

Alinta Cogeneration Wagerup Pty Ltd

**Electricity Generation Licence
(EGL 6)**

**2017 Asset Management
System Review Report**

December 2017



Deloitte Risk Advisory Pty Ltd
ACN 611 748 184
Brookfield Place, Tower 2
123 St Georges Terrace
Perth, WA, 6000
Australia

Phone: +61 8 9365 7000
www.deloitte.com.au

Mr Steve Altschwager
General Manager Power Generation (Acting)
Alinta Cogeneration Wagerup Pty Ltd
The Quadrant, 1 William Street
Perth, WA 6000

11 December 2017

Dear Steve


**Alinta Cogeneration Wagerup Pty Ltd Electricity Generation Licence (EGL 6) –
2017 Asset Management System review report**

We have completed the Electricity Generation Licence Asset Management System review for Alinta Cogeneration Wagerup Pty Ltd for the period 1 July 2013 to 30 June 2017 and are pleased to submit our report to you.

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

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

Yours sincerely


Richard Thomas
Partner
Deloitte Risk Advisory Pty Ltd

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1 Independent Reviewer's report

With the approval of the Economic Regulation Authority (the **ERA**), Alinta Cogeneration Wagerup Pty Ltd (**Alinta Wagerup**) engaged Deloitte Risk Advisory Pty Ltd (**Deloitte**) to conduct a review of the effectiveness of Alinta Wagerup's Asset Management System (**AMS**) relating to its Electricity Generation Licence No.6 (EGL 6) (the **Licence**) for the period 1 July 2013 to 30 June 2017 (**review period**). Deloitte engaged KT & Sai Associates Pty Ltd to provide advice where technical expertise was required. Deloitte conducted the review as a limited assurance engagement.

Alinta Wagerup's responsibility for maintaining an effective AMS

Alinta Wagerup is responsible for establishing and maintaining an effective AMS for the assets subject to the License 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 AMS 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 Alinta Wagerup's AMS for assets subject to the Licence. The limited assurance engagement has been conducted in accordance with 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 Alinta Wagerup had not established and maintained an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* issued by the ERA (the **Guidelines**) and in operation during the review period.

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

Our procedures consisted primarily of:

- Utilising the Guidelines as a guide for development of a risk assessment and document review to assess controls
- Development of a Review Plan for approval by the ERA and an associated work program
- Interviews with and representations from relevant Alinta 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 Alinta Wagerup's AMS requirements and standards
- Physical visit to Alinta Wagerup's operations site
- Consideration of reports and references evidencing activity
- Consideration of the installation's function, normal modes of operation and age
- Reporting of findings to Alinta Wagerup for review and response.

Limitations of use

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

We understand that a copy of the report will be provided to the ERA for the purpose of reporting on the effectiveness of Alinta Wagerup's AMS. We agree that a copy of this report may be provided to the ERA for its information in connection with this purpose but only on the basis that we accept no duty, liability or responsibility to the ERA in relation to the report. We accept no duty, responsibility or liability to any party, other than Alinta Wagerup, 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 AMS deficiencies, which may occur.

Any projection of the evaluation of the effectiveness of AMS 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 Alinta Wagerup had not established and maintained an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and in operation during the period 1 July 2013 to 30 June 2017.

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 Alinta Wagerup's AMS that were assessed as having opportunities for improvement or requiring corrective action, relevant observations, recommendations and action plans are summarised at section 2.4 of this report and detailed at section 4 of this report.

DELOITTE RISK ADVISORY PTY LTD

Richard Thomas

Partner

Perth, 11 December 2017

2 Executive summary

2.1 Introduction and background

The Economic Regulation Authority (the **ERA**) has under the provisions of the Electricity Industry Act 2004 (**Electricity Act**), issued to Alinta Cogeneration Wagerup Pty Ltd (**Alinta Wagerup**) the Electricity Generation Licence No.6 (EGL6) (**the Licence**).

Section 14 of the Act requires Alinta Wagerup to provide to the ERA an asset management system (**AMS**) review (the **review**) conducted by an independent expert acceptable to the ERA not less than once in every 24 month period (or any longer period that the ERA allows). The ERA set the period to be covered by the review as 1 July 2013 to 30 June 2017 (**review period**).

At the request of Alinta Wagerup, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has undertaken a limited assurance review of Alinta Wagerup's AMS.

The Licence relates to Alinta Wagerup's operation of electricity generating works at its Wagerup cogeneration facility, which supplies electricity to the South West Interconnected System (**SWIS**)

The Wagerup Power Station is a 380MW open cycle, gas fired gas turbine power plant located adjacent to Alcoa of Australia Ltd.'s (**Alcoa**) Wagerup refinery in South-West WA. The power station operates as a peaking power station.

Alinta established an Operations and Maintenance Agreement (**O&M Agreement**) with Alcoa for Alcoa to manage, operate and maintain the power station on Alinta's behalf. The O&M Agreement for the Wagerup Power Station ceased on 2 May 2017, after which Alinta Wagerup took up the responsibility for managing, operating and maintaining the power station.

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 sets 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 Alinta Wagerup had not established and maintained an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and in operation during the period 1 July 2013 to 30 June 2017.

2.2 Findings

In considering Alinta Wagerup'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:

- Alinta Wagerup has drawn on experienced and suitably competent personnel from power stations with similar assets to facilitate its operational takeover of O&M activities for the Wagerup power station from 2 May 2017
- At the time of this review, Alinta Wagerup remained in a rationalisation and defect maintenance phase, which was initiated upon the transfer of O&M activities from Alcoa to Alinta. This phase included:
 - Transfer of key maintenance data from Alcoa's Oracle electronic asset management system to Alinta's Ellipse electronic asset management system
 - A focus on defect maintenance activities, with future planned maintenance work rationalised to align with Alinta's maintenance approach
 - Re-alignment of site-based procedures and risk management tools to meet Alinta's standards
 - Reverting maintenance activities to normal operational mode in October 2017
- Alinta Wagerup had recognised that normal maintenance work order completion rates would not be achievable during the defect maintenance and rationalisation phase

- Alinta Wagerup had yet to develop a risk register for the power station site beyond the risks associated with the transition of O&M activities.

This review assessed that, of the 56 elements of Alinta Wagerup's AMS:

- For the asset management process and policy definition adequacy ratings:
 - 45 are rated as "Adequately defined"
 - 10 are rated as "Requires some improvement"
 - One is not rated
- For the asset management performance ratings:
 - 45 are rated as "Performing effectively"
 - Eight are rated as "Opportunity for improvement"
 - Two are rated as "Corrective action required"
 - One is not rated
- In aggregate, there are seven observations (across 11 elements) 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 Alinta Wagerup's response to previous review recommendations

This review considered how Alinta Wagerup has progressed against the five outstanding action items from the 2013 and 2010 reviews.

Based on our examination of relevant documents, discussion with staff and consideration of the results of this review's testing against the criteria:

- Alinta Wagerup has closed out three action plans, of which:
 - One requires no further action (*Development and circulation of the site Asset Management Plan*)
 - One was actioned in August 2017, after the end of the review period (*Finalisation of the site Compliance Manual*). Based on the timing of the action, this observation has been categorised as 'Unresolved at end of the review period'
 - Updated findings have been provided for two action plans relating to reflect Alinta Wagerup's role as asset operator since 2 May 2017 (*Development of policies and procedures and integration of site operations into asset management framework*)
- One has not yet been actioned (*Independent review of the Asset Management System*).

Refer to section 5 of this report for further detail.

2.4 Recommendations and action plans

A. Resolved at end of current review period

Not applicable.

B. Unresolved at end of current audit period

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 1/2017
<p>Asset planning 1(a) Asset management plan covers key requirements</p>	<p>Requires some improvement (B)</p> <p>Performance rating</p> <p>Opportunity for improvement (2)</p>	<p>Although the Alinta Energy Wagerup Power Station – Asset Management Plan FY2018 - FY2022 (AMP) generally reflects Alinta Wagerup’s expectations and requirements for managing its generation assets, the AMP:</p> <ol style="list-style-type: none"> Requires updating to reflect the following aspects of the power station’s operations: <ul style="list-style-type: none"> As Alinta Wagerup has decided that it will currently not operate its gas turbine units on diesel fuel, the power station’s diesel unloading, storage and forwarding equipment is not in operational mode. Risks associated with these arrangements and plans for utilising a long recall storage approach should be reflected in the AMP The AMP has some residual references to Alcoa’s role in operations and maintenance. Can be further improved as it does not clearly address the following elements expected by Alinta Energy’s Asset Management Framework: <ul style="list-style-type: none"> 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.
<p>Recommendation 1/2017</p> <p>Alinta Wagerup update its AMP to:</p> <ol style="list-style-type: none"> Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa’s role in operations and maintenance Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> Contingency plans Known and significant risks relating to key assets Legal and compliance requirements. 		<p>Action Plan 1/2017</p> <p>Alinta Wagerup will update its AMP to:</p> <ol style="list-style-type: none"> Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa’s role in operations and maintenance Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> Contingency plans Known and significant risks relating to key assets Legal and compliance requirements. <p>Responsible Person: Wagerup Plant Manager Target Date: August 2018</p>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 2/2017
Environmental Analysis <i>4(c) Compliance with statutory and regulatory requirements.</i>	Requires some improvement (B)	In response to a finding of the previous (2013) AMS review that Alinta Wagerup's site Compliance Manual remained in draft form, Alinta Wagerup devised an action plan for the Manual to be reviewed and finalised. As the Manual had not been formally reviewed and approved as a final document as at 30 June 2017, the issue and action plan remained outstanding for the purpose of this review. In August 2017, the Compliance Manual was reviewed and updated to reflect the current legal, safety and environmental obligations relating to Alinta Wagerup's operations. <i>No further action is required.</i>
	Performance rating Performing effectively (1)	
Recommendation 2/2017 Not applicable – the necessary corrective action was taken in August 2017.	Action Plan 2/2017 Complete – August 2017.	

