Alinta Energy Transmission (Roy Hill) Pty Ltd

Electricity Integrated Regional Licence (EIRL6)

2016 Asset Management System Review

December 2016 report

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Mr Paul Grey
General Manager Pilbara O&M
Alinta Sales Pty Ltd, trading as Alinta Energy
The Quadrant, 1 William Street
Perth, WA 6000

22 December 2016

Dear Paul

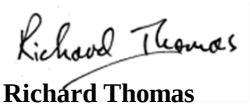
Alinta Energy Transmission (Roy Hill) Pty Ltd Electricity Integrated Regional Licence (EIRL6) – 2016 Asset Management System review report

We have completed the Electricity Integrated Regional Licence Asset Management System review for Alinta Energy Transmission (Roy Hill) Pty Ltd for the period 1 October 2013 to 30 September 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 **Authority**), Alinta Energy Transmission (Roy Hill) Pty Ltd (**AETRH**) engaged Deloitte Risk Advisory Pty Ltd (**Deloitte**) to conduct a review of the effectiveness of AETRH's asset management system relating to its Electricity Integrated Regional Licence (EIRL6) (the **Licence**).

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 Authority (**Guidelines**).

AETRH's responsibility for maintaining an effective asset management system

AETRH 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 AETRH's asset management systems 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 AETRH 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 period 1 October 2013 to 30 September 2016.

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 assessment of controls
- Development of a Review Plan for approval by the Authority and an associated work program
- Interviews with and representations from relevant AETRH 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 AETRH's asset management system requirements and standards
- Physical visit to the Newman Power Station site
- Consideration of reports and references evidencing activity
- Consideration of the installation's function, normal modes of operation and age
- Reporting of findings to AETRH for review and response.

Limitations of use

This report is made solely for the information and internal use of AETRH 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 Authority for the purpose of reporting on the effectiveness of AETRH's asset management systems. We agree that a copy of this report may be provided to the Authority for its information in connection with this purpose but only on the basis that we accept no duty, liability or responsibility to the Authority in relation to the report. We accept no duty, responsibility or liability to any party, other than AETRH, 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 AETRH 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 period 1 October 2013 to 30 September 2016.

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 those aspects of AETRH's asset management system that were assessed as having opportunities for improvement, relevant observations, recommendations and action plans are summarised at section 2.4 of this report and detailed at section 4 of this report.

DELOITTE TOUCHE TOHMATSU

Richard Thomas
Partner
Perth, December 2016

2 Executive summary

2.1 Introduction and background

The Economic Regulation Authority (the **Authority**) has, under the provisions of the *Electricity Industry Act 2004* (the **Act**), issued to Alinta Energy Transmission (Roy Hill) Pty Ltd (**AETRH**) an Electricity Integrated Regional Licence (EIRL6) (the **Licence**).

Section 14 of the Act requires AETRH to provide to the Authority an asset management system review (the **review**) conducted by an independent expert acceptable to the Authority not less than once in every 24 month period (or any longer period that the Authority allows). The Authority set the period to be covered by the review as 1 October 2013 to 30 September 2016.

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

The Licence covers AETRH's generation, transmission, distribution and retail activity in relation to its supply of power to the Roy Hill iron ore mine via a 220kV transmission line from AETRH's Newman Power Station, a 6MW diesel power station at the Roy Hill mine site and 33kV distribution lines operating throughout the Roy Hill mine site. The construction of AETRH's transmission assets, distribution assets and diesel power station was completed on 15 March 2015.

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 AETRH 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 period 1 October 2013 to 30 September 2016.

2.2 Findings

In considering AETRH's internal control procedures, structure and environment, its compliance arrangements and its information systems specifically relevant to those effectiveness criteria subject to review, we observed that:

- Throughout the period subject to review AETRH had maintained consistent procedures and controls within its asset management system
- AETRH promoted a culture of continuous improvement throughout the period subject to review, with multiple process and control improvements made to its asset management system
- AETRH staff appeared to have a good understanding of their roles, particularly displaying an understanding of the asset management processes within their area of responsibility.

This review assessed that of the 55 elements of AETRH's asset management system:

- For the asset management process and policy definition adequacy ratings:
  - 51 are rated as "Adequately defined"
  - Three elements are rated as "Requires some improvement"
  - One element is not rated
- For the asset management performance ratings:
  - 47 are rated as "Performing effectively"
  - Seven elements are rated as "Opportunity for improvement"
  - One element is not rated.
- There are four opportunities 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 AETRH's response to previous review recommendations

Not applicable – as this is the first asset management system review performed in accordance with AETRH's Electricity Integrated Regional Licence, there are no previous review recommendations requiring AETRH's response.

2.4 Recommendations and action plans

<table>
<tr><th>AMS Key Process and Effectiveness Criteria</th><th>Adequacy rating</th><th>Issue 1/2016</th></tr>
<tr><td rowspan="3">1 (h) Plans are regularly reviewed and updated
2 (e) Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood</td><td>Requires some improvement (B)</td><td rowspan="3">Although the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP generally reflect AETRH's expectations and requirements for managing the generation, transmission and distribution assets, they can be further improved in the following areas, to better align with Alinta Energy's Asset Management Framework and EIRL obligations:
It is not clear how the Asset Management Strategy and Key Asset Risks detailed in the SAMP have been addressed within the annual revision of the supporting AMP
The AMP does not clearly address the following elements expected by Alinta Energy's Asset Management Framework:
Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks
A brief description of any known and significant risks relating to assets
Consideration and documentation of legal and compliance requirements.</td></tr>
<tr><td>Performance rating</td></tr>
<tr><td>Opportunity for improvement (2)</td></tr>
<tr><td colspan="2">Recommendation 1/2016
AETRH explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP:
Contingency plans
Known and significant risks relating to the key assets
Legal and compliance requirements.</td><td>Action Plan 1/2016
AETRH will explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP:
Contingency plans
Known and significant risks relating to the key assets
Legal and compliance requirements.
Responsible Person: General Manager Pilbara O&M
Target Date: 30 September 2017</td></tr>
</table>

<table>
<tr><th>AMS Key Process and Effectiveness Criteria</th><th>Adequacy rating</th><th>Issue 2/2016</th></tr>
<tr><td rowspan="3">6(e) Risk management is applied to prioritise maintenance tasks
8(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system
8(b)Risks are documented in a risk register and treatment plans are actioned and monitored</td><td>Adequately defined (A)</td><td rowspan="3">AETRH has applied the Alinta Energy group-wide risk management framework within its Newman Power Station and Roy Hill Transmission Line asset management processes. AETRH’s resulting operational risk management activities also appear to be generally understood and applied by staff. However, AETRH had not retained clear evidence of some of those risk management activities to demonstrate that its risk management philosophies and approach are consistently applied. For example:
In March 2016, AETRH initiated an update of its risk assessment for maintenance activities. This update involved conversion of the previous excel model extracted from Ellipse (risk assessments were completed on an ad hoc basis) to the SPM Asset recording system. While this update process was designed to improve the completeness and accuracy of its risk assessment for maintenance tasks and to provide for a more effective risk register, it has not yet been completed and a timeframe for completion has not been established
A consistent approach and timeframe has not been designed for preparing and reviewing risk treatment plans and reports, other than through the annual review of the Newman Power Station and Roy Hill Transmission Line SAMP, AMP and supporting SAMP Model. The SAMP, AMP and SAMP Model do not provide a clear and consistence reference to specific risk assessment and management activities, including preparation of risk treatment plans (which often result in allocation of capital expenditure) and links to insurer risk reduction recommendations.</td></tr>
<tr><td>Performance rating</td></tr>
<tr><td>Opportunity for improvement (2)</td></tr>
<tr><td colspan="2">Recommendation 2/2016
AETRH establish a clear:
Timeframe for completing its program of populating risk assessments within the SPM Asset software
Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</td><td>Action Plan 2/2016
AETRH will establish a clear:
Timeframe for completing its program of populating risk assessments within the SPM Asset software
Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.
Responsible Person: General Manager Pilbara O&M
Target Date: 30 September 2017</td></tr>
</table>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 3/2016
9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	As AETRH's contingency plans and arrangements are currently maintained/described in different processes and documents, AETRH has the opportunity to further ensure the completeness and consistency of its contingency planning arrangements by capturing all of its plans and processes in one single reference. Such an approach would be consistent with Alinta Energy's Asset Management Framework.
Recommendation 3/2016 AETRH: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and water supply) are rigorously challenged and tested 2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability.		**Action Plan 3/2016** AETRH will: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and water supply) are rigorously challenged and tested 2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 4/2016
12(b) Independent reviews (e.g. internal audit) are performed of the asset management system	Adequately defined (A) **Performance rating** Opportunity for improvement (2)	Although components of AETRH's asset management system are subject to regular review and update, AETRH has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying asset management system.
Recommendation 4/2016 In accordance with the Alinta Energy Asset Management Framework, AETRH implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer.		**Action Plan 4/2016** In accordance with the Alinta Energy Asset Management Framework, AETRH will implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017

2.5 Scope and objectives

The objective of the review was to independently examine the effectiveness and performance of the asset management system established for AETRH's assets subject to AETRH's electricity integrated regional licence for the period 25 June 2014 to 30 June 2016.

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

#	Key processes	Effectiveness criteria
1	Asset planning	(a) Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning (b) Service levels are defined (c) Non-asset operations (e.g. demand management) are considered (d) Lifecycle costs of owning and operating assets are assessed (e) Funding options are evaluated (f) Costs are justified and cost drivers identified (g) Likelihood and consequences of asset failure are predicted (h) Plans are regularly reviewed and updated.
2	Asset creation and acquisition	(a) Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions (b) Evaluations include all life-cycle costs (c) Projects reflect sound engineering and business decisions (d) Commissioning tests are documented and completed (e) Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.
3	Asset disposal	(a) Underutilised and underperforming assets are identified as part of a regular systematic review process (b) The reasons for underutilisation or poor performance are critically examined and corrective action or disposal undertaken (c) Disposal alternatives are evaluated (d) There is a replacement strategy for assets.
4	Environmental analysis (all external factors that affect the system)	(a) Opportunities and threats in the system environment are assessed (b) Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved (c) Compliance with statutory and regulatory requirements (d) Achievement of customer service levels.
5	Asset operations	(a) Operational policies and procedures are documented and linked to service levels required (b) Risk management is applied to prioritise operations tasks (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 (d) Operational costs are measured and monitored (e) Staff receive training commensurate with their responsibilities.

