Alinta Cogeneration (Pinjarra) Pty Ltd

Electricity Generation Licence (EGL10)
2022 Asset Management System Review

Final report

6 October 2022

ASSURANCE ADVISORY GROUP

Level 11, 251 Adelaide Terrace
PERTH WA 6000

6 October 2022

Catherine Rousch
Manager WA Retail Regulation
Alinta Energy
Level 18 Raine Square, 300 Murray Street
Perth WA 6000

Dear Catherine

Electricity Generation Licence (EGL10) – 2022 Asset Management System Review report

We have completed the Electricity Generation Licence Asset Management System Review for Alinta Cogeneration (Pinjarra) Pty Ltd for the period 1 July 2017 to 30 June 2022 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 at abaldwin@assuranceadvisory.com.au or myself at slinden@assuranceadvisory.com.au.

Yours sincerely
Assurance Advisory Group

[redacted]

Stephen Linden
Director
www.assuranceadvisory.com.au

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1. Independent assurance practitioner's report

Conclusion

We have undertaken a limited assurance engagement on the effectiveness of Alinta Cogeneration (Pinjarra) Pty Ltd's Asset Management System (**AMS**), relating to its Electricity Generation Licence (EGL10 (the **Licence**) for the period 1 July 2017 to 30 June 2022 (**review period**).

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that Alinta Pinjarra has not established and maintained, in all material respects, an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the March 2019 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* (**the Guidelines**) issued by the Economic Regulation Authority (the **ERA**) and that the systems have not operated effectively for the review period.

Basis for conclusion

We conducted our engagement in accordance with Standard on Assurance Engagements ASAE 3500 *Performance Engagements* (**ASAE 3500**) issued by the Auditing and Assurance Standards Board.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Alinta Pinjarra's responsibility for the AMS

Alinta Pinjarra is responsible for ensuring that it has:

- Complied in all material respects with the requirements of the Licence as specified by the Review Guidelines
- Established and maintained an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria detailed in the Guidelines.

Our independence and quality control

We have complied with the independence and other relevant ethical requirements relating to assurance engagements, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour. We applied Auditing Standard ASQC 1 *Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, and Other Assurance Engagements* in undertaking this assurance engagement.

Our responsibilities

Our responsibility is to express a limited assurance conclusion on Alinta Pinjarra's AMS for assets subject to the Licence, based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with ASAE 3500, in order to express a conclusion whether, based on the procedures performed and the evidence obtained, anything has come to our attention that causes us to believe that Alinta Pinjarra's AMS for assets subject to the Licence, have not been established and maintained, in all material respects. That standard requires that we plan and perform this engagement to obtain limited assurance about whether the AMS for assets subject to the Licence is materially ineffective.

A limited assurance engagement conducted in accordance with ASAE 3500 involves identifying areas where the AMS for assets subject to a Licence is likely to be materially ineffective, addressing the areas identified and considering the process used to prepare the AMS for assets subject to the Licence. A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

Procedures performed

The procedures we performed were based on our professional judgement and consisted primarily of:

- Utilising the Review Guidelines as a guide for development of a risk assessment, which involved discussions with key staff and review of documents to perform a preliminary controls assessment
- Development of a Review Plan for approval by the ERA, and an associated work program
- Interviews with and representations from Alinta Pinjarra representatives and key operational and administrative staff to gain an understanding of the development and maintenance of policies and procedural type documentation. A full list of staff engaged has been provided at Appendix B
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Alinta Pinjarra's AMS requirements and standards
- Physical visit to operations located at Pinjarra
- Consideration of reports and references evidencing activity
- Consideration of activities performed by Alinta Pinjarra that relate to operation of the assets.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement. Accordingly, we do not express a reasonable assurance opinion on the effectiveness of Alinta Pinjarra's AMS for assets subject to the Licence.

Inherent Limitations

Because of the inherent limitations of an assurance engagement, together with the inherent limitation of any system of controls it is possible that fraud, error or non-compliance with the requirements of the Guidelines may occur and not be detected.

A limited assurance engagement relating to the period from 1 July 2017 to 30 June 2022 does not provide assurance on whether the effectiveness of Alinta Pinjarra's AMS for assets subject to the Licence will continue in the future.

Restricted use

This report has been prepared for use by Alinta Pinjarra for the purpose of satisfying its obligation under Section 14 of the Electricity Industry Act 2004. We disclaim any assumption of responsibility for any reliance on this report to any person other than Alinta Pinjarra, or for any other purpose other than that for which it was prepared. We understand that a copy of the report will be provided to the ERA for the purpose of reporting on the effectiveness of Alinta Pinjarra's AMS. We agree that a copy of this report will be given to the ERA in connection with this purpose, however we accept no responsibility to the ERA or to anyone who is provided with or obtains a copy of our report.

Assurance Advisory Group

Stephen Linden
Director

6 October 2022

2. Executive Summary

2.1 Introduction and Background

The Economic Regulation Authority (the **ERA**) has under the provisions of the Electricity Industry Act 2004 (the **Act**), issued to Alinta Cogeneration (Pinjarra) Pty Ltd (**Alinta Pinjarra**) an Electricity Generation Licence (EGL10) (the **Licence**).

The Licence relates to Alinta Pinjarra's operation of electricity generation works at its Pinjarra cogeneration facility which provides electricity to the South West Interconnected System (**SWIS**).

The Pinjarra Power Station is a 280MW (nameplate capacity) gas fuelled cogeneration plant located at Alcoa's Pinjarra refinery in the Shire of Murray, approximately 70 kms south of Perth. The Pinjarra Power Station operates as a base load power station and supplies electricity to the Wholesale Electricity Market (**WEM**) and steam to Alcoa under commercial agreements. Alinta Pinjarra has established an Operations and Maintenance Agreement with Alcoa for Alcoa to manage, operate and maintain the Pinjarra Power Station on Alinta's behalf.

Section 14 of the Act requires Alinta Pinjarra to provide to the ERA an asset management system review (the **review**) report 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, Assurance Advisory Group (**AAG**) has been appointed to conduct the review for the period 1 July 2017 to 30 June 2022 (**review period**).

The review has been conducted in accordance with the ERA's March 2019 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* (**Review Guidelines**), which set out 12 key processes in the asset management life-cycle.

2.2 Findings

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

- Throughout the period subject to review, Alinta Pinjarra had maintained an appropriate level of resourcing and an appropriate suite of procedures and controls within its AMS
- Alinta Pinjarra's contractual arrangements with Alcoa continue to provide a high level of confidence that the power station's assets are to be operated and maintained to a high standard in accordance with Alinta Pinjarra's expectations
- Alinta Pinjarra and Alcoa staff appeared to have a good understanding of their roles, particularly displaying an understanding of the asset management processes within their area of responsibility
- Alinta Pinjarra has effectively completed all action plans resulting from recommendations raised by the 2017 review
- Alinta Pinjarra has four minor improvement opportunities to strengthen aspects of its asset management practices, as described throughout this report (where criteria are rated as "B" or "2").

This review assessed that, of the 58 elements of Alinta Pinjarra's AMS:

- For the asset management process and policy definition ratings:
  - 53 are rated as "Adequately defined"
  - 3 are rated as "Requires some improvement"
  - 2 are not rated.
- For the asset management performance ratings:
  - 50 are rated as "Performing effectively"
  - 2 are rated as "Improvement required"
  - 6 are not rated.

2.3 Alinta Pinjarra's response to previous review recommendations

A. Resolved during current review period

This review considered Alinta Pinjarra's progress against the five outstanding action items from the 2017 review. Note that the other recommendation of a total of six recommendations made by the 2017 review had been actioned and closed out prior to the issue of the final 2017 review report.

Based on our examination of relevant documents, discussion with staff and consideration of the results of this review's testing against the criteria, we confirmed that all five outstanding recommendations and action plans raised by the 2017 review were actioned and effectively closed out throughout 2018. No further recommendations are made in relation to these matters.

Refer to section 5 "Status of recommendations addressing asset system deficiencies from the previous review" for further detail.

B. Unresolved at end of current review period - Not applicable.

2.4 Recommendations to address current asset system deficiencies

A. Resolved during current review period

Not applicable - this review does not make any recommendations to address asset system deficiencies.

B. Unresolved at end of current review period

Not applicable - this review does not make any recommendations to address asset system deficiencies.

2.5 Scope and objectives

We have conducted a limited assurance engagement in order to express a conclusion whether, based on the procedures performed and the evidence obtained, anything has come to our attention that causes us to believe that Alinta Pinjarra's AMS for assets subject to the Licence, have not been established and maintained, in all material respects for the period 1 July 2017 to 30 June 2022.

Our engagement was conducted in accordance with Australian Standard on Assurance Engagements ASAE 3500 Performance Engagements, issued by the Australian Auditing and Assurance Standards Board and provides limited assurance as defined in ASAE 3500. The procedures we performed are described in more detail in section 2.6 below.

A limited assurance engagement in accordance with ASAE 3500, to report on the effectiveness of Alinta Pinjarra's AMS for assets subject to the Licence involves performing procedures to obtain evidence about processes and controls designed and implemented within Alinta Pinjarra's AMS for assets subject to the Licence. The procedures selected depend on our judgement, including the

identification and assessment of risks of Alinta Pinjarra's AMS for assets subject to a Licence being materially ineffective.