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 3/2017
<p>Asset Operations 5(a) Operational policies and procedures are documented and linked to service levels required</p> <p>Asset Maintenance 6(a) Maintenance policies and procedures are documented and linked to service levels required</p>	<p>Requires some improvement (B)</p> <p>Performance rating</p> <p>Opportunity for improvement (2)</p>	<p>Alinta Wagerup is in the process of developing its Plant operations and maintenance procedures, as procedures received from Alcoa did not align with Alinta's documentation framework. Those site specific procedures are to refer to required service levels (where appropriate) for the operation of the specific item of equipment, or electrical or mechanical procedures. Control plans are also being developed for major items of plant.</p> <p>We recognise that Alinta Wagerup has mitigating processes and controls in place, including:</p> <ul style="list-style-type: none"> • An overarching Asset Management Plan for the Wagerup site • Maintenance tasks integrated into the Ellipse system • Reporting dashboards in place, which provide a weekly view of performance of each site • Senior and experienced personnel assigned to manage site operations and maintenance tasks.
<p>Recommendation 3/2017</p> <p>Alinta Wagerup:</p> <p>(a) Document and implement all key procedures and control plans which require updating from existing Alcoa procedures and plans</p> <p>(b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p>		<p>Action Plan 3/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Document and implement all key procedures and control plans, which require updating from Alcoa procedures and plans</p> <p>(b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: March 2018</p>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 4/2017
<p>Asset operations 5(b) Risk management is applied to prioritise operations tasks</p> <p>Asset maintenance 6(e) Risk management is applied to prioritise operations tasks</p> <p>Risk management 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</p>	<p>Requires some improvement (B)</p> <p>Performance rating</p> <p>Opportunity for improvement (2)</p>	<p>Through discussion with personnel on-site and examination of Alinta Wagerup's Risk Register, we observed that Alinta Wagerup is in the process of:</p> <ul style="list-style-type: none"> • Migrating previous work order data from Alcoa's Oracle system and assigning priorities (including re-assigning where required) under Alinta Wagerup's maintenance framework (refer to Issue 5/2017) • Developing a site specific risk register. The current risk register is limited to risks associated with the transition of operations in May 2017. In particular, it does not address risks associated with the decision not to operate the gas turbine units on diesel fuel and associated plans for utilising a long recall storage approach. <p>Although Alinta Wagerup has applied the Alinta Energy group-wide risk management framework, it has not yet captured clear evidence of some of those risk management activities to demonstrate that its risk management philosophies and approach are consistently applied.</p> <p>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 AMP.</p> <p>The AMP does not provide a clear and consistent 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.</p>
<p>Recommendation 4/2017</p> <p>Alinta Wagerup:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset • Contingency planning (refer to Issue 6/2017) • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p>		<p>Action Plan 4/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset • Contingency planning • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: March 2018</p>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 5/2017
<p>Asset Maintenance 6 (c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</p>	<p>Requires some improvement (B)</p> <p>Performance rating</p> <p>Corrective action required (3)</p>	<p>As part of the transfer of the Alinta Wagerup asset O&M activities from Alcoa to Alinta, Alinta Wagerup initiated a rationalisation and defect maintenance phase, which commenced in May 2017 and was substantially completed in October 2017. This phase involved:</p> <ul style="list-style-type: none"> • Transfer of all key maintenance data from Alcoa’s Oracle system to Alinta’s Ellipse system • A primary focus on defect maintenance activities • Rationalisation of planned, routine maintenance work to match Alinta’s approach to operating and maintaining its assets. The rationalisation process initially resulted in a large number of work orders being postponed or cancelled • Where relevant, routine maintenance work orders continuing to be recognised and completed as part of the defect maintenance activities. <p>The General Manager Power Generation advised Alinta Wagerup’s maintenance activities reverted to normal operational mode in October 2017.</p> <p>We also observed that:</p> <ul style="list-style-type: none"> • As a direct outcome of the defect maintenance and rationalisation activities, a number of work orders (including some priority 2 work orders) remained open as at 30 June 2017 (i.e. the end of this review period) • Although details of completion rates were not reported for May and June 2017, Alinta Wagerup had recognised that normal operations and completion rates would not be achievable during the defect maintenance and rationalisation phase • In July 2017, Alinta Wagerup commenced reporting maintenance work order completion rates in its Weekly Performance Reports (completion rates reported in the last week of August for Annual Work Plan and Defect Maintenance work orders were 56% and 54% respectively). <p>Although a performance effectiveness rating of "3 - Corrective action required" is applicable for this review, we recognise that Alinta Wagerup had initiated corrective action in May 2017 and as at the end of the review period, needed to close-out that corrective action.</p>
<p>Recommendation 5/2017</p> <p>Alinta Wagerup establish a clear timeframe for:</p> <p>(a) Completing all remaining defect maintenance and rationalisation activities</p> <p>(b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.</p>		<p>Action Plan 5/2017</p> <p>Alinta Wagerup will establish a clear timeframe for:</p> <p>(a) Completing all remaining defect maintenance and rationalisation activities</p> <p>(b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: Complete - October 2017</p>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 6/2017
<p>Contingency Planning 9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks</p>	<p>Requires some improvement (B)</p> <p>Performance rating</p> <p>Corrective action required (3)</p>	<p>As Alinta Wagerup's contingency plans and arrangements are currently maintained/described in different processes and documents, it 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.</p> <p>We also observed that during the period subject to review, Alinta Wagerup had not performed regular tests of the Wagerup power station site emergency response plans.</p>
<p>Recommendation 6/2017 Alinta Wagerup:</p> <p>(a) 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 fuel and water supply) are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans</p> <p>(b) Prepare a clear overarching "umbrella" document to capture all contingency plans in place for each of the key risks to Alinta Wagerup's assets' operations and availability.</p>		<p>Action Plan 6/2017 Alinta Wagerup will:</p> <p>(a) Establish a formal process for ensuring that contingency arrangements in place for all key risks to the power station's operations and availability are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans</p> <p>(b) Prepare a clear overarching "umbrella" document to capture all contingency plans in place for each of the key risks to Alinta Wagerup's assets' operations and availability.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: December 2017</p>
AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 7/2017
<p>AMS Review 12(b) Independent reviews (e.g. internal audit) are performed of the asset management system</p>	<p>Adequately defined (A)</p> <p>Performance rating</p> <p>Opportunity for improvement (2)</p>	<p>Although components of Alinta Wagerup's AMS are subject to regular review and update, Alinta Wagerup has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying AMS.</p>
<p>Recommendation 7/2017 In accordance with the Alinta Energy Asset Management Framework, Alinta Wagerup implement:</p> <p>(a) The requirement for its AMS to be subject to an independent review on a regular basis</p> <p>(b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer.</p>		<p>Action Plan 7/2017 Alinta Wagerup will implement:</p> <p>(a) The requirement for its AMS to be subject to an independent review on a regular basis</p> <p>(b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: August 2018</p>

2.5 Scope and objectives

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

Table 1 – Asset management system key processes and effectiveness criteria

#	Key process	Effectiveness criteria
1	Asset planning	<ul style="list-style-type: none"> (a) Asset management plan covers key requirements (b) Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning (c) Service levels are defined (d) Non-asset options (e.g. demand management) are considered (e) Lifecycle costs of owning and operating assets are assessed (f) Funding options are evaluated (g) Costs are justified and cost drivers identified (h) Likelihood and consequences of asset failure are predicted (i) Plans are regularly reviewed and updated.
2	Asset creation and acquisition	<ul style="list-style-type: none"> (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	<ul style="list-style-type: none"> (a) Under-utilised and under-performing assets are identified as part of a regular systematic review process (b) The reasons for under-utilisation 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)	<ul style="list-style-type: none"> (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	<ul style="list-style-type: none"> (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 resources are adequate and staff receive training commensurate with their responsibilities.

#	Key process	Effectiveness criteria
6	Asset maintenance	<ul style="list-style-type: none"> (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	<ul style="list-style-type: none"> (a) Adequate system documentation exists for users and IT operators (b) Input controls include appropriate verification and validation of data entered into the system (c) Logical security access controls appear adequate, such as passwords (d) Physical security access controls appear adequate (e) Data backup procedures appear adequate and backups are tested (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	<ul style="list-style-type: none"> (a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the AMS (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	<ul style="list-style-type: none"> (a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.
10	Financial planning	<ul style="list-style-type: none"> (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	<ul style="list-style-type: none"> (a) There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates (b) The plan provides 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 process	Effectiveness criteria
12	Review of Asset Management System	(a) A review process is in place to ensure that the asset management plan and the AMS described therein are kept current (b) Independent reviews (e.g. internal audit) are performed of the AMS.

Each key process and effectiveness criterion is applicable to Alinta Wagerup'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 August to October 2017:

- Utilising the Guidelines, development of a risk assessment, which involved discussions with key staff and review of documents to undertake a preliminary assessment of relevant controls
- Development of a Review Plan (see **Appendix A**) for approval by the ERA
- Correspondence and interviews with Alinta Wagerup staff to gain understanding of process controls in place (see **Appendix B** for staff involved)
- Visited Alinta Wagerup's 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 Alinta Wagerup's AMS (see **Appendix B** for reference listing)
- Consideration of the resourcing applied to maintaining those controls and processes
- Reporting of findings to Alinta Wagerup 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 AMS 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 AMS processes is performed using the below ratings.

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

Table 1: Asset management process and policy definition adequacy ratings

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 AMS into sub-components as described in the Guidelines. This approach is taken to enable a more thorough review of key processes where individual components within a larger process can be of greater risk to the business therefore requiring different review treatment
- A summary of the ratings applied by the review (**Table 3**) for each of:
 - Asset management process and policy definition adequacy (**definition adequacy rating**)
 - Asset management performance (**performance rating**)
- Detailed findings, including relevant observations, recommendations and action plans (**Section 4**). Descriptions of the effectiveness criteria can be found in section 4 and the Review Plan at Appendix A.

Table 3: AMS effectiveness summary

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

Ref	Effectiveness criteria	Review Priority	Ratings	
			Definition adequacy	Performance
5(d)	Operational costs are measured and monitored	Priority 4	A	1
5(e)	Staff resources are adequate and staff receive training commensurate with their responsibilities	Priority 4	A	1
6. Asset maintenance			B	2
6(a)	Maintenance policies and procedures are documented and linked to service levels required	Priority 2	B	2
6(b)	Regular inspections are undertaken of asset performance and condition	Priority 2	A	1
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Priority 2	B	3
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Priority 2	A	1
6(e)	Risk management is applied to prioritise maintenance tasks	Priority 2	B	2
6(f)	Maintenance costs are measured and monitored	Priority 4	A	1
7. Asset management information system			A	1
7(a)	Adequate system documentation exists for users and IT operators	Priority 5	A	1
7(b)	Input controls include appropriate verification and validation of data entered into the system	Priority 5	A	1
7(c)	Logical security access controls appear adequate, such as passwords	Priority 5	A	1
7(d)	Physical security access controls appear adequate	Priority 5	A	1
7(e)	Data backup procedures appear adequate and backups are tested	Priority 4	A	1
7(f)	Key computations related to licensee performance reporting are materially accurate	Priority 5	NR	NR
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	Priority 5	A	1
8. Risk management			B	2
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the AMS	Priority 2	B	2
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	Priority 4	B	2
8(c)	The probability and consequences of asset failure are regularly assessed	Priority 2	A	1
9. Contingency planning			B	3
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Priority 2	B	3
10. Financial planning			A	1
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Priority 5	A	1
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Priority 5	A	1
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Priority 5	A	1
10(d)	The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Priority 5	A	1
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Priority 4	A	1
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Priority 4	A	1
11. Capital expenditure planning			A	1
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Priority 4	A	1
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Priority 5	A	1
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Priority 4	A	1
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Priority 5	A	1
12. Review of AMS			A	2
12(a)	A review process is in place to ensure that the asset management plan and the AMS described therein are kept current	Priority 5	A	1
12(b)	Independent reviews (e.g. internal audit) are performed of the AMS	Priority 5	A	2

4 Detailed findings, recommendations and action plans

Summary of operations subject to review

The Alinta Wagerup Open Cycle Plant at Alcoa's Wagerup Alumina Refinery Facilities includes two gas turbines in open cycle configuration. Both units were commissioned in 2007 and have a nameplate generation capacity of 175MW. Transmission of electricity is via a 330kW transmission line to Western Power's substation located at Landwehr. Being an open cycle plant, its operating regime is not continuous but follows the peak demand nominations to the SWIS. In the event of a loss of Alinta Wagerup's generation capability, there may be an impact on Western Power's operation of the SWIS.

On 2 May 2017, upon termination of the previous O&M Agreement with Alcoa, Alinta commenced as the operator of the Wagerup site. Alinta Wagerup has also established a Long Term Service Agreement with Alstom for major maintenance of the open cycle gas turbine units.

The transition of operations and maintenance activities from Alcoa to Alinta Wagerup was initiated in May 2017 and substantially completed in October 2017. Transition activities undertaken to the end of the review period (30 June 2017) included:

- Turnover in site personnel, with suitably competent Alinta staff replacing Alcoa staff on site
- Data migration of the asset hierarchy and work orders from Alcoa's electronic asset management system (Oracle) to Alinta's electronic asset management system (Ellipse)
- Re-alignment of site-based procedures and risk management tools to align with Alinta's standards.

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)*: Alinta Wagerup's formal response to review recommendations, providing details of action to be implemented to address the specific issue raised by the review.

4.1 Asset planning

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

Expected outcome: Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised

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

No	Effectiveness Criteria	Findings	
1(a)	Asset management plan covers key requirements	<p>Through discussions with the General Manager Power Generation and the Head of Asset Management, and consideration of Alinta Wagerup’s business planning processes, we determined that Alinta Wagerup’s business planning model accommodates its operation and maintenance of the Wagerup site in accordance with its contractual arrangements and regulatory requirements.</p> <p>From a business planning perspective, we determined that Alinta has established asset management processes and mechanisms to assimilate the requirements of its various stakeholders. In particular, we observed that Alinta Wagerup has:</p> <ul style="list-style-type: none"> • Developed an AMS (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 supporting Asset Management Plan (AMP) for operating and maintaining the various components of the power station to achieve optimum performance over the entire life of those assets. The AMP defines Alinta Wagerup’s broader and long term plans and is reviewed on an annual basis. <p>Although the Alinta Energy Wagerup Power Station – Asset Management Plan FY2018 - FY2022 generally reflects Alinta Wagerup’s expectations and requirements for managing its generation assets, the AMP:</p> <ol style="list-style-type: none"> 1. Requires updating to reflect the following aspects of the power station’s operations: <ul style="list-style-type: none"> ○ As Alinta Wagerup has decided that it will currently not operate its gas turbine units on diesel fuel, the power station’s diesel unloading, storage and forwarding equipment is not in operational mode. Risks associated with these arrangements and plans for utilising a long recall storage approach should be reflected in the AMP ○ The AMP has some residual references to Alcoa’s role in operations and maintenance. 2. Can be further improved as it does not clearly address the following elements expected by Alinta Energy’s Asset Management Framework: <ul style="list-style-type: none"> ○ 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. 	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Opportunity for improvement (2)
		Recommendation 1/2017 Alinta Wagerup update its AMP to:	Action Plan 1/2017 Alinta Wagerup will update its AMP to:

No	Effectiveness Criteria	Findings	
		(a) Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa's role in operations and maintenance (b) Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. 	(a) Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa's role in operations and maintenance (b) Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. Responsible Person: Wagerup Plant Manager Target Date: August 2018
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Through discussions with the General Manager Power Generation, Head of Asset Management, Lead Engineering Planner and Finance Manager - Power Generation, and consideration of Alinta Wagerup's business planning processes, we determined that: <ul style="list-style-type: none"> • Alinta Wagerup's business planning model and planning documentation is developed in consultation with a range of business functions including: <ul style="list-style-type: none"> ○ Senior management ○ Engineering ○ Site-based management ○ Finance • A formal delegation of authority framework is in place across the stakeholder functions (operations, finance and compliance) and integrated into its SharePoint information storage portal for project task and expenditure approval. 	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
1(c)	Service levels are defined	Through discussions with the Head of Asset Management and Lead Engineering Planner, and examination of Alinta Wagerup's AMP and contractual documentation, we determined that the plant's required service levels have been: <ul style="list-style-type: none"> • 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 Alinta Wagerup's maintenance standards (e.g. High Voltage Asset Maintenance Standard) maintained on SharePoint and integrated into the maintenance management system • Programmed into the Ellipse asset management work order system to track routine maintenance requirements across all asset components. 	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
1(d)	Non-asset options (e.g. demand management) are considered	Through discussion with the General Manager Power Generation, Head of Asset Management and Lead Engineering Planner, and examination of the business case development process for new projects and major acquisitions, we determined that:	

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> Given the performance output requirements of the Wagerup site, which are well below total output capacity, Alinta Wagerup has the opportunity to consider non-asset options where required (e.g. altering turbine loads) The peaking nature of the Wagerup plant reduces the risk of requiring demand management alternatives As part of its business case process for the acquisition of new assets, the applicant is required to detail alternative project options. 	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
1(e)	Lifecycle costs of owning and operating assets are assessed	<p>Through discussion with the Head of Asset Management and examination of Alinta Wagerup's AMP and finance models, we determined that assessment of lifecycle costs of owning and operating the assets is reflected in the AMP, which addresses each major equipment component and provides specific details, including:</p> <ul style="list-style-type: none"> Operating and maintenance philosophy Key lifecycle issues and how they are addressed Lifecycle 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. <p>Alinta Wagerup 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 2049.</p>	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
1(f)	Funding options are evaluated	<p>Through discussion with the Head of Asset Management and Finance Manager – Power Generation; and examination of Alinta Wagerup's AMP and financial models, we determined that:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Expenditure description relative to plan (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(g)	Costs are justified and cost drivers identified	<p>Through discussion with the Head of Asset Management and Finance Manager – Power Generation; and consideration of Alinta Wagerup's AMP and financial models, we determined that:</p> <ul style="list-style-type: none"> The AMP includes a detailed lifecycle plan that identifies and assesses all lifecycle costs and cost drivers associated with the power station 	

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> Power station 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(h)	Likelihood and consequences of asset failure are predicted	<p>Through discussion with the Head of Asset Management and consideration of Alinta Wagerup's AMP and relevant supporting documentation, we determined that:</p> <ul style="list-style-type: none"> The AMP is a major tool used for predicting the likelihood and consequence of asset failure. The AMP considers each major item of equipment and provides specific details of its operation and maintenance strategy and key lifecycle issues and remedial plans 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(i)	Plans are regularly reviewed and updated.	<p>Through discussions with Head of Asset Management and consideration of Alinta Wagerup's AMP and relevant supporting asset planning documentation, we determined that the AMP has been reviewed and revised on an annual basis.</p>	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)

4.2 Asset creation and acquisition

Key process: Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay

Expected outcome: A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery

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

No	Effectiveness Criteria	Findings
2(a)	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	<p>Through consideration of relevant supporting documentation and discussion with the Head of Asset Management and Finance Manager – Power Generation, we determined that Alinta Wagerup 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, Alinta Wagerup requires the following to be completed:</p> <ul style="list-style-type: none"> • A full business case, which provides 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. The modelling 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 20-30 years of plant life • Consideration of non-asset options.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
2(b)	Evaluations include all life-cycle costs	<p>Through discussion with the Head of Asset Management and Finance Manager – Power Generation, and examination of the procedures for expenditure approval and associated forms and templates, we determined that Alinta Wagerup has the following process in place to assess lifecycle costs of owning and operating assets:</p> <ul style="list-style-type: none"> • Assessment of lifecycle costs of owning and operating the assets is reflected in the AMP, which addresses each major equipment component and provides specific details, including: <ul style="list-style-type: none"> ○ Operating and maintenance philosophy ○ Key lifecycle issues and how they are addressed ○ Lifecycle plan and critical outages ○ Performance improvement opportunities ○ Critical reinvestments ○ Retirement/disposal consideration at end of plant life. • An economic evaluation model is utilised as part of budgeting and forecasting process to assess the cost associated with the overall plant life and forecast expenditure up to 2049 • Project evaluations provide for estimates of the amount of investment required as well as identifying the source of funds.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>

No	Effectiveness Criteria	Findings
2(c)	Projects reflect sound engineering and business decisions	<p>Through discussion with the Head of Asset Management and Finance Manager – Power Generation, and examination of Alinta Wagerup’s AMP, expenditure approval process (including the automated approval process through the SharePoint site) and associated forms and templates, we determined that Alinta Wagerup has the following procedures in place to assess the commercial and technical competence of projects:</p> <ul style="list-style-type: none"> • Project evaluations are performed with the input from engineering and finance personnel and 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. <p>We sighted the project register within the SharePoint portal for the Wagerup site, which contained the required sign offs for the “Stay in business” (SIB) capital works performed.</p>
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
2(d)	Commissioning tests are documented and completed	<p>Through discussion with the Head of Asset Management and consideration of relevant procedures, we observed that:</p> <ul style="list-style-type: none"> • Alinta Wagerup (and its external contractors) performed commissioning tests during the review period as part of its standard process for adding/replacing asset components (e.g. during planned shutdowns) • Commissioning tests form part of the project lifecycle, which is recorded on SharePoint • Where Alinta Wagerup engages external contractors to perform commissioning tests: <ul style="list-style-type: none"> ○ Testing reports are prepared by the site engineering team and stored on SharePoint ○ Service requirements are governed by contractual terms relating to any major service required.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
2(e)	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.	<p>Through discussion with the General Manager Power Generation and examination of relevant supporting documentation, we determined that, for the purpose of its ongoing asset management obligations Alinta Wagerup has:</p> <ul style="list-style-type: none"> • Identified legal, environmental and safety obligations relating to its power station assets • Applied the Alinta Energy (group-wide) Occupational Health and Safety Management Framework and Environmental Management Framework to its Wagerup facilities • Assigned responsibilities to staff on site and in the Perth office for managing Alinta Wagerup’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. <p>We sighted evidence of Alinta Wagerup’s Compliance Manual, which demonstrates identification, assessment and treatment of risks relating to its legal, environmental and safety obligations within the Wagerup site.</p>
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>

4.3 Asset disposal

Key process: Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms

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

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

No	Effectiveness Criteria	Findings
3(a)	Under-utilised and under-performing assets are identified as part of a regular systematic review process	<p>Through discussion with the Head of Asset Management and Lead Engineering Planner, examination of relevant supporting documentation, and walkthrough of Alinta Wagerup's Incident Management System, we determined that Alinta Wagerup has applied the following mechanisms for identifying under-utilised and under-performing assets:</p> <ul style="list-style-type: none"> • The AMP considers each major item of equipment and provides details of the facility's operations and maintenance strategy, key lifecycle 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 • The operational performance of the Wagerup 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 Incident Management System, which details: <ul style="list-style-type: none"> ○ Incident description ○ Relevant Workgroup responsible ○ Incident Type (e.g. equipment, environmental etc.) ○ Incident Status.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	<p>Through discussion with the Head of Asset Management and examination of relevant supporting documentation, we determined that Alinta Wagerup has applied the mechanisms at Asset Disposal (s.3(a)) to facilitate the examination of under-utilised and under-performing assets by:</p> <ul style="list-style-type: none"> • Undertaking root cause analyses of under-utilisation or poor performance of power station assets • 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.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
3(c)	Disposal alternatives are evaluated	<p>Through discussion with the Head of Asset Management and the Lead Engineering Planner; and examination of supporting documentation, we determined that Alinta Wagerup's processes require:</p>

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> • 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.	<p>Through discussion with the Head of Asset Management and consideration of Alinta Wagerup's AMP and decommissioning documentation we observed that:</p> <ul style="list-style-type: none"> • The AMP considers each major item of equipment and provides specific details of the facility's operations and maintenance strategy, key lifecycle issues and remedial plans • Alinta developed an organisation-wide Decommissioning Policy in March 2013 • Alinta Wagerup engages an external contractor (Jacobs) to provide a decommissioning analysis (including projection of costs) – the analysis has been performed in 2010, 2013 and 2017 • 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	<p>Through discussion with the Wagerup Plant Manager General Manager Power Generation and examination of supporting documentation, we determined that Alinta Wagerup:</p> <ul style="list-style-type: none"> • Maintains a site-based Compliance Manual, which outlines: <ul style="list-style-type: none"> ○ NOx emissions targets and requirements ○ Greenhouse gas emissions obligations under the NGER Act ○ Occupational Health and Safety Regulations. Alinta's Energy Occupational Health and Safety Management Framework accommodates Alinta's core focus on safety ○ Additional licence and Standard requirements (e.g. Dangerous Goods Storage Licence requirements and Plant and Pressure Vessel Registration) • Details its compliance with environmental performance standards in its Environmental Ministerial Performance and Compliance Reports (we sighted the December 2016 report) • Utilises the Alinta Group Environmental, Health and Safety Incident Management System (EHSIMS) for logging, managing and reporting risks and incidents • Recently created an initiative to develop an Environmental Aspects and Impacts procedure, which will further strengthen Alinta Wagerup's capability to: <ul style="list-style-type: none"> ○ Ensure the systematic review of environmental aspects and impacts ○ Facilitate the identification and assessment of opportunities and threats to the Wagerup operations system environment ○ Comply with ISO 14001, Dangerous Goods regulations and health and safety requirements.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved	<p>Through discussion with the General Manager Power Generation and the Lead Engineering Planner, and consideration of Alinta Wagerup's performance monitoring practices, we determined that:</p> <ul style="list-style-type: none"> • 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 emission breaches. Any deviations from budget or contractual KPIs are highlighted and explained, where appropriate • Alinta Wagerup is required to report any breaches of emission limits (e.g. for SO2 and NOx) to the Department of Environment. Alinta Wagerup monitors its emissions in sufficient detail to flag any instance where its emission limits are breached.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
4(c)	Compliance with statutory and regulatory requirements	<p>Through discussion with the General Manager Power Generation and consideration of relevant supporting documentation and sample Ministerial compliance reports, we determined that Alinta Wagerup operates and monitors its operations in accordance with the following statutory and regulatory requirements:</p> <ul style="list-style-type: none"> • Mines Safety and Inspection Regulations • WA Gas Standards (Gas fitting & Consumer Gas Installations) Regulations 1999 • Environmental Operating Licence, which includes NOx emissions targets and requirements. We observed that monitoring of NOx 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 Alinta Wagerup's commitment to environmental protection • Environmental Noise Regulations licence, which specifies the maximum night and day noise levels as measured at the boundary • Occupational Health and Safety Regulations. Alinta's Energy Occupational Health and Safety Management Framework accommodates Alinta Wagerup's core focus on safety. <p>In response to a finding of the previous (2013) AMS review that Alinta Wagerup's site Compliance Manual remained in draft form, Alinta Wagerup devised an action plan for the Manual to be reviewed and finalised. As the Manual had not been formally reviewed and approved as a final document as at 30 June 2017, the issue and action plan remained outstanding for the purpose of this review.</p> <p>In August 2017, the Compliance Manual was reviewed and updated to reflect the current legal, safety and environmental obligations relating to Alinta Wagerup's operations. <i>No further action is required.</i></p>	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Performing effectively (1)
		Recommendation 2/2017 Not applicable – the necessary corrective action was taken in August 2017.	Action Plan 2/2017 Complete - August 2017
4(d)	Achievement of customer service levels	<p>Through discussion with the General Manager Power Generation and consideration of relevant supporting documentation, we determined that Alinta Wagerup's customer service levels and performance requirements are defined by its electricity transfer access agreement with Western Power.</p> <p>In relation to community obligations, Alinta operates and monitors its operations in accordance with 4(c) above.</p>	
		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: Requires some improvement (B) / Opportunity for improvement (2)