#	Key processes	Effectiveness criteria
6	Asset maintenance	(a) Maintenance policies and procedures are documented and linked to service levels required (b) Regular inspections are undertaken of asset performance and condition (c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule (d) Failures are analysed and operational/maintenance plans adjusted where necessary (e) Risk management is applied to prioritise maintenance tasks (f) Maintenance costs are measured and monitored.
7	Asset management information system	(a) Adequate system documentation for users and IT operators (b) Input controls include appropriate verification and validation of data entered into the system (c) Logical security access controls appears adequate, such as passwords (d) Physical security access controls appear adequate (e) Data back-up procedures appear adequate (f) Key computations related to licensee performance reporting are materially accurate (g) Management reports appear adequate for the licensee to monitor licence obligations.
8	Risk management	(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system (b) Risks are documented in a risk register and treatment plans are actioned and monitored (c) The probability and consequences of asset failure are regularly assessed.
9	Contingency planning	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks
10	Financial planning	(a) The financial plan states the financial objectives and strategies and actions to achieve the objectives (b) The financial plan identifies the source of funds for capital expenditure and recurrent costs (c) The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) (d) The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period (e) The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services (f) Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.
11	Capital expenditure planning	(a) There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates (b) The plan provide reasons for capital expenditure and timing of expenditure (c) The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan (d) There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.

#	Key processes	Effectiveness criteria
12	Review of Asset Management System	(a) A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current (b) Independent reviews (e.g. internal audit) are performed of the asset management system.

Each key process and effectiveness criterion is applicable to AETRH'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.

2.6 Approach

Our approach for this review involved the following activities, which were undertaken during the period November and December 2016:

- 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 Authority
- Correspondence and interviews with AETRH staff to gain understanding of process controls in place (see **Appendix B** for staff involved)
- Visited the Newman Power Station site with a focus on understanding the facility, its function and normal mode of operation, its age and an assessment of the facility against the AMS review criteria
- Review of documents, processes and controls to assess the overall effectiveness of AETRH's asset management systems (see **Appendix B** for reference listing)
- Consideration of the resourcing applied to maintaining those controls and processes
- Reporting of findings to AETRH for review and response.

2.7 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 non-compliance 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.

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 asset management system 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	• Processes and policies are documented • Processes and policies adequately document the required performance of the assets • Processes and policies are subject to regular reviews, and updated where necessary • The asset management information system(s) are adequate in relation to the assets that are being managed.
B	Requires some improvement	• Process and policy documentation requires improvement • Processes and policies do not adequately document the required performance of the assets • Reviews of processes and policies are not conducted regularly enough • The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed).
C	Requires significant improvement	• Process and policy documentation is incomplete or requires significant improvement • Processes and policies do not document the required performance of the assets • Processes and policies are significantly out of date • The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).
D	Inadequate	• Processes and policies are not documented • The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed).

Table 2: Asset management performance ratings

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

This report provides:

- A breakdown of each function of the asset management system 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: Asset management system effectiveness summary

						Ratings	
Criteria	Consequence	Likelihood	Inherent Risk	Control Risk	Review Priority	Definition adequacy	Performance
1. Asset planning						**A**	**1**
1(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(b)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(c)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(e)	Minor	Probable	Low	Moderate	Priority 5	A	1
1(f)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(g)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
1(h)	Minor	Probable	Low	Moderate	Priority 5	B	2
2. Asset creation and acquisition						**A**	**2**
2(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
2(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
2(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
2(d)	Moderate	Unlikely	Medium	Moderate	Priority 4	A	1
2(e)	Major	Probable	High	Moderate	Priority 2	B	2
3. Asset disposal						**A**	**1**
3(a)	Minor	Unlikely	Low	Moderate	Priority 5	A	1
3(b)	Minor	Unlikely	Low	Moderate	Priority 5	A	1
3(c)	Minor	Unlikely	Low	Moderate	Priority 5	A	1
3(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
4. Environmental analysis						**A**	**1**
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
5. Asset operations						**A**	**1**
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
6. Asset maintenance						**A**	**1**
6(a)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
6(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
6(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
6(d)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
6(e)	Moderate	Probable	Medium	Moderate	Priority 4	A	2
6(f)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
7. Asset management information system						**A**	**1**
7(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
7(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	1

						Ratings	
Criteria	Consequence	Likelihood	Inherent Risk	Control Risk	Review Priority	Definition adequacy	Performance
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	NR	NR
7(g)	Minor	Probable	Low	Moderate	Priority 5	A	1
8. Risk management						A	**2**
8(a)	Major	Probable	High	Moderate	Priority 2	A	2
8(b)	Moderate	Probable	Medium	Moderate	Priority 4	A	2
8(c)	Moderate	Probable	Medium	Moderate	Priority 4	A	1
9. Contingency planning						**B**	**2**
9(a)	Major	Probable	High	Moderate	Priority 2	B	2
10. Financial planning						**A**	**1**
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
11. Capital expenditure planning						**A**	**1**
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
12. Review of AMS						**A**	**2**
12(a)	Minor	Probable	Low	Moderate	Priority 5	A	1
12(b)	Minor	Probable	Low	Moderate	Priority 5	A	2

4 Detailed findings, recommendations and action plans

Summary of operations subject to review

The Licence covers AETRH's generation, transmission, distribution and retail activity in relation to its supply of power to the Roy Hill iron ore mine via a 220kV transmission line from AETRH's Newman Power Station and a 6MW diesel power station at the Roy Hill mine site.

Key details relating to AETRH's facilities are:

- The total nameplate capacity of the generating works located at Newman Power Station is 178MW at ISO conditions and 132MW at site conditions (35°C). The Newman Power Station is a simple cycle gas turbine plant consisting of four gas turbines (three of which were commissioned in 1995 and one in 2009)
- Three 2MW diesel generation units are installed at the Roy Hill mine
- The transmission system is approximately 121km in length and comprises of a:
  - Switchyard at the Newman facility
  - 220kV transmission line between the Newman Power Station and the Roy Hill mine
  - 220/33kV substation located at the Roy Hill mine
- The 33kV distribution system is approximately 5km in length and comprises of distribution lines to designated points within the Roy Hill mine site.

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)*: AETRH'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)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>1(a)</td><td>Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning</td><td colspan="2">Through discussions with the General Manager Pilbara O&M and the Manager, Asset Management & Engineering, and consideration of AETRH's business planning processes, we determined that AETRH's business planning model accommodates its operation and maintenance of the Newman Power Station and related transmission and distribution assets in accordance with its contractual arrangements and regulatory requirements.
From a business planning perspective, we determined that AETRH has established asset management processes and mechanisms to assimilate the requirements of its various stakeholders. In particular, we observed that AETRH has:
Developed an asset management system (which aligns with ISO55000:2014, ISO 55001:2014 and ISO 55002:2014 and the British Publicly Available Specification (PAS) Asset Management Standard PAS 55-1:2008)
Developed a Strategic Asset Management Plan (SAMP) and supporting Asset Management Plan (AMP) for operating and maintaining the various components of the power station and the related transmission and distribution network to achieve optimum performance over the entire life of those assets. The AMP defines AETRH's broader and long term plans and is reviewed on an annual basis
Established a Power Purchase Agreement (PPA) with its customer, outlining AETRH's responsibilities for operating the power station and transmission and distribution network assets
A formal delegation of authority framework in place across the stakeholder functions (operations, finance and compliance) integrated into its SharePoint information storage portal for project task and expenditure approval.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>1(b)</td><td>Service levels are defined</td><td colspan="2">Through discussions with the Manager, Asset Management & Engineering and examination of AETRH's AMP and contractual documentation, we determined that the plant's required service levels have been:
Summarised in the AMP to facilitate the achievement of those service levels. The AMP references relevant operational information for each item of equipment and is updated on an annual basis
Defined in AETRH's maintenance standards (e.g. High Voltage Asset Maintenance Standard) maintained on SharePoint and integrated into the maintenance management system including
Programed into the Ellipse asset management work order system to track routine maintenance requirements across all asset components.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

No	Effectiveness Criteria	Findings	
1(c)	Non-asset options (e.g. demand management) are considered	Through discussion with the General Manager Pilbara O&M and the Manager, Asset Management & Engineering, we determined that AETRH had considered non-asset options for the Newman Power Station, however those options are not relevant in the current circumstances where AETRH is contractually obliged to generate power to meet its customer's requirements.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(d)	Lifecycle costs of owning and operating assets are assessed	Through discussion with the Manager, Asset Management & Engineering and examination of AETRH's AMP and contractual documentation, we determined that assessment of lifecycle costs of owning and operating the assets is undertaken by means of AETRH's AMP that considers each major equipment component and provides specific details, including: • Operating and maintenance philosophy • Key life cycle issues and how they are addressed • Life cycle plan and critical outages • Performance improvement opportunities • Critical reinvestments • Retirement/disposal consideration at end of plant life • Capex and Opex forecast for a five year period. AETRH also uses an economic evaluation model as part of the budgeting and forecasting process to assess the cost associated with the overall plant life and forecast expenditure up to FY 2025.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(e)	Funding options are evaluated	Through discussions with the Manager, Asset Management & Engineering and the Finance Manager – Power Generation; and examination of AETRH's AMP and contractual documentation, we determined that: • Day to day operating expenses are funded from operating cash flows • Funding options are considered and evaluated by means of the Request for Commitment on the AMP Expenditure Project Delivery Site (integrated within SharePoint) which details: ▪ Expenditure description relative to plan (i.e. budget vs unbudgeted) ▪ Expenditure type (Opex / Capex) • A Delegated Financial Authority matrix and automated workflow system within the 'Request for Commitment' approval process (within SharePoint) helps ensure that fund requests above specified levels are required to be authorised by the appropriate level of management.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(f)	Costs are justified and cost drivers identified	Through discussions with the Manager, Asset Management & Engineering and the Finance Manager – Power Generation; and consideration of AETRH's AMP strategy and model, we determined that:	

No	Effectiveness Criteria	Findings	
		• The AMP includes a detailed life cycle plan that identifies and assesses all life cycle costs and cost drivers associated with each major power station and transmission network asset • Power station and transmission network assets are managed using Ellipse, which records maintenance tasks and associated costs. Financial reporting is generated from Ellipse with budget vs actual analysis performed quarterly.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(g)	Likelihood and consequences of asset failure are predicted	Through discussion with the Manager, Asset Management & Engineering and consideration of AETRH's AMP and relevant supporting documentation, we determined that the SAMP, AMP and SAMP Model are major tools used for predicting the likelihood and consequences of asset failure. Specifically, we observed that: • The SAMP considers each major item of equipment and provides specific details of its operation and maintenance strategy and key life cycle issues and remedial plans • AETRH's operations and maintenance staff operate the plant and perform routine and first line intervention maintenance on a scheduled basis controlled by work orders generated through Ellipse • Condition monitoring techniques are employed on a frequent basis to identify defects, including: ▪ Oil analysis ▪ Vibration analysis ▪ Radiography and thermography to identify any surface or internal defects. • During scheduled outages (e.g. long term shutdowns), main components of the facility's plant are inspected for defects by site staff and external contractors.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(h)	Plans are regularly reviewed and updated	Through discussions with Manager, Asset Management & Engineering and consideration of AETRH's AMP and relevant supporting asset planning documentation, we determined that: • The Newman Power Station and Roy Hill Transmission Line AMP has been reviewed and revised on an annual basis • The detailed maintenance program is maintained as a forward-looking document to avoid unplanned outages and subjected to revision in accordance with continuous improvement principles, with a view to maximising availability and aligning outages to coincide with off-peak and off-season periods • Operational and capital expenditure budgets are tracked on a monthly and quarterly basis with any variances analysed to determine impact on the scheduled maintenance and outage plans. Although the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP generally reflect AETRH's expectations and requirements for managing the relevant facilities' assets, they can be further improved in the following areas, to better align with AETRH's Asset Management Framework and EIRL obligations: • It is not clear how the Asset Management Strategy and Key Asset Risks detailed in the SAMP have been addressed within the annual revision of the supporting AMP. We note that the SAMP was last reviewed in December 2014, with no disclosed next review date	

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td></td><td></td><td colspan="2">• The AMP does not clearly address the following elements expected by Alinta Energy's Asset Management Framework:
▪ Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks
▪ A brief description of any known and significant risks relating to assets
▪ Consideration and documentation of legal and compliance requirements.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td></td><td colspan="2">Recommendation 1/2016
AETRH explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP:
• Contingency plans
• Known and significant risks relating to the key assets
• Legal and compliance requirements.</td><td>Action Plan 1/2016
AETRH will explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP:
• Contingency plans
• Known and significant risks relating to the key assets
• Legal and compliance requirements.
Responsible Person: General Manager Pilbara O&M
Target Date: 30 September 2017</td></tr>
</table>

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 (2)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>2(a)</td><td>Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</td><td colspan="2">Through consideration of relevant supporting documentation and discussion with the Manager, Asset Management & Engineering and the Finance Manager – Power Generation, we determined that AETRH has developed expenditure approval procedures, which outline the requirement for project evaluations to be undertaken prior to seeking funds approval. As part of the project evaluation process, AETRH requires the following to be completed:
A full business case, which provides an approval criteria for instigating new projects including; financial and capital requirements, current state assessment, asset/non-asset alternatives and timeline
Economic evaluation modelling in support of the business case that utilises a standard set of high level economic assumptions to assess the cost associated with the overall plant life and generate cost predictions over the 20+ years of plant life
Consideration of non-asset options.
We sighted the following project supporting documentation for AETRH’s Battery storage project which took place during the period subject to review:
Business case, on a staged basis
Presentation to Capital Steering Committee and Board
Project execution supporting documentation, including Principal Project requirements and Early Works Agreements
Financial analysis, including costings and required Capex.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>2(b)</td><td>Evaluations include all life-cycle costs</td><td colspan="2">Through discussions with the Manager, Asset Management & Engineering and the Finance Manager – Power Generation and an examination of the procedures for expenditure approval and associated forms and templates, we determined that AETRH has the following process in place to assess lifecycle costs of owning and operating assets:
Assessment of lifecycle costs of owning and operating the assets is undertaken by means of AETRH’s AMP that considers each major equipment and provides specific details, including:
Operating and maintenance philosophy
Key life cycle issues and how they are addressed
Life cycle plan and critical outages
Performance improvement opportunities</td></tr>
</table>

No	Effectiveness Criteria	Findings	
		▪ Critical reinvestments ▪ Retirement/disposal consideration at end of plant life. • An economic evaluation model is also utilised as part of budgeting and forecasting process to assess the cost associated with the overall plant life and forecast expenditure up to FY 2025 • Project evaluations provide for estimates of the amount of investment required as well as identifying the source of funds. We sighted project, technical and financial supporting documentation for the Battery storage project, which took place during the period subject to review.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2(c)	Projects reflect sound engineering and business decisions	Through discussions with the Manager, Asset Management & Engineering and the Finance Manager – Power Generation and examination of AETRH's AMP and PPA/contractual documentation, expenditure approval procedure and associated forms and templates, we determined that AETRH has the following procedures in place to assess the commercial and technical competence of projects: • Project evaluations are performed with the input from both engineering and finance personnel and with evaluation results detailed and approved by relevant department stakeholders to ensure all engineering, finance, environmental, health and safety aspects are addressed • Project modelling tools are applied to project evaluations, taking into account relevant economic measures • Commercial sign off is required, which incorporates the above considerations and addresses any potential contract risks when engaging external parties. We sighted project, technical and financial supporting documentation for the Battery storage project, which took place during the period subject to review.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2(d)	Commissioning tests are documented and completed	Through discussions with the Manager, Asset Management & Engineering and consideration of relevant procedures, we observed that commissioning tests form part of the project lifecycle which is recorded on SharePoint. Where AETRH engages external contractors to perform commissioning tests: • Testing reports are prepared by the site engineering team and stored on SharePoint • Service requirements are governed by the contractual terms relating to any major service required to be provided.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2(e)	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	Through discussion with the General Manager Pilbara O&M and Newman Power Station Plant Manager; and examination of relevant supporting documentation, we determined that, for the purpose of its ongoing asset management obligations AETRH has: • Identified legal, environmental and safety obligations relating to its power station and transmission and distribution network assets	

No	Effectiveness Criteria	Findings	
		• Applied the Alinta Energy (group-wide) Occupational Health and Safety Management Framework and Environmental Management Framework to its Newman Power Station and Roy Hill facilities • Assigned responsibilities to staff on site and in the Perth office for managing AETRH's environmental and safety obligations in accordance with OHS and Environmental management plans • Implemented an organised document management system within SharePoint for housing regulatory obligations such as licences, related management plans and monitoring/compliance reports • Assigned responsibilities to its national legal team for monitoring any updates or changes to regulatory obligations and reporting requirements. We sighted evidence of: • AETRH's identification, assessment and treatment of risks relating to its legal, environmental and safety obligations within the Newman Power Station and Roy Hill Transmission Line SAMP and related SAMP Model • Actions and reports prepared in accordance with the Environmental Management Plan. However, we note that the Newman Power Station and Roy Hill Transmission Line SAMP and related SAMP Model do not clearly address the following elements expected by Alinta Energy's Asset Management Framework: • Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks • Consideration and documentation of legal and compliance requirements. *Refer to Recommendation and Action Plan 1/2016 at item 1(h) above.*	
		Adequacy Rating: Requires some improvement (B)	**Performance Rating:** Opportunity for improvement (2)

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)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>3(a)</td><td>Under-utilised and under-performing assets are identified as part of a regular systematic review process</td><td colspan="2">Through discussions with the Manager, Asset Management & Engineering and Newman Power Station Plant Manager; and examination of relevant supporting documentation, we determined that AETRH has applied the following mechanisms for identifying under-utilised and under-performing assets:
The SAMP considers each major item of equipment and provides specific details of the facility’s operations and maintenance strategy, key life cycle issues and remedial plans
A detailed forward maintenance program in accordance with manufacturer’s guidelines and expert experience is maintained for the plant that is reviewed on a daily basis
Condition monitoring techniques are employed on a frequent basis to identify defects, including:
Oil analysis
Vibration analysis
Radiography and thermography to identify any surface or internal defects
During scheduled outages, main components of the facility’s plant are inspected for defects by external consultants
The operational performance of the Newman/Roy Hill facilities is monitored through the Honeywell Experion system, with weekly performance dashboard reports presented to management for review
Results of these assessments and inspections are included in the rolling five year plans
Unexpected asset failures are logged in the KMI Incident Management System which details:
Incident description
Relevant Workgroup responsible
Incident Type (e.g. equipment, environmental etc.)
Incident Status.
The General Manager Pilbara O&M provided a walkthrough of the KMI Incident Management Register for Newman/Roy Hill for the period subject to this review.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>3(b)</td><td>The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken</td><td colspan="2">Through discussions with the Manager, Asset Management & Engineering and the Newman Power Station Plant Manager; and examination of relevant supporting documentation, we determined that AETRH has applied the mechanisms at Asset Disposal (s.3(a)) to facilitate the examination of under-utilised and under-performing assets by:
Undertaking root cause analyses of underutilisation or poor performance of power station assets</td></tr>
</table>

No	Effectiveness Criteria	Findings	
		• Applying a project evaluation approach as part of the capital expenditure approval process, which requires a justification of why the upgrade/purchase of equipment is crucial to the condition of the asset • Incorporating assessments into rolling five year plans that detail the major capital projects planned for the coming financial year.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
3(c)	Disposal alternatives are evaluated	Through discussions with the Manager, Asset Management & Engineering and the Newman Power Station Plant Manager; and examination of supporting documentation, we determined that AETRH's processes require: • Consideration of alternatives for decommissioning, removal or storage of key plant • The rolling five year plans to provide details of the major projects planned for each asset in the coming financial year, including any equipment replacement requirements • Asset disposals to be performed in accordance with Project Management processes (including the Management of Change system process) and the AMP.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
3(d)	There is a replacement strategy for assets	Through discussions with the Manager, Asset Management & Engineering and the Newman Power Station Plant Manager; and consideration of AETRH's AMP and SAMP, we observed that: • The SAMP considers each major item of equipment and provides specific details of the facility's operations and maintenance strategy, key life cycle issues and remedial plans • Rolling five year plans provide details of the major projects planned for each asset in the coming financial year, including any equipment replacement requirements.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that AETRH identifies and assesses opportunities and threats within its asset management system environment through records of: • Applicable legal and regulatory obligations in its Power Generation Compliance Register • Risks and threats to the asset's operations in the Newman Power Station and Roy Hill Transmission Line SAMP • Environmental and Safety related incidents in its KMI Incident Management System.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; consideration of relevant supporting documentation and walkthrough of the reporting document management system on SharePoint, we determined that: • The tracking of work orders and performance KPIs on site is controlled through Ellipse, which reports on the key performance aspects of the plant. The monthly reports include aspects such as availability and production losses, maintenance costs, EOHS incidents and SOx emission breaches. Any deviations from budget or contractual KPIs are highlighted and explained, where appropriate • AETRH is required to report any breaches of SOx emission limits to the Department of Environment. AETRH monitors it SOx emissions in sufficient detail to flag all instances where its emission limits are breached AETRH has demonstrated its compliance with those reporting requirements by reporting breaches as required.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
4(c)	Compliance with statutory and regulatory requirements	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that AETRH operates and monitors its operations in accordance with the following statutory and regulatory requirements: • Environmental Operating Licence, which includes SOx emissions targets and requirements. We observed that monitoring of SOx emissions is undertaken on a continuous basis to enable reporting of any breaches in accordance with the environmental licence requirements. Alinta Energy's Environmental Management Framework accommodates AETRH's commitment to environmental protection • Greenhouse gas emissions obligations under the NGER Act • Occupational Health and Safety Regulations. Alinta Energy's Occupational Health and Safety Management Framework accommodates AETRH's core focus on safety.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
4(d)	Achievement of customer service levels	Through discussion with the General Manager Pilbara O&M and consideration of relevant supporting documentation, we determined that AETRH's customer service levels and performance requirements are defined by the respective PPA with each customer. In relation to community obligations, AETRH operates and monitors its operations in accordance with 4(c) above.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.5 Asset operations

Key process: Operations 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)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">5(a)</td><td rowspan="2">Operational policies and procedures are documented and linked to service levels required</td><td colspan="2">Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that:
AETRH has documented procedures in place to cover operational and maintenance tasks, which include:
Raising of work orders for planned or unplanned work (as appropriate)
Tracking of backlog and daily/weekly/monthly maintenance plan
Ellipse MSTs for regular maintenance tasks
Priority discussion and decision making
Daily pre-start meetings that are attended by the Plant Manager, Supervisor, Operations and Maintenance Technicians (OMTs), contractors and other relevant AETRH staff
Preparation of Safe Work Method Statement (SWMS) documents
Completion of work permits, including reference to isolations and other considerations required (such as confined space, etc.)
Maintenance contractors preparing AETRH SWMSs/work permits for work undertaken on site, which must be signed off by an AETRH authorised person
Tasks performed by the duty operator, who is responsible for operation of the plant and responding to any alarms (including overnight remotely)
Daily rounds, where key plant parameters are recorded and any maintenance issues noted for action (e.g. oil leak, etc.)
Algorithms within the plant control system automatically manage customer requirements, with turbines being automatically started and stopped to meet customer load and contractual requirements.</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

No	Effectiveness Criteria	Findings	
5(b)	Risk management is applied to prioritise operations tasks	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • Plant assets are managed by AETRH using risk-based processes in accordance with Alinta Energy policies and procedures • Operations and maintenance tasks are performed in a sequential manner, with higher risk tasks given priority over lower risk tasks • Performance and availability of plant is tracked via a weekly report that contains a record of availability, planned and unplanned maintenance outages • A daily pre-start meeting is held with appropriate staff to review and decide on the priority of operations and maintenance tasks for the day • The daily meeting is undertaken in conjunction with weekly maintenance plans that track all maintenance tasks for the upcoming one to two week period. Where relevant, any maintenance tasks that are removed from the daily list following priority assessments are added on to the maintenance plan for discussion at the next daily meeting.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
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	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • The Ellipse system holds detailed information for each major component of plant, such as assets' unique asset identifier details, operational history and cost data (via work orders) • The Newman Power Station and Roy Hill Transmission Line SAMP and supporting SAMP Model outlines the major components of the plant and applies a risk rating to any associated issues or long term maintenance requirements. The SAMP serves as a high-level asset risk register for the plant's higher risk components and systems.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
5(d)	Operational costs are measured and monitored	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • AETRH prepares and presents detailed monthly costs reports, which include: ▪ Total operational costs for the month ▪ Calculations to determine variance of costs to the budget for the month ▪ Internal and external costs (i.e. AETRH staff, contractor costs, parts, etc.) • Costs are allocated to assets automatically based on the work order • External costs are allocated to the relevant cost centre, which has relevant links to assets • Costs are typically tracked on a whole-of-plant basis, with asset level cost information also available within Ellipse when required.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
5(e)	Staff receive training commensurate with their responsibilities	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • Each work pack requires a SWMS and work permits to be completed and signed off by relevant authorised staff before work can commence (including signoff by an AETRH OMT for any contractor work) • AETRH's SharePoint and other internal information management systems contain relevant high-level procedures and checklists to enable the worker to perform the tasks required. For example there are specific procedures for confined space, hot work and working at heights tasks • AETRH maintains a central training record for all staff showing qualifications and training. This record links roles to training requirements, where for example electrical OMTs require an electrical licence while mechanical OMTs require other qualifications. As all relevant OMTs require authorised person and work permit training, they are able to supervise contractors in their field and sign-off on SWMS documents • AETRH maintains records of all personnel and contractors inducted as appropriate to their role on site. For example, a maintenance contractor is required to undergo a more detailed induction than an escorted visitor to ensure they understand the procedures for working on site, such as work permit procedures • Several of AETRH's key staff have been involved in the running of the power station for many years and also the transmission assets since commissioning. Their extensive knowledge of the plant and equipment are drawn upon by the broader team when required.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>6(a)</td><td>Maintenance policies and procedures are documented and linked to service levels required</td><td colspan="2">Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that:
AETRH has documented procedures in place to cover operational and maintenance tasks, which include:
Raising of work orders for planned or unplanned work (as appropriate)
Tracking of backlog and daily/weekly/monthly maintenance plan
Ellipse maintenance schedule tasks (MST) for regular maintenance tasks
Priority discussion and decision making
Daily pre-start meetings that are attended by the Plant Manager, OMT Supervisor, OMTs, contractors and other relevant staff
Preparation of SWMS documents
Completion of work permits, including reference to isolations and other permits required such as confined space
Maintenance contractors preparing AETRH work permits for work undertaken on site, which must be signed off by an AETRH authorised person (e.g. OMT)
Tasks performed by the duty operator, who is responsible for operation of the plant and responding to any alarms (including overnight by phone)
Daily rounds, where key plant parameters are recorded and any maintenance issues noted for action (e.g. oil leak, etc.)
In early 2016, AETRH established a national asset management team with planners who are responsible for planning maintenance tasks for the Newman Power Station and managing MSTs within Ellipse that trigger regular maintenance tasks to be performed on site. This process is jointly managed by the Supervisor at Newman Power Station to manage the local OMT allocation to the work, and also by the planner in the national team to ensure the work is scheduled and managed
Algorithms within the plant control system automatically manage customer requirements, with turbines being automatically started and stopped to meet customer load and contractual requirements.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

No	Effectiveness Criteria	Findings	
6(b)	Regular inspections are undertaken of asset performance and condition	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • As part of AETRH's general plant management, plant performance is monitored on a continual basis by the duty officer to ensure that the plant is operating correctly. Any deviations from normal operations or control system alarms are investigated • Regular third party inspections of key high risk equipment such as turbines are performed during planned outages, including preventative maintenance, where required • AETRH maintains several aspects of the plant using a condition-based monitoring maintenance process whereby regular samples of oil are taken from the main components of the plant and sent to an external lab for detailed analysis to highlight any potential issues with equipment, which may require preventive maintenance. Sample analysis is performed for example on transformer oil and turbine oil • Daily rounds are performed by a designated OMT where a checklist booklet is completed to record key plant parameters. Daily rounds also look for visual signs of maintenance issues, such as oil leaks and appropriate actions will be taken to correct them depending on the severity and risk rating of the fault.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • The Ellipse system is used to record all work schedules and work orders for key components of the plant. The schedules and work orders are extracted from Ellipse on a monthly basis to track and monitor maintenance of the plant (capturing emergency, corrective and preventative maintenance activities). Tracking and monitoring is performed by the maintenance planners in conjunction with the Supervisor • In accordance with a service agreement for the maintenance of the turbines, GE and Trent/Rolls Royce/Siemens have been engaged to ensure key maintenance tasks are completed as per original equipment manufacturer recommendations • AETRH prepares a detailed report on a monthly basis that outlines planned and achieved maintenance tasks, forecast and actual costs and major outages. This reporting is used to track and manage any backlog of tasks.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • Unplanned outages that result in a loss of production are required to be investigated and are reported into AETRH's incident reporting system. The incident report is to include an explanation of the outage and possible causes, and will also track who is responsible for any investigation and what actions are in place to correct the fault. Where appropriate, a work order will be raised to undertake preventative actions to limit the fault's reoccurrence. Incident reports are prepared by the person who found the fault, reviewed by a supervisor, then assigned to the Plant Manager for investigating further corrective actions. The incident reporting system is also used by AETRH for safety incident reporting, with detailed audit trail and responsibility features built in. We sighted records of a number of faults, which caused outages as reported in AETRH's incident reporting system e.g. an incident where turbine TG404 tripped due to an IP thrust piston value issue. • If the fault requires modification to the plant, such as changes of control parameters, or physical modification of the plant, a Management of Change process will be submitted for the change to be formally reviewed and approved • In conjunction with the annual AMP review, adjustments are made, where necessary, to the risk action plan that is prepared to address significant risks/issues in the plant • In conjunction with ongoing maintenance discussions and regular reliability meetings, a reliability register is maintained which tracks key plant faults or key plant maintenance requirements, using a risk based approach to prioritise and allocate the maintenance • AETRH's service agreement with GE and Trent/Rolls Royce/Siemens for the maintenance of the turbines provides an incentive to GE/Siemens to ensure they are involved in any turbine related faults to ensure ongoing reliability of their turbines.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
6(e)	Risk management is applied to prioritise maintenance tasks	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • Daily meetings are used to arrange: ▪ Daily work plans ▪ Plans for upcoming work ▪ Outage plans for major scheduled outages • In conjunction with ongoing maintenance discussions and regular reliability meetings, a reliability register is maintained, which tracks key plant faults or key plant maintenance requirements, using a risk based approach to prioritise and allocate the maintenance • All maintenance activities are based on a risk management approach, whereby the maintenance tasks addressing higher risk issues are performed first in order, followed by lower priority tasks • The Newman Power Station and Roy Hill Transmission Line AMP and supporting SAMP Model is revised on an annual basis, using a risk based approach to prioritise medium to long term maintenance tasks and associated capital expenditure projects. The tasks are listed and risk rated, with a second risk rating performed to reflect the risk rating once the maintenance task has been performed. The SAMP Model includes proposed plant improvements to minimise maintenance costs and significant scheduled maintenance tasks such as hot section turbine inspections. In March 2016, AETRH initiated an update of its risk assessment for maintenance activities. This update involved conversion of the previous excel model extracted from Ellipse (risk assessments were completed on an ad hoc basis) to the SPM Asset recording system. While this update process was designed to improve the completeness and accuracy of its risk assessment for maintenance tasks, it has not yet been completed and a timeframe for completion has not been formally established. *Refer to Recommendation and Action Plan 2/2016 at items 8(a) and (b) below.*	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Opportunity for Improvement (2)
6(f)	Maintenance costs are measured and monitored	Through discussions with the General Manager Pilbara O&M, Newman Power Station Plant Manager, Newman Power Station Supervisor and the Finance Manager – Power Generation, we determined that: • AETRH prepares and presents detailed monthly costs reports, which include: ▪ Total operational costs for the month ▪ Calculations to determine variance of costs to the budget for the month ▪ Internal and external costs (i.e. AETRH staff, contractor costs, parts, etc.) • Costs are allocated to assets automatically based on the work order • External costs are allocated to the relevant cost centre, which has relevant links to assets • Costs are typically tracked on a whole-of-plant basis, with asset level cost information also available within Ellipse when required.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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	From our discussions with the Ellipse Team Leader, the Lead Engineering Planner and the General Manager Pilbara O&M, we determined that: • AETRH utilises the Ellipse computerised maintenance management system • Asset live performance is monitored through Honeywell Experion software. Through discussions with the above personnel and consideration of relevant system documentation, we observed that: • AETRH staff are responsible for operating the Ellipse system in line with Alinta Energy's business wide IT policy, comprising general IT policies such as internet usage policy, remote access policy and mobile communications policy • Alinta Energy has an internal support team for maintaining the Ellipse system (based in South Australia) • IT policies are stored on Alinta Energy's SharePoint site and are readily accessible for all users • Honeywell Experion is administered on site with oversight by the site manager. **Adequacy Rating:** Adequately defined (A) | **Performance Rating:** Performing effectively (1)
7(b)	Input controls include appropriate verification and validation of data entered into the system	Through discussion with the Ellipse Team Leader, we determined that: • Input controls are managed through built-in checks in Ellipse and aligned to Alinta Energy's overall IT policy • Processes are in place to verify and validate data entered into the system, including data reconciliation between old and new systems, checking data transferred between one system to another is accurate, timely and complete and validating data as close as possible to the point of origin, which includes the ability to trace data back to the source document • Alinta Energy's central IT helpdesk processes user requests • User access is based on roles and positions • Access is granted only on receipt of a request form duly signed by relevant departmental head • Ellipse has multiple points of security tied to user position. Employee IDs are attached to positions within a hierarchy within Ellipse • Global profile security profiles are tied to positions • Financial Delegations are tied to positions, are district specific and requires specific approval of Alinta Energy's Finance function • Within Ellipse, work functions can be restricted through menu visibility (i.e. programs will not appear without access)