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

In accordance with the Review Guidelines, the review considered the effectiveness of Alinta Pinjarra's existing control procedures within the following 12 key processes in the asset management life cycle:

Key processes	Effectiveness criteria
1. Asset Planning	1.1 Asset management plan covers the processes in this table 1.2 Planning processes and objectives reflect the needs of all stakeholders and are integrated with business planning 1.3 Service levels are defined in the asset management plan 1.4 Non-asset operations (e.g. demand management) are considered 1.5 Lifecycle costs of owning and operating assets are assessed 1.6 Funding options are evaluated 1.7 Costs are justified and cost drivers identified 1.8 Likelihood and consequences of asset failure are predicted 1.9 Asset management plan is regularly reviewed and updated.
2. Asset creation and acquisition	2.1 Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options 2.2 Evaluations include all life-cycle costs 2.3 Projects reflect sound engineering and business decisions 2.4 Commissioning tests are documented and completed 2.5 Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood
3. Asset disposal	3.1 Under-utilised and under-performing assets are identified as part of a regular systematic review process 3.2 The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken 3.3 Disposal alternatives are evaluated 3.4 There is a replacement strategy for assets
4. Environmental analysis	4.1 Opportunities and threats in the asset management system environment are assessed 4.2 Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved 4.3 Compliance with statutory and regulatory requirements 4.4 Service standard (customer service levels etc) are measured and achieved.
5. Asset operations	5.1 Operational policies and procedures are documented and linked to service levels required 5.2 Risk management is applied to prioritise operations tasks 5.3 Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition 5.4 Accounting data is documented for assets [new criteria] 5.5 Operational costs are measured and monitored 5.6 Staff resources are adequate and staff receive training commensurate with their responsibilities

Key processes	Effectiveness criteria
6. Asset maintenance	6.1 Maintenance policies and procedures are documented and linked to service levels required 6.2 Regular inspections are undertaken of asset performance and condition 6.3 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule 6.4 Failures are analysed and operational/maintenance plans adjusted where necessary 6.5 Risk management is applied to prioritise maintenance tasks 6.6 Maintenance costs are measured and monitored
7. Asset management information systems	7.1 Adequate system documentation for users and IT operators 7.2 Input controls include suitable verification and validation of data entered into the system 7.3 Security access controls appear adequate, such as passwords 7.4 Physical security access controls appear adequate 7.5 Data backup procedures appear adequate and backups are tested 7.6 Computations for licensee performance reporting are accurate 7.7 Management reports appear adequate for the licensee to monitor licence obligations 7.8 Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation [new criteria]
8. Risk management	8.1 Risk management policies and procedures exist and are applied to minimise internal and external risks 8.2 Risks are documented in a risk register and treatment plans are implemented and monitored 8.3 Probability and consequences of asset failure are regularly assessed
9. Contingency planning	9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks
10. Financial planning	10.1 The financial plan states the financial objectives and identifies strategies and actions to achieve those 10.2 The financial plan identifies the source of funds for capital expenditure and recurrent costs 10.3 The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) 10.4 The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period 10.5 The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services 10.6 Large variances in actual/budget income and expenses are identified and corrective action taken where necessary

Key processes	Effectiveness criteria
11. Capital expenditure planning	11.1 There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates 11.2 The capital expenditure plan provides reasons for capital expenditure and timing of expenditure 11.3 The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan 11.4 There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented
12. Review of asset management system	12.1 A review process is in place to ensure the asset management plan and the asset management system described in it remain current 12.2 Independent reviews (e.g. internal audit) are performed of the asset management system

Each key process and effectiveness criterion is applicable to Alinta Pinjarra'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 July to September 2022:

- 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 Pinjarra staff to gain an understanding of process controls in place (see Appendix B for staff involved)
- Site visit to the Pinjarra power station facility with a focus on understanding the generation assets, their function, normal mode of operation, age and an assessment of the facilities against the AMS review criteria
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Alinta Pinjarra's AMS requirements and standards (see Appendix B for reference listing)
- Consideration of the resourcing applied to maintaining those controls and processes
- Reporting of findings to Alinta Pinjarra for review and response.

3. Summary of Ratings

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

Table 1: Process and policy rating scale

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

Table 2: Performance rating scale

Rating	Description	Criteria
1	Performing effectively	• The performance of the process meets or exceeds the required levels of performance • Process effectiveness is regularly assessed and corrective action taken where necessary
2	Improvement required	• The performance of the process requires some improvement to meet the required level • Process effectiveness reviews are not performed regularly enough • Recommended process improvements are not implemented
3	Corrective action required	• The performance of the process requires substantial improvement to meet the required level • Process effectiveness reviews are performed irregularly, or not at all • Recommended process improvements are not implemented
4	Serious action required	• Process is not performed, or the performance is so poor 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 rating
  - Asset management performance rating.
- Detailed findings, including relevant observations and recommendations (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

			Ratings	
Ref	Asset management process and effectiveness criteria	Review priority	Process and policy	Performance
1. Asset Planning			**A**	**1**
1.1	Asset management plan covers the processes in this table	Priority 4	A	1
1.2	Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning	Priority 4	A	1
1.3	Service levels are defined in the asset management plan	Priority 4	A	1
1.4	Non-asset operations (e.g. demand management) are considered	Priority 5	Not rated	Not rated
1.5	Lifecycle costs of owning and operating assets are assessed	Priority 5	A	1
1.6	Funding options are evaluated	Priority 5	A	1
1.7	Costs are justified and cost drivers identified	Priority 5	A	1
1.8	Likelihood and consequences of asset failure are predicted	Priority 2	A	1
1.9	Asset management plan is regularly reviewed and updated.	Priority 5	A	1
2. Asset creation and acquisition			**A**	**1**
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options	Priority 4	A	Not rated
2.2	Evaluations include all life-cycle costs	Priority 4	A	Not rated
2.3	Projects reflect sound engineering and business decisions	Priority 4	A	Not rated
2.4	Commissioning tests are documented and completed	Priority 4	A	1
2.5	Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood	Priority 2	A	1
3. Asset disposal			**A**	**1**
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process	Priority 4	A	1
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Priority 5	A	1
3.3	Disposal alternatives are evaluated	Priority 5	A	Not rated
3.4	There is a replacement strategy for assets	Priority 4	A	1

Ref	Asset management process and effectiveness criteria	Review priority	Ratings	
			Process and policy	Performance
4. Environmental analysis			**A**	**1**
4.1	Opportunities and threats in the asset management system environment are assessed	Priority 4	A	1
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	Priority 4	A	1
4.3	Compliance with statutory and regulatory requirements	Priority 4	A	1
4.4	Service standard (customer service levels etc) are measured and achieved.	Priority 4	A	1
5. Asset operations			**A**	**1**
5.1	Operational policies and procedures are documented and linked to service levels required	Priority 4	B	1
5.2	Risk management is applied to prioritise operations tasks	Priority 4	A	1
5.3	Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition	Priority 4	A	1
5.4	Accounting data is documented for assets [new criteria]	Priority 4	A	1
5.5	Operational costs are measured and monitored	Priority 4	A	1
5.6	Staff resources are adequate and staff receive training commensurate with their responsibilities	Priority 4	A	1
6. Asset maintenance			**A**	**1**
6.1	Maintenance policies and procedures are documented and linked to service levels required	Priority 4	A	1
6.2	Regular inspections are undertaken of asset performance and condition	Priority 2	A	1
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Priority 2	A	2
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary	Priority 2	B	2
6.5	Risk management is applied to prioritise maintenance tasks	Priority 4	A	1
6.6	Maintenance costs are measured and monitored	Priority 4	A	1
7. Asset management information systems			**A**	**1**
7.1	Adequate system documentation for users and IT operators	Priority 5	A	1
7.2	Input controls include suitable verification and validation of data entered into the system	Priority 4	A	1
7.3	Security access controls appear adequate, such as passwords	Priority 5	A	1
7.4	Physical security access controls appear adequate	Priority 5	A	1
7.5	Data backup procedures appear adequate and backups are tested	Priority 4	A	1
7.6	Computations for licensee performance reporting are accurate	Priority 5	Not rated	Not rated
7.7	Management reports appear adequate for the licensee to monitor licence obligations	Priority 5	A	1

Ref	Asset management process and effectiveness criteria	Review priority	Ratings	
			Process and policy	Performance
7.8	Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation	Priority 4	A	1
8. Risk management			**A**	**1**
8.1	Risk management policies and procedures exist and are applied to minimise internal and external risks	Priority 4	A	1
8.2	Risks are documented in a risk register and treatment plans are implemented and monitored	Priority 4	B	1
8.3	Probability and consequences of asset failure are regularly assessed	Priority 2	A	1
9. Contingency planning			**A**	**1**
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Priority 2	A	1
10. Financial planning			**A**	**1**
10.1	The financial plan states the financial objectives and identifies strategies and actions to achieve those	Priority 4	A	1
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Priority 5	A	1
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Priority 5	A	1
10.4	The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period	Priority 5	A	1
10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Priority 5	A	1
10.6	Large variances in actual/budget income and expenses are identified and corrective action taken where necessary	Priority 5	A	1
11. Capital expenditure planning			**A**	**1**
11.1	There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates	Priority 4	A	1
11.2	The capital expenditure plan provides reasons for capital expenditure and timing of expenditure	Priority 5	A	1
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Priority 5	A	1
11.4	There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented	Priority 5	A	1
12. Review of asset management system			**A**	**1**
12.1	A review process is in place to ensure the asset management plan and the asset management system described in it remain current	Priority 5	A	1
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system	Priority 4	A	1

4. Detailed findings and recommendations

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.

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 Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness criteria	Findings	
1.1 Asset management plan covers the processes in this table	Through discussion with the Alinta Energy Operations Manager, SWIS and Alinta Energy Head of Operations, consideration of Alinta Pinjarra's business planning processes, and examination of Alinta Energy's Asset Management Policy, Alinta Energy's Asset Management Framework and Alinta Pinjarra's Asset Management Plans (**AMP**), we determined that Alinta Pinjarra's business planning model accommodates its operation and maintenance of the Pinjarra power station site in accordance with its contractual arrangements and regulatory requirements. From a business planning perspective, we determined that Alinta Pinjarra has established asset management processes and mechanisms to assimilate the requirements of its various stakeholders. In particular, we observed that Alinta Pinjarra has: • Adopted an AMS, which aligns with ISO55000:2014, ISO 55001:2014, ISO 55002:2014 and the British Publicly Available Specification (PAS) Asset Management Standard PAS 55-1:2008 • Developed a supporting AMP for operating and maintaining the various components of the power station to achieve optimum performance over the entire life of power station assets. The AMP defines Alinta Pinjarra's broader and long term plans and is reviewed on an annual basis. The AMP sufficiently reflects each of the elements outlined in the rest of this Asset Planning process, including the elements highlighted in the 2017 AMS review (relating to contingency plans, key risks and legal and compliance requirements.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

1.2 Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning	Through discussion with the Alinta Energy Operations Manager, SWIS and Alinta Energy Head of Operations, and consideration of Alinta Pinjarra's business planning processes, we determined that:
	• Alinta Pinjarra's business planning model and planning documentation is developed in consultation with a range of business functions including:
	  ○ 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.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1.3 Service levels are defined in the asset management plan	Through discussion with the Alinta Energy Operations Manager, SWIS, and examination of Alinta Pinjarra's AMP and contractual documentation with Alcoa, we determined that the power station's required service levels have been: • Summarised in the AMP to facilitate the achievement of those service levels. The AMP references relevant operational information for each item of equipment and is updated on an annual basis • Defined in Alinta Pinjarra's maintenance standards, which are integrated into Alcoa's eAM maintenance management system • Programmed into Alcoa's eAM asset management work order system to track routine maintenance requirements across all asset components.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1.4 Non-asset operations (e.g. demand management) are considered	As the primary purpose of the Alinta Pinjarra Power Station is to supply electricity to the WEM, plus steam to Alcoa under commercial agreements, there is no requirement or opportunity for Alinta Pinjarra to consider non-asset options.	
	Process and Policy Rating: Not rated	**Performance Rating:** Not rated

Effectiveness criteria	Findings	
1.5 Lifecycle costs of owning and operating assets are assessed	Through consideration of Alinta Pinjarra'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: • 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.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1.6 Funding options are evaluated	Through consideration of Alinta Pinjarra's AMP and finance models, we determined that: • Day to day operating expenses are funded from operating cash flows • Funding options are considered and evaluated using the Alinta Energy 'Request for Commitment' process within the AMP Expenditure Project Delivery SharePoint Site • A Delegated Financial Authority matrix and automated workflow system within the Alinta Energy 'Request for Commitment' approval process helps ensure that fund requests above specified levels are required to be authorised by the appropriate level of management.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1.7 Costs are justified and cost drivers identified	Through consideration of Alinta Pinjarra's AMP and finance models, we determined that: • The AMP includes a detailed lifecycle plan that identifies and assesses all lifecycle costs and cost drivers associated with the power station • Alinta Energy's business case approval process and associated templates require the costs and cost drivers (in the form of a business case) to be identified.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

1.8 Likelihood and consequences of asset failure are predicted	Through examination of Alinta Pinjarra's AMP and relevant supporting documentation, we determined that:
	• 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
	• The O&M Agreement requires Alcoa to provide and operate an asset management system on Alinta Pinjarra's behalf. Alcoa has applied the following mechanisms for identifying consequence and likelihood of powerhouse asset failure:
	  ○ Asset integrity audits, which are completed on a five yearly basis. Audit findings are maintained in a database and tracked through to completion
	  ○ Other audits, which feed results into Alcoa's Business Improvement System. Similarly, audit findings are stored and tracked for completion
	  ○ Loss prevention inspections, as a major aspect of Alcoa's risk management activities directed at powerhouse operations
	  ○ Classified plant inspections, which are conducted as per statutory requirements
	• During scheduled outages (e.g. long term shutdowns), main components of the power station are inspected for defects by Alcoa site staff and external contractors.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1.9 Asset management plan is regularly reviewed and updated.	Through discussion with the Alinta Energy Operations Manager, SWIS and examination of Alinta Pinjarra's two most recent AMPs and relevant supporting asset planning documentation, we determined that the AMP has been reviewed and revised on an annual basis in accordance with Alinta Energy's Asset Management Policy and Framework.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.2 Asset creation and acquisition

Key process: Asset creation/acquisition is the provision or improvement of assets

Expected outcome: The asset acquisition framework is economic, efficient and cost-effective; it reduces demand for new assets, lowers service costs and improves service delivery

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">2.1 Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</td><td colspan="2">Through discussion with the Alinta Energy Operations Manager, SWIS and Alinta Energy Head of Operations, and consideration of relevant supporting documentation, we determined that Alinta Pinjarra has continued to maintain expenditure approval procedures that outline the requirement for project evaluations to be undertaken prior to seeking funds approval. As part of the project evaluation process, Alinta Pinjarra requires the following to be completed:
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 40 years of plant life
Consideration of non-asset options.
For the duration of the review period, Alinta Pinjarra had not created or acquired any relevant assets that required this process to be applied.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Not rated</td></tr>
</table>

Effectiveness criteria	Findings	

2.2 Evaluations include all life-cycle costs	Through discussion with the Alinta Energy Operations Manager, SWIS and Alinta Energy Head of Operations, and examination of the procedures for expenditure approval and associated forms and templates, we determined that Alinta Pinjarra has maintained the following process to assess lifecycle costs of owning and operating assets:
	• 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:
	  ○ 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 to be 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.
	For the duration of the review period, Alinta Pinjarra had not created or acquired any relevant assets that required this process to be applied.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Not rated
2.3 Projects reflect sound engineering and business decisions	Through discussion with the Alinta Energy Operations Manager, SWIS and Alinta Energy Head of Operations, and examination of Alinta Pinjarra's AMP, expenditure approval process and associated forms and templates, we determined that Alinta Pinjarra has maintained the following procedures to assess the commercial and technical competence of projects: • 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, considering relevant economic measures • Commercial sign-off is required, which incorporates the above considerations and addresses any potential contract risks when engaging external parties. For the duration of the review period, Alinta Pinjarra had not created or acquired any relevant assets that required this process to be applied.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Not rated

Effectiveness criteria	Findings	

2.4 Commissioning tests are documented and completed	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of relevant procedures, we observed that:
	• Alinta Pinjarra 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 Pinjarra engages external contractors to perform commissioning tests:
	  ○ Testing reports are prepared by the site engineering team and stored on SharePoint
	  ○ Service requirements are governed by contractual terms relating to any major service required.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2.5 Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.	Through discussion with the Alinta Energy Operations Manager, SWIS and examination of relevant supporting documentation, we determined that, for the purpose of its ongoing asset management obligations Alinta Pinjarra has: • Identified legal, environmental and safety obligations relating to its power station assets • Assigned responsibilities to staff on site and in the Perth office for managing Alinta Pinjarra's environmental and safety obligations in accordance with OHS and Environmental management plans • Implemented an organised document management system within SharePoint for housing regulatory obligations such as licences, related management plans and monitoring/compliance reports • Assigned responsibilities to its national legal team for monitoring any updates or changes to regulatory obligations and reporting requirements. We sighted evidence of Alinta Pinjarra's Compliance Manual, which demonstrates identification, assessment and treatment of risks relating to its legal, environmental and safety obligations within the Pinjarra site.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.3 Asset disposal

Key process: Asset disposal is the consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets

Expected outcome: The asset management framework minimises holdings of surplus and underperforming assets and lowers service costs. The cost-benefits of disposal options are evaluated

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">3.1 Under-utilised and under-performing assets are identified as part of a regular systematic review process</td><td colspan="2">Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's Incident Management System, we determined that Alinta Pinjarra has applied the following mechanisms for identifying under-utilised and under-performing assets:
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 is maintained by Alcoa in accordance with manufacturer's guidelines and expert experience for the plant
The operational performance of the Pinjarra 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 Alinta Pinjarra's Incident Management System.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td rowspan="2">3.2 The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken</td><td colspan="2">Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's asset condition monitoring and reporting arrangements, we determined that Alinta Pinjarra processes for examining under-utilised and under-performing assets include:
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.
For the duration of the review period, Alinta Pinjarra had not disposed of any relevant assets.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

Effectiveness criteria	Findings	
3.3 Disposal alternatives are evaluated	Through discussion with the Alinta Energy Operations Manager, SWIS and examination of supporting documentation, we determined that Alinta Pinjarra's processes require: • Consideration of alternatives for decommissioning, removal or storage of key plant • The rolling five year plans to provide details of the major projects planned for each asset in the coming financial year, including any equipment replacement requirements • Asset disposals to be performed in accordance with Project Management processes (including the Management of Change system process) and the AMP. As Alinta Pinjarra had not disposed of any relevant assets in the review period, this process was not required to be applied.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Not rated
3.4 There is a replacement strategy for assets.	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's AMP and decommissioning documentation we observed that: • The AMP considers each major item of equipment and provides specific details of the power station's operations and maintenance strategy, key lifecycle issues and remedial plans • Alinta Energy has maintained a stable, organisation-wide Decommissioning Policy • Rolling five year plans provide details of the major projects planned for each asset in the coming financial year, including any equipment replacement requirements.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.4 Environmental analysis

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

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

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">4.1 Opportunities and threats in the asset management system environment are assessed</td><td colspan="2">Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and examination of supporting documentation, we determined that:
Alinta Pinjarra maintains a site-based Compliance Manual, which outlines:
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)
Under the O&M Agreement, Alcoa is obligated to maintain compliance with the site’s environmental performance standards, as reported in Environmental Ministerial Performance and Compliance Reports (we sighted the 2020 Compliance Report (Ministerial Statement 622) report as an example)
Risks and incidents can be logged by any employee/contractor onto the Environmental, Health and Safety Incident Management System (EHSIMS), which are then assessed by the Environmental Team
Incidents logged via the EHSIMS are reviewed at daily Powerhouse and refinery meetings
Alinta Pinjarra has implemented an Environmental Aspects and Impacts procedure, which enables Alinta Pinjarra to:
Ensure the systematic review of environmental aspects and impacts
Facilitate the identification and assessment of opportunities and threats to the Pinjarra operations system environment
Comply with ISO 14001, Dangerous Goods regulations and health and safety requirements.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

Effectiveness criteria	Findings	

4.2 Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's performance monitoring practices, we determined that:
	• The O&M Agreement requires Alcoa to report on key environmental aspects on a monthly basis, which are incorporated into Alinta Pinjarra's management reports. Environmental matters relevant to Alinta Pinjarra's generation operations are accommodated through established Alcoa WA Operations environmental management mechanisms, through which performance standards specific to Alinta Pinjarra's cogeneration facilities are identified and managed
	• Alinta Pinjarra is required to report any breaches of emission limits (e.g. for SO2 and NOx) to the Department of Water and Environmental Regulation. Alinta Pinjarra monitors its emissions in sufficient detail to flag any instance where its emission limits are breached
	• Performance of the plant is also measured by means of maintenance metrics, such as:
	  ○ Planned work ratio, which measures how much of the total week is spent on planned work
	  ○ Planned work complete, which measures how much of the work that was planned for the week actually was completed.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

4.3 Compliance with statutory and regulatory requirements	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of relevant supporting documentation and sample Ministerial compliance reports, we determined that:
	• Alinta Pinjarra operates and monitors its operations in accordance with the following statutory and regulatory requirements:
	  ○ 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. Alcoa has maintained the ISO-14001 standard and as such is required to maintain an effective Environmental Management System (EMS) that monitors all obligations that have an environmental focus
	  ○ Environmental Noise Regulations licence, which specifies the maximum night and day noise levels as measured at the boundary. Alinta Pinjarra monitors noise levels (e.g. during start up when steam venting is undertaken) to enable it to manage and report on its compliance obligations
	  ○ Occupational Health and Safety Regulations. Alinta's Energy Occupational Health and Safety Management Framework accommodates Alinta Pinjarra's core focus on safety
	• Alinta Pinjarra's Compliance Manual reflects the current legal, safety and environmental obligations relating to Alinta Pinjarra's operations.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
4.4 Service standard (customer service levels etc) are measured and achieved	Through discussion with the Alcoa WA Operations Cogen Supervisor and Alinta Energy Operations Manager, SWIS, and consideration of supporting procedures and reporting documentation, we determined that: • Other than in the supply of electricity to the WEM and steam to Alcoa as part of its commercial obligations, Alinta Pinjarra does not have specific customer service levels to attain in relation to its power operations • Alinta Pinjarra's and Alcoa's processes provide for continuous monitoring of performance standards through weekly reporting mechanisms and live reporting data • The above personnel (and examination of reporting data) did not raise any issues with failing to meet customer service levels.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.5 Asset operations

Key process: Asset operations is the day-to-day running of assets (where the asset is used for its intended purpose)

Expected outcome: The asset operation plans adequately document the processes and knowledge of staff in the operation of assets so service levels can be consistently achieved

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1))

Effectiveness criteria	Findings

5.1 Operational policies and procedures are documented and linked to service levels required	As outlined in the AMP, the operating strategy for Alinta Pinjarra's Cogen units has changed to accommodate a substantial change in dynamics observed in the WEM and to prepare for the WEM reform scheduled for 2023. Control system modifications were undertaken during the review period to allow Alinta Pinjarra's Cogen units to participate in the Load Following Ancillary Services market, which has occurred regularly since early 2019. In addition, further control system modifications were undertaken during the review period to allow Alinta Pinjarra's Cogen units to operate in a motoring mode. These changes allow negative load operation of the units through normal Automatic Generation Control operation, whilst maintaining steam supply to Alcoa by duct burning in the heat recovery steam generators (HRSG), which are required to be maintained in accordance with the Steam Supply Agreement with Alcoa. Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and consideration of supporting documentation:
	• We determined that:
	  ○ Reporting dashboards are used to provide a weekly summary of the power station's performance
	  ○ The O&M Agreement requires Alcoa to operate a functioning asset management system. Alcoa has:
	  ▪ Documented its powerhouse related policies, procedures and protocols with the Alcoa WA Operations Performance Support System
	  ▪ Maintained procedures, which specifically refer to required service levels (where appropriate) for the operation of the specific item of equipment, or specific electrical or mechanical procedures
	  ▪ Maintained control plans for major items of plant
	  ▪ Fully integrated drawings of the modified HRSG units within the O&M system.
	• We observed the following minor improvement opportunities:
	  ○ The O&M Strategy document AUACDS-2061-2348 is out-of-date as it does not reflect changes to the operating philosophy for the Cogen units, nor does it reflect the planned inspection regime after 2017
	  ○ O&M Procedures can be reviewed and updated to reflect changes to the power station's operating strategy which provide for units to be operated in generator motoring modes
	  ○ Operating budgets for electricity production and gas usage can be reviewed and updated to reflect changes to the operating philosophy for the Cogen units. This change will enable Alinta Pinjarra to more accurately monitor power station performance.
	We discussed these improvement opportunities with Alinta Pinjarra staff.

	Process and Policy Rating: Requires some improvement (B) / **Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	
5.2 Risk management is applied to prioritise operations tasks	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, examination of Alinta Pinjarra's site risk register and consideration of Alinta's and Alcoa's application of their respective risk management and reporting frameworks, we determined that • Alinta Energy's Enterprise Risk Management Framework has been applied to Alinta Pinjarra's operations to enable Alinta Pinjarra to make risk based decisions in relation to operational matters • Alcoa also applies a structured, risk based approach to its O&M activities, performed in accordance with the O&M Agreement. In particular, operational tasks focus on people and safety risks first, followed by environmental risks, then customer related risks.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

5.3 Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and examination of Alinta Pinjarra's AMP, supporting documents and information systems, we determined that:
	• Alcoa, on Alinta Pinjarra's behalf, manages power station equipment through its electronic asset maintenance system, eAM. eAM contains the following information for major equipment:
	  ○ Unique asset identification (asset ID)
	  ○ Equipment details, including type, location, components, operational capacity, age, expected life
	  ○ Equipment history, including condition
	  ○ Maintenance procedures
	  ○ Maintenance intervals
	  ○ Purchase cost, depreciation rates and net book value
	• Alinta Pinjarra monitors the value of assets (including depreciation) through its Financial Assets Register.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
5.4 Accounting data is documented for assets	Through discussion with Alinta Energy Operations Manager, SWIS, and consideration of Alinta Pinjarra's asset register, we observed that the asset register and corporate records capture relevant information for accounting purposes, including: • Purchase date • Acquisition cost • Depreciation rates and costs • Written down values.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

5.5 Operational costs are measured and monitored	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's monthly reporting arrangements, we determined that:
	• The O&M Agreement requires Alcoa to provide Alinta Pinjarra with a monthly report detailing:
	  ○ Operational costs incurred
	  ○ Capital expenditure
	  ○ Analysis of actual expenditure against budgeted expenditure
	• Alcoa's reports are incorporated into Alinta Pinjarra's monthly management reports
	• Significant variances between actual and budgeted expenditure are scrutinised by Alinta Finance staff, with the assistance of Alcoa personnel
	• 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.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
5.6 Staff resources are adequate and staff receive training commensurate with their responsibilities	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and consideration of Alinta Pinjarra's staff resourcing and training arrangements, we determined that: • Although there has been a change in Alcoa's O&M leadership team at Pinjarra with the retirement of a long term employee and Cogen Superintendent, Alcoa applied effective succession planning to effectively manage the impact on O&M activities • Details of staff training requirements (including qualifications and competence) and training undertaken is maintained through Alcoa's central LMS Training Package • Alcoa's Powerhouse Training Report provides up-to-date statistics on staff training performed and compliance levels achieved • Alcoa utilises its WA Operations Operator Traineeship Program to enable its powerhouse operators to be fully trained in all key aspects of powerhouse operations, relevant to each individual's position • Staff are adequately qualified for their respective roles and their required licences are current.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.6 Asset maintenance

Key process: Asset maintenance is the upkeep of assets

Expected outcome: The asset maintenance plans cover the scheduling and resourcing of the maintenance tasks so work can be done on time and on cost

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">6.1 Maintenance policies and procedures are documented and linked to service levels required</td><td colspan="2">Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and consideration of Alinta Pinjarra's AMPs, Alinta Pinjarra's Long Term Service Agreement (LTSA) with the turbine manufacturer Mitsubishi Heavy Industries (MHI) and Combustion Inspection Scope of Works, we determined that:
Alcoa utilises the Oracle eAM computerised maintenance management system. Alcoa's eAM system references major equipment maintenance procedures, equipment details, maintenance intervals, costs and equipment history and is linked to service levels required
Alcoa has developed maintenance policies, procedures and protocols, which specifically refer to required service levels (where appropriate) for the operation of the specific item of equipment, or specific electrical or mechanical procedures. Those procedures are documented within the Alcoa WA Operations Performance Support System
Performance reporting of the Pinjarra site is reviewed on a weekly basis by the Alinta Management team
All Major Inspections and Outage Works during the review period have been undertaken by MHI (as services under the LTSA), and a craft labour provider, such as Turbine Services Australia (TSA), UGL and/or Power Turbine Services (PTS). Those inspections and outage works are well scoped and documented
Two recent changes to Alinta Pinjarra's maintenance arrangements are:
Condition monitoring processes have moved from routine combustion inspections to Boroscope inspections
Maintenance periods have changed from standard 18-months period to three yearly. This change increases the risk profile for forced and unplanned outage events and requires performance to be closely monitored.
Planned Outages are scheduled over a 6 year period, with defined outage intervals for Borescope Inspections, Turbine Inspections, Generator Inspections and Major Inspections.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

Effectiveness criteria	Findings	
6.2 Regular inspections are undertaken of asset performance and condition	Schedule 1, Part 3, Section 7 of the O&M Agreement outlines Alcoa's responsibility for all routine, maintenance and repair service in relation to the cogeneration facilities and for that maintenance to be carried out at scheduled times. The required tasks include: • Routine and periodic visual inspection of the facilities • Routine and periodic testing of the facilities • Routine, scheduled, non-scheduled and emergency maintenance and repair • Periodic maintenance, shut down and inspection. Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and examination of sample inspection reports, outage reports and facility performance reports, we observed that: • In accordance with its "AUACDS-2061-2348 Cogeneration Operating and Maintenance Strategy" and "AUACDS-2061-3055 Pinjarra Powerhouse Asset Strategy" documents, Alcoa applies a structured program for key mechanical and electrical assets (such as turbines, feedwater pumps, transformers, generators, switchgear) to be condition monitored using online vibration monitoring devices and for earthing systems and protection relays to be regularly tested (including partial discharge) to avoid unplanned outages or failures • Alinta Pinjarra has entered into a LTSA with the turbine manufacturer MHI for condition monitoring and maintenance of Pinjarra units • Equipment assessment and inspection reports are generated and made available to staff and management, providing information on equipment condition and performance.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	
6.3 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and consideration of Alcoa's eAM system, Alinta Pinjarra's AMPs, Powerhouse Meeting Minutes and Oracle Work Order Tracking, we observed that: • For each cogeneration facility major equipment, the eAM system contains plans for scheduled maintenance as well as required emergency and corrective works • All maintenance work undertaken is recorded in the eAM system • Alcoa's operational requirements lead to emergency and corrective works having the highest priority due to the impact on refinery production • Maintenance schedules are monitored • Alinta's maintenance philosophy for the cogeneration facilities is to systematically analyse production assets to ensure they are achieving business objectives • Maintenance strategies are reviewed on a yearly basis or when there are significant events that affect the assets • Section 4 of the AMP details the inspection history and key results of the Pinjarra cogeneration units. We observed evidence of maintenance plans being effectively executed through examination of a sample of: • Gas turbine inspection work summaries • Shutdown events • Inspection reports • Detailed work plans • Maintenance work order activity reports • Asset Maintenance Metrics provided by Alcoa to Alinta on a weekly basis, which outlines the week summary, bi-weekly summary and year-to-date summary list of overdue preventative maintenance tasks, overdue critical maintenance tasks, unplanned works and planned works completed. We observed the following improvement opportunity: • Asset Maintenance Metrics show that a critical maintenance task requiring statutory internal inspection of CO_2 gas bottles had remained outstanding since December 2021 and is now rescheduled to December 2022. Several other preventative maintenance tasks have been rescheduled for November 2022, which results in predicted overdue periods of between 1 and 3.5 years. There is some potential for Alinta Pinjarra to reconsider its work order prioritisation approach, including recognising lowest priority tasks. *We discussed this improvement opportunity with Alinta Pinjarra staff.*	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (2)

Effectiveness criteria	Findings	
6.4 Failures are analysed and operational/maintenance plans adjusted where necessary	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and examination of a Torque Converter Bearing Failure Report, we determined that: • Failures are analysed and operational/maintenance plans are adjusted to reduce the likelihood of the failure to be repeated • Emergency and corrective actions are taken followed by a root cause analysis of the failure event such as a trip or fail-to-start • Where the failure required adjustments to the maintenance procedure, the adjustment is formally effected. We observed the following improvement opportunity: • Our review of the "2021 Cogen MWs, Availability and Trip RCAs" spreadsheet shows multiple unit trips and loss of generation associated with Flame scanner lenses being dirty and also through low IP drum levels due to a faulty control valve. This result is indicative of slow execution of the actions identified through root cause analysis leading to multiple unit trips. Prioritising works to prevent repetitive occurrence of these trips for the same reason can further improve plant availability and reliability factors. *We discussed this improvement opportunity with Alinta Pinjarra staff.*	
	Process and Policy Rating: Requires some improvement (B)	**Performance Rating:** Improvement required (2)

6.5 Risk management is applied to prioritise maintenance tasks	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, examination of Alinta Pinjarra's AMPs and Risk Register, and consideration of Alinta Pinjarra's risk management and reporting framework, we determined that:
	• 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:
	  ○ Daily work plans
	  ○ Plans for upcoming work
	  ○ Outage plans for major scheduled outages.
	• Alinta Pinjarra's understanding of risks and treatment options relevant to its operations and maintenance activities is reflected in its risk register and its reporting of issues, assessments and decisions that require prioritisation and action.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

6.6 Maintenance costs are measured and monitored	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's monthly reporting arrangements, we determined that:
	• The O&M Agreement requires Alcoa to provide Alinta Pinjarra with a monthly report detailing:
	  ○ Operational and maintenance costs incurred
	  ○ Analysis of actual expenditure against budgeted expenditure
	• Alcoa's reports are incorporated into Alinta Pinjarra's monthly management reports
	• Significant variances between actual and budgeted expenditure are scrutinised by Alinta Finance staff, with the assistance of Alcoa personnel
	• 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.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.7 Asset management information systems

Key process: An asset management information system is a combination of processes, data and software supporting the asset management functions

Expected outcome: The asset management information system provides authorised, complete and accurate information for the day-to-day 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 Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">7.1 Adequate system documentation for users and IT operators</td><td colspan="2">Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we observed that:
Alcoa utilises the Oracle eAM computerised maintenance management system
Technical documentation for Alcoa’s Oracle eAM application is managed and maintained through Alcoa’s Oracle support arrangement with its Global Support Centre
Documents are stored in the Alcoa Performance Support System to provide document version control
User guides are kept up to date by the Alcoa Functional Support Representative and key users
Alinta Pinjarra monitors live plant performance through Alinta Energy’s Honeywell Experion software
Alinta Pinjarra is also supported by Alinta Energy’s Group IT policies and procedures, which are stored on Alinta’s SharePoint site and are readily accessible for all users.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td rowspan="2">7.2 Input controls include suitable verification and validation of data entered into the system</td><td colspan="2">Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we observed that the following data verification and validation controls and techniques are applied to Alinta Pinjarra’s core systems:
Input controls are managed through input validation checks in the Oracle eAM system and through additional manual processes
Data reconciliations are used to verify and validate data uploaded into the eAM and Honeywell systems.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

Effectiveness criteria	Findings	

7.3 Security access controls appear adequate, such as passwords	Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we confirmed that:
	• In relation to Alcoa's Oracle software, to which eAM belongs:
	  ○ Alcoa's Security Access Policy (Australia) is based on Alcoa's global security standards as outlined in its Security Access Account Management Standard
	  ○ Alcoa's logical security access is managed through Alcoa's Access Request Facility systems, where all users are assigned a unique user account and password
	  ○ Alcoa's account password requirements are aligned with accepted information security access protocols
	  ○ Passwords for the Oracle environment are synchronised to Alcoa's Windows environment
	• In relation to Alinta Energy's Honeywell Experion software:
	  ○ 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
	  ○ 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 Honeywell Experion system. Those requirements are aligned with accepted information security access protocols.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

7.4 Physical security access controls appear adequate	Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we observed that Alinta Pinjarra has established and maintained appropriate processes and procedures relating to the access of facilities and the physical protection of information assets and systems.
	Specifically in the context of access to computer server rooms and other control systems on site, we observed that:
	• Access to the site operations building, main control room and key plant control facilities is restricted by security fencing and swipe card entry to the premises
	• General safety precautions are maintained to contain fire and other damaging events in computer rooms on site
	• Alcoa has established appropriate physical security access controls over its data centre, including:
	  ○ Use of access cards to restrict physical access to the data centre. Access cards are managed by Building Management
	  ○ Regular review of access rights.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

7.5 Data backup procedures appear adequate and backups are tested	Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we observed that procedures for managing data backup and data restoration include:
	• In relation to Alcoa's Oracle software, to which eAM belongs, Alcoa maintains accepted industry practice for:
	  ○ Scheduling and executing daily backups of production data
	  ○ Secure management of backup data and restoration of data
	  ○ Testing of data recovery and restoration procedures
	• In relation to its Honeywell Experion software, Alinta Energy maintains accepted industry practice for:
	  ○ Scheduling and executing backups of production data in accordance with defined schedules and media rotation rules
	  ○ Secure management of backup data and restoration of data, including oversight from assigned IT Operations personnel
	  ○ Testing of data recovery and restoration procedures.	

	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7.6 Computations for licensee performance reporting are accurate	Alinta Pinjarra's asset management information systems do not directly provide data used in any computation related to Alinta Pinjarra's performance reporting.	
	Process and Policy Rating: Not rated	**Performance Rating:** Not rated
7.7 Management reports appear adequate for the licensee to monitor licence obligations	Through discussions with Alinta Pinjarra staff and consideration of relevant supporting documentation and management reporting procedures, we determined that: • The eAM and Honeywell Experion systems are capable of generating a substantial variety of reports, including for plant operations, routine and first line intervention maintenance and generation activity • Management reports relating to the operation and performance of the power station are produced on a scheduled basis and can also be produced on request.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7.8 Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation	Through discussions with Alinta Pinjarra and Alcoa staff and consideration of relevant Alinta and Alcoa IT system documentation, we observed that Alinta Pinjarra has established and maintained appropriate processes and procedures relating to the protection of information assets and systems, including: • Comprehensive user access controls, including user permissions and remote access • Contemporary cyber security processes and procedures.	
	Process and Policy 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: The risk management framework effectively manages the risk that the licensee does not maintain effective service standards

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">8.1 Risk management policies and procedures exist and are applied to minimise internal and external risks</td><td colspan="2">Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and consideration of Alinta Pinjarra's risk management and reporting framework, we determined that:
Alinta Energy's Enterprise Risk Management Framework applies throughout Alinta Energy's business structure, including Alinta Pinjarra's operations
Alcoa also applies a structured, risk based approach to its O&M activities, performed in accordance with the O&M Agreement. In particular, all maintenance activities are based on Alcoa's risk management approach, whereby the maintenance tasks addressing higher risk issues are performed first in order, followed by lower priority tasks. We sighted several examples of risk based practices being applied to Alcoa's (on behalf of Alinta Pinjarra) monitoring of asset operations, asset condition and incidents. Alinta Pinjarra maintains appropriate records of those activities
Alinta Pinjarra's AMP includes several references to risk assessment and management activities, including material risks, risk mitigation options, and links to risk reduction recommendations.
Based on our examination of the risk management processes in place, we determined that Alinta Pinjarra uses a well-established and consistent system for identifying and managing risks, including formal supporting procedural documentation.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

Effectiveness criteria	Findings	

8.2 Risks are documented in a risk register and treatment plans are implemented and monitored	Through discussion with the Alinta Energy Operations Manager, SWIS, consideration of Alinta Pinjarra's risk management and reporting framework and examination of Alinta Pinjarra's risk records, we determined that:
	• Alinta Pinjarra uses several references and applications to capture its material and operational risks, including:
	  ○ The AMP, which includes several references to risk assessment and management activities, including material risks and risk mitigation options and plans
	  ○ EHS risk register (maintained by Alcoa), which captures site environmental and safety risks, including risk treatment plans
	  ○ Alinta Energy's Power Generation Fleet reports material Asset Fleet risks on a quarterly basis, including Alinta Pinjarra's material risks, mitigations and actions
	  ○ A Plant Condition SharePoint tool, which rates plant condition risks and summarises treatment action and/or requirements.
	• Although Alinta Pinjarra has applied a consistent approach and timeframe for preparing and reviewing risk treatment plans and reports, it has not maintained a single, clear reference to the complete suite of risk records and registers that make up Alinta Pinjarra's risk profile. Accordingly, it can be a challenging task to form a complete view of the power station's risk profile at any one point in time
	• Alinta Pinjarra is currently included in a workstream of a project currently being undertaken by Alinta Energy to expand the use of its InControl platform (which is currently used to record hazards, incidents and operational events) as a single risk register for each site. This enhancement should facilitate that more complete view of the power station's risk profile at any one point in time. *No further recommendation is made by this review in relation to this matter*.	

	Process and Policy Rating: Requires some improvement (B)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	

8.3 Probability and consequences of asset failure are regularly assessed	Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, examination of Alinta Pinjarra's AMP and consideration of Alinta Pinjarra's asset planning and risk management practices, we determined that Alinta Pinjarra has applied the following mechanisms for identifying and assessing the consequence and likelihood of power station asset failure:
	• 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 Alcoa site staff and external contractors
	• Classified plant inspections are conducted in accordance with the statutory requirements imposed upon the plant
	• Condition monitoring techniques are employed on a frequent basis to identify defects, including:
	  ○ Oil analysis
	  ○ Vibration analysis
	  ○ Radiography and thermography to identify any surface or internal defects
	• The management and maintenance of the plant assets is reviewed on a day-to-day basis at an operational level and on at least an annual basis
	• 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 by Alinta Pinjarra and by Alcoa to the required asset management processes appear to be appropriate for enabling the regular assessment of the probability and consequences of asset failure.	

	Process and Policy 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 major disruptions to service standards

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks</td><td colspan="2">Alinta Pinjarra's O&M agreement with Alcoa includes provision for outages and emergencies, stating that Alcoa will take such action as may be reasonable and necessary to prevent, avoid or mitigate injury, damage or loss. As part of Alcoa's overall business continuity management framework, Alcoa has developed a series of system recovery plans, including black/brown start procedures for each powerhouse, in the event of a major failure of site assets or systems.
Through discussion with the Alcoa WA Operations Cogen Superintendent and Alinta Energy Operations Manager, SWIS, and examination of relevant supporting documentation, we observed that:
• Alcoa's process provides for all relevant staff to be assessed for competency in performing brown and black start procedures on a six monthly basis. We sighted formal records of such competency assessments, which are captured in Alcoa's LMS training register
• Alcoa's powerhouse workforce is specifically resourced and trained to respond to powerhouse equipment losses, to minimise the interruption to operations
• Alcoa maintains Emergency Response plans and procedures, broadly for its whole of site-operations and more specifically for Pinjarra powerhouse operations. Key references and activities maintained throughout the review period include:
○ Evacuate Powerhouse (Pinjarra) procedure – last reviewed and updated in 2020
○ Weekly testing of alarms
○ Employee evacuation training
○ Emergency response to gas pipeline leak/rupture procedure.
In response to recommendation 5/2017 of the 2017 review, Alinta Pinjarra reconsidered its approach to capturing its contingency plans for each key risk, concluding that the AMP, Alcoa's comprehensive system recovery plans and existing records of risk mitigations effectively capture relevant contingency plans. We are satisfied that Alinta Pinjarra's current approach and records sufficiently document action required to deal with the unexpected failure of an asset and to minimise any major disruptions to service standards.</td></tr>
<tr><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

4.10 Financial planning

Key process: Financial brings together the financial elements of the service delivery to ensure its financial viability over the long term

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

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness criteria	Findings	
10.1 The financial plan states the financial objectives and identifies strategies and actions to achieve those	Through discussion with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's financial planning mechanisms, we observed that: • Alinta Pinjarra's financial plan takes the form of an annual operational budget, prepared on a rolling five year basis to reflect its financial objectives and strategies that are driven by its contractual agreements for generation and supply of electricity and steam • The financial plan outlines the financial elements of the power station's operations to reflect its financial viability over the long term.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10.2 The financial plan identifies the source of funds for capital expenditure and recurrent costs	Through consideration of Alinta Pinjarra's financial planning mechanisms, we determined that: • The Alinta Pinjarra annual budget is aligned with Alinta Pinjarra's overall business plans • Operational cash flows are retained for budgeted maintenance and capital expenditure, based on retained funds or by submission through the Alinta Energy corporate structure for non-budgeted expenditure.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10.3 The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Through consideration of Alinta Pinjarra's financial planning mechanisms, we determined that: • Alinta Pinjarra's financial plan constitutes a summary of budgeted income and expenditure from the supply of electricity and steam 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.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	
10.4 The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period	Through consideration of Alinta Pinjarra's financial planning mechanisms, we determined that Alinta Pinjarra's financial plan: • Is prepared on an annual basis and updated for the projections of income and expenses based on five year outage and maintenance schedules • Includes a summary of planned capital expenditure projects for the next five years with a brief description of the intended purpose of the project • Forms part of Alinta Energy's budgeting and forecasting processes, which assess costs associated with overall fleet asset life.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10.5 The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Through consideration of Alinta Pinjarra's annual financial plans, we observed that those plans: • Provide a sufficient level of detail relating to forecast operational, maintenance and administrative costs. 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.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10.6 Large variances in actual/budget income and expenses are identified and corrective action taken where necessary	Through consideration of Alinta Pinjarra's financial planning and monitoring mechanisms, we observed that actual versus budgeted expenditure is monitored on a monthly basis, with variances identified and investigated where required to determine whether corrective action is required.	
	Process and Policy 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 for these works 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: The capital expenditure plan provides reliable forward estimates of capital expenditure and asset disposal income. Reasons for the decisions and for the evaluation of alternatives and options are documented

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness criteria	Findings	
11.1 There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates	Through discussions with the Alinta Energy Operations Manager, SWIS and consideration of Alinta Pinjarra's capital planning procedures, we determined that: • A capital expenditure plan is included in the annual financial plan • Capital expenditure planning is undertaken along with financial planning on a rolling five year basis • The plan provides information on the amount, purpose and description of budgeted capital expenditure • The plan also provides information on project responsibilities and the estimated dates of funds release.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11.2 The capital expenditure plan provides reasons for capital expenditure and timing of expenditure	Through consideration of Alinta Pinjarra's capital planning procedures, we determined that Alinta Pinjarra's capital expenditure plan specifies the reasons for the capital expenditure and the financial year in which the capital expenditure amount is planned.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11.3 The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Through consideration of Alinta Pinjarra's capital planning procedures, we determined that: • Alinta Pinjarra'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 and maintenance philosophy • The capital expenditure plan concurs with the assessed lifecycle costs of the power station's assets.	
	Process and Policy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness criteria	Findings	
11.4 There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented	Through consideration of Alinta Pinjarra's capital planning procedures, we determined that: • The capital expenditure budget is tracked on a monthly basis and any variances analysed to determine impact on the scheduled maintenance and outage plans • On completion, capital projects are assessed against the approved criteria to determine whether project objectives were met • The annual financial and capital expenditure planning process takes account of all asset risks, assigned treatments and requirements.	
	Process and Policy 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: The asset management system is regularly reviewed and updated

Overall Process and Policy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness criteria</th><th colspan="2">Findings</th></tr>
<tr><td>12.1 A review process is in place to ensure the asset management plan and the asset management system described in it remain current</td><td colspan="2" rowspan="2">Through consideration of Alinta Energy’s Asset Management Policy and Framework and supporting AMS documentation, we observed that:
The Alinta Pinjarra AMP, which is the main reference to the AMS, has been reviewed and updated on an annual basis. With the support of designated engineering staff, the Alinta Energy Asset Engineer has the primary responsibility for that annual review, with the Alinta Energy Operations Manager, SWIS responsible for reviewing and the Alinta Energy Head of Optimisation 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. Provision is made for independent audits and reviews to be conducted either internally or through third parties
An independent review of Alinta Energy’s asset management systems conducted by Wave International in 2018 assessed the alignment of Alinta Energy’s asset management framework to its asset management policy, plus Alinta Energy’s compliance with that asset management framework. Recommendations made by that review have since been implemented and are incorporated into Alinta Pinjarra’s asset management systems.</td></tr>
<tr><td>12.2 Independent reviews (e.g. internal audit) are performed of the asset management system</td></tr>
<tr><td></td><td>Process and Policy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

5. Status of recommendations addressing asset system deficiencies from the previous review

Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned	Date resolved	**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
A. Resolved during current review period[1]				
1/2017	**B2** ***Asset planning:*** *1.1 Asset management plan covers key requirements.* Although the Alinta Energy Pinjarra Cogeneration Plant – Asset Management Plan FY2018 - FY2022 (AMP) generally reflects Alinta Pinjarra's expectations and requirements for managing its generation assets, the AMP can be further improved as it does not clearly address the following elements expected by Alinta Energy's Asset Management Framework: • Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks • A brief description of any known and significant risks relating to assets • Consideration and documentation of legal and compliance requirements.	**Action Plan** Alinta Pinjarra will update its AMP to explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. **Responsible Person:** Head of Asset Management **Target Date:** August 2018	July 2018	No

[1] Recommendation 2/2017 had been actioned and closed-out prior to the issue of the final 2017 review report.

Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned	Date resolved	**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
3/2017	**A2** ***Asset Operations**: 5.1 Operational policies and procedures are documented and linked to service levels required* ***Asset Maintenance**: 6.1 Maintenance policies and procedures are documented and linked to service levels required* In 2014, NEM Energy [heat recovery steam generator (HRSG) manufacturer] was commissioned by Alinta Pinjarra to design and implement major modifications to the Plant's cogeneration units to improve steam production capacity at low GT Loads. The updated drawings relating to those modifications are not yet fully integrated into the O&M system managed by Alcoa on Alinta Pinjarra's behalf.	**Action Plan** Alinta Pinjarra will work with Alcoa to ensure updated drawings of the modified HRSG units are fully integrated within the O&M system. **Responsible Person**: Head of Asset Management and Alcoa WA Operations CoGen Supervisor **Target Date**: June 2018	December 2018	No
4/2017	**B2** ***Asset Maintenance:** 6.5 Risk management is applied to prioritise maintenance tasks* ***Risk management:** 8.1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system* Alinta Pinjarra applies the Alinta Energy group-wide risk management framework across its asset management activities. Alcoa also applies a structured, risk based approach to its O&M activities, performed in accordance with the O&M Agreement. However, Alinta Pinjarra has not yet captured clear evidence of some of those risk management activities to	**Action Plan** Alinta Pinjarra will: (a) 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 (b) Further develop its site Risk Register to include all risk elements relevant to management of the power station assets, including the contingency planning process and insurer risk reduction recommendations.	March 2018	No

Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned	Date resolved	**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
	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. For example, in relation to Alinta Pinjarra's decision to extend the Unit 1 critical rotor inspection to be delayed until the 3rd major inspection in 2023, the impact of that decision (e.g. on other maintenance activity and cost forecasts) had not been reflected in Alinta Pinjarra's records of the risks associated with the Unit 1 gas turbine rotor prior to and subsequent to the decision • The Pinjarra site risk register does not capture all risk elements identified through the contingency planning process (refer to Issue 5/2017) or the insurer risk reduction recommendations. In relation to 6(e) Risk management is applied to prioritise maintenance tasks: • In relation to the major inspection of a "U1 Gas Turbine Rotor" initially scheduled for November/December 2017 and classified in the AMP as a medium risk, Alinta Pinjarra engaged MHI to assess whether the major inspection could be delayed. In April 2016, MHI concluded that it was possible for the critical rotor inspection to be delayed	**Responsible Person**: Head of Asset Management and Alcoa WA Operations CoGen Supervisor **Target Date:** March 2018		

Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned	Date resolved	**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
	until the 3rd major inspection scheduled for 2023, enabling Alinta Pinjarra to make a decision not to purchase a replacement rotor. Although Alinta Pinjarra had demonstrated its assessment of risk in prioritising maintenance tasks, the impact of that decision had not been reflected in Alinta Pinjarra's records of the risks and related treatments associated with the Unit 1 gas turbine rotor prior to and subsequent to the decision.			
5/2017	**B2** ***Contingency Planning****: 9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks* As Alinta Pinjarra'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 their 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.	**Action Plan** Alinta Pinjarra will: (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 (b) Prepare a clear overarching "umbrella" document to capture all contingency plans in place for each of the key risks to Alinta Pinjarra's assets' operations and availability. **Responsible Persons**: Head of Asset Manager **Target Date**: March 2018	March 2018	No
6/2017	**B2** ***AMS Review****: 12.2 Independent reviews (e.g. internal audit) are performed of the asset management system.* Although components of Alinta Pinjarra's AMSs are subject to regular reviews and updates, Alinta Pinjarra	**Action Plan** Alinta Pinjarra will implement: (a) The requirement for their AMSs to be subject to independent reviews on a regular basis	March 2018	No

Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned	Date resolved	**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
	has not applied formal processes for ensuring sufficient degrees of independence in any regular reviews of the asset management plans and underlying AMSs.	(b) A register or record to capture the reviews conducted on their AMSs and the independence of the associated reviewers. **Responsible Person**: Head of Asset Management **Target Date:** August 2018		
B. Unresolved at end of current review period				
Reference (no./year)	**Process and policy deficiency / Performance deficiency** (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Reviewer's recommendation or action planned		**Further action required** (Yes/No/Not Applicable) **Further action required** (including current recommendation reference, if applicable)
Not applicable.				

Appendix A – Review Plan

ASSURANCE ADVISORY GROUP

Alinta Cogeneration (Wagerup) Pty Ltd

and

Alinta Cogeneration (Pinjarra) Pty Ltd

Electricity Generation Licences (EGL6 & EGL10)

2022 Asset Management System Review

Review Plan

July 2022

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Introduction

Overview

The Economic Regulation Authority (the **ERA**) has under the provisions of the Electricity Industry Act 2004 (the **Act**), issued to Alinta Cogeneration (Wagerup) Pty Ltd (Alinta Wagerup) and Alinta Cogeneration (Pinjarra) Pty Ltd (Alinta Pinjarra) (hereinafter together **Alinta**) Electricity Generation Licences EGL6 and EGL10 respectively (the **Licences**).

Section 14 of the Act requires Alinta to provide to the ERA an asset management system review (the **review**) report, 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, Assurance Advisory Group (**AAG**) has been appointed to conduct the 2022 reviews for the five year period 1 July 2017 to 30 June 2022 (**review period**).

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

The Wagerup Power Station is a 351MW (nameplate capacity) dual fuel (gas and distillate) power station in the Shire of Waroona approximately 100kms south of Perth. The electricity generated is dispatched to the SWIS during peak periods.

The Pinjarra Power Station is a 280MW (nameplate capacity) gas fuelled cogeneration plant located at Alcoa's Pinjarra refinery in the Shire of Murray, approximately 70 kms south of Perth. The Pinjarra Power Station operates as a base load power station and supplies electricity and steam to Alcoa under commercial agreements. Alinta has established an Operations and Maintenance Agreement with Alcoa for Alcoa to manage, operate and maintain the Pinjarra Power Station on Alinta's behalf.

The reviews will be conducted in accordance with the ERA's March 2019 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 AAG and Alinta and presented to the ERA for approval.

This Plan has been prepared in relation to both asset management system reviews (i.e. for the EGL6 and EGL10 Licences) and represents the review approach to assessing both Licences concurrently. All references to 'review' assumes applicability to both asset management system reviews. Two separate review reports will be prepared, outlining the obligations and findings relevant to each Licence.

Objective

The objective of the review is to independently examine the effectiveness and performance of the asset management systems established for the 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 in this review.

Table 1 – Asset management system key processes and effectiveness criteria

Key processes	Effectiveness criteria
1. Asset Planning	1.1 Asset management plan covers the processes in this table 1.2 Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning 1.3 Service levels are defined in the asset management plan 1.4 Non-asset operations (e.g. demand management) are considered 1.5 Lifecycle costs of owning and operating assets are assessed 1.6 Funding options are evaluated 1.7 Costs are justified and cost drivers identified 1.8 Likelihood and consequences of asset failure are predicted 1.9 Asset management plan is regularly reviewed and updated.
2. Asset creation and acquisition	2.1 Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options 2.2 Evaluations include all life-cycle costs 2.3 Projects reflect sound engineering and business decisions 2.4 Commissioning tests are documented and completed 2.5 Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood
3. Asset disposal	3.1 Under-utilised and under-performing assets are identified as part of a regular systematic review process 3.2 The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken 3.3 Disposal alternatives are evaluated 3.4 There is a replacement strategy for assets
4. Environmental analysis	4.1 Opportunities and threats in the asset management system environment are assessed 4.2 Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved 4.3 Compliance with statutory and regulatory requirements 4.4 Service standard (customer service levels etc) are measured and achieved.
5. Asset operations	5.1 Operational policies and procedures are documented and linked to service levels required 5.2 Risk management is applied to prioritise operations tasks 5.3 Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition 5.4 Accounting data is documented for assets [new criteria] 5.5 Operational costs are measured and monitored 5.6 Staff resources are adequate and staff receive training commensurate with their responsibilities
6. Asset maintenance	6.1 Maintenance policies and procedures are documented and linked to service levels required 6.2 Regular inspections are undertaken of asset performance and condition 6.3 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule 6.4 Failures are analysed and operational/maintenance plans adjusted where necessary 6.5 Risk management is applied to prioritise maintenance tasks 6.6 Maintenance costs are measured and monitored

Key processes	Effectiveness criteria
7. Asset management information systems	7.1 Adequate system documentation for users and IT operators 7.2 Input controls include suitable verification and validation of data entered into the system 7.3 Security access controls appear adequate, such as passwords 7.4 Physical security access controls appear adequate 7.5 Data backup procedures appear adequate and backups are tested 7.6 Computations for licensee performance reporting are accurate 7.7 Management reports appear adequate for the licensee to monitor licence obligations 7.8 Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation [new criteria]
8. Risk management	8.1 Risk management policies and procedures exist and are applied to minimise internal and external risks 8.2 Risks are documented in a risk register and treatment plans are implemented and monitored 8.3 Probability and consequences of asset failure are regularly assessed
9. Contingency planning	9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks
10. Financial planning	10.1 The financial plan states the financial objectives and identifies strategies and actions to achieve those 10.2 The financial plan identifies the source of funds for capital expenditure and recurrent costs 10.3 The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) 10.4 The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period 10.5 The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services 10.6 Large variances in actual/budget income and expenses are identified and corrective action taken where necessary
11. Capital expenditure planning	11.1 There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates 11.2 The capital expenditure plan provides reasons for capital expenditure and timing of expenditure 11.3 The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan 11.4 There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented
12. Review of asset management system	12.1 A review process is in place to ensure the asset management plan and the asset management system described in it remain current 12.2 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.

AAG's responsibility

Our responsibility is to express a limited assurance conclusion on whether, based on the procedures performed and the evidence obtained, anything has come to our attention that causes us to believe that Alinta's AMS for assets subject to its Licences have not been established and maintained, in all material respects, in accordance with the Licences as measured by the effectiveness criteria in the Guidelines for the period from 1 July 2017 to 30 June 2022. The review will be conducted in accordance with Australian Standard on Assurance Engagements ASAE 3500 Performance Engagements (**ASAE 3500**), issued by the Australian Auditing and Assurance Standards Board.

ASAE 3500 requires that we plan and perform the review to obtain assurance about whether the AMS for assets subject to the Licences is materially ineffective. A limited assurance engagement conducted in accordance with ASAE 3500 involves identifying areas where the AMS for assets subject to a Licence is likely to be materially ineffective, addressing the areas identified and considering the process used to prepare the AMS for assets subject to the Licences. A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

Limitations of use

Our reports will be produced solely for the information and internal use of Alinta and are 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 our 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, however we accept no responsibility to the ERA or to anyone who is provided with or obtains a copy of our reports.

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

Inherent limitations

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

An assurance engagement relating to the period from 1 July 2017 to 30 June 2022 will not provide assurance on whether the AMS for assets subject to the Licences will remain effective in the future.

Independence

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

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, reports 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 Alinta's Licences. The risk assessment considers changes to Alinta's relevant 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 classification descriptions listed at Table 1 of the Reporting Manual, provides the risk assessment with context to enable the appropriate consequence rating to be applied to each component of the asset management system subject to review.

Once the consequence has been determined, the likelihood of Alinta not effectively maintaining an asset management system for the assets subject to its Licences (with reference to the defined effectiveness criteria) is assessed using the likelihood rating listed at Table 17 of the Review Guidelines (refer to Appendix 1). 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 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 specified in the Review Guidelines (refer to Appendix 1-3). Once inherent risks and control risks are established, the audit priority can then be determined using the matrix specified in the Review Guidelines (refer to Table 3 below). Essentially, the higher the level of risk the more substantive testing is required.

Table 3: Assessment of Review Priority

	Preliminary 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.

Table 4: Review Priority Table

Priority rating	Review requirement
Review Priority 1	• Via interview and walkthrough, understand relevant processes and controls as they apply to each asset management system effectiveness criteria • Examine relevant documents, registers and reports as they apply to each asset management system effectiveness criteria • Obtain evidence of policies, procedures and controls being in place and working effectively • Controls testing and extensive substantive testing of activities and/or transactions as they apply to each asset management system effectiveness criteria, including physical inspection of applicable asset infrastructure • Follow-up and if necessary, re-test matters previously reported.
Review Priority 2	• Via interview and walkthrough, understand relevant processes and controls as they apply to each asset management system effectiveness criteria • Examine relevant documents, registers and reports as they apply to each asset management system effectiveness criteria • Obtain evidence of policies, procedures and controls being in place and working effectively • Controls testing and moderate substantive testing of activities and/or transactions as they apply to each asset management system effectiveness criteria, including physical inspection of applicable asset infrastructure • Follow-up and if necessary, re-test matters previously reported.
Review Priority 3	• Via interview and walkthrough, understand relevant processes and controls as they apply to each asset management system effectiveness criteria • Examine relevant documents, registers and reports as they apply to each asset management system effectiveness criteria • Limited controls testing (moderate sample size) of activities and/or transactions as they apply to each asset management system effectiveness criteria, including physical inspection of applicable asset infrastructure. Only substantively test transactions if further control weakness found • Follow-up of matters previously reported.
Review Priority 4	• Confirmation of existing controls via walk through of key processes and examination of key documents including policies and procedures, compliance/breach registers and reports • Follow-up of matters previously reported.
Review Priority 5	• Confirmation of existing controls via observation, discussions with key staff and/or reliance on key references including policies and procedures, compