveness Criteria	Findings	
		<p>Synergy's risk based approach to maintenance activities includes a priority rating ranging from 1 to 5 (with 1 requiring immediate action). As part of its monitoring processes, Synergy runs a SAP Weekly Maintenance Measures report which provides a summary of work order status, presented as:</p> <ul style="list-style-type: none"> <li>• Unexecuted</li> <li>• Cancelled before execution</li> <li>• Closed incorrectly</li> <li>• % completed in accordance with the Schedule.</li> </ul> <p>In its present state, the report does not differentiate or highlight high priority work orders. By presenting work orders by priority rating, management will be alerted to high priority orders which require action. Such a report will also help to validate the prioritisation of work orders.</p>	
		<b>Adequacy Rating:</b> Requires some improvement (B)	<b>Performance Rating:</b> Performing effectively (1)
		<p><b>Recommendation 1/2017</b>            Synergy consider:</p> <p>(a) Updating its SAP Weekly Maintenance Measures report to highlight the relative priority of outstanding work orders, including summary statistics by priority rating</p> <p>(b) Using the report to review all open Priority 1 and Priority 2 Work Orders to determine whether they are appropriately categorised.</p>	<p><b>Action Plan 1/2017</b>            The SAP weekly maintenance measures report will be revised to include summary statistics of priority 1 and 2 work orders. Non-executed priority 1 and 2 work orders will be highlighted for review.</p> <p><b>Responsible Person:</b>            Asset Performance Manager</p> <p><b>Target Date:</b>  <b>30 June 2017</b></p>
6(f)	Maintenance costs are measured and monitored	<p>Through discussion with the Asset Performance Manager, managers and relevant staff at Kwinana, Cockburn and Muja, and examination of Synergy's reporting processes, we determined that:</p> <ul style="list-style-type: none"> <li>• Dashboard reports are produced on a monthly basis for each asset, enabling management to specifically assess actual v budgeted expenditure for each asset, identify sites that are over budget or problematic and determine necessary corrective action</li> <li>• Synergy's reporting processes compare actual performance against budgeted expenditure for each asset site. Reasons for significant variances at the cost centre level are examined and scrutinised by management.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.7 Asset Management Information System

**Key process:** An asset management information system is a combination of processes, data and software that support the asset management functions.

**Expected 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.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
7(a)	Adequate system documentation for users and IT operators	<p>Through discussion with the Senior Project Manager [Core Systems Improvement (<b>CSI</b>)] and PI system specialist, walkthrough of SAP and PI information systems and examination of Synergy's SAP transitioning project documents, we observed that:</p> <ul style="list-style-type: none"> <li>In July 2016, the GBU transitioned from Ellipse to SAP as its Computerised Maintenance Management System (<b>CMMS</b>)</li> <li>Synergy uses PI as a live monitoring and recording database for plant operations</li> <li>Synergy maintains internal support teams for the maintenance of SAP and PI.</li> </ul> <p>Documents are stored in the DM electronic document management system, which:</p> <ul style="list-style-type: none"> <li>Has a tracker for document version control</li> <li>Includes a suite of policies and user guides for SAP and general IT use.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
7(b)	Input controls include appropriate verification and validation of data entered into the system	<p>Through discussion with the Senior Project Manager (CSI) and PI system specialist, walkthrough of SAP and PI information systems and examination of Synergy's SAP transitioning project documents, we observed that:</p> <ul style="list-style-type: none"> <li>Input controls have been implemented via 'global profiles' assigned to each employee based on their roles and position (including a DFA integrated within SAP (and previously, Ellipse) designed to align with Synergy's Procurement processes)</li> <li>Global profiles are determined and governed by function leads and have been implemented within SAP by Synergy's in-house IS support team.</li> <li>Processes are in place to verify and validate data entered into SAP (and previously, Ellipse)</li> <li>A limited number of staff have access to input data into SAP</li> <li>A quality assurance process requires signoff from relevant staff.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
7(c)	Logical security access controls appears adequate, such as passwords	<p>Through discussion with the Senior Project Manager (CSI) and PI system specialist, walkthrough of SAP and PI information systems and examination of Synergy's SAP transitioning project documents, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy's processes and procedures provide for all users to be assigned a unique 'global profile' user account and password that adhere to Synergy's IS security standards. Account password requirements provide for a minimum and mixture of characters</li> <li>• Passwords are synchronised to the Windows environment via the active directory. Three unsuccessful login attempts freeze the user account</li> <li>• Synergy's IT Security policy documents the standards, which define how access is granted and permissions are managed.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
7(d)	Physical security access controls appear adequate	<p>Through discussion with the Senior Project Manager (CSI), PI system specialist and ICT infrastructure Manager, walkthrough of SAP and PI information systems and examination of Synergy's SAP transitioning project documents, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy's head office, which houses its key ICT infrastructure maintains standard building protocols, including: <ul style="list-style-type: none"> <li>• Secure lifts (with restricted floor access)</li> <li>• Swipe Card access</li> <li>• CCTV.</li> </ul> </li> <li>• Upon notification of an employee termination, the employee's global profile is terminated</li> <li>• Synergy's data centre and offsite data centres are managed through a service contract with ASG. ASG site controls include: <ul style="list-style-type: none"> <li>• Biometric scans</li> <li>• Escorted visitation</li> <li>• ID presentation prior to site access.</li> </ul> </li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

No	Effectiveness Criteria	Findings	
7(e)	Data backup procedures appear adequate and backups are tested	<p>Through discussion with the Senior Project Manager (CSI), PI system specialist and ICT Infrastructure Manager, walkthrough of SAP and PI information systems and examination of Synergy's SAP transitioning project documents, we determined that:</p> <ul style="list-style-type: none"> <li>Backups of production data occur on a tiered information basis. Standard backups are retained on a daily, weekly and monthly basis. Annual backups are retained permanently</li> <li>Backup tapes are collected and stored off-site by ASG</li> <li>ICT stakeholders are included as part of Disaster Recovery exercise simulations (the last formal exercise took place in May 2015)</li> <li>Rolling Disaster Recovery (data restoration) tests are performed informally on a regular basis as part of ICT routine operations. These recovery exercises reflect the ICT function's capability to restore backed up data.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
7(f)	Key computations related to licensee performance reporting are materially accurate	Synergy's SAP (and previously, Ellipse) asset management information system does not directly provide data used in any computation related to Synergy's licence performance reporting.	
		<b>Adequacy Rating:</b> Not performed	<b>Performance Rating:</b> Not performed
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	<p>Through discussions with the Asset Performance Manager and consideration of Synergy's management reporting procedures, we determined that:</p> <ul style="list-style-type: none"> <li>A variety of scheduled reports are capable of being generated from SAP</li> <li>Scheduled reports are run on a regular basis including management reports in relation to performance and Work Order management.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.8 Risk management

**Key process:** Risk management involves the identification of risks and their management within an acceptable level of risk.

**Expected outcome:** An effective risk management framework is applied to manage risks related to the maintenance of service standards.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.	<p>Through discussions with the Risk Management Advisor – Corporate Services and Asset Performance Manager, and walk through of Synergy’s risk management policies, procedures and practices, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy incorporates risk management as a fundamental aspect of its decision making processes to support and enhance business activities in all areas of its operations</li> <li>• The Synergy Board provides oversight on all elements of risk management, with the Audit &amp; Risk Management Committee having accountability for ensuring that risk management processes are established and operating effectively. The Chief Executive Officer has the ultimate ownership responsibility for risk management, with the Executive playing a pivotal role. The Manager Audit &amp; Risk provides guidance on the application of the process and also reports risk management activity to the Board Audit &amp; Risk Management Committee</li> <li>• Synergy’s risk management hierarchy (as it applies to its GBU operations) is composed of: <ul style="list-style-type: none"> <li>• Empower, an organisation wide risk management system, which applies three categories of risk: <ul style="list-style-type: none"> <li>▪ Strategic</li> <li>▪ Business Unit</li> <li>▪ Social Responsibility and business continuity</li> </ul> </li> <li>• Risk governance processes (including policies and procedures), which are referenced in the AMS and supporting AMPs and ALCPs</li> <li>• Risk analyses conducted on a project basis, as part of the business case proposal for acquisition of new assets</li> </ul> </li> <li>• In 2014, Synergy engaged Thies Services (now Ventia) to review its Asset Management Framework, a component of which included a review of the risk-based approach to maintenance activity</li> <li>• During the current review period, the ERAP and PLUS model was superseded by the preparation and maintenance of ALCPs, which detail risks associated with each system on site. Risk assessments are performed annually when updating the ALCP</li> <li>• Since 2015, GBU has been transitioning to Synergy’s organisation wide risk management system ‘Empower’.</li> </ul> <p>We sighted the GBU risk register, ALCPs for a number of Muja Power Station assets and independent engineering reports performed by AIG for the Muja CD site.</p> <p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	<p>Through discussions with the Asset Performance Manager and Risk Management Advisor – Corporate Services and examination of Synergy’s risk management procedures, we determined that:</p> <ul style="list-style-type: none"> <li>• Site specific risk registers are maintained for each asset site to record all identified operational risks and associated risk treatments/actions</li> <li>• GBU is in the process of transitioning to the organisation wide Empower risk management system, which documents all GBU risks and associated risk treatments/actions</li> <li>• Risk treatment plans are primarily actioned through SAP work orders, schedules and tasks, which are monitored through day-to-day operations.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)
8(c)	The probability and consequences of asset failure are regularly assessed	<p>Through discussions with the Asset Performance Manager and Risk Management Advisor – Corporate Services, and examination of Synergy’s risk management procedures, we observed that Synergy has applied the following mechanisms for identifying consequence and likelihood of power station asset failure [as per Asset Planning s.1(h)]:</p> <ul style="list-style-type: none"> <li>• In 2014, Synergy updated its Asset Management Framework which included the development of a full suite of AMPs and ALCPs to accommodate all of its generation assets. Each ALCP is designed to: <ul style="list-style-type: none"> <li>• Identify the key functional failures for each sub system</li> <li>• Align functional failures to the current maintenance strategy to manage such failures (i.e. routines, inspections or testing conducted) and to meet the asset’s objectives and mission</li> <li>• Identify key historical events, significant failures and upgrade works/projects and referencing relevant reports, condition assessments and recommendations</li> <li>• Identify and review current and potential future risks which may impact the asset management strategy over the asset’s lifecycle</li> <li>• List improvement opportunities and new failure modes when they occur for ongoing continuous improvement</li> <li>• Reference the current whole of life budget as it applies to each system</li> </ul> </li> <li>• Synergy’s ALCPs utilise information compiled in its Engineering Risk Management System (and previously, its ERAP engineering risk evaluation tool) and OMSP, which include: <ul style="list-style-type: none"> <li>• Quantification of likelihood and impact of risks relating to safety, operational, commercial and environmental performance</li> <li>• Analysis and optimisation of maintenance expenditure.</li> </ul> </li> </ul> <p>Our examination of a sample of ALCPs for Muja CD and Kwinana Power Station (prior to decommissioning) and GBU risk registers indicate that the likelihood and consequence (impact) of asset failure has been assessed and is subject to ongoing review.</p>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.9 Contingency planning

**Key process:** Contingency plans document the steps to deal with the unexpected failure of an asset.

**Expected outcome:** Contingency plans have been developed and tested to minimise any significant disruptions to service standards.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	<p>Through discussion with the Asset Performance Manager, Risk Management Advisor – Corporate Services, relevant managers and other staff at Muja, Cockburn and Kwinana, and examination of relevant supporting documentation, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy has developed policies and manuals to facilitate an integration of risk management, crisis management and business continuity management</li> <li>• Synergy’s business continuity management framework includes: <ul style="list-style-type: none"> <li>• Business continuity policy</li> <li>• Business continuity manual containing information on crisis classification, relevant procedures, team roles, and logs and records to be maintained during crisis resolution</li> <li>• Crisis response plan</li> <li>• Crisis management toolkit</li> <li>• Emergency management manual</li> <li>• Emergency response plans and guidelines, specific to each power station or gas turbine site</li> </ul> </li> <li>• Each site Emergency Response/Management Plan specifies roles and responsibilities for staff to assist in management of an emergency and provides various scenarios and possible management strategies</li> <li>• As part of overall business continuity management framework, Synergy has established an Emergency Control Organisation and Emergency Management Response team at each site</li> <li>• To respond to a crisis, a group Crisis Management Response (<b>CMR</b>) team may be convened on site or by teleconference to work closely with the Board, the Minister and relevant regulatory bodies</li> <li>• Crisis Management and Business Continuity system and processes are subject to a detailed annual review by the Risk Team and General Manager Corporate Services. Based on Synergy’s risk management framework, a list of potential crises is also reviewed annually to ensure provisional crisis control plans are developed for the most critical scenarios</li> <li>• Where relevant and possible, emergency response plans are subject to testing in accordance with timeframes specified in the relevant plan. Testing takes the form of periodic 'live exercises' as well as desk top training. For example, the Emergency Response Plan for the: <ul style="list-style-type: none"> <li>• Kwinana Gas Turbine site requires testing to be performed on an annual basis</li> <li>• Muja Power Station site involves testing of evacuation drills and emergency scenarios in accordance with a formal schedule established and monitored by the site’s incident controller</li> </ul> </li> </ul>

No	Effectiveness Criteria	Findings
		<ul style="list-style-type: none"> <li>• The Business continuity manual requires the BCM Coordinator within the Risk Team to facilitate a crisis scenario exercise with a CMR team on an annual basis, or upon major change to crisis management team membership. We sighted evidence of: <ul style="list-style-type: none"> <li>• The crisis management exercise conducted on 1 May 2015 (in office)</li> <li>• The environment emergency response exercise conducted at Muja in April 2016</li> <li>• Additional Emergency Training reports for Muja and Kwinana sites</li> </ul> </li> <li>• Synergy has a dual data site structure to mitigate risk of lost data.</li> </ul> <p>We sighted reports and photos from the recent environmental emergency response exercise at Muja, which was designed to incorporate both safety related and environmental related emergencies. The exercise simulated injury to personnel, rescue of those personnel and an environmental incident. The Muja emergency response team also undertakes small exercises on a fortnightly basis.</p> <p>Several contingencies are inherent in the design of Synergy’s power station sites, such as:</p> <ul style="list-style-type: none"> <li>• Fuel: <ul style="list-style-type: none"> <li>• Kwinana – primary fuel is gas as supplied by third party pipeline and gas supply contract; secondary fuel is diesel which is stored on site in a storage tank</li> <li>• Muja – primary fuel is coal supplied by Premier coal. Coal is stockpiled at Muja with adequate coal stored for around three months’ operation of units 5-8. Fuel oil for starting of the plant is stored at Muja with adequate fuel stored for several starts. In case of coal supply conveyor failure, coal can be delivered to Muja via road and also by haul pack</li> <li>• Collie – primary fuel is coal supplied by Premier coal. Coal is stockpiled at Collie with adequate coal stored for around 1 month operation</li> </ul> </li> <li>• Water: <ul style="list-style-type: none"> <li>• Kwinana/Cockburn – high quality water is provided by the onsite water treatment plant, with water stored in tanks. Cooling water is provided by ocean channel, via heat exchange with the cooling water circuit</li> <li>• Muja – high quality water is provided by an onsite water treatment plant, with water stored in tanks. Water is sourced from mine dewatering and onsite 54ML storage dam giving 18 hours storage. Several alternative water sources are available including other coal bore field locations, and an old mine void</li> </ul> </li> <li>• Power backup: <ul style="list-style-type: none"> <li>• Kwinana – 20MW backup gas turbine, capable of running on diesel. This unit is used for black start and also for other critical power situations</li> <li>• Muja – a 600kW 415V diesel generator, plus a newly installed 2MW 11kV larger diesel generator provide backup power for critical equipment such as turbine lube oil systems, control systems, etc. in case of grid outage or other similar crisis event. Diesel fuel of around 5000L is stored on site, sufficient for around 10 hours operation of the 11kV generator. For start-up external power is required and two separate feeds are available to provide power to Muja</li> </ul> </li> </ul>



No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> <li>• Critical equipment:               <ul style="list-style-type: none"> <li>• Kwinana – the two HEGT units are predominantly duplicated and one unit can operate separately in the event of most failures on the other unit</li> <li>• Muja – consists of eight generation units and each unit can operate separately in the event of most failures on the other unit.</li> </ul> </li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.10 Financial planning