No	Effectiveness Criteria	Findings	
		• Site management approval is required for user profile updates • A work order number is primary identifier in the Ellipse system that cannot be modified. Users have restricted access to the equipment register (limited to site personnel) • District security settings require a Newman site login. Higher management have multiple level district access.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(c)	Logical security access controls appear adequate, such as passwords	Through discussions with the Ellipse Team Leader and consideration of relevant supporting documentation, we determined that: • The process of granting and managing access is undertaken online through Alinta Energy's IT helpdesk. Access requests are required to be approved by the relevant departmental head prior to being processed by IT • End-users are granted the minimum level of access privileges required to perform their job function and to prevent segregation of duties conflicts • Password requirements are maintained to authenticate user access to the Alinta Energy network and the Ellipse system, including a minimum number of characters and type of characters and restrictions on use of most recent passwords • An audit of management's email folders is undertaken periodically to ensure that only relevant personal assistants have access to those folders • Ellipse authenticates from the active employee directory and can track when users last logged in • Remote user access requires RSA token authentication. We noted that the IT policy outlines consequences for breach of policy and misuse of user privileges.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(d)	Physical security access controls appear adequate	Through discussions with the Newman Power Station Plant Manager, Ellipse Team Leader and General Manager Pilbara O&M, consideration of relevant supporting documentation and observations made during our visits to AETRH premises, we determined that: • Processes and procedures relating to the access of facilities and the physical protection of information assets and systems are in use both at the head office as well as on site • Site access is restricted by security fencing and swipe card entry to the premises • Physical security for the head office location in Perth is maintained by the relevant building services company, including the provision of swipe card access to the building and restricted lift access. Specifically in the context of access to computer server rooms on site, we observed that: • Access swipe cards are used to restrict and record physical access to the computer server rooms • On employee termination, an exit checklist is completed whereby phones, cards and laptops are required to be returned and access is revoked • Visitors are required to sign in and out at reception and required to be accompanied by an AETRH employee • Access to the building is monitored by CCTV.	

No	Effectiveness Criteria	Findings	
		We also noted that general safety precautions appear to have been instigated to contain fire and other damaging events in computer rooms on site.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(e)	Data backup procedures appear adequate	Through discussions with the Ellipse Team Leader and consideration of relevant supporting documentation, we determined that procedures for managing data backup and data restore of servers have been established. In particular, we observed that: • The main on-site data centre is located in Adelaide • Nightly backups are performed through UNIX commands • Regular backups are performed in accordance with defined schedules and media rotation rules. A full backup is performed every weekday and a weekly backup is performed each Friday • Backup tapes are stored securely and protected from environmental harm and unauthorised access • End of calendar year and end of financial year backups are maintained indefinitely • Recall has been engaged to manage off-site backup tapes at a secure location • Testing of backups is performed on a quarterly basis with archived emails being more commonly tested. We also noted that access to the backup tapes is limited to a sub-set of IT Operations personnel and examined quarterly.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(f)	Key computations related to licensee performance reporting are materially accurate	AETRH's asset management information system does not directly provide data used in any computation related to AETRH's licence performance reporting.	
		Adequacy Rating: Not rated	**Performance Rating:** Not rated
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	Through discussions with the Newman Power Station Plant Manager and the Ellipse Team Leader, and consideration of relevant supporting documentation and management reporting procedures, we determined that site management reporting is performed by AETRH staff. We also observed that the Experion and Ellipse systems are capable of generating a variety of scheduled reports. In particular, we determined that: • Management reports are generated to provide performance information on plant operations and routine and first line intervention maintenance • A daily generation report is produced for daily operator meetings on site and contains relevant information on the volume of MW hours produced and the quantity of fuel consumed • The Finance team also prepares a monthly management pack to monitor costs from a financial perspective.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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) / Opportunity for improvement (2)

<table>
<tr><th>No</th><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td colspan="4">8. Risk Management</td></tr>
<tr><td>8(a)</td><td>Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.</td><td colspan="2" rowspan="2">Criteria 8(a) and (b)
Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that:
Alinta Energy’s Enterprise Risk Management Framework applies throughout Alinta Energy’s business structure, including AETRH’s operations
All maintenance activities are based on a risk management approach, whereby the maintenance tasks addressing higher risk issues are performed first in order, followed by lower priority tasks
The Newman Power Station and Roy Hill Transmission Line AMP and supporting SAMP Model is revised on an annual basis, using a risk based approach to prioritise medium to long term maintenance tasks, and associated capital expenditure projects. The tasks are listed and risk rated, with a second risk rating performed to reflect the risk rating once the maintenance task has been performed. The SAMP Model includes proposed plant improvements to minimise maintenance costs and significant scheduled maintenance tasks such as hot section turbine inspections.
Daily meetings are used to arrange:
Daily work plans
Plans for upcoming work
Outage plans for major scheduled outages.
In March 2016, AETRH initiated an update of its risk assessment for maintenance activities. This update involved conversion of the previous excel model extracted from Ellipse (risk assessments were completed on an ad hoc basis) to the SPM Asset recording system. While this update process was designed to improve the completeness and accuracy of its risk assessment for maintenance tasks and to provide for a more effective risk register, it has not yet been completed and a timeframe for completion has not been formally established
Although AETRH’s operational risk management approach is generally understood and applied by staff, AETRH has not retained clear evidence of some of those activities to demonstrate that its risk management philosophies and approach are consistently applied. For example:
A consistent approach and timeframe has not been designed for preparing and reviewing risk treatment plans and reports, other than through the annual review of the Newman Power Station and Roy Hill Transmission Line SAMP, AMP and supporting SAMP Model. The SAMP, AMP and SAMP Model do not provide a clear and consistence reference to specific risk assessment and management activities, including preparation of risk treatment plans (which often result in allocation of capital expenditure) and links to insurer risk reduction recommendations.</td></tr>
<tr><td>8(b)</td><td>Risks are documented in a risk register and treatment plans are actioned and monitored.</td></tr>
<tr><td></td><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
</table>

No	Effectiveness Criteria	Findings	
	Recommendation 2/2016 AETRH establish a clear: • Timeframe for completing its program of populating risk assessments within the SPM Asset software • Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.	**Action Plan 2/2016** AETRH will establish a clear: • Timeframe for completing its program of populating risk assessments within the SPM Asset software • Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017	
8(c)	The probability and consequences of asset failure are regularly assessed.	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of AETRH's asset planning and risk management practices, we determined that AETRH has applied the following mechanisms for identifying and assessing the consequence and likelihood of power station asset failure: • The SAMP, AMP and SAMP Model are major tools used for predicting the likelihood and consequences of asset failure • The SAMP considers each major item of equipment and provides specific details of its operation and maintenance strategy and key life cycle issues and remedial plans • A detailed forward maintenance program in accordance with the manufacturer's guidelines and expert experience is maintained for the plant and reviewed on a daily basis • AETRH's operations and maintenance staff operate the plant and perform routine and first line intervention maintenance on a scheduled basis controlled by work orders generated through Ellipse • External contractor maintenance standards/requirements are governed by specific contract arrangements • Condition monitoring techniques are employed on a frequent basis to identify defects, including: ▪ Oil analysis ▪ Vibration analysis ▪ Radiography and thermography to identify any surface or internal defects • During scheduled outages, main components of the facility's plant are inspected for defects by site staff and external consultants • The management and maintenance of the plant assets is reviewed on a day-to-day basis at an operational level and on an annual basis, primarily through the review of the AMP • Any asset failures or related incidents are recorded online through the KMI Incident Management System • A high level of priority is accorded to minimising instances of asset failure and the duration of any such failure. The management structures, skills and resources assigned to the asset management processes appear to be appropriate for enabling the regular assessment of the probability and consequences of asset failure.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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: Requires some improvement (B) / Opportunity for improvement (2)