No	Effectiveness Criteria	Findings	
5(a)	Operational policies and procedures are documented and linked to service levels required	<p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, and consideration of supporting documentation, we determined that Alinta Wagerup is in the process of developing its plant operations and maintenance procedures, as procedures received from Alcoa did not align with Alinta Wagerup's documentation framework. Those site specific procedures are to refer to required service levels (where appropriate) for the operation of the specific item of equipment, or electrical or mechanical procedures. Control plans are also being developed for major items of plant.</p> <p>We recognise that Alinta Wagerup has mitigating processes and controls in place through the transitional period, including:</p> <ul style="list-style-type: none"> • An overarching AMP for the Wagerup site • Reporting dashboards in place, which provide a weekly view of performance of each site • Senior and experienced personnel assigned to manage site operations and maintenance tasks. 	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Opportunity for improvement (2)
		<p>Recommendation 3/2017</p> <p>Alinta Wagerup:</p> <p>(a) Document and implement all key procedures and control plans which require updating from existing Alcoa procedures and plans</p> <p>(b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p>	<p>Action Plan 3/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Document and implement all key procedures and control plans, which require updating from Alcoa procedures and plans</p> <p>(b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p> <p>Responsible Person: Wagerup Plant Manager</p> <p>Target Date: March 2018</p>

No	Effectiveness Criteria	Findings	
5(b)	Risk management is applied to prioritise operations tasks	<p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, examination of Alinta Wagerup's Risk Register and consideration of Alinta Wagerup's risk management and reporting framework, we determined that Alinta Wagerup is in the process of:</p> <ul style="list-style-type: none"> • Migrating previous work order data from Alcoa's Oracle system and assigning priorities (including re-assigning where required) under Alinta Wagerup's maintenance framework (refer to Issue 5/2017). During the migration period, Alinta Wagerup leveraged experienced personnel on site and within its planning division to prioritise operations and maintenance tasks, with a focus on defect and statutory work orders • Developing a site specific risk register. The current risk register is limited to risks associated with the transition of operations in May 2017. In particular, it does not address risks associated with the decision not to operate the gas turbine units on diesel fuel and associated plans for utilising a long recall storage approach. <p>Although Alinta Wagerup has applied the Alinta Energy group-wide risk management framework, it has not yet captured clear evidence of some of those risk management activities to demonstrate that its risk management philosophies and approach are consistently applied.</p> <p>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 AMP.</p> <p>The AMP does not provide a clear and consistent 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.</p>	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Opportunity for improvement (2)
		<p>Recommendation 4/2017</p> <p>Alinta Wagerup:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset Contingency planning (refer to Issue 6/2017) • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p>	<p>Action Plan 4/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset • Contingency planning • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p> <p>Responsible Person: Wagerup Plant Manager</p> <p>Target Date: March 2018</p>

No	Effectiveness Criteria	Findings
5(c)	Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	<p>Through discussion with the Lead Engineering Planner and Finance Manager - Power Generation, and consideration of relevant supporting documentation, we determined that:</p> <ul style="list-style-type: none"> • The Ellipse system holds detailed information for each major component of plant (under an asset hierarchy layout, such as assets' unique asset identifier details, operational history, equipment condition, cost/financial data, and maintenance intervals) • Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had utilised Alcoa's Oracle asset management system to maintain such detailed information for each major component of plant • The Alinta Wagerup AMP outlines the major components of the plant and applies a risk rating to any associated issues or long term maintenance requirements. <p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
5(d)	Operational costs are measured and monitored	<p>Through discussion with the Finance Manager – Power Generation and Wagerup Plant Manager, we determined that:</p> <ul style="list-style-type: none"> • Alinta Wagerup prepares and presents detailed monthly costs reports, which include: <ul style="list-style-type: none"> ○ Operational costs incurred ○ Analysis of actual expenditure against budgeted expenditure, including reasons for significant variances ○ Internal and external costs (i.e. Alinta Wagerup staff, contractor costs, parts, etc.) • Costs are allocated to assets automatically based on the work order and external costs are allocated to the relevant cost centre, which has relevant links to assets • Costs are tracked on a whole-of-plant basis, with asset level cost information also available within Ellipse • Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had utilised Alcoa's Oracle system to capture details of operational costs. <p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
5(e)	Staff resources are adequate and staff receive training commensurate with their responsibilities	<p>Through discussion with the Wagerup Plant Manager and General Manager Power Generation, and consideration of Alinta Wagerup's staff resourcing and training arrangements, we determined that:</p> <ul style="list-style-type: none"> • Alinta Wagerup uses in-house training facilities to provide relevant training to its staff and maintains a central record of staff qualifications and training • Alinta Wagerup's SharePoint and other internal information management systems contain relevant high-level procedures and checklists to guide staff in performing required tasks. For example there are specific procedures for confined space, hot work and working at heights tasks • Alinta had re-assigned a number of qualified staff from its other electricity generation sites to operate the Wagerup power station from the point of handover from Alcoa on 2 May 2017 • Alinta Wagerup had recognised risks associated with the handover of operations to a new team, with site-specific training to be provided as a matter of priority. <p>Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had contracted Alcoa to provide an adequate number of competent staff to operate the power station. Alcoa's training practices also required staff to maintain the necessary qualifications and competence, with a central record of qualifications and training maintained.</p> <p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>

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: Requires some improvement (B) / Opportunity for improvement (2)

No	Effectiveness Criteria	Findings	
6(a)	Maintenance policies and procedures are documented and linked to service levels required	<p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, and consideration of supporting documentation, we determined that Alinta Wagerup is in the process of developing its plant operations and maintenance procedures, as procedures received from Alcoa did not align with Alinta Wagerup's documentation framework.</p> <p>Those site specific procedures are to refer to required service levels (where appropriate) for the operation of the specific item of equipment, or electrical or mechanical procedures. Control plans are also being developed for major items of plant.</p> <p>We recognise that Alinta Wagerup has put mitigating processes and controls in place during the transitional period, including:</p> <ul style="list-style-type: none"> • An overarching AMP for the Wagerup site • Maintenance tasks integrated into the Ellipse system • Reporting dashboards in place, which provide a weekly view of performance of each site • Senior and experienced personnel assigned to manage site operations and maintenance tasks. 	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Opportunity for improvement (2)
		Recommendation 3/2017 <i>Refer to 5(a) above.</i>	Action Plan 3/2017 <i>Refer to 5(a) above.</i>

No	Effectiveness Criteria	Findings	
6(b)	Regular inspections are undertaken of asset performance and condition	<p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, and consideration of Alinta Wagerup's maintenance procedures and practices, we determined that:</p> <ul style="list-style-type: none"> • As part of Alinta Wagerup'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 appropriately investigated • Regular third party inspections of key high risk equipment such as turbines are performed during planned outages, including preventative maintenance, where required • Alinta Wagerup 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 transformer oil, turbine oil and cooling water • 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 are taken to correct them, depending on the severity and risk rating of the fault • Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had contracted Alcoa to perform inspections of asset performance and condition. 	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)

No	Effectiveness Criteria	Findings	
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	<p>Through discussion with the General Manager Power Generation and examination of relevant documentation and data extracts, we determined that as part of the transfer of the Alinta Wagerup asset O&M activities from Alcoa to Alinta, Alinta Wagerup initiated a rationalisation and defect maintenance phase, which commenced in May 2017 and was substantially completed in October 2017. This phase involved:</p> <ul style="list-style-type: none"> • Transfer of all key maintenance data from Alcoa’s Oracle system to Alinta’s Ellipse system • A primary focus on defect maintenance activities • Rationalisation of planned, routine maintenance work to match Alinta’s approach to operating and maintaining its assets. The rationalisation process initially resulted in a large number of work orders being postponed or cancelled • Where relevant, routine maintenance work orders continuing to be recognised and completed as part of the defect maintenance activities. <p>The General Manager Power Generation advised Alinta Wagerup’s maintenance activities reverted to normal operational mode in October 2017.</p> <p>We also observed that:</p> <ul style="list-style-type: none"> • As an outcome of the defect maintenance and rationalisation activities, a number of work orders (including some priority 2 work orders) remained open as at 30 June 2017 (i.e. the end of this review period) • Although details of completion rates were not reported for May and June 2017, Alinta Wagerup had recognised that normal operations and completion rates would not be achievable during the defect maintenance and rationalisation phase • In July 2017, Alinta Wagerup commenced reporting maintenance work order completion rates in its Weekly Performance Reports (completion rates reported in the last week of August for Annual Work Plan and Defect Maintenance work orders were 56% and 54% respectively). <p>Although a performance effectiveness rating of "3 - <i>Corrective action required</i>" is applicable for this review, we recognise that Alinta Wagerup had initiated corrective action in May 2017 and as at the end of the review period needed to close out that corrective action.</p>	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Corrective action required (3)
		<p>Recommendation 5/2017</p> <p>Alinta Wagerup establish a clear timeframe for:</p> <p>(a) Completing all remaining defect maintenance and rationalisation activities</p> <p>(b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.</p>	<p>Action Plan 5/2017</p> <p>Alinta Wagerup will establish a clear timeframe for:</p> <p>(a) Completing all remaining defect maintenance and rationalisation activities</p> <p>(b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.</p> <p>Responsible Person: Wagerup Plant Manager</p> <p>Target Date: Complete - October 2017</p>

No	Effectiveness Criteria	Findings	
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	<p>Through discussion with site personnel and the Lead Engineering Planner and examination of the Wagerup site forced outage register we determined that:</p> <ul style="list-style-type: none"> Unplanned outages that result in a loss of production are required to be investigated and are reported into Alinta Wagerup’s incident reporting system (from which, the forced outage register is a subcategory). The incident report includes an explanation of the outage and possible causes, and also tracks who is responsible for any investigation and what actions are in place to correct the fault. Where appropriate, a work order is raised to undertake preventative actions to limit the fault’s recurrence. 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 Alinta Wagerup for safety incident reporting, with detailed audit trail and responsibility features built in Given the low performance levels required of the Wagerup site, Alinta has managed to maintain the required performance metrics for the period subject to review. With the exception of one instance of an extended inspection task, all forced outages were resolved within 48 hours during the period subject to review Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had contracted Alcoa to perform the tasks described above. 	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
6(e)	Risk management is applied to prioritise maintenance tasks	<p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, examination of Alinta Wagerup’s Risk Register and consideration of Alinta Wagerup’s risk management and reporting framework, we determined:</p> <ul style="list-style-type: none"> 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 Daily meetings are used to arrange: <ul style="list-style-type: none"> Daily work plans Plans for upcoming work Outage plans for major scheduled outages Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had contracted Alcoa to perform such tasks Alinta Wagerup is in the process of migrating previous work order data from Alcoa’s Oracle system and assigning priorities (including re-assigning where required) under Alinta Wagerup’s maintenance framework (refer to Issue 5/2017). During the migration period, Alinta Wagerup leveraged experienced personnel on site and within its planning division to prioritise operations and maintenance tasks, with a current focus on defect and statutory work orders. <p>Although Alinta Wagerup has applied the Alinta Energy group-wide risk management framework, it has not yet captured clear evidence of some of those risk management 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 AMP.</p>	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Opportunity for improvement (2)

No	Effectiveness Criteria	Findings	
		Recommendation 4/2017 <i>Refer to No 5(b) above.</i>	Action Plan 4/2017 <i>Refer to No 5(b) above.</i>
6(f)	Maintenance costs are measured and monitored.	<p>Through discussions with the General Manager Power Generation and the Finance Manager – Power Generation, we determined that:</p> <ul style="list-style-type: none"> • Alinta Wagerup prepares and presents detailed monthly costs reports, which include: <ul style="list-style-type: none"> ○ Total costs for the month ○ Analysis of actual expenditure against budgeted expenditure, including reasons for significant variances ○ Internal and external costs (i.e. Alinta Wagerup staff, contractor costs, parts, etc.) • Costs are allocated to assets automatically based on the work order and 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. Prior to taking up the responsibility for operating and maintaining the power station from Alcoa in May 2017, Alinta Wagerup had utilised Alcoa’s Oracle system to capture details of operational (including maintenance) costs. 	
		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	<p>Through discussion with the IT Infrastructure and Security Manager and the Lead Engineering Planner, consideration of relevant system documentation, and examination of Alinta's SharePoint site we determined that:</p> <ul style="list-style-type: none"> Alinta utilises the Ellipse computerised maintenance management system Asset live performance is monitored through Honeywell Experion software Alinta staff are responsible for operating the Ellipse system in line with Alinta's business wide IT policy, comprising general IT policies such as internet usage policy, remote access policy and mobile communications policy Alinta has an internal support team for maintaining the Ellipse system (based in South Australia) IT policies are stored on Alinta's SharePoint site and are readily accessible for all users Honeywell Experion is administered on site with oversight by the site manager. <p>In relation to the transfer of systems (from Alcoa's Oracle system to Alinta's Ellipse system), through discussion with the IT Infrastructure and Security Manager and the Lead Engineering Planner and examination of project transitioning documentation and correspondence with Alcoa, we determined that:</p> <ul style="list-style-type: none"> IT transitioning requirements were included as a formal project (within Alinta Wagerup's project register on SharePoint) IT stakeholders provided ongoing consultation during the transition Alinta Wagerup consulted with Alcoa on a regular basis to facilitate the transition of Oracle work orders to the Ellipse system format.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
7(b)	Input controls include appropriate verification and validation of data entered into the system	<p>Through discussion with the IT Infrastructure and Security Manager and consideration of relevant supporting documentation, we determined that:</p> <ul style="list-style-type: none"> Input controls are managed through built-in checks in Ellipse and aligned to Alinta's overall IT policy Processes are in place to verify and validate data entered into the eAM system, including: <ul style="list-style-type: none"> Data reconciliation between old and new systems Checking data transferred between one system to another is accurate, timely and complete Validating data as close as possible to the point of origin, which includes the ability to trace data back to the source document. Alinta's central IT helpdesk processes user requests

No	Effectiveness Criteria	Findings		
		<ul style="list-style-type: none"> • 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 require specific approval by Alinta's Finance function • Within Ellipse, work functions can be restricted through menu visibility (i.e. programs will not appear without access) • Site management approval is required for user profile updates • A work order number is the 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 an Alinta Wagerup login. Higher management have multiple level district access. 		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; background-color: #d9ead3;">Adequacy Rating: Adequately defined (A)</td> <td style="width: 50%; background-color: #d9ead3;">Performance Rating: Performing effectively (1)</td> </tr> </table>	Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)			
7(c)	Logical security access controls appear adequate, such as passwords	<p>Through discussions with the IT Infrastructure and Security Manager and consideration of relevant supporting documentation, we determined that:</p> <ul style="list-style-type: none"> • The process of granting and managing access is undertaken online through Alinta'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 network and the Ellipse system, including a minimum number of characters, minimum specified types of characters and restrictions on the use of recent passwords. Alinta's group IT policy requires a user to update their password every 30 days • 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. <p>The IT policy outlines consequences for breach of policy and misuse of user privileges.</p>		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; background-color: #d9ead3;">Adequacy Rating: Adequately defined (A)</td> <td style="width: 50%; background-color: #d9ead3;">Performance Rating: Performing effectively (1)</td> </tr> </table>	Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)			
7(d)	Physical security access controls appear adequate	<p>Through discussions with the IT Infrastructure and Security Manager, consideration of relevant supporting documentation and observations made during our visits to Alinta's Perth office, we determined that:</p> <ul style="list-style-type: none"> • Processes and procedures relating to the access of facilities and the physical protection of information assets and systems are in use at the head office as well as on site • Site access is restricted by security fencing and swipe card entry to the premises 		

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> 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. <p>Specifically in the context of access to computer server rooms on site, we observed that:</p> <ul style="list-style-type: none"> 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 Alinta employee Access to the building is monitored by CCTV. <p>We also observed that general safety precautions appear to have been instigated to contain fire and other damaging events in computer rooms on site.</p>	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
7(e)	Data backup procedures appear adequate and backups are tested	<p>Through discussions with the IT Infrastructure and Security Manager 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:</p> <ul style="list-style-type: none"> The main on-site data centre (tier 1) 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. <p>We also noted that access to the backup tapes is limited to a sub-set of IT Operations personnel and examined quarterly.</p>	
		Adequacy Rating: Adequately defined (A)	Performance Rating: Performing effectively (1)
7(f)	Key computations related to licensee performance reporting are materially accurate	Alinta Wagerup's asset management information system does not directly provide data used in any computation related to Alinta Wagerup'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.	<p>Through discussions with the IT Infrastructure and Security Manager, the Lead Engineering Planner and the Head of Asset Management and consideration of relevant supporting documentation and management reporting procedures, we determined that:</p> <ul style="list-style-type: none"> Management reports (i.e. weekly performance reports) are generated to provide performance information on plant operations and routine and first line intervention maintenance 	

No	Effectiveness Criteria	Findings	
		<ul style="list-style-type: none"> • 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 • The Experion and Ellipse systems are capable of generating a variety of scheduled reports. 	
		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: Requires some improvement (B) / Opportunity for improvement (2)

No	Effectiveness Criteria	Findings
8. Risk Management		
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	<p><i>Criteria 8(a) and (b)</i></p> <p>Through discussion with the General Manager Power Generation and Wagerup Plant Manager, examination of Alinta Wagerup's Risk Register and consideration of Alinta Wagerup's risk management and reporting framework, we determined that:</p> <ul style="list-style-type: none"> • Alinta Energy's Enterprise Risk Management Framework applies throughout Alinta Energy's business structure, including Alinta Wagerup'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 • Alinta Wagerup is in the process of: <ul style="list-style-type: none"> ○ Migrating previous work order data from Alcoa's Oracle system and assigning priorities (including re-assigning where required) under Alinta Wagerup's maintenance framework (refer to Issue 5/2017). During the migration period, Alinta Wagerup leveraged experienced personnel on site and within its planning division to prioritise operations and maintenance tasks, with a focus on defect and statutory work orders ○ Developing a site specific risk register. The current risk register is limited to risks associated with the transition of operations in May 2017. In particular, it does not address risks associated with the decision not to operate the gas turbine units on diesel fuel and associated plans for utilising a long recall storage approach • Although Alinta Wagerup has applied the Alinta Energy group-wide risk management framework, it has not yet captured clear evidence of some of those risk management 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 AMP • The AMP does not provide a clear and consistent 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.
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	
Adequacy Rating: Requires some improvement (B)		Performance Rating: Opportunity for improvement (2)
Recommendation 4/2017 <i>Refer to 5(b) above.</i>		Action Plan 4/2017 <i>Refer to 5(b) above.</i>

No	Effectiveness Criteria	Findings	
8(c)	The probability and consequences of asset failure are regularly assessed.	<p>Through discussion with the Head of Asset Management, General Manager Power Generation and Wagerup Plant Manager, examination of Alinta Wagerup’s AMP and consideration of Alinta Wagerup’s asset planning and risk management practices, we determined that Alinta Wagerup has applied the following mechanisms for identifying and assessing the consequence and likelihood of power station asset failure:</p> <ul style="list-style-type: none"> • The AMP is a major tool used for predicting the likelihood and consequences of asset failure. The AMP considers each major item of equipment and provides specific details of its operation and maintenance strategy and key lifecycle issues and remedial plans • During scheduled outages (e.g. long term shutdowns), main components of the plant are inspected for defects by site staff and external contractors • Condition monitoring techniques are employed on a frequent basis to identify defects, including: <ul style="list-style-type: none"> ○ Oil analysis ○ Vibration analysis ○ Radiography and thermography to identify any surface or internal defects • 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 through Alinta Wagerup’s 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) / Corrective action required (3)

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.	<p>Alinta Wagerup's contingency plans and arrangements are currently maintained or described in different processes and documents, such as risk registers, supply contracts, emergency response plans and restart/recovery procedures.</p> <p>Alinta Wagerup has the opportunity to consolidate 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.</p> <p>We also observed that during the period subject to review, Alinta Wagerup had not formally tested the Wagerup power station site emergency response plans.</p>	
		Adequacy Rating: Requires some improvement (B)	Performance Rating: Corrective action required (3)
		<p>Recommendation 6/2017</p> <p>Alinta Wagerup:</p> <p>(a) 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 fuel and water supply) are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans</p> <p>(b) Prepare a clear overarching "umbrella" document to capture all contingency plans in place for each of the key risks to Alinta Wagerup's assets' operations and availability.</p>	<p>Action Plan 6/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Establish a formal process for ensuring that contingency arrangements in place for all key risks to the power station's operations and availability are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans</p> <p>(b) Prepare a clear overarching "umbrella" document to capture all contingency plans in place for each of the key risks to Alinta Wagerup's assets' operations and availability.</p> <p>Responsible Person: Wagerup Plant Manager</p> <p>Target Date: December 2017</p>

4.10 Financial planning

Key process: The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term

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

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

No	Effectiveness Criteria	Findings
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	<p>Through discussion with the Finance Manager – Power Generation and consideration of Alinta Wagerup’s financial planning mechanisms, we observed that:</p> <ul style="list-style-type: none"> Alinta Wagerup’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.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	<p>Through discussion with the Finance Manager – Power Generation and consideration of Alinta Wagerup’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.</p>
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	<p>Through discussion with the Finance Manager – Power Generation and consideration of Alinta Wagerup’s financial planning mechanisms, we determined that:</p> <ul style="list-style-type: none"> Alinta Wagerup’s financial plan constitutes a summary of budgeted income and expenditure 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 consolidated financial statements on a six-monthly and annual basis.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	<p>Through discussions with the Finance Manager – Power Generation and consideration of Alinta Wagerup’s financial planning mechanisms, we observed that Alinta’s financial plan:</p> <ul style="list-style-type: none"> 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 30 years of plant life.