**Key process:** 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.

**Expected outcome:** A financial plan that is reliable and provides for the long-term financial viability of the services.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	<p>Through discussion with the Manager – Financial Planning and consideration Synergy’s financial planning mechanisms, we determined that in preparation of a portfolio level financial plan:</p> <ul style="list-style-type: none"> <li>The financial objectives and strategies of Synergy’s GBU are driven by its overall business unit objectives</li> <li>PowrSym modelling is used to determine financial targets for each of GBU’s Thermal Generation and GTDG operations, as part of Synergy’s Strategic Planning process that is independent of the State Budget Forecast process</li> <li>The financial plans for each of GBU’s Thermal Generation and GTDG operations are supported by strategies and action plans for achieving the financial targets</li> <li>Site analysts at each asset submit a plan and budget covering labour requirements, maintenance requirements and other operational costs. The maintenance plan is determined based on scheduled work for major items plus base workload. Data is sourced from the maintenance system and with reference to the five year plan for each asset.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	<p>Through discussion with the Manager – Financial Planning and consideration of Synergy’s financial planning mechanisms, we determined that in preparation of a portfolio level financial plan:</p> <ul style="list-style-type: none"> <li>Synergy has access to funds mainly from three sources: <ul style="list-style-type: none"> <li>Revenue from operations</li> <li>Debt facility from WA Treasury</li> <li>Equity injection by government</li> </ul> </li> <li>An application for funds made by Synergy is required to be in accordance with the Delegated Financial Authority, which specifies that any expenditure commitment over \$20 million including GST (or 1% of the WDV of Synergy’s consolidated fixed assets and investment as appearing in its latest audited financial statements) is required to be approved by the Minister</li> <li>Site level plans are drawn by analysts at each site and form part of the ALCP, which is then rolled up into the portfolio level financial plan.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	<p>Through discussions with the Manager – Financial Planning and consideration of Synergy’s financial planning mechanisms, we determined that:</p> <ul style="list-style-type: none"> <li>• Detailed level projections of operating statements and statement of financial position occur at a portfolio level after taking into account operational information from individual assets</li> <li>• Projections of detailed monthly profit and loss are also prepared for each of GBU’s Thermal Generation and GTDG operations</li> <li>• The financial plan for GBU’s Thermal Generation and GTDG operations also includes a separate projection of monthly P&amp;L subdivided into operational, maintenance, logistics and staff by site.</li> </ul> <p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	<p>Through discussions with the Manager – Financial Planning and consideration of Synergy’s financial planning mechanisms, we determined that:</p> <ul style="list-style-type: none"> <li>• As part of the annual State Budget Forecast process, a five year forecast of income and expenses is prepared at a portfolio level (being a collation of plans and forecasts prepared for each asset) and submitted to the Department of Treasury for review, prior to inclusion in the State budget</li> <li>• Detailed information is provided for each item in the five year forecasts, including underlying assumptions and financial impacts and presented for review to Synergy’s Board</li> <li>• A financial plan analysis pack is prepared each year to track variance of the annual financial plan from state budget forecasts.</li> </ul> <p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	<p>Through discussions with the Manager – Financial Planning and examination of Synergy financial planning policies, monthly financial performance reports and models, which form the appendices of site ALCPs, we determined that:</p> <ul style="list-style-type: none"> <li>• A detailed financial plan is prepared for GBU’s Thermal Generation and GTDG operations, which includes a detailed monthly Profit &amp; Loss for each of the major assets</li> <li>• The financial plan for GBU’s Thermal Generation and GTDG operations considers operational costs relating to engineering, maintenance and administration and provides a separate monthly Profit &amp; Loss for each of these costs</li> <li>• Site analysts at each asset are required to submit a plan that covers requirements for labour, maintenance, administration, materials, contractors and other operational costs. The maintenance plan is determined based on scheduled work plus availability requirements</li> <li>• For each site, a separate monthly Profit &amp; Loss is prepared for each of the operational costs relating to logistics, staff, engineering, maintenance and operations</li> <li>• The financial plan is supported by a capital expenditure plan, which outlines projects and associated expenditure for each asset.</li> </ul> <p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	<p>Through discussions with the Manager – Financial Planning and an examination of a sample of AMPs, ALCPs and GBU Monthly reports, we determined that:</p> <ul style="list-style-type: none"> <li>• Dashboard reports are produced on a monthly basis for each asset and presented to the GBU Leadership Team, which enables management to specifically assess actual vs budgeted expenditure for each asset, identify sites that are over budget or problematic and determine necessary corrective action</li> <li>• The Manager – Financial Planning communicates with the GBU on a monthly, quarterly and annual basis to update the financial model within the Asset Lifecycle Plan (where required), which feeds back into the budget</li> <li>• Forced outage factors and plant availability are amongst the key performance indicators that are tracked in the dashboard reports</li> <li>• No significant variances, which required action beyond the standard business processes detailed above occurred during the period subject to audit.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately defined (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.11 Capital expenditure planning

**Key process:** 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

**Expected 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.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	<p>Through discussions with the Manager – Financial Planning, consideration of Synergy’s capital planning procedures and examination of the capital expenditure plans for Synergy’s generation assets, we determined that:</p> <ul style="list-style-type: none"> <li>• A capital expenditure plan is included in the annual financial plan for GBU’s Thermal Generation and GTDG operations</li> <li>• Capital expenditure planning is undertaken along with financial planning on a rolling five year basis, as part of the State Budget Forecasting process</li> <li>• The plan provides information on the amount of budgeted capital expenditure, purpose and description of the spend and the asset to which it relates</li> <li>• ALCPs break down capital expenditure on a site system level</li> <li>• All capital expenditure projects over \$20 million including GST (or 1% of the WDV of Synergy’s consolidated fixed assets and investment as appearing in its latest audited financial statements) is required to be approved by the Minister (as per Synergy’s DFA).</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	<p>Through discussions with the Manager – Financial Planning, consideration of Synergy’s capital planning procedures and an examination of the capital expenditure plans for Synergy’s generation assets, we determined that GBU’s Thermal Generation and GTDG operations capital expenditure plans outline the:</p> <ul style="list-style-type: none"> <li>• Individual capital projects by site (e.g. power station) (which feature in the ALCP appendix)</li> <li>• Details of the financial year in which the capital expenditure amount is planned</li> <li>• Reasons for the expenditure.</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately documented (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	<p>Through discussions with the Manager – Financial Planning, consideration of Synergy’s capital planning procedures and an examination of the capital expenditure plans for Synergy’s generation assets, we determined that:</p> <ul style="list-style-type: none"> <li>• Capital expenditure plans are prepared using SAP finance data and models previously built from OMSP, which provides a mathematical modelling tool to analyse and optimise expenditure by evaluating the interaction between plant condition, maintenance spending, investment spending, operating regime and reliability targets</li> <li>• Capital expenditure is set out in the appendix of each ALCP</li> <li>• Each ALCP identifies, predicts and ranks plant condition, degradation and residual life, and provides an indication of the optimum spending program</li> <li>• Each ALCP is reviewed on an annual basis, with periodic updates also made with input from site personnel and the finance team</li> <li>• Synergy’s procedures address the requirement for life cycle costs of assets to be assessed and recorded in formal project evaluations</li> <li>• Synergy’s procedures address the requirement for investment and capital expenditure estimates to be calculated and disclosed within the project evaluation phase.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately documented (A)	<b>Performance Rating:</b> Performing effectively (1)
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	<p>Through discussions with the Manager – Financial Planning, consideration of Synergy’s capital planning procedures and an examination of the capital expenditure plans for selected generation assets, we determined that:</p> <ul style="list-style-type: none"> <li>• The capital plan is annually reviewed internally along with the financial plan to ensure consistent alignment with current business and strategic plans</li> <li>• The capital plan is also reviewed annually as part of the State Budget forecasting process</li> <li>• When projects are completed they are reviewed against the approved criteria to test whether the project objectives were met.</li> </ul>	
		<b>Adequacy Rating:</b> Adequately documented (A)	<b>Performance Rating:</b> Performing effectively (1)

## 4.12 Review of Asset Management System

**Key process:** The asset management system is regularly reviewed and updated.

**Expected outcome:** Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.

**Overall Adequacy/Performance rating:** Adequately defined (A) / Performing effectively (1)

No	Effectiveness Criteria	Findings
12(a)	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	<p>Through discussions with the Asset Performance Manager and Manager, Regulation and Compliance, and examination of Synergy's GBU AMS, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy has developed a review framework for its AMS (every two years, with next scheduled review for July 2017) and AMPs (annually)</li> <li>• Updated plans are stored within Synergy's DM system</li> <li>• The AMS outlines Synergy's reporting requirements to the ERA in the event of substantial change to the AMS, which Synergy defines as: <ul style="list-style-type: none"> <li>• Addition or removal of individual generating works to/from Synergy's portfolio of generating work</li> <li>• A change that would materially affect the risk to the performance of a generating asset</li> <li>• Any other changes deemed to be substantial as part of the internal review.</li> </ul> </li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>
12(b)	Independent reviews (e.g. internal audit) are performed of the asset management system	<p>Through discussions with the Asset Performance Manager and Manager, Regulation and Compliance, and examination of Synergy's GBU AMS, we determined that:</p> <ul style="list-style-type: none"> <li>• Synergy's Asset Management framework now requires the GBU AMS to be subject to review by an acceptable independent expert</li> <li>• Subsequent to the 2013 EGL Performance Audit, Synergy conducted a review of its Asset Management framework, with input from external consultants (Ventia).</li> </ul>
		<p><b>Adequacy Rating:</b> Adequately defined (A)      <b>Performance Rating:</b> Performing effectively (1)</p>