No	Effectiveness Criteria	Findings
9. Contingency Planning		
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.	Through discussion with the General Manager Pilbara O&M, Newman Power Station Plant Manager and Newman Power Station Supervisor; and consideration of relevant supporting documentation, we determined that: • The Newman Power Station maintains a range of emergency planning documents, including an emergency response plan ▪ The emergency response plan includes exercises that are undertaken up to twice each year; one a desktop exercise and one a "live" exercise, which involves participation by local emergency services. We sighted records (including results and lessons learned) of the live exercise performed on 23 July 2015 ▪ The results of exercises are documented in Alinta Energy's SharePoint system ▪ Personnel at the Newman Power Station confirmed that these "live" exercises are not always communicated to staff and personnel onsite believe it is a real emergency until they are informed during the exercise • Duty officers (on a rolling schedule basis for the Newman Power Station and Roy Hill site operations) are responsible for plant operations and addressing any alarms, including when onsite during office hours via the control system, and after hours remotely by phone alarms. When the duty officer receives an alarm, the officer is required to investigate and take appropriate remedial action based on their understanding of the cause of the alarm the related risk. Minor alarms may be left to the next day shift, while high risk alarms require immediate attention. The Plant Manager would also be contacted as appropriate. We also observed that: • Inherent in the design and setup of the plant and the contractual agreements in place with third parties, contingencies are in place for the main business operational risks as follows: ▪ Fuel supply: o Gas is the primary fuel for the power station and is sourced via pipeline o In the case of gas failure, the site uses diesel with the three GE turbines operating at Newman Power Station capable of firing on diesel o Diesel is stored in two large tanks at Newman, with arrangements in place with local suppliers to provide additional diesel if required. Contractual arrangements with AETRH's customer require at least one million litres to be maintained, of the possible 1.2 million litre tank capacity ▪ Water supply: o Water is supplied via a shared services agreement with BHPB o A water tank is located onsite for firefighting purposes

No	Effectiveness Criteria	Findings
		○ A water treatment plant is located onsite for deionisation of water, for turbine cleaning etc. with a small tank acting as a buffer ○ Water is not a key input to the process as the plant is air cooled (i.e. not water cooled) ▪ Turbine failure/error: ○ The Newman Power Station comprises four gas turbines (three GE units and one large Trent/Rolls Royce/Siemens unit) and three smaller diesel generators at the Roy Hill mine site ○ The typical demand on the power station is generally much less than the rated capacity of all four turbines and diesel generators combined, and two to three turbines can generally handle the load should one turbine trip or have a failure ▪ Transmission line failure/error: ○ Three smaller diesel generators located at the Roy Hill mine site can meet the essential load of Roy Hill • Normal operation processes and procedures used to maintain, control and operate the plant include contingency aspects to allow the plant personnel to react to emergencies and implement necessary actions to limit the emergency's impact and recurrence. The Newman Power Station has been demonstrated to run safely in events of emergency that have occurred since commencement of operations • In addition to the normal operational processes and procedures for the plant (as described above) risks relating to operational emergencies (such as catastrophic failure of plant) are managed by: ▪ Using regular inspections of key high risk equipment (such as pressure vessels, turbines, etc.) and undertaking preventative maintenance on those items, where required. We sighted examples of inspections undertaken during 2016 and were present during an inspection on 8 December 2016 ▪ Implementing a condition-based maintenance regime, whereby oil samples from key equipment are taken regularly and sent to an external lab for analysis. Any contaminants identified in the oil samples could indicate undue wear and tear of the particular item and a timely maintenance action is then initiated. Samples include transformer oil, turbine oil, etc. The preceding description of the contingency plans and arrangements in place indicates AETRH has broad mechanisms to manage its contingency requirements inherent within the design of the plant and within contractual arrangements. As those plans and arrangements are currently maintained/described in different processes and documents, AETRH has the opportunity to further ensure the completeness and consistency of its contingency planning arrangements by capturing all of its plans and processes in one single reference. Such an approach would be consistent with Alinta Energy's Asset Management Framework.
		Adequacy Rating: Requires some improvement (B) — **Performance Rating:** Opportunity for improvement (2)
	Recommendation 3/2016 AETRH: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and transmission line failure) are rigorously challenged and tested	**Action Plan 3/2016** AETRH will: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and transmission line failure) are rigorously challenged and tested

No	Effectiveness Criteria	Findings
	2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability.	2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017

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	Through discussion with the Finance Manager – Power Generation and consideration of AETRH's financial planning mechanisms, we observed that: • AETRH's financial plan takes the form of an operational budget that is prepared on a rolling five year basis, reflecting its financial objectives and strategies that are driven by its contractual agreements for generation and supply of electricity • The financial plan puts together the financial elements of the plant's operations to reflect its financial viability over the long term.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Through discussion with the Finance Manager – Power Generation and consideration of AETRH's financial planning mechanisms, we determined that operational cash flows are retained for budgeted maintenance and capital expenditure, based on retained funds or by submission through the Alinta Group corporate structure for non-budgeted expenditure.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Through discussion with the Finance Manager – Power Generation and consideration of AETRH's financial planning mechanisms, we determined that: • AETRH's financial plan constitutes a summary of budgeted income and expenses from the supply of electricity under its contractual agreements, which is prepared and updated annually and includes a rolling forecast for the next five years • An income statement and a position statement are prepared as part of statutory financial statements on a six-monthly and annual basis.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Through discussions with the Finance Manager – Power Generation and consideration of AETRH's financial planning mechanisms, we observed that AETRH's financial plan: • Is prepared on an annual basis and updated for the projections of income and expenses based on five year outage and maintenance schedules and also taking into account Consumer Price Index movements • Includes a summary of planned capital expenditure projects for the next five years with a brief description of the intended purpose of the project • Utilises an economic evaluation model as part of budgeting and forecasting process to assess the cost associated with the overall plant life and to generate cost predictions over the 20+ years of plant life.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Through discussions with the Finance Manager – Power Generation and examination of AETRH's financial plans for the two years relevant to this review, we observed that AETRH's financial plans: • Provide a detailed monthly view of operational expenditure i.e. operations maintenance and administration expenses on a rolling five year basis • Include a summary of current and planned capital expenditure projects over the following five years, with a brief description of each project's purpose and assumptions.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Through discussions with the Finance Manager – Power Generation and examination of AETRH's financial planning mechanisms, we observed that: • On a monthly basis, a variance analysis report is produced in a management package to: ▪ Assess actual versus budgeted income and expenditure ▪ Identify areas that are over budget or problematic and determine necessary corrective action • Finance holds quarterly discussions with site personnel to analyse site expenditure and determine whether forecast adjustments are required • A set of audited financial statements are prepared on a six-monthly and annual basis as part of statutory requirements.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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. CAPITAL EXPENDITURE PLANNING			
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Through discussions with the Financial Manager – Power Generation and consideration of AETRH's capital planning procedures and examination of the capital expenditure plans for the two years relevant to this review, we determined that: • A capital expenditure plan is included in the annual financial plan • Capital expenditure planning is undertaken along with financial planning on a rolling five year basis • The plan provides information on the amount, purpose and description of budgeted capital expenditure • The plan also provides information on project responsibilities and the estimated dates of funds release.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Through discussions with the Financial Manager – Power Generation, consideration of AETRH's capital planning procedures and examination of the capital expenditure plans for the two years relevant to this review, we determined that the capital expenditure plan outlines the: • Details of the financial year in which the capital expenditure amount is planned • Reasons for the capital expenditure.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Through discussions with the Financial Manager – Power Generation, consideration of AETRH's capital planning procedures and examination of the capital expenditure plans for the two years relevant to this review, we determined that: • AETRH's procedures require life cycle costs of assets to be assessed and recorded in the AMP for each major item of equipment, including key life cycle issues, critical outages and operating & maintenance philosophy • The capital expenditure plan concurs with the assessed life cycle costs of the plant's assets.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

No	Effectiveness Criteria	Findings	
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Through discussions with the Financial Manager – Power Generation, consideration of AETRH's capital planning procedures and examination of the capital expenditure plans for the two years relevant to this review, we determined that: • The capital expenditure budget is tracked on a monthly basis and any variances analysed to determine impact on the scheduled maintenance and outage plans • An economic evaluation model is utilised as part of budgeting and forecasting process to assess the cost associated with the overall plant life and to generate cost predictions over the 20+ years of plant life • For non-budgeted capital expenditure an application for expenditure is required to be made that evaluates the project rationale in conjunction with the economic evaluation model • On completion, the projects are reviewed against the approved criteria to test whether the project objectives were met • Daily site meetings are held at the plant to review the ongoing maintenance projects and schedules, including any relevant capital expenditure projects • Site liaises with the financial team on a quarterly basis to update the expenditure models.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** 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) / Opportunity for improvement (2)

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	From our discussions with Manager, Asset Management & Engineering and General Manager Pilbara O&M, and review of AETRH's Asset Management System documentation, we observed that: • Since the issue of the Licence in October 2013, AETRH has strengthened its asset management system through refined policies and procedures and improved data recording and reporting mechanisms (e.g. through the transition from excel models to the SPM Asset software) • The Newman Power Station and Roy Hill Transmission Line AMP, which is the main reference to the asset management system, has been reviewed and updated (where necessary) on an annual basis. With the support of a designated Mechanical Engineer, the Manager, Asset Management and Engineering has the primary responsibility for that annual review, with the Executive Director Power Generation responsible for approving the revised version • Alinta Energy's Asset Management Framework provides for asset management activities to be subject to performance assessment and continuous improvement.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
12(b)	Independent reviews (e.g. internal audit) are performed of the asset management system	Although components of AETRH's asset management system are subject to regular review and update, as noted at 12(a) above, AETRH has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying asset management system.	
		Adequacy Rating: Adequately defined (A)	**Performance Rating:** Opportunity for improvement (2)
	Recommendation 4/2016 In accordance with the Alinta Energy Asset Management Framework, AETRH implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer.	**Action Plan 4/2016** In accordance with the Alinta Energy Asset Management Framework, AETRH will implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017	

Appendix A – Review plan

Alinta Energy Transmission (Roy Hill) Pty Ltd

Electricity Integrated Regional Licence (EIRL6)

2016 Asset Management System Review

Review Plan

October 2016

Contents

1 Introduction

Overview

The Economic Regulation Authority (**the Authority**) has under the provisions of the Electricity Industry Act 2004 (**the Act**), issued to Alinta Energy Transmission (Roy Hill) Pty Ltd (**Alinta**) an Electricity Integrated Regional Licence (**the Licence**). The Licence relates to Alinta electricity generation, transmission, and retail operations.

Section 14 of the Electricity Industry Act requires Alinta to provide to the Authority an asset management system review (the **review**) conducted by an independent expert acceptable to the Authority not less than once in every 24 month period. With the Authority's approval, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has been appointed to conduct the review for the period 1 October 2013 to 30 September 2016.

The Licence covers Alinta's generation, transmission, distribution and retail activity in relation to its supply of power to the Roy Hill iron ore mine via a 220kV transmission line from Alinta Energy's Newman power station and a 6MW diesel power station at the Roy Hill mine site.

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

Objective

The objective of the review is to independently examine the effectiveness and performance of the asset management system established for the assets subject to Alinta's Licence.

Scope

In accordance with the Guidelines, the review is required to consider the effectiveness of Alinta's existing control procedures within the 12 key processes in the asset management life-cycle as outlined below at Table 1.

Table 1 – Asset management system key processes and effectiveness criteria

#	Key processes	Effectiveness criteria
1	Asset planning	• Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning • Service levels are defined • Non-asset operations (e.g. demand management) are considered • Lifecycle costs of owning and operating assets are assessed • Funding options are evaluated • Costs are justified and cost drivers identified • Likelihood and consequences of asset failure are predicted • Plans are regularly reviewed and updated.
2	Asset creation and acquisition	• Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions • Evaluations include all life-cycle costs • Projects reflect sound engineering and business decisions • Commissioning tests are documented and completed • Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.

#	Key processes	Effectiveness criteria
3	Asset disposal	• Underutilised and underperforming assets are identified as part of a regular systematic review process • The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken • Disposal alternatives are evaluated • There is a replacement strategy for assets.
4	Environmental analysis (all external factors that affect the system)	• Opportunities and threats in the system environment are assessed • Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved • Compliance with statutory and regulatory requirements • Achievement of customer service levels.
5	Asset operations	• Operational policies and procedures are documented and linked to service levels required • Risk management is applied to prioritise operations tasks • 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 • Operational costs are measured and monitored • Staff receive training commensurate with their responsibilities.
6	Asset maintenance	• Maintenance policies and procedures are documented and linked to service levels required • Regular inspections are undertaken of asset performance and condition • Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule • Failures are analysed and operational/maintenance plans adjusted where necessary • Risk management is applied to prioritise maintenance tasks • Maintenance costs are measured and monitored.
7	Asset management information system	• Adequate system documentation for users and IT operators • Input controls include appropriate verification and validation of data entered into the system • Logical security access controls appears adequate, such as passwords • Physical security access controls appear adequate • Data back-up procedures appear adequate • Key computations related to licensee performance reporting are materially accurate • Management reports appear adequate for the licensee to monitor licence obligations.
8	Risk management	• Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system • Risks are documented in a risk register and treatment plans are actioned and monitored • The probability and consequences of asset failure are regularly assessed.
9	Contingency planning	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.

#	Key processes	Effectiveness criteria
10	Financial planning	• The financial plan states the financial objectives and strategies and actions to achieve the objectives • The financial plan identifies the source of funds for capital expenditure and recurrent costs • The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) • The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period • The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services • Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.
11	Capital expenditure planning	• There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates • The plan provide reasons for capital expenditure and timing of expenditure • The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan • There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.
12	Review of Asset Management System	• A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current • Independent reviews (e.g. internal audit) are performed of the asset management system.

Responsibility

Alinta's responsibility for maintaining an effective asset management system

Alinta 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 Alinta'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, in order to state whether, in all material respects, based on the work performed, anything has come to our attention to indicate that Alinta 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 October 2013 to 30 September 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 3100.

Limitations of use

The regulatory report is intended solely for the information and internal use of Alinta 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 Authority for the purpose of reporting on the effectiveness of Alinta's asset management systems. We agree that a copy of the report may be provided to the Authority for its information in connection with this purpose but, as will be made clear in the report, only on the basis that we accept no duty, liability or responsibility to the Authority in relation to the report. We accept no duty, responsibility or liability to any party, other than Alinta, in connection with the report or this engagement.

This plan is intended solely for the use of Alinta for the purpose of its reporting requirements under section 14 of the Act.

Inherent limitations

A review consists primarily of making enquiries, primarily of persons responsible for the management of assets, applying analytical and other review procedures, and examination of evidence for a small number of transactions or events. A review is substantially less in scope than a reasonable assurance "audit" conducted in accordance with ASAEs. Accordingly, we will not express an audit opinion in the asset management system review report.

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 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 Alinta's asset management systems established for the assets subject to Alinta's licence. The risk assessment gives specific consideration to changes to Alina's relevant systems and processes and any matters of significance raised by the Authority and/or Alinta. 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 Alinta not effectively maintaining an asset management system for the assets subject to its licence, in the absence of mitigating controls. The consequence rating descriptions listed at Table 15 of the Guidelines (refer to **Appendix 1-A**), provides the risk assessment with context to enable the appropriate consequence rating to be applied to each component of the asset management system subject to review.

Once the consequence has been determined, the likelihood of Alinta not effectively maintaining an asset management system for the assets subject to its licence (with reference to the defined effectiveness criteria) is assessed using the likelihood rating listed at Table 16 of the Guidelines (refer to **Appendix 1-B**). 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 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 Guidelines (refer to **Appendix 1-C**).

Once inherent risks and control risks are established, the review priority can then be determined using the matrix listed at Table 20 of the 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	• Controls testing and extensive substantive testing of activities • Follow-up and if necessary, re-test matters previously reported.
Priority 2	• Controls testing and moderate substantive testing of activities • Follow-up and if necessary, re-test matters previously reported.
Priority 3	• Limited controls testing (moderate sample size). Only substantively test activities if further control weakness found • Follow-up of matters previously reported.
Priority 4	• Confirmation of existing controls via observation and walk through testing • Follow-up of matters previously reported.
Priority 5	• Confirmation of existing controls via observation, discussions with key staff and/or reliance on key references (“desktop review”).

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 based on:

- Prior assessments of the state of relevant controls during the recent review of Alinta DEWAP Pty Ltd’s asset management system
- Our understanding of the electricity industry and regulatory environment
- Any other factors that may have an effect on the level of risk or strength of controls.

At this stage, the risk assessment can only be a preliminary assessment based on reading of documentation and interviews by the auditors. 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 this 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 review effort.

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

Systems analysis/policy and procedure review

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 Alinta representatives and 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 Alinta'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 Alinta representatives and key operational and administrative staff
- Physical visit to the facility's site
- Consideration of the facility'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 Guidelines, the reviewer must provide an assessment of both the process and policy definition rating (refer to **Table 5** below and **Table 8** of the Guidelines) and the performance rating (refer to **Table 6** below and **Table 9** of the Guidelines) for each of the key processes in Alinta's asset management system.

Table 5: Asset management process and policy definition adequacy ratings

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

Table 6: Asset management performance ratings

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

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

- 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
- Where appropriate, recommendations on actions required to address opportunities for improvement.

Where appropriate, Alinta will provide a post review implementation plan for incorporation into the report as an appendix.

3 General Information

All aspects of the review will undergo quality assurance and review procedures as outlined in our previous communications to Alinta. Before delivery of a final report, full quality procedures will be applied, including second partner review.

Key Alinta contacts

The key contacts for this review are:

- Paul Grey Manager Generation Operations WA
- Fiona Wiseman Wholesale Regulation Manager
- Michael Roberts Manager - Asset Management
- Jeff Ey Plant Manager Newman Power Station.

Deloitte Staff

Deloitte staff who will be involved with this assignment are:

- Richard Thomas Partner
- Andrew Baldwin Specialist Leader Regulatory Compliance and Lead Auditor
- Bryn Durrans Manager - Technical Specialist / Engineer
- David Herbert Senior Analyst
- Shailesh Tyagi Partner - Technical Lead and Quality Assurance
- Kobus Beukes Partner - Quality Assurance.

Resumes for key Deloitte staff are outlined in the proposal accepted by Alinta and the Auditors Approval Submission document presented to the Authority.

Timing

The initial risk assessment phase was completed on 30 September 2016, after which the draft review plan and risk assessment were presented to Alinta for comment prior to submission to the Authority for review and approval.

The remainder of the fieldwork phase is scheduled to be performed in November 2016, enabling a report to be submitted to the Authority by the due date of 31 December 2016.

Deloitte's time and staff commitment to the completion of the review is outlined in the proposal accepted by Alinta and subsequently presented to the Authority.

Appendix 1 – Risk assessment key

1-1 Consequence ratings

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

1-2 Likelihood ratings

Source: Guidelines – Electricity and Gas Licences April 2014

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

1-3 Adequacy ratings for existing controls

Source: Guidelines – Electricity and Gas Licences April 2014

Rating	Description
Strong	Strong controls that mitigate the identified risks to an appropriate level
Moderate	Moderate controls that only cover significant risks; improvement required
Weak	Controls are weak or non-existent and have minimal impact on the risks

Appendix 2 – Risk assessment

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).
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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
1(a)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Minor	Probable	Low	Strong	Priority 5
1(b)	Service levels are defined	Minor	Probable	Low	Strong	Priority 5
1(c)	Non-asset options (e.g. demand management) are considered	Minor	Probable	Low	Moderate	Priority 5
1(d)	Lifecycle costs of owning and operating assets are assessed	Moderate	Probable	Medium	Moderate	Priority 4
1(e)	Funding options are evaluated	Minor	Probable	Low	Strong	Priority 5
1(f)	Costs are justified and cost drivers identified	Moderate	Probable	Medium	Strong	Priority 4
1(g)	Likelihood and consequences of asset failure are predicted	Moderate	Probable	Medium	Moderate	Priority 4
1(h)	Plans are regularly reviewed and updated	Minor	Probable	Low	Moderate	Priority 5

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
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.