No	Effectiveness Criteria	Findings	
		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	<p>Through discussions with the Finance Manager – Power Generation and examination of Alinta Wagerup’s financial plans for the four years relevant to this review, we observed that Alinta Wagerup’s financial plans:</p> <ul style="list-style-type: none"> • 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.	<p>Through discussions with the Finance Manager – Power Generation and examination of Alinta Wagerup’s financial planning mechanisms, we observed that:</p> <ul style="list-style-type: none"> • On a monthly basis, a variance analysis report is produced in a management package to: <ul style="list-style-type: none"> ○ 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. 	
		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(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	<p>Through discussions with the Financial Manager – Power Generation and consideration of Alinta’s capital planning procedures and examination of the capital plan (and supporting model) for the four years relevant to this review, we determined that:</p> <ul style="list-style-type: none"> • 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.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	<p>Through discussions with the Financial Manager – Power Generation, consideration of Alinta’s capital planning procedures and examination of the capital plan (and supporting model) for the four years relevant to this review, we determined that the capital expenditure plan outlines the:</p> <ul style="list-style-type: none"> • Details of the financial year in which the capital expenditure amount is planned • Reasons for the capital expenditure.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	<p>Through discussions with the Financial Manager – Power Generation, consideration of Alinta’s capital planning procedures and examination of the capital expenditure model for the four years relevant to this review, we determined that:</p> <ul style="list-style-type: none"> • Alinta’s procedures require lifecycle costs of assets to be assessed and recorded in the AMP for each major item of equipment, including key lifecycle issues, critical outages and operating & maintenance philosophy • The capital expenditure plan concurs with the assessed lifecycle costs of the plant’s assets.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>

No	Effectiveness Criteria	Findings	
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.	<p>Through discussions with the Financial Manager – Power Generation, consideration of Alinta’s capital planning procedures and examination of the capital plan (and supporting model) for the four years relevant to this review, we determined that:</p> <ul style="list-style-type: none"> • 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 30 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 Finance 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	<p>Through discussion with the Head of Asset Management and General Manager Power Generation and review of Alinta's AMS documentation, we observed that:</p> <ul style="list-style-type: none"> Since the last review (submitted in November 2013), Alinta has strengthened its AMS through refined policies and procedures and improved data recording and reporting mechanisms The Wagerup Power Station AMP, which is the main reference to the AMS, 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.
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Performing effectively (1)</p>
12(b)	Independent reviews (e.g. internal audit) are performed of the asset management system.	<p>Although components of Alinta Wagerup's AMS are subject to regular review and update, Alinta Wagerup has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying AMS (excluding this licence review).</p>
		<p>Adequacy Rating: Adequately defined (A) Performance Rating: Opportunity for improvement (2)</p>
	<p>Recommendation 7/2017 In accordance with the Alinta Energy Asset Management Framework, Alinta Wagerup implement: (a) The requirement for its AMS to be subject to an independent review on a regular basis (b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer.</p>	<p>Action Plan 7/2017 Alinta Wagerup will implement: (a) The requirement for its AMS to be subject to an independent review on a regular basis (b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer. Responsible Person: Wagerup Plant Manager Target Date: August 2018</p>

5 Follow-up of previous review action plans

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
A. Resolved before end of previous Review period				
N/A - The 2013 AMS Review report did not contain any recommendations or action plans which were resolved before the end of the previous review period.				
B. Resolved during current Review period				
3/08	<i>All elements</i> Integration of Alinta Wagerup cogeneration units into Alcoa's regular operations and maintenance systems be given more urgency to address the long term sustainability of the units' availability and reliability - (3/2008 Recommendation)	Alinta continue to work with Alcoa for the integration of the Wagerup cogeneration units to Alcoa's operations and maintenance systems. The highest risk areas are being actioned as a priority. <i>Note: This matter has been closed out, with Alinta Wagerup transitioning to asset operator on 2 May 2017. Also refer to 2017 findings and recommendations.</i>	May 2017	N/A
8/08	<i>Asset Operations</i> <i>5(a) Operational policies and procedures are documented and linked to service levels required</i> Alinta prioritise and fund the development of operational policies procedures for auxiliary equipment - (8/2008 Recommendation)	Alinta will monitor Alcoa's progress for the development of operational procedures to ensure staged completion in accordance with priorities. <i>Note: This matter has been closed out, with Alinta Wagerup transitioning to asset operator on 2 May 2017. Also refer to 2017 findings and recommendations.</i>	May 2017	N/A
1/2013	<i>Asset Planning</i> <i>1(b) Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning</i>	a) The Wagerup AMP is reviewed and updated annually. b) Alinta Wagerup has taken on responsibility as asset operator (transitioning from Alcoa) at 2 May 2017. Performance reporting now aligns to the asset	a) January 2014 b) May 2017	N/A

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
	Alinta has established a new plan called Wagerup Power Station Strategic Asset Management Plan (SAMP). This plan is still in draft and is replacing the previous Wagerup Power Station Asset Life Plan. The SAMP has not been approved and presently is established as an uncontrolled copy without dissemination of information to the other personnel.	management framework used for Alinta operated projects which includes: <ul style="list-style-type: none"> o Performance reporting o Financial reporting. 		
C. Unresolved at end of current Review period				
2/2013	<i>Environmental Analysis</i> <i>4(c) Compliance with statutory and regulatory requirements</i> Alinta utilise a Compliance Manual that appears to have minor errors. The manual has been reviewed but does not appear to have been finalised for distribution and compliance.	The compliance manual needs to be audited for accuracy, approved and issued for compliance and monitoring.	August 2017	No - refer to finding 2/2017.
3/2013	<i>Review of AMS</i> <i>12(a) Independent reviews (e.g. internal audit) are performed of the asset management system</i> There is no independent review of the Asset Management System which Alinta referred to as the Wagerup Power Station SAMP. This was recommended in the previous audit issue 3/10.	The Licensee should ensure that an independent review/audit is conducted of the Asset Management System. This should be reflected in the Wagerup Power Station SAMP as a documented requirement.	N/A	Yes - refer to finding 7/2017.

Appendix A – Review plan

**Alinta Cogeneration
Wagerup Pty Ltd.**

and

**Alinta Cogeneration
Pinjarra Pty Ltd.**

**Electricity Generation Licences
(EGL 6 – EGL 10)**

**2017 Asset Management System
Review**

Review Plan

August 2017

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1 Introduction

Overview

The Economic Regulation Authority (the **ERA**) has under the provisions of the Electricity Industry Act 2004 (**Electricity Act**), issued to Alinta Cogeneration Wagerup Pty Ltd (Alinta Wagerup) and Alinta Cogeneration Pinjarra Pty Ltd. (Alinta Pinjarra) (hereinafter together "**Alinta**") respectively the Electricity Generation Licence No.6 (EGL6) and Electricity Generation Licence No.10 (EGL10) (**the Licences**).

Section 14 of the Electricity Act requires Alinta to provide the ERA an asset management systems review (the **review**) conducted by an independent expert acceptable to the ERA not less than once in every 24-month period unless otherwise approved by the ERA. With the ERA's approval, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has been appointed to conduct the review for the period 1 July 2013 to 30 June 2017 (**review period**).

The Licences relate to Alinta's operation of electricity generating works at its Wagerup and Pinjarra cogeneration facilities, which supply electricity to the South West Interconnected System (**SWIS**)

The Wagerup Power Station is a 380MW open cycle, gas fired gas turbine power plant located adjacent to Alcoa of Australia Ltd's (**Alcoa**) Wagerup refinery in South-West WA. The power station operates as a peaking power station.

The Pinjarra Power Station is a 285MW gas fuelled cogeneration plant located at Alcoa's Pinjarra refinery in South-West WA. The Pinjarra Power Station operates as a base load power station.

Alinta established Operations and Maintenance Agreements (**O&M Agreement**) with Alcoa for Alcoa to manage, operate and maintain the power stations on Alinta's behalf. The O&M Agreement for the Wagerup Power Station ceased on 2 May 2017, after which Alinta took up the responsibility for managing, operating and maintaining the power station.

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

The Plan has been developed in relation to both reviews (i.e. for the EGL6 and EGL10 Licences) and represents our approach in combining our work to assess both Licences concurrently. All references to 'review' assumes applicability to both Asset Management System reviews. Two separate review reports will be prepared, outlining the findings relevant to each Licence.

Objective

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

Scope

In accordance with the Review Guidelines, the review will 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. Each key process and effectiveness criteria is applicable to Alinta's Licences and as such will be individually considered as part of the review.

Table 1 – Asset management system key processes and effectiveness criteria

#	Key processes	Effectiveness criteria
1	Asset planning	<ul style="list-style-type: none"> Asset management plan covers key requirements Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning Service levels are defined Non-asset options (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	<ul style="list-style-type: none"> 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.
3	Asset disposal	<ul style="list-style-type: none"> Under-utilised and under-performing 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)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 resources are adequate and staff receive training commensurate with their responsibilities.
6	Asset maintenance	<ul style="list-style-type: none"> 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.

#	Key processes	Effectiveness criteria
7	Asset management information system	<ul style="list-style-type: none"> • Adequate system documentation exists for users and IT operators • Input controls include appropriate verification and validation of data entered into the system • Logical security access controls appear adequate, such as passwords • Physical security access controls appear adequate • Data backup procedures appear adequate and backups are tested • Key computations related to licensee performance reporting are materially accurate • Management reports appear adequate for the licensee to monitor licence obligations.
8	Risk management	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.
10	Financial planning	<ul style="list-style-type: none"> • 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 provides 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	<ul style="list-style-type: none"> • There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates • The plan provides 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	<ul style="list-style-type: none"> • 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.

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 Licences.

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, 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 July 2013 to 30 June 2017. These standards also require us to comply with the relevant ethical requirements of the Australian professional accounting bodies. Our engagement provides limited assurance as defined in ASAE 3500.

Limitations of use

Our reports will be produced 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 the reports.

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

Inherent limitations

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement conducted in accordance with ASAE 3500 and consequently does not allow us to obtain assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement. Accordingly, we will not express an opinion providing reasonable assurance. We cannot, in practice, examine every activity and procedure, nor can we be a substitute for management's responsibility to maintain adequate controls over all levels of operations and their responsibility to prevent and detect irregularities, including fraud. Accordingly, readers of our reports should not rely on the reports to identify all potential opportunities for improvement which may be required. Any projection of the evaluation of the level of effectiveness to future periods is subject to the risk that the systems may become inadequate because of changes in conditions, or that the degree of effectiveness with management procedures may deteriorate.

Independence

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

2 Approach

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

Risk assessment

The review will focus on identifying or assessing those activities and management control systems to be examined and the matters subject to review. Therefore, the purpose of conducting the risk assessment as a preliminary phase enables the reviewer to focus on pertinent/high risk areas of Alinta’s asset management systems established for the assets subject to the Licence. The risk assessment gives specific consideration to changes to Alinta’s systems and processes and any matters of significance raised by the ERA 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 Licences, in the absence of mitigating controls. The consequence rating descriptions listed at Table 10 of the Review Guidelines (refer to **Appendix 1-1**), provides the risk assessment with context to enable the appropriate consequence rating to be applied to each component of the asset management system subject to review.

Once the consequence has been determined, the likelihood of Alinta not maintaining an asset management system for the assets subject to its Licences (with reference to the defined effectiveness criteria) is assessed using the likelihood rating listed at Table 16 of the Review Guidelines (refer to **Appendix 1-2**). The assessment of likelihood is based on the expected frequency of non-performance against the defined criteria, over a period of time.

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

Table 2: Inherent risk rating

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

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

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

Table 3: Assessment of Review Priority

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

The following table outlines the review requirement for each level of review priority. Testing can range from extensive substantive testing around the controls and activities of particular processes (including physical inspection of asset infrastructure, which will be given greater attention for those processes with a review priority of 1, 2 or 3) to confirming the existence of controls through discussions with relevant staff. Review procedures to be performed will be selected from those procedures included in *Table 1: Example of possible audit procedures for each audit priority* of the Guidelines.

Table 4: Review Priority Table

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

- Prior assessments of the state of controls during preliminary discussions with Alinta representatives
- Our understanding of Alinta's assets and internal processes
- 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 reviewers. It is possible that the ratings and risk assessment comments may be revised as we conduct our work and new evidence comes to light. Accordingly, the risk assessment for the asset management system review is a preliminary draft, not a final report, and no reliance should be placed on its findings. It is however an invaluable tool for focussing the review effort.

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

Systems analysis/walkthrough

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

- Interviewing key operational and administrative staff responsible for the development and maintenance of policies and procedural type documentation
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to 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 reports.

Examination of performance

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

- Consideration of reports and references evidencing activity
- Interviews with key operational staff
- Physical visits to the Wagerup and Pinjarra power stations
- Consideration of Alinta's management of planned outage rates
- Consideration of the level of staff resourcing applied to maintaining those controls and processes
- Consideration of each installation's function, normal modes of operation and age.