# 5 Follow-up of previous review action plans

Reference (no./year)	(Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue)	Auditors' Recommendation or action taken	Date Resolved	Further action required
<b>A. Resolved before end of previous Review period</b>				
N/A - The 2013 Asset Management System Review report did not contain auditor recommendations or action plans which were resolved before the end of the previous review period.				
<b>B. Resolved during current Review period</b>				
1/2013	<p>B2</p> <p><b>Asset operations</b></p> <p><i>5(e) Staff receive training commensurate with their responsibilities.</i></p> <p>In relation to the Kwinana Power Station, the extent of operator access to the Plant DCS system (as identified through the 2009 ERAP assessment) creates a minor exposure to operational errors and potential accidents. Current operator access levels allow operators to potentially alter parameters in protection systems, alarm limits and bypass permissions.</p>	<p>Synergy implemented a site instruction, which details the conditions under which operators can perform a Control Inhibit on the plant Distributed Control System (DCS). All Control Inhibits are based on a risk assessment. No safety related Control Inhibits can be made without a risk assessment and approval from the engineering department.</p> <p>This site instruction emphasised through regular toolbox talks to Operations staff.</p>	24 February 2014	No
2/2013	<p>A2</p> <p><b>Asset maintenance</b></p> <p><i>6(b) Regular inspections are undertaken of asset performance and condition.</i></p> <p>The 2009 Engineering Risk Assessment Process assessment confirmed the planned critical risk reduction strategies such as improved engineering resources on site, replacing ageing electrical components, etc. Although the extent of the improvement works undertaken to improve the condition of the plant is</p>	<p>Synergy acknowledges that two shift operations are market driven outcome. Synergy actively trades in the WEM and where possible, tries to minimise two shift operations through its trading activities.</p> <p>Synergy considered the option of installing an acoustic leak detection system within the context of the June 2013 State Government decision to retire Kwinana Power Station Stage C from October 2015, installing an acoustic leak detection system would not be an economic investment. To do so would require a major outage and investment in excess of \$2M. With only 20 months</p>	24 February 2014	No



Reference (no./year)	(Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue)	Auditors' Recommendation or action taken	Date Resolved	Further action required
	<p>constrained by the official plant closure date of 2015, Verve Energy is expected to continue to manage the safety critical risks of thermal fatigue and corrosion type issues. Effective options for managing those risks are to implement Acoustic Leak Detection Systems and to minimise the 2-shifting operations of the plant.</p> <p>As other planned risk reduction works are ongoing the next ERAP assessment should clarify the residual risk profile of the plant.</p>	<p>remaining until retirement the installation of such a system is neither practicable nor economic.</p>		
<p>3/2014</p>	<p>A2</p> <p><b>Asset maintenance</b></p> <p><i>6(c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</i></p> <p>In instances where recommendations are made by the detailed MetLab reports prepared as part of outage reporting, Verve Energy's processes provide for work orders to be raised to address those recommendations.</p> <p>As those processes do not provide a procedural link between the relevant recommendations and completed work orders, there is a minor improvement opportunity to more effectively track action taken to close out those recommendations.</p>	<p>A process to facilitate tracking of progress on recommendations in the outage closeout report to consequent work orders has been captured as part of Synergy's recently upgraded Outage Management Framework (OMF).</p> <p>Within the OMF there is a requirement to capture all recommendations and link these to any consequent work orders.</p>	<p>24 February 2014</p>	<p>No</p>

Reference (no./year)	(Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue)	Auditors' Recommendation or action taken	Date Resolved	Further action required
4/2013	<p>B2</p> <p><b>Review of AMS</b></p> <p><i>12(a) A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current</i></p> <p><i>12(b) Independent reviews (e.g. internal audit) are performed of the asset management system</i></p> <p>Although components of Verve Energy's asset management system are subject to regular review and update, a formal process has not been established for ensuring the currency of the asset management system (including the currency of the collective references, which describe that system).</p> <p>There is also some doubt as to whether there has been any "substantial" change to Verve Energy's asset management system, which would warrant notification to the Authority per section 14(1) (b) of the Act.</p>	<p>Synergy initiated a project with the scope of reviewing and aligning its Asset Management System with ISO 55000, which includes a change management process (feedback, plan, check and act) with the assistance of external consultants Thiess Services (now Ventia).</p> <p>The review included an update to the Asset Management Policy and updates to the "Management Review" and "Continuous Improvement" sections of the Asset Management System. The Asset Management System provides a section which describes Synergy's interpretation of "substantial change" and the obligation to notify regulatory stakeholders.</p>	25 August 2015	No
<b>C. Unresolved at end of current Review period</b>				
N/A – There are no unresolved action plans from the 2013 Asset Management System Review.				

# Appendix A: Review plan

# **Electricity Generation and Retail Corporation trading as Synergy**

**Electricity Generation Licence (EGL7)**

**2017 Asset Management System  
Review**

**Review Plan**

March 2017

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# 1 Introduction

## Overview

The Economic Regulation Authority (**the ERA**) has under the provisions of the Electricity Industry Act 2004 (**Electricity Act**), issued to Electricity Generation and Retail Corporation T/A Synergy (**Synergy**) the Electricity Generation Licence No.7 (EGL7) (**the Licence**).

Section 14 of the Electricity Act requires Synergy to provide the ERA an asset management systems review (**the review**) conducted by an independent expert acceptable to the ERA not less than once in every 24 month period unless otherwise approved by the ERA. With the ERA's approval, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has been appointed to conduct the review for the period 1 April 2013 to 31 October 2016 (**review period**).

Synergy has been granted a licence to construct and operate, or operate existing electricity generating works throughout the South West Interconnected System (SWIS) network. Synergy is the largest electricity generator in the SWIS network.

The review will be conducted in accordance with the ERA's April 2014 issue of the Audit and Review Guidelines: Electricity and Gas Licences (**Review Guidelines**). In accordance with the Review Guidelines this document represents the Review Plan (**the Plan**) that is to be agreed upon by Deloitte and Synergy and presented to the ERA for approval.

## Objective

The objective of the review is to independently examine the effectiveness and performance of the respective asset management systems established for assets subject to Synergy's Licence during the review period.

## Scope

In accordance with the Review Guidelines, the review will consider the effectiveness of Synergy's existing control procedures within the 12 key processes in the asset management life-cycle as outlined below at Table 1. Each key process and effectiveness criteria is applicable to Synergy's Licence and as such will be individually considered as part of the review.

**Table 1 – Asset management system key processes and effectiveness criteria**

#	Key processes	Effectiveness criteria
1	Asset planning	<ul style="list-style-type: none"> <li>Asset management plan covers key requirements</li> <li>Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning</li> <li>Service levels are defined</li> <li>Non-asset options (e.g. demand management) are considered</li> <li>Lifecycle costs of owning and operating assets are assessed</li> <li>Funding options are evaluated</li> <li>Costs are justified and cost drivers identified</li> <li>Likelihood and consequences of asset failure are predicted</li> <li>Plans are regularly reviewed and updated.</li> </ul>
2	Asset creation and acquisition	<ul style="list-style-type: none"> <li>Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</li> <li>Evaluations include all life-cycle costs</li> <li>Projects reflect sound engineering and business decisions</li> <li>Commissioning tests are documented and completed</li> <li>Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.</li> </ul>

#	Key processes	Effectiveness criteria
3	Asset disposal	<ul style="list-style-type: none"> <li>Under-utilised and under-performing assets are identified as part of a regular systematic review process</li> <li>The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken</li> <li>Disposal alternatives are evaluated</li> <li>There is a replacement strategy for assets.</li> </ul>
4	Environmental analysis (all external factors that affect the system)	<ul style="list-style-type: none"> <li>Opportunities and threats in the system environment are assessed</li> <li>Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved</li> <li>Compliance with statutory and regulatory requirements</li> <li>Achievement of customer service levels.</li> </ul>
5	Asset operations	<ul style="list-style-type: none"> <li>Operational policies and procedures are documented and linked to service levels required</li> <li>Risk management is applied to prioritise operations tasks</li> <li>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</li> <li>Operational costs are measured and monitored</li> <li>Staff resources are adequate and staff receive training commensurate with their responsibilities.</li> </ul>
6	Asset maintenance	<ul style="list-style-type: none"> <li>Maintenance policies and procedures are documented and linked to service levels required</li> <li>Regular inspections are undertaken of asset performance and condition</li> <li>Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</li> <li>Failures are analysed and operational/maintenance plans adjusted where necessary</li> <li>Risk management is applied to prioritise maintenance tasks</li> <li>Maintenance costs are measured and monitored.</li> </ul>
7	Asset management information system	<ul style="list-style-type: none"> <li>Adequate system documentation exists for users and IT operators</li> <li>Input controls include appropriate verification and validation of data entered into the system</li> <li>Logical security access controls appear adequate, such as passwords</li> <li>Physical security access controls appear adequate</li> <li>Data backup procedures appear adequate and backups are tested</li> <li>Key computations related to licensee performance reporting are materially accurate</li> <li>Management reports appear adequate for the licensee to monitor licence obligations.</li> </ul>
8	Risk management	<ul style="list-style-type: none"> <li>Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system</li> <li>Risks are documented in a risk register and treatment plans are actioned and monitored</li> <li>The probability and consequences of asset failure are regularly assessed.</li> </ul>
9	Contingency planning	<ul style="list-style-type: none"> <li>Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.</li> </ul>

#	Key processes	Effectiveness criteria
10	Financial planning	<ul style="list-style-type: none"> <li>The financial plan states the financial objectives and strategies and actions to achieve the objectives</li> <li>The financial plan identifies the source of funds for capital expenditure and recurrent costs</li> <li>The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)</li> <li>The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period</li> <li>The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services</li> <li>Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.</li> </ul>
11	Capital expenditure planning	<ul style="list-style-type: none"> <li>There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates</li> <li>The plan provides reasons for capital expenditure and timing of expenditure</li> <li>The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan</li> <li>There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.</li> </ul>
12	Review of Asset Management System	<ul style="list-style-type: none"> <li>A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current</li> <li>Independent reviews (eg internal audit) are performed of the asset management system.</li> </ul>

### Synergy's responsibility for maintaining an effective asset management system

Synergy is responsible for putting in place policies, procedures and controls, which are designed to provide for an effective asset management system for assets subject to the Licence.

### Deloitte's responsibility

Our responsibility is to express a conclusion on the effectiveness of Synergy's asset management systems to meet Licence requirements based on our procedures. The engagement will be conducted in accordance with Australian Standard on Assurance Engagements (ASAE) 3500 Performance Engagements issued by the Australian Auditing and Assurance Standards Board and the Guidelines, to state whether, in all material respects, based on the work performed, anything has come to our attention to indicate that Synergy had not established and maintained an effective asset management system for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and the systems have not operated effectively for the period 1 April 2013 to 31 October 2016. These standards also require us to comply with the relevant ethical requirements of the Australian professional accounting bodies. Our engagement provides limited assurance as defined in ASAE 3500.

### Limitations of use

Our report will be produced solely for the information and internal use of Synergy, and is not intended to be and should not be used by any other person or entity. No other person or entity is entitled to rely, in any manner or for any purpose, on this report.

We understand that a copy of our report will be provided to the ERA for the purpose of meeting Synergy's reporting requirements of section 14 of the Act. We agree that a copy of our report may be provided to the ERA for its information in connection with this purpose, but only on the basis that we accept no duty, liability or responsibility to the ERA in relation to the report. We accept no duty, responsibility or liability to any party, other than Synergy, in connection with the report or this engagement.

### Inherent limitations

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement conducted in accordance with ASAE 3500 and consequently does not allow us to obtain



assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement. Accordingly, we will not express an opinion providing reasonable assurance. We cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud. Accordingly, readers of our report should not rely on the report to identify all potential opportunities for improvement which may be required. Any projection of the evaluation of the level of effectiveness to future periods is subject to the risk that the systems may become inadequate because of changes in conditions, or that the degree of effectiveness with management procedures may deteriorate.

### **Independence**

In conducting our engagement, we will comply with the independence requirements of the Australian professional accounting bodies.

# 2 Approach

The review will be conducted in three distinct phases, being a risk assessment, system analysis/policy and procedure review and examination of performance. From the review results, a report will be produced to outline findings, overall assessments and recommendations for improvement in line with the Review Guidelines. Each step of the review is discussed in detail below.

## Risk assessment

The review will focus on identifying or assessing those activities and management control systems to be examined and the matters subject to review. Therefore, the purpose of conducting the risk assessment as a preliminary phase enables the reviewer to focus on pertinent/high risk areas of Synergy’s licence obligations. The risk assessment gives specific consideration to the status of post review action plans devised in response to previous review recommendations, changes to Synergy’s systems and processes and any matters of significance raised by the ERA and/or Synergy. The level of risk and materiality of the process determine the level of review required i.e. the greater the materiality and the higher the risk, the more effort will be applied.

The first step of the risk assessment is the rating of the potential consequences of Synergy not meeting its licence obligations, in the absence of mitigating controls. The consequence rating descriptions listed at Table 10 of the Review Guidelines (refer to **Appendix 1-1**), provides the risk assessment with context to enable the appropriate consequence rating to be applied to each obligation subject to review.

Once the consequence has been determined, the likelihood of Synergy not meeting its Licence obligations (against the defined effectiveness criteria) is assessed using the likelihood rating listed at Table 16 of the Review Guidelines (refer to **Appendix 1-2**). The assessment of likelihood is based on the expected frequency of non-performance against the defined criteria, over a period of time.

Table 2 below (sourced from Table 17 of the Review Guidelines) outlines the combination of consequence and likelihood ratings to determine the level of inherent risk associated with each individual effectiveness criteria.

**Table 2: Inherent risk rating**

	Consequence		
Likelihood	Minor	Moderate	Major
Likely	Medium	High	High
Probable	Low	Medium	High
Unlikely	Low	Medium	High

Once the level of inherent risk has been determined, the adequacy of existing controls is assessed in order to determine the level of control risk. Controls are assessed and prioritised as weak, moderate or strong dependant on their suitability to mitigate the risks identified. The control adequacy ratings used by this risk assessment are aligned to the ratings listed at Table 19 of the Review Guidelines (refer to **Appendix 1-3**).

Once inherent risks and control risks are established, the review priority can then be determined using the matrix listed at Table 20 of the Review Guidelines (refer to **Table 3** below). Essentially, the higher the level of risk the greater the level of examination is required.

**Table 3: Assessment of Review Priority**

	Adequacy of existing controls		
Inherent Risk	Weak	Moderate	Strong
High	Review priority 1	Review priority 2	
Medium	Review priority 3	Review priority 4	
Low	Review priority 5		

The following table outlines the review requirement for each level of review priority. Testing can range from extensive substantive testing around the controls and activities of particular processes to confirming the existence of controls through discussions with relevant staff.

**Table 4: Review Priority Table**

Priority Rating and Resulting Review Procedures	
Rating	Review requirement
Priority 1	<ul style="list-style-type: none"> <li>• Controls testing and extensive substantive testing of activities</li> <li>• Follow-up and if necessary, re-test matters previously reported.</li> </ul>
Priority 2	<ul style="list-style-type: none"> <li>• Controls testing and moderate substantive testing of activities</li> <li>• Follow-up and if necessary, re-test matters previously reported.</li> </ul>
Priority 3	<ul style="list-style-type: none"> <li>• Limited controls testing (moderate sample size). Only substantively test activities if further control weakness found</li> <li>• Follow-up of matters previously reported.</li> </ul>
Priority 4	<ul style="list-style-type: none"> <li>• Confirmation of existing controls via observation and walk through testing</li> <li>• Follow-up of matters previously reported.</li> </ul>
Priority 5	<ul style="list-style-type: none"> <li>• Confirmation of existing controls via observation, discussions with key staff and/or reliance on key references ("desktop review").</li> </ul>

The risk assessment has been discussed with stakeholders to gain their input as to the appropriateness and factual accuracy of risk and control ratings and associated explanations. The key sources considered in reaching our preliminary assessment of the risk and control ratings were:

- The previous asset management system review report (2013) and associated review plan and risk assessment
- Initial interviews with key Synergy staff
- Relevant records of Synergy's correspondence with the ERA's Secretariat
- Observations of the ERA's Secretariat.

At this stage, the risk assessment can only be a preliminary assessment based on reading of documentation and interviews by the reviewers. It is possible that the ratings and risk assessment comments may be revised as we conduct our work and new evidence comes to light. Accordingly the risk assessment for the asset management system review is a preliminary draft, not a final report, and no reliance should be placed on its findings. It is however an invaluable tool for focussing the review effort.