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	Probable	Medium	Moderate	Priority 4
2(b)	Evaluations include all life-cycle costs	Moderate	Probable	Medium	Moderate	Priority 4
2(c)	Projects reflect sound engineering and business decisions	Moderate	Probable	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	Probable	High	Moderate	Priority 2

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.
Outcome:	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	Unlikely	Low	Moderate	Priority 5
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Minor	Unlikely	Low	Moderate	Priority 5
3(c)	Disposal alternatives are evaluated	Minor	Unlikely	Low	Moderate	Priority 5
3(d)	There is a replacement strategy for assets	Moderate	Probable	Medium	Moderate	Priority 4

4	Environmental analysis
Key Process:	Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.
Outcome:	The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.

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

5	Asset operations
Key Process:	Operational functions relate to the day-to-day running of assets and directly affect service levels and costs.
Outcome:	Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.

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 receive training commensurate with their responsibilities	Moderate	Probable	Medium	Moderate	Priority 4

6	Asset maintenance
Key Process:	Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.
Outcome:	Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.

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	Moderate	Probable	Medium	Moderate	Priority 4
6(b)	Regular inspections are undertaken of asset performance and condition	Moderate	Probable	Medium	Moderate	Priority 4
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Moderate	Probable	Medium	Moderate	Priority 4
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Moderate	Probable	Medium	Moderate	Priority 4
6(e)	Risk management is applied to prioritise maintenance tasks	Moderate	Probable	Medium	Moderate	Priority 4
6(f)	Maintenance costs are measured and monitored	Moderate	Probable	Medium	Moderate	Priority 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.
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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
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	Strong	Priority 5
7(d)	Physical security access controls appear adequate	Minor	Probable	Low	Moderate	Priority 5
7(e)	Data backup procedures appear adequate	Moderate	Probable	Medium	Strong	Priority 4
7(f)	Key computations related to licensee performance reporting are materially accurate	Minor	Unlikely	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
Key Process:	Risk management involves the identification of risks and their management within an acceptable level of risk.
Outcome:	An effective risk management framework is applied to manage risks related to the maintenance of service standards

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	Strong	Priority 4

9	Contingency Planning
Key Process:	Contingency plans document the steps to deal with the unexpected failure of an asset.
Outcome:	Contingency plans have been developed and tested to minimise any significant disruptions to service standards.

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

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

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Moderate	Probable	Medium	Strong	Priority 4
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Minor	Probable	Low	Strong	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	Strong	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	Strong	Priority 5
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Moderate	Probable	Medium	Strong	Priority 4
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Moderate	Probable	Medium	Strong	Priority 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
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.

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	Strong	Priority 4
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Minor	Probable	Low	Strong	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	Strong	Priority 4
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Minor	Probable	Low	Strong	Priority 5

12	Review of AMS
Key Process:	The asset management system is regularly reviewed and updated.
Outcome:	Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.

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 (e.g. internal audit) are performed of the asset management system	Minor	Probable	Low	Moderate	Priority 5

Appendix B – References

AETRH staff and representatives participating in the review

- Alinta Energy General Manager Pilbara O&M
- Alinta Energy Manager, Asset Management & Engineering
- Alinta Energy Finance Manager – Power Generation
- Alinta Energy Lead Engineering Planner
- Alinta Energy Ellipse Team Leader
- AETRH Newman Power Station Manager
- AETRH Newman Power Station Supervisor.

Deloitte staff participating in the review

Name	Position	Hours
• Richard Thomas	Partner	3.5
• Andrew Baldwin	Account Director	31
• David Herbert	Senior Analyst	14
• Shailesh Tyagi	Principal Engineer	2.5
• Bryn Durrans	Engineer	20
• Kobus Beukes	Quality Assurance Partner	1

Key documents and other information sources examined

- Newman Power Station and Roy Hill Transmission Line SAMP 2015
- Newman Power Station and Roy Hill Transmission Line AMP FY2016
- Newman Power Station and Roy Hill Transmission Line AMP FY2015
- AMP Spreadsheet FY15
- AMP Spreadsheet FY16
- Alinta Energy Asset Management Framework
- Alinta Energy Enterprise Risk Management Policy
- Alinta Energy Enterprise Risk Management Framework
- Project Approval Portal screenshot via SharePoint (example used Battery storage project)
- Sample Ellipse KPI reporting spreadsheet
- Business Case electronic forms
- Battery storage project - presentations to Executive Team and Board
- Management of Change forms
- Project Commercial Sign-Off form
- 2016 Asset Project Delivery Model Training (Slide Deck)
- KMI Incident Management Register
- Power Generation Weekly Performance Report
- Newman/Roy Hill single line electrical diagram
- Photos of Roy Hill switchyard
- Sample Environmental report listing screenshot via SharePoint
- Accumulator Inspection Report
- Work order entry for 3 weekly diesel unit synchronising to grid – G501
- Work order entry for 6 monthly diesel generator inspection and oil sample – G503
- Work order entry for 2000 hour inspection of Trent turbine

- Several transmission line tower inspection reports – towers 111, 138, 160
- Pressure vessel inspection report – air receiver TG404AR02
- Pressure vessel inspection report – fuel gas filter coalescer TG404-F2745-2
- Maintenance work process document
- Roy Hill Energisation Black Network / No Gen Sets Procedure
- Turbine compressor water wash procedure
- TG404 prestart checks document
- TG404 tripped due to IP thrust piston value issue incident report (screenshot)
- Insulating oil analysis report – transformer TG401TX-1240
- Newman Reliability Meeting Minutes
- Newman Reliability Register
- High Voltage Assets Maintenance Standard
- IT policy listing
- IT Security Policy
- Alinta Energy back-up system protocol
- Application user approval matrix
- Accounts policies/Password Policy system parameters
- Newman Power Station Emergency Response Plan
- Records of Newman Simulated Emergency Response Event – July 2015
- Newman Power Station Master available system (screenshot)
- Accounting position paper – Operating and Capital Expenses Policy
- Financial Budgeting Model (including Capital budget)
- Newman Power Station Financial Model
- Finance Monthly Management Pack – Power Generation.

Appendix C – Post Review Implementation Plan

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 1/2016
1 (h) Plans are regularly reviewed and updated *2 (e) Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Although the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP generally reflect AETRH's expectations and requirements for managing the relevant facilities' assets, they can be further improved in the following areas, to better align with AETRH's Asset Management Framework and EIRL obligations: • It is not clear how the Asset Management Strategy and Key Asset Risks detailed in the SAMP have been addressed within the annual revision of the supporting AMP • The AMP does not clearly address the following elements expected by Alinta Energy's Asset Management Framework: ▪ Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks ▪ A brief description of any known and significant risks relating to assets ▪ Consideration and documentation of legal and compliance requirements.
Recommendation 1/2016 AETRH explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP: • Contingency plans • Known and significant risks relating to the key assets • Legal and compliance requirements.		**Action Plan 1/2016** AETRH will explicitly incorporate the following elements of its Asset Management Framework and EIRL obligations into the Newman Power Station and Roy Hill Transmission Line SAMP and supporting AMP: • Contingency plans • Known and significant risks relating to the key assets • Legal and compliance requirements. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017

<table>
<tr><th>AMS Key Process and Effectiveness Criteria</th><th>Adequacy rating</th><th>Issue 2/2016</th></tr>
<tr><td rowspan="3">6(e) Risk management is applied to prioritise maintenance tasks
8(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system
8(b)Risks are documented in a risk register and treatment plans are actioned and monitored</td><td>Adequately defined (A)</td><td rowspan="3">AETRH has applied the Alinta Energy group-wide risk management framework within its Newman Power Station and Roy Hill Transmission Line asset management processes. AETRH’s resulting operational risk management activities also appear to be generally understood and applied by staff. However, AETRH had not retained clear evidence of some of those risk management activities to demonstrate that its risk management philosophies and approach are consistently applied. For example:
In March 2016, AETRH initiated an update of its risk assessment for maintenance activities. This update involved conversion of the previous excel model extracted from Ellipse (risk assessments were completed on an ad hoc basis) to the SPM Asset recording system. While this update process was designed to improve the completeness and accuracy of its risk assessment for maintenance tasks and to provide for a more effective risk register, it has not yet been completed and a timeframe for completion has not been formally established
A consistent approach and timeframe has not been designed for preparing and reviewing risk treatment plans and reports, other than through the annual review of the Newman Power Station and Roy Hill Transmission Line SAMP, AMP and supporting SAMP Model. The SAMP, AMP and SAMP Model do not provide a clear and consistence reference to specific risk assessment and management activities, including preparation of risk treatment plans (which often result in allocation of capital expenditure) and links to insurer risk reduction recommendations.</td></tr>
<tr><td>Performance rating</td></tr>
<tr><td>Opportunity for improvement (2)</td></tr>
<tr><td colspan="2">Recommendation 2/2016
AETRH establish a clear:
Timeframe for completing its program of populating risk assessments within the SPM Asset software
Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</td><td>Action Plan 2/2016
AETRH will establish a clear:
Timeframe for completing its program of populating risk assessments within the SPM Asset software
Approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.
Responsible Person: General Manager Pilbara O&M
Target Date: 30 September 2017</td></tr>
</table>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 3/2016
9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	As AETRH's contingency plans and arrangements are currently maintained/described in different processes and documents, AETRH has the opportunity to further ensure the completeness and consistency of its contingency planning arrangements by capturing all of its plans and processes in one single reference. Such an approach would be consistent with Alinta Energy's Asset Management Framework.
Recommendation 3/2016 AETRH: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and water supply) are rigorously challenged and tested 2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability.		**Action Plan 3/2016** AETRH will: 1. Establish a formal process for ensuring that contingency arrangements in place for all key risks to the Power Station's operations and availability (such as gas/diesel supply and water supply) are rigorously challenged and tested 2. Prepare a clear over-arching "umbrella" document to capture all contingency plans in place for each of the key risks to AETRH assets' operations and availability. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 4/2016
12(b) Independent reviews (e.g. internal audit) are performed of the asset management system	Adequately defined (A) **Performance rating** Opportunity for improvement (2)	Although components of AETRH's asset management system are subject to regular review and update, AETRH has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying asset management system.
Recommendation 4/2016 In accordance with the Alinta Energy Asset Management Framework, AETRH implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer.		**Action Plan 4/2016** In accordance with the Alinta Energy Asset Management Framework, AETRH will implement: • The requirement for its asset management system to be subject to an independent review on a regular basis • A register or record to capture the reviews conducted on its asset management system and the independence of the associated reviewer. **Responsible Person:** General Manager Pilbara O&M **Target Date:** 30 September 2017