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

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

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

Reporting

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

Table 5: Asset management process and policy definition adequacy ratings

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 Review Guidelines, including:

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

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. 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:

- Alinta Energy General Manager East Coast and SWIS O&M
- Alinta Energy Wagerup Power Station Manager
- Alinta Energy Manager, Asset Management & Engineering
- Alinta Energy Finance Manager – Power Generation
- Alinta Energy Lead Engineering Planner
- Alinta Energy Ellipse Team Leader
- Alinta Energy Manager Regulatory Compliance
- Alinta Energy Alinta Wholesale Regulation Manager

Key Alcoa contacts

- WAO Principal Mechanical Engineer
- WAO Principal Electrical Engineer
- WAO Powerhouse Manager.

Deloitte staff

Deloitte staff who will be involved with this assignment are:

- Richard Thomas Partner
- Andrew Baldwin Specialist Leader, Regulatory Compliance
- David Herbert Senior Analyst
- Manuela Cervellera Senior Analyst
- Emlyn King Senior Compliance Specialist
- Bryn Durrans Manager (Engineer)
- Kobus Beukes QA Partner
- Shailesh Tyagi Technical QA Lead.

Resumes for key Deloitte staff are outlined in the proposal accepted by Alinta and subsequently presented to the ERA.

Timing

The initial risk assessment phase was completed on 31 July 2017 after which the review plan and detailed risk assessment were presented to the ERA for review and comment. The remainder of the fieldwork phase is scheduled to be performed in August and early September 2017.

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 ERA. In summary, the estimated time allocated to each activity is as follows:

- Planning (including risk assessment): 16 hours
- Fieldwork (including system analysis/policy & procedure review and examination of performance): 100 hours
- Reporting: 34 hours.

Site visits

The review will include a physical site visit by Deloitte's Engineer and Technical Specialist to the Wagerup and Pinjarra power stations.

Appendix 1 - Risk assessment key

Appendix 1 – 1 Consequence ratings

Source: Review Guidelines – Electricity and Gas Licences April 2014

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

Appendix 1 – 2 Likelihood ratings

Source: Review Guidelines – Electricity and Gas Licences April 2014

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

Appendix 1 – 3 Adequacy ratings for existing controls

Source: Review Guidelines – Electricity and Gas Licences April 2014

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

Appendix 2 – Risk assessment

1		Asset Planning				
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)	Asset management plan covers key requirements	Moderate	Probable	Medium	Moderate	Priority 4
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Minor	Probable	Low	Moderate	Priority 5
1(c)	Service levels are defined	Minor	Unlikely	Low	Moderate	Priority 5
1(d)	Non-asset options (e.g. demand management) are considered	Minor	Unlikely	Low	Moderate	Priority 5
1(e)	Lifecycle costs of owning and operating assets are assessed	Moderate	Probable	Medium	Moderate	Priority 4
1(f)	Funding options are evaluated	Minor	Probable	Low	Moderate	Priority 5
1(g)	Costs are justified and cost drivers identified	Minor	Probable	Low	Moderate	Priority 5
1(h)	Likelihood and consequences of asset failure are predicted	Major	Probable	High	Moderate	Priority 2
1(i)	Plans are regularly reviewed and updated	Minor	Unlikely	Low	Moderate	Priority 5

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	Unlikely	Medium	Moderate	Priority 4
2(b)	Evaluations include all life-cycle costs	Moderate	Unlikely	Medium	Moderate	Priority 4
2(c)	Projects reflect sound engineering and business decisions	Moderate	Unlikely	Medium	Moderate	Priority 4
2(d)	Commissioning tests are documented and completed	Moderate	Unlikely	Medium	Moderate	Priority 4
2(e)	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	Moderate	Unlikely	Medium	Moderate	Priority 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.				
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	Minor	Unlikely	Low	Moderate	Priority 5

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	Major	Probable	High	Moderate	Priority 2
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	Weak	Priority 3
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 resources are adequate and 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	Major	Probable	High	Moderate	Priority 2
6(b)	Regular inspections are undertaken of asset performance and condition	Major	Probable	High	Moderate	Priority 2
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Major	Probable	High	Moderate	Priority 2
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Major	Probable	High	Moderate	Priority 2
6(e)	Risk management is applied to prioritise maintenance tasks	Major	Probable	High	Moderate	Priority 2
6(f)	Maintenance costs are measured and monitored	Moderate	Probable	Medium	Moderate	Priority 4

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent risk rating	Controls assessment	Review priority
7	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.					
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	Minor	Probable	Low	Moderate	Priority 5
7(c)	Logical security access controls appear adequate, such as passwords	Minor	Probable	Low	Moderate	Priority 5
7(d)	Physical security access controls appear adequate	Minor	Probable	Low	Moderate	Priority 5
7(e)	Data backup procedures appear adequate and backups are tested	Moderate	Probable	Medium	Moderate	Priority 4
7(f)	Key computations related to licensee performance reporting are materially accurate	Minor	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	Controls assessment	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	Major	Probable	High	Moderate	Priority 2

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

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent risk rating	Controls assessment	Review priority
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.					
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Minor	Probable	Low	Moderate	Priority 5
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Minor	Probable	Low	Moderate	Priority 5
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Minor	Probable	Low	Moderate	Priority 5
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Minor	Probable	Low	Moderate	Priority 5
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Moderate	Probable	Medium	Moderate	Priority 4
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Moderate	Probable	Medium	Moderate	Priority 4

11		Capital expenditure planning				
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	Moderate	Priority 4
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Minor	Probable	Low	Moderate	Priority 5
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Moderate	Probable	Medium	Moderate	Priority 4
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Minor	Probable	Low	Moderate	Priority 5

12		Review of AMS				
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 (eg internal audit) are performed of the asset management system	Minor	Probable	Low	Weak	Priority 5

Appendix 3 – Previous review recommendations

<p>Issue 1/2013 (Wagerup and Pinjarra) <u>Asset Planning</u> <u>1(b) Does the planning process and objectives reflect the need of all stakeholders and is it integrated with business planning?</u> Alinta has established a new plan called Wagerup/Pinjarra Power Station Strategic Asset Management Plan (SAMP). This plan is still in draft and is replacing the previous Wagerup Power Station Asset Life Plan. The SAMP has not been approved and presently is established as an uncontrolled copy without dissemination of information to the other personnel.</p>	
<p>Recommendation 1/2013 The Wagerup/Pinjarra Power Station SAMP needs to be approved and disseminated. A reporting system is to be established to measure and monitor actual against the plans.</p>	<p>Action plan 1/2013 Alinta will complete the approval process of the Wagerup/Pinjarra Power Station SAMP and implement accordingly. <i>Auditor Comment:</i> (Unverified confirmation of completion of this action was provided after the close of this audit. <u>Outstanding ACTION is verification only.</u> Responsible person Alinta Energy Asset Engineering Manager Target date November 2013</p>
<p>Issue 2/2013 (Wagerup and Pinjarra) <u>Environmental Analysis</u> <u>4(c) Compliance with statutory and regulatory requirements</u> Alinta utilise a Compliance Manual that appears to have minor errors. The manual has been reviewed but does not appear to have been finalised for distribution and compliance.</p>	
<p>Recommendation 2/2013 The compliance manual needs to be audited for accuracy, approved and issued for compliance and monitoring</p>	<p>Action Plan 2/2013 Alinta to finalise and formally approve the Compliance Manual with monitoring facility in place. Responsible Person Alinta Energy Manager Generation Operations WA Target Date November 2013</p>

<p>Issue 3/2013 (Wagerup and Pinjarra) <u>Review of AMS</u> <u>12(b) Are independent reviews (e.g. internal audit) of the asset management system reviewed?</u> There is no independent review of the Asset Management System which Alinta referred to as the Wagerup/Pinjarra Power Station SAMP. This was recommended in the previous audit issue 3/10.</p>	
<p>Recommendation 3/2013 The Licensee should ensure that an independent review/audit is conducted of the Asset Management System. This should be reflected in the Wagerup/Pinjarra Power Station SAMP as a documented requirement.</p>	<p>Action Plan 3/2013 Alinta to schedule an independent review/audit of the Wagerup/Pinjarra Power Station SAMP. Alinta to update audit/review process in the Wagerup/Pinjarra Power Station SAMP. <i>Auditor comment:</i> <i>(Unverified confirmation that previous independent audit of the SAMP was carried out FY2012 and is rescheduled for FY2014 was provided after the close of this audit. Outstanding ACTION is verification only).</i> Responsible Person Alinta Energy Asset Engineering Manager Target Date November 2013</p>
<p>Issue 3/2008 (Wagerup) <u>All elements</u> <i>Status: In progress at the time of the 2013 AMS review</i></p>	
<p>Recommendation 3/2008 Integration of Alinta Wagerup cogeneration units into Alcoa’s regular operations and maintenance systems be given more urgency to address the long term sustainability of the units’ availability and reliability.</p>	<p>Revised Action Plan 3/2008 Alinta continue to work with Alcoa for the integration of the Wagerup cogeneration units to Alcoa’s operations and maintenance systems. The highest risk areas are being actioned as a priority. Responsible Person Alinta Energy Asset Engineering Manager Target Date Six monthly basis until completion</p>
<p>Issue 8/2008 (Wagerup) <u>Asset Operations</u> <u>5(a) Operational policies and procedures are documented and linked to service levels required</u> <i>Status: In progress at the time of the 2013 AMS review</i></p>	
<p>Recommendation 8/2008 (Wagerup) Alinta prioritise and fund the development of operational policies procedures for auxiliary equipment.</p>	<p>Revised Action Plan 8/2008 (Wagerup) Alinta will monitor Alcoa’s progress for the development of operational procedures to ensure staged completion in accordance with priorities. Responsible Person Alinta Energy Asset Engineering Manager Target Date June 2014</p>

<p>Issue 1/2008 (Pinjarra) <u>Asset Operations and Asset Maintenance</u> <i>Status: In progress at the time of the 2013 AMS review</i></p>	
<p>Recommendation 1/2008 (Pinjarra) The 2008 review report detailed an action plan for Alinta to monitor Alcoa’s integration of the Pinjarra cogeneration units into Alcoa’s operations and maintenance system.</p>	<p>Revised Action Plan 1/2008 (Pinjarra) Alinta will continue to work with Alcoa to close out the remaining OEM drawings for Unit 2, which require incorporation into Alcoa’s maintenance drawing system. Responsible Person Alinta Energy Asset Engineering Manager Target Date December 2013</p>
<p>Issue 6/2008 (Pinjarra) <u>Asset Creation/Acquisition</u> <u>2(e) Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood</u> <i>Status: In progress at the time of the 2013 AMS review</i></p>	
<p>Recommendation 6/2008 (Pinjarra) The 2008 review report detailed an action plan for Alinta to establish and maintain a full record and understanding of its legal requirements as an electricity generation and transmission owner.</p>	<p>Revised Action Plan 6/2008 (Pinjarra) Alinta will convert the gap analysis into a scheduled action plan. Responsible Person HSSE Manager Target Date December 2013</p>
<p>Issue 7/2008 (Pinjarra) <u>Environmental Analysis</u> <u>4(c) Compliance with statutory and regulatory requirements</u> <i>Status: In progress at the time of the 2013 AMS review</i></p>	
<p>Recommendation 7/2008 (Pinjarra) The 2008 review report detailed an action plan for Alinta to investigate, understand and comply with the statutory and regulatory noise level requirements for the Pinjarra cogeneration plant.</p>	<p>Revised Action Plan 7/2008 (Pinjarra) Alinta will install (with Alcoa’s assistance) the analyser on unit 2. Responsible Person Alinta Energy Asset Engineering Manager Target Date June 2014</p>

Appendix B – References

Alinta staff and representatives participating in the review

- Wagerup Plant Manager

Alinta Energy

- General Manager Power Generation
- Head of Asset Management
- Finance Manager – Power Generation
- Lead Engineering Planner
- IT Infrastructure and Security Manager
- Manager Regulatory Compliance
- Alinta Wholesale Regulation Manager.

Alcoa

- WA Operations CoGen Supervisor
- Principal Mechanical Engineer WAO Powerhouse.