The asset management system review risk assessment is attached at **Appendix 2**.

### Systems analysis/walkthrough

The level of policy and procedure review required will be determined utilising the aforementioned priority scale. Once the priority level has been defined, the review will consist of:

- Interviewing key operational and administrative staff responsible for the development and maintenance of policies and procedural type documentation
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Synergy's asset management system requirements and standards.

The policy and procedure definition element of the asset management system review will be performed to provide a rating as defined under Table 5 (refer below).

Key documents which may be subject to review are not specifically disclosed in this plan. A list of documents examined will be included in the review report.

## Examination of performance

The actual performance of the relevant controls and processes in place will then be examined via:

- Consideration of reports and references evidencing activity
- Interviews with key operational staff
- Physical visits to the Muja Power Station and Gas Turbines & Distributed Generation operations (Kwinana)
- Consideration of Synergy's management of planned outage rates
- Consideration of the level of staff resourcing applied to maintaining those controls and processes
- Consideration of each installation's function, normal modes of operation and age.

A full work program will be completed to record the specific aspects of our review and examination of the performance of each asset management system key process. This work program will be based on:

- The review priority determined by the risk assessment to be applicable to each effectiveness criteria
- The results of the policy and procedure review, as described above
- The location of personnel and activity to be tested.

The performance effectiveness element of the asset management system review will be performed to provide a rating as defined **under Table 6** (refer below).

## Reporting

In accordance with the Review Guidelines, the reviewer must provide an assessment of both the process and policy definition rating (refer to **Table 5** below and also **Table 8** of the Review Guidelines) and the performance rating (refer to **Table 6** below and also **Table 9** of the Review Guidelines) for each of the key processes in Synergy's asset management system.

**Table 5: Asset management process and policy definition adequacy ratings**

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> <li>• Processes and policies are documented</li> <li>• Processes and policies adequately document the required performance of the assets</li> <li>• Processes and policies are subject to regular reviews, and updated where necessary</li> <li>• The asset management information system(s) are adequate in relation to the assets that are being managed.</li> </ul>
B	Requires some improvement	<ul style="list-style-type: none"> <li>• Process and policy documentation requires improvement</li> <li>• Processes and policies do not adequately document the required performance of the assets</li> <li>• Reviews of processes and policies are not conducted regularly enough</li> <li>• The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed).</li> </ul>
C	Requires significant improvement	<ul style="list-style-type: none"> <li>• Process and policy documentation is incomplete or requires significant improvement</li> <li>• Processes and policies do not document the required performance of the assets</li> <li>• Processes and policies are significantly out of date</li> <li>• The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).</li> </ul>
D	Inadequate	<ul style="list-style-type: none"> <li>• Processes and policies are not documented</li> <li>• The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed)</li> </ul>

**Table 6: Asset management performance ratings**

Rating	Description	Criteria
1	Performing effectively	<ul style="list-style-type: none"> <li>The performance of the process meets or exceeds the required levels of performance</li> <li>Process effectiveness is regularly assessed and corrective action taken where necessary.</li> </ul>
2	Opportunity for improvement	<ul style="list-style-type: none"> <li>The performance of the process requires some improvement to meet the required level</li> <li>Process effectiveness reviews are not performed regularly enough</li> <li>Process improvement opportunities are not actioned.</li> </ul>
3	Corrective action required	<ul style="list-style-type: none"> <li>The performance of the process requires significant improvement to meet the required level</li> <li>Process effectiveness reviews are performed irregularly, or not at all</li> <li>Process improvement opportunities are not actioned.</li> </ul>
4	Serious action required	<ul style="list-style-type: none"> <li>Process is not performed, or the performance is so poor that the process is considered to be ineffective.</li> </ul>

The asset management review report will be structured to address all key components expected by the Review Guidelines, including:

- Response to previous review recommendations (refer to **Appendix 3**)
- Performance summary and rating for each effectiveness criteria (Table 1), utilising the asset management process and policy definition adequacy ratings (Table 5) and the asset management performance ratings (Table 6)
- Review observations for each effectiveness criteria
- Status and response to recommendations from the previous review
- Where appropriate, recommendations on actions required to address opportunities for improvement.

Where appropriate, Synergy will provide post review implementation plans for incorporation into the report as an appendix.



# Appendix 1 - Risk Assessment key

## Appendix 1 – 1 Consequence ratings

Source: Review Guidelines – Electricity and Gas Licences April 2014

Rating	Examples of non-compliance		
	Supply quality and reliability	Consumer protection	Breaches of legislation or other licence conditions
Minor	<p>Breaches of supply quality or reliability standards - affecting a small number of customers.</p> <p>Delays in providing a small proportion of new connections.</p>	<p>Customer complaints procedures not followed in a few instances.</p> <p>Small percentage of disconnections or reconnections not completed on time.</p> <p>Small percentage of bills not issued on time.</p>	<p>Legislative obligations or licence conditions not fully complied with, minor impact on customers or third parties.</p> <p>Compliance framework generally fit for purpose and operating effectively.</p>
Moderate	<p>Supply quality breach events that significantly impact customers; large number of customers affected and/or extended duration and/or damage to customer equipment.</p> <p>Supply interruptions affecting significant proportion of customers on the network for up to one day.</p> <p>Significant number of customers experiencing excessive number of interruptions per annum.</p> <p>Significant percentage of new connections not provided on time/ some customers experiencing extended delays.</p>	<p>Significant percentage of complaints not being correctly handled.</p> <p>Customers not receiving correct advice regarding financial hardship.</p> <p>Significant percentage of bills not issued on time.</p> <p>Ongoing instances of disconnections and reconnections not completed on time, remedial actions not being taken or proving ineffective. Instances of wrongful disconnection.</p>	<p>More widespread breaches of legislative obligations or licence conditions over time.</p> <p>Compliance framework requires improvement to meet minimum standards.</p>
Major	<p>Supply interruptions affecting significant proportion of customers on the network for more than one day.</p> <p>Majority of new connections not completed on time/ large number of customers experiencing extended delays.</p>	<p>Significant failure of one or more customer protection processes leading to ongoing breaches of standards.</p> <p>Ongoing instances of wrongful disconnection</p>	<p>Wilful breach of legislative obligation or licence condition.</p> <p>Widespread and/or ongoing breaches of legislative obligations or licence conditions.</p> <p>Compliance framework not fit for purpose, requires significant improvement.</p>

**Appendix 1 – 2 Likelihood ratings**

Source: Review Guidelines – Electricity and Gas Licences April 2014

Level	Criteria
Likely	Non-compliance is expected to occur at least once or twice a year.
Probable	Non-compliance is expected to occur every three years.
Unlikely	Non-compliance is expected to occur at least once every 10 years or longer.

**Appendix 1 – 3 Adequacy ratings for existing controls**

Source: Review Guidelines – Electricity and Gas Licences April 2014

Rating	Description
Strong	Strong controls that are sufficient for the identified risks.
Moderate	Moderate controls that cover significant risks; improvement possible.
Weak	Controls are weak or non-existent and have minimal impact on the risks.



# Appendix 2 – Risk assessment

1		Asset Planning				
<b>Key Process:</b>		Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).				
<b>Outcome:</b>		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.				
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
1(a)	Asset management plan covers key requirements	Moderate	Probable	Medium	Moderate	Priority 4
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Minor	Probable	Low	Moderate	Priority 5
1(c)	Service levels are defined	Minor	Unlikely	Low	Moderate	Priority 5
1(d)	Non-asset options (e.g. demand management) are considered	Minor	Probable	Low	Moderate	Priority 5
1(e)	Lifecycle costs of owning and operating assets are assessed	Moderate	Probable	Medium	Moderate	Priority 4
1(f)	Funding options are evaluated	Minor	Probable	Low	Moderate	Priority 5
1(g)	Costs are justified and cost drivers identified	Moderate	Probable	Medium	Moderate	Priority 4
1(h)	Likelihood and consequences of asset failure are predicted	Major	Probable	High	Moderate	Priority 2
1(i)	Plans are regularly reviewed and updated	Minor	Unlikely	Low	Moderate	Priority 5

<b>2</b>		<b>Asset Creation and Acquisition</b>				
<b>Key Process:</b>		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				
<b>Outcome:</b>		A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.				
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
2(a)	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	Moderate	Unlikely	Medium	Moderate	Priority 4
2(b)	Evaluations include all life-cycle costs	Moderate	Unlikely	Medium	Moderate	Priority 4
2(c)	Projects reflect sound engineering and business decisions	Moderate	Unlikely	Medium	Moderate	Priority 4
2(d)	Commissioning tests are documented and completed	Moderate	Unlikely	Medium	Moderate	Priority 4
2(e)	Ongoing legal/environmental/ safety obligations of the asset owner are assigned and understood	Major	Unlikely	High	Moderate	Priority 2

<b>3</b>		<b>Asset Disposal</b>				
<b>Key Process:</b>		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.				
<b>Outcome:</b>		Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.				
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
3(a)	Under-utilised and under-performing assets are identified as part of a regular systematic review process	Minor	Probable	Low	Moderate	Priority 5
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Minor	Probable	Low	Moderate	Priority 5
3(c)	Disposal alternatives are evaluated	Minor	Probable	Low	Moderate	Priority 5
3(d)	There is a replacement strategy for assets	Moderate	Probable	Medium	Moderate	Priority 4

<b>4</b>	<b>Environmental analysis</b>					
<b>Key Process:</b>	Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.					
<b>Outcome:</b>	The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.					
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
4(a)	Opportunities and threats in the system environment are assessed	Moderate	Probable	Medium	Moderate	Priority 4
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved	Moderate	Probable	Medium	Moderate	Priority 4
4(c)	Compliance with statutory and regulatory requirements	Moderate	Probable	Medium	Moderate	Priority 4
4(d)	Achievement of customer service levels	Moderate	Probable	Medium	Moderate	Priority 4

<b>5</b>	<b>Asset operations</b>					
<b>Key Process:</b>	Operational functions relate to the day-to-day running of assets and directly affect service levels and costs.					
<b>Outcome:</b>	Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.					
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
5(a)	Operational policies and procedures are documented and linked to service levels required	Moderate	Probable	Medium	Moderate	Priority 4
5(b)	Risk management is applied to prioritise operations tasks	Moderate	Probable	Medium	Moderate	Priority 4
5(c)	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	Moderate	Probable	Medium	Moderate	Priority 4
5(d)	Operational costs are measured and monitored	Moderate	Probable	Medium	Moderate	Priority 4
5(e)	Staff resources are adequate and staff receive training commensurate with their responsibilities	Moderate	Probable	Medium	Moderate	Priority 4

6	Asset maintenance					
<b>Key Process:</b>	Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.					
<b>Outcome:</b>	Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.					
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
6(a)	Maintenance policies and procedures are documented and linked to service levels required	Major	Unlikely	High	Moderate	Priority 2
6(b)	Regular inspections are undertaken of asset performance and condition	Moderate	Unlikely	Medium	Moderate	Priority 4
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Major	Probable	High	Moderate	Priority 2
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Major	Probable	High	Moderate	Priority 2
6(e)	Risk management is applied to prioritise maintenance tasks	Major	Probable	High	Moderate	Priority 2
6(f)	Maintenance costs are measured and monitored	Moderate	Probable	Medium	Moderate	Priority 4

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
7	<b>Asset Management Information System</b>					
<b>Key Process:</b>	An asset management information system is a combination of processes, data and software that support the asset management functions.					
<b>Outcome:</b>	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(a)	Adequate system documentation for users and IT operators	Minor	Probable	Low	Moderate	Priority 5
7(b)	Input controls include appropriate verification and validation of data entered into the system	Moderate	Probable	Medium	Moderate	Priority 4
7(c)	Logical security access controls appear adequate, such as passwords	Minor	Probable	Low	Moderate	Priority 5
7(d)	Physical security access controls appear adequate	Minor	Probable	Low	Moderate	Priority 5
7(e)	Data backup procedures appear adequate and backups are tested	Moderate	Probable	Medium	Moderate	Priority 4
7(f)	Key computations related to licensee performance reporting are materially accurate	Minor	Probable	Low	Moderate	Priority 5
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	Minor	Probable	Low	Moderate	Priority 5

8		Risk Management				
<b>Key Process:</b>		Risk management involves the identification of risks and their management within an acceptable level of risk.				
<b>Outcome:</b>		An effective risk management framework is applied to manage risks related to the maintenance of service standards				
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Control Risk	Review Priority
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	Major	Probable	High	Moderate	Priority 2
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	Moderate	Probable	Medium	Moderate	Priority 4
8(c)	The probability and consequences of asset failure are regularly assessed	Moderate	Probable	Medium	Moderate	Priority 4

9		Contingency Planning				
<b>Key Process:</b>		Contingency plans document the steps to deal with the unexpected failure of an asset.				
<b>Outcome:</b>		Contingency plans have been developed and tested to minimise any significant disruptions to service standards.				
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Major	Probable	High	Moderate	Priority 2

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
10	Financial Planning					
<b>Key Process:</b>	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.					
<b>Outcome:</b>	A financial plan that is reliable and provides for the long-term financial viability of the services.					
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Moderate	Probable	Medium	Moderate	Priority 4
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Minor	Probable	Low	Moderate	Priority 5
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Minor	Probable	Low	Moderate	Priority 5
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Minor	Probable	Low	Moderate	Priority 5
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Moderate	Probable	Medium	Moderate	Priority 4
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Moderate	Probable	Medium	Moderate	Priority 4

11		Capital expenditure planning				
<b>Key Process:</b>	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					
<b>Outcome:</b>	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.					
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Moderate	Probable	Medium	Moderate	Priority 4
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Minor	Probable	Low	Moderate	Priority 5
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Moderate	Probable	Medium	Moderate	Priority 4
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Minor	Probable	Low	Moderate	Priority 5

12		Review of AMS				
<b>Key Process:</b>	The asset management system is regularly reviewed and updated.					
<b>Outcome:</b>	Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.					
Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
12(a)	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	Minor	Probable	Low	Moderate	Priority 5
12(b)	Independent reviews (eg internal audit) are performed of the asset management system	Minor	Probable	Low	Moderate	Priority 5



# Appendix 3 – Previous review recommendations

<p><b>Issue 1/2013</b></p> <p><i>Asset operations: 5(e) Staff receive training commensurate with their responsibilities</i></p> <p>In relation to the Kwinana Power Station, the extent of operator access to the Plant DCS system (as identified through the 2009 ERAP assessment) creates a minor exposure to operational errors and potential accidents.</p> <p>Current operator access levels allow operators to potentially alter parameters in protection systems, alarm limits and bypass permissions.</p> <p>More focussed operator training and review procedures can further minimise this risk.</p>	
<p><b>Recommendation 1/2013</b></p> <p>Verve Energy:</p> <p>(a) Review the extent of operator access to the Kwinana Power Station Plant DCS system, with the objective of further minimising the risk of operational errors and potential accidents</p> <p>(b) Where appropriate, implement:</p> <ul style="list-style-type: none"> <li>• Focussed operator training</li> <li>• Review procedures, including the requirement for least two operators to sign off on changes in DCS procedures.</li> </ul>	<p><b>Action Plan 1/2013</b></p> <p>Verve Energy will:</p> <ol style="list-style-type: none"> <li>1. Provide evidence of its review of the extent of operator access to the Kwinana Power Station Plant DCS system, with the objective of further minimising the risk of operational errors and potential accidents;</li> <li>2. Where appropriate, implement focused operator training regarding the Kwinana Power Station Plant DCS system; and</li> <li>3. Provide evidence of its review of procedures regarding the Kwinana Power Station Plant DCS system, including whether or not there should be a requirement for at least two operators to sign off on changes in DCS procedures.</li> </ol> <p><b>Responsible Person</b> Manager Portfolio Development &amp; Optimisation</p> <p><b>Target Date</b> December 2013.</p>