Deloitte staff and representatives participating in the review

		Hours
• Richard Thomas	Partner	6
• Andrew Baldwin	Specialist Leader	24
• David Herbert	Senior Analyst	50
• Manuela Cervellera	Senior Analyst	2
• Tanuja Sanders	Engineer (KT & Sai Associates)	16
• Keith Sanders	Engineer (KT & Sai Associates)	9
• Kobus Beukes	QA Partner	1

Key documents and other information sources examined

- Asset Management Plan - Wagerup Power Station 2018
- AMP Spreadsheet FY17
- AMP Spreadsheet FY18
- Alinta Energy Asset Management Framework
- Alinta Energy OHS Management Framework
- Alinta Energy Enterprise Risk Management Policy
- Alinta Energy Enterprise Risk Management Framework
- Project Approval Portal screenshot via SharePoint
- Sample Ellipse KPI reporting spreadsheet
- Business Case electronic forms
- Management of Change forms
- Project Commercial Sign-Off form
- 2016 Asset Project Delivery Model Training (Slide Deck)
- Alinta Energy Plant Decommissioning Policy
- Decommissioning report – Wagerup (compiled by Jacobs, June 2017)
- Wagerup Compliance Manual
- Ministerial Audit Report 2014, 2015 and 2016
- Ellipse Maintenance Master Data
 - Ellipse data extract - Maintenance work orders
 - Ellipse data extract - Defect work orders

- Correspondence – Alcoa/Alinta Oracle to Ellipse Work Order transition
- Wagerup weekly work schedule
- Alinta Energy Maintenance Work Process Manual
- Incident Management Register
- Power Generation Weekly Performance Reports
- Sample Environmental report listing screenshot via SharePoint
- High Voltage Assets Maintenance Standard
- Example Alcoa powerhouse lead team meeting minutes
- Example Alcoa powerhouse operational procedures
- Project Deliverable – Wagerup Transition (IT)
- Project Scope – Wagerup Transition (IT)
- Alinta Energy IT policy listing
- Alinta Energy IT Security Policy
- Alinta Energy back-up system protocol
- Sample back up report
- Sample system restoration test
- Application user approval matrix
- Accounts policies/Password Policy system parameters
- Wagerup Power Station Risk Register
- Wagerup Power Station Emergency Response Plan
- Alcoa LMS training package references
- Accounting position paper – Operating and Capital Expenses Policy
- Financial Budgeting Model (including Capital budget)
- Wagerup Power Station Financial Model
- Finance Monthly Management Pack – Power Generation.

Appendix C – Post review implementation plan

This plan has been prepared by Alinta Wagerup and does not form part of Deloitte’s review findings.

<p>Issue 1/2017 <i>Asset planning: 1(a) Asset management plan covers key requirements.</i> Although the Alinta Energy Wagerup Power Station – Asset Management Plan FY2018 - FY2022 (AMP) generally reflects Alinta Wagerup’s expectations and requirements for managing its generation assets, the AMP:</p> <ol style="list-style-type: none"> 1. Requires updating to reflect the following aspects of the power station’s operations: <ul style="list-style-type: none"> • As Alinta Wagerup has decided that it will currently not operate its gas turbine units on diesel fuel, the power station’s diesel unloading, storage and forwarding equipment is not in operational mode. Risks associated with these arrangements and plans for utilising a long recall storage approach should be reflected in the AMP • The AMP has some residual references to Alcoa’s role in operations and maintenance. 2. Can be further improved as it does not clearly address the following elements expected by Alinta Energy’s Asset Management Framework: <ul style="list-style-type: none"> • 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. 	
<p>Recommendation 1/2017 Alinta Wagerup update its AMP to:</p> <ol style="list-style-type: none"> (a) Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa’s role in operations and maintenance (b) Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> • Contingency plans • Known and significant risks relating to key assets Legal and compliance requirements. 	<p>Action Plan 1/2017 Alinta Wagerup will update its AMP to:</p> <ol style="list-style-type: none"> (a) Reflect current arrangements relating to diesel, as well as to remove any residual reference to Alcoa’s role in operations and maintenance (b) Explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: <ul style="list-style-type: none"> • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. <p>Responsible Person: Wagerup Plant Manager Target Date: August 2018</p>

<p>Issue 2/2017 <i>Environmental analysis: 4(c) Compliance with statutory and regulatory requirements.</i> In response to a finding of the previous (2013) AMS review that Alinta Wagerup’s site Compliance Manual remained in draft form, Alinta Wagerup devised an action plan for the Manual to be reviewed and finalised. As the Manual had not been formally reviewed and approved as a final document as at 30 June 2017, the issue and action plan remained outstanding for the purpose of this review. In August 2017, the Compliance Manual was reviewed and updated to reflect the current legal, safety and environmental obligations relating to Alinta Wagerup’s operations. <i>No further action is required.</i></p>
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<p>Recommendation 2/2017 Not applicable – the necessary corrective action was taken in August 2017.</p>	<p>Action Plan 2/2017 Complete – August 2017.</p>
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<p>Issue 3/2017 <i>Asset Operations: 5(a) Operational policies and procedures are documented and linked to service levels required.</i> <i>Asset Maintenance: 6(a) Maintenance policies and procedures are documented and linked to service levels required.</i></p> <p>Alinta Wagerup is in the process of developing its Plant operations and maintenance procedures, as procedures received from Alcoa did not align with Alinta’s documentation framework. Those site specific procedures are to refer to required service levels (where appropriate) for the operation of the specific item of equipment, or electrical or mechanical procedures. Control plans are also being developed for major items of plant.</p> <p>We recognise that Alinta Wagerup has mitigating processes and controls in place, including:</p> <ul style="list-style-type: none"> • An overarching Asset Management Plan for the Wagerup site • Maintenance tasks integrated into the Ellipse system • Reporting dashboards in place, which provide a weekly view of performance of each site • Senior and experienced personnel assigned to manage site operations and maintenance tasks. 	
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<p>Recommendation 3/2017 Alinta Wagerup: (a) Document and implement all key procedures and control plans which require updating from existing Alcoa procedures and plans (b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p>	<p>Action Plan 3/2017 Alinta Wagerup will: (a) Document and implement all key procedures and control plans, which require updating from Alcoa procedures and plans (b) When updating key documentation, ensure that key operations and maintenance tasks and service level metrics are clearly communicated.</p> <p>Responsible Person: Wagerup Plant Manager Target Date: March 2018</p>
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<p>Issue 4/2017</p> <p><i>Asset operations: 5(b) Risk management is applied to prioritise operations tasks</i></p> <p><i>Asset maintenance: 6(e) Risk management is applied to prioritise operations tasks</i></p> <p><i>Risk management: 8(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system</i></p> <p><i>Risk management: 8(b) Risks are documented in a risk register and treatment plans are actioned and monitored</i></p> <p>Through discussion with personnel on-site and examination of Alinta Wagerup’s Risk Register, we observed that Alinta Wagerup is in the process of:</p> <ul style="list-style-type: none"> • Migrating previous work order data from Alcoa’s Oracle system and assigning priorities (including re-assigning where required) under Alinta Wagerup’s maintenance framework (refer to Issue 5/2017) • Developing a site specific risk register. The current risk register is limited to risks associated with the transition of operations in May 2017. In particular, it does not address risks associated with the decision not to operate the gas turbine units on diesel fuel and associated plans for utilising a long recall storage approach. <p>Although Alinta Wagerup has applied the Alinta Energy group-wide risk management framework, it has not yet captured clear evidence of some of those risk management activities to demonstrate that its risk management philosophies and approach are consistently applied.</p> <p>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 AMP.</p> <p>The AMP does not provide a clear and consistent 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.</p>	
<p>Recommendation 4/2017</p> <p>Alinta Wagerup:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset • Contingency planning (refer to Issue 6/2017) • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p>	<p>Action Plan 4/2017</p> <p>Alinta Wagerup will:</p> <p>(a) Develop its site Risk Register to include all risk elements relevant to:</p> <ul style="list-style-type: none"> • The site environment • Maintenance of the asset • Contingency planning • Current diesel fuel arrangements <p>(b) Complete the data migration of work orders</p> <p>(c) Establish a clear approach and timeframe for assessing risks, implementing treatment plans and monitoring status on a more frequent basis than the annual review of the AMP.</p> <p>Responsible Person: Wagerup Plant Manager</p> <p>Target Date: March 2018</p>

Issue 5/2017

Asset Maintenance: 6 (c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule

As part of the transfer of the Alinta Wagerup asset O&M activities from Alcoa to Alinta, Alinta Wagerup initiated a rationalisation and defect maintenance phase, which commenced in May 2017 and was substantially completed in October 2017. This phase involved:

- Transfer of all key maintenance data from Alcoa’s Oracle system to Alinta’s Ellipse system
- A primary focus on defect maintenance activities
- Rationalisation of planned, routine maintenance work to match Alinta’s approach to operating and maintaining its assets. The rationalisation process initially resulted in a large number of work orders being postponed or cancelled
- Where relevant, routine maintenance work orders continuing to be recognised and completed as part of the defect maintenance activities.

The General Manager Power Generation advised Alinta Wagerup’s maintenance activities reverted to normal operational mode in October 2017.

We also observed that:

- As a direct outcome of the defect maintenance and rationalisation activities, a number of work orders (including some priority 2 work orders) remained open as at 30 June 2017 (i.e. the end of this review period)
- Although details of completion rates were not reported for May and June 2017, Alinta Wagerup had recognised that normal operations and completion rates would not be achievable during the defect maintenance and rationalisation phase
- In July 2017, Alinta Wagerup commenced reporting maintenance work order completion rates in its Weekly Performance Reports (completion rates reported in the last week of August for Annual Work Plan and Defect Maintenance work orders were 56% and 54% respectively).

Although a performance effectiveness rating of "3 - *Corrective action required*" is applicable for this review, we recognise that Alinta Wagerup had initiated corrective action in May 2017 and as at the end of the review period needed to close-out that corrective action.

Recommendation 5/2017

Alinta Wagerup establish a clear timeframe for:

- (a) Completing all remaining defect maintenance and rationalisation activities
- (b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.

Action Plan 5/2017

Alinta Wagerup will establish a clear timeframe for:

- (a) Completing all remaining defect maintenance and rationalisation activities
- (b) Returning to normal maintenance activities, enabling targets to be set for work order completion rates.

Responsible Person: Wagerup Plant Manager

Target Date: Complete - October 2017

Issue 6/2017

Contingency Planning: 9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks

As Alinta Wagerup’s contingency plans and arrangements are currently maintained/described in different processes and documents, it 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.

We also observed that during the period subject to review, Alinta Wagerup had not performed regular tests of the Wagerup power station site emergency response plans.

<p>Recommendation 6/2017</p> <p>Alinta Wagerup:</p> <ul style="list-style-type: none"> (a) 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 fuel and water supply) are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans (b) Prepare a clear overarching “umbrella” document to capture all contingency plans in place for each of the key risks to Alinta Wagerup’s assets’ operations and availability. 	<p>Action Plan 6/2017</p> <p>Alinta Wagerup will:</p> <ul style="list-style-type: none"> (a) Establish a formal process for ensuring that contingency arrangements in place for all key risks to the power station’s operations and availability are rigorously challenged and tested, including regular testing of the Wagerup power station site emergency response plans (b) Prepare a clear overarching “umbrella” document to capture all contingency plans in place for each of the key risks to Alinta Wagerup’s assets’ operations and availability. <p>Responsible Person: Wagerup Plant Manager Target Date: December 2017</p>
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<p>Issue 7/2017</p> <p><i>AMS Review: 12(b) Independent reviews (e.g. internal audit) are performed of the asset management system</i></p> <p>Although components of Alinta Wagerup’s AMS are subject to regular review and update, Alinta Wagerup has not applied a formal process for ensuring a sufficient degree of independence in any regular review of the asset management plan and underlying AMS.</p>	
<p>Recommendation 7/2017</p> <p>In accordance with the Alinta Energy Asset Management Framework, Alinta Wagerup implement:</p> <ul style="list-style-type: none"> (a) The requirement for its AMS to be subject to an independent review on a regular basis (b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer. 	<p>Action Plan 7/2017</p> <p>Alinta Wagerup will implement:</p> <ul style="list-style-type: none"> (a) The requirement for its AMS to be subject to an independent review on a regular basis (b) A register or record to capture the reviews conducted on its AMS and the independence of the associated reviewer. <p>Responsible Person: Wagerup Plant Manager Target Date: August 2018</p>