<p><b>Issue 2/2013</b></p> <p><i>Asset maintenance: 6(b) Regular inspections are undertaken of asset performance and condition</i></p> <p>A significant amount of forward planning for Kwinana Power Station assets had been affected by the uncertainty surrounding the plant closure/retirement date, which has only been clarified by a government decision in late June 2013 to retire the plant in 2015. A confirmed retirement date was critical for the optimum management of asset life to be aligned with the retirement date and for a thorough Optimum Maintenance Spend Plan to be produced.</p> <p>The 2009 Engineering Risk Assessment Process assessment confirmed the planned critical risk reduction strategies such as improved engineering resources on site, replacing ageing electrical components, etc. Although the extent of the improvement works undertaken to improve the condition of the plant is constrained by the official plant closure date of 2015, Verve Energy is expected to continue to manage the safety critical risks of thermal fatigue and corrosion type issues. Effective options for managing those risks are to implement Acoustic Leak Detection Systems and to minimise the 2-shifting operations of the plant.</p> <p>As other planned risk reduction works are ongoing the next ERAP assessment should clarify the residual risk profile of the plant.</p>	
<p><b>Recommendation 2/2013</b></p> <p>In order to most effectively control thermal fatigue issues in Kwinana Power Station assets, Verve Energy consider:</p> <p>(a) Minimising two shift operations (b) Installing an acoustic leak detection system.</p>	<p><b>Action Plan 2/2013</b></p> <p>Verve Energy notes the June 2013 State Government decision to retire Kwinana Power Station Stage C from October 2015. Within this context Verve Energy will consider what options to most effectively control thermal fatigue issues in Kwinana Power Station assets are appropriate for the remainder of its life. This review will include consideration of the appropriateness of:</p> <p>(a) Minimising two shift operations; and (b) Installing an acoustic leak detection system.</p> <p><b>Responsible Person</b> Manager Portfolio Development &amp; Optimisation</p> <p><b>Target Date</b> December 2013.</p>
<p><b>Issue 3/2013</b></p> <p><i>Asset maintenance: 6(c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</i></p> <p>In instances where recommendations are made by the detailed MetLab reports prepared as part of outage reporting, Verve Energy's processes provide for work orders to be raised to address those recommendations.</p> <p>As those processes do not provide a procedural link between the relevant recommendations and completed work orders, there is a minor improvement opportunity to more effectively track action taken to close out those recommendations.</p>	
<p><b>Recommendation 3/2013</b></p> <p>Verve Energy implement a procedure to facilitate tracking of progress on recommendations in the outage closeout report by linking those recommendations with the consequent work orders raised.</p>	<p><b>Action Plan 3/2013</b></p> <p>Verve Energy will develop and implement a procedure to facilitate tracking of progress on recommendations in the outage closeout report by linking those recommendations with the consequent work orders raised.</p> <p><b>Responsible Person</b> Manager Portfolio Development &amp; Optimisation</p> <p><b>Target Date</b> December 2013.</p>

<p><b>Issue 4/2013</b></p> <p><i>Review of AMS:</i></p> <p><i>12(a) A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current</i></p> <p><i>12(b) Independent reviews (e.g. internal audit) are performed of the asset management system</i></p> <p>Although components of Verve Energy’s asset management system are subject to regular review and update, a formal process has not been established for ensuring the currency of the asset management system (including the currency of the collective references, which describe that system).</p> <p>There is also some doubt as to whether there has been any “substantial” change to Verve Energy’s asset management system, which would warrant notification to the Authority per section 14(1) (b) of the Act.</p>	
<p><b>Recommendation 4/2013</b></p> <p>Establish a formal review process for ensuring the currency of the asset management system, including the currency of the collective references, which describe that system.</p> <p>Such a formal process should also address the need for a sufficient degree of independence in that review.</p>	<p><b>Action Plan 4/2013</b></p> <p>Verve Energy will establish a formal review process for ensuring the currency of the asset management system, including the currency of the collective references, which describe that system.</p> <p><b>Responsible Person</b></p> <p>Manager Portfolio Development &amp; Optimisation</p> <p><b>Target Date</b></p> <p>December 2013.</p>

# Appendix B: References

## Synergy staff participating in the review

- Manager – Regulation and Compliance
- Manager Asset Optimisation
- Asset Performance Manager
- Power and Control Group Manager Muja Power Station
- Operations Manager Muja Power Station
- Engineering Manager, Gas Turbines and Distributed Generation
- Attended Operations Manager, Gas Turbines and Distributed Generation
- Mechanical Technical Officer, Gas Turbines and Distributed Generation
- Kwinana Closure Project Manager
- Manager - Financial Planning and Performance
- Risk Management Advisor – Corporate Services
- Muja Environmental Advisor
- Senior Project Manager (CSI)
- PI system specialist
- ICT Infrastructure Manager.

## Deloitte staff participating in the review

<b>Name</b>	<b>Position</b>	<b>Hours</b>
• Richard Thomas	Partner	8
• Andrew Baldwin	Account Director	43
• Bryn Durrans	Technical Specialist (Engineer)	52
• David Herbert	Senior Analyst	111
• Shailesh Tyagi	Technical Specialist (Quality Assurance Review)	4
• Kobus Beukes	Partner (Quality Assurance Review)	2.5

## Key documents and other information sources examined

- GBU Asset Management System
- Synergy Generation Portfolio Asset Mission Statement 2016
- GBU Asset Management Policy
- Asset Management Plan 2015/16 Muja AB
- Asset Management Plan 2015/16 Muja CD
- Asset Management Plan 2015/16 Kwinana Power Station
- Asset Management Plan GBU Gas Turbines 2016
- Asset Lifecycle Plan and Planned Maintenance Review 2014-2016 (performed by Ventia)
- Asset Lifecycle Plans - Muja (multiple)
- Procurement Standard

- GBU Business Case (Example: Diaphragm replacement 20 September 2016)
- Submission to Board of Directors – Kwinana C Retirement Decision
- Plant Change Management Form
- Population of lags and outages for review period (from GIRS)
- Example weekly production meeting pack - Muja
- Register of Environmental or Related Licences for all Synergy Power Stations
- Environmental Management System Manual
- Environmental Management System Implementation Plan - Muja
- ERA PAIP update letters
- Thermal Generation Availability Report (June 2016)
- Example GBU Weekly Performance Dashboard
- Example GBU Monthly Report Presentation
- SAP Weekly Maintenance Measures Report
- Maintenance Electronic log book screenshot
- GIRS Training Presentation
- Sample testing reports:
  - Muja Transformer Offline Tests (Feb 2015)
  - Muja Tap Change and Oil Change Report (Nov 2015)
  - Oil Analysis Report
- CSI Project Data Migration Strategy and Approach
- CSI Blueprint Security
- SAP Organisational Management User Guide
- SAP Quick Reference Guide
- ICT Acceptable Usage Policy
- ICT Backup Policy
- Synergy Risk Management Framework
- GBU Risk Register
- Risk Register - Muja Power Station
- Corporate Services Risk Review Guide
- AIG Risk Report 2015/16 (Kwinana)
- AIG Risk Report 2015/16 (Muja)
- AIG Risk Report 2015/16 (Cockburn CCGT and Kwinana Shared Services)
- Emergency Response Plan – Kwinana Power Station (inclusive of Kwinana Gas Turbines) and Cockburn Power Station
- Emergency Response Plan - Muja
- Health and Safety Management Plan - Muja
- Presentation to Insurers - Muja
- Crisis Scenario Exercise (May 2015)
- Crisis Management and Response Toolkit
- Crisis Management and Response Plan
- Business Continuity Management Framework and Manual
- Emergency Response Training - Muja
- Environmental Exercise April 2016 - Muja
- Major Maintenance Event Outage Framework
- Corporate Planning and Budgeting Framework
- ALCP Historical and Future Expenditure Financial Models
- GBU Project Detailed Estimate Financial Model
- Representations from:
  - Manager, Regulation and Compliance
  - Asset Performance Manager.

# Appendix C: Post Review Implementation Plan

<p><b>Issue 1/2017</b></p> <p><i>Asset maintenance: 6(e) Risk management is applied to prioritise maintenance tasks</i></p> <p>Synergy's risk based approach to maintenance activities includes a priority level output rating (<b>priority rating</b>) ranging from 1 to 5 (with 1 requiring immediate action).</p> <p>As part of its monitoring processes, Synergy runs a SAP Weekly Maintenance Measures report which provides a summary of Work Order status, presented as:</p> <ul style="list-style-type: none"> <li>• Unexecuted</li> <li>• Cancelled before execution</li> <li>• Closed incorrectly</li> <li>• % completed in accordance with the Schedule.</li> </ul> <p>In its present state, the report does not differentiate or highlight high priority work orders. By presenting work orders by priority rating, management will be alerted to high priority orders which require action. Such a report will also help to validate the prioritisation of work orders.</p>	
<p><b>Recommendation 1/2017</b></p> <p>Synergy consider:</p> <p>(a) Updating its SAP Weekly Maintenance Measures report to highlight the relative priority of outstanding work orders, including summary statistics by priority rating</p> <p>(b) Using the report to review all open Priority 1 and Priority 2 Work Orders to determine whether they are appropriately categorised.</p>	<p><b>Action Plan 1/2017</b></p> <p>The SAP weekly maintenance measures report will be revised to include summary statistics of priority 1 and 2 work orders. Non-executed priority 1 and 2 work orders will be highlighted for review.</p> <p><b>Responsible Person:</b> Asset Performance Manager</p> <p><b>Target Date:</b> 30 June 2017</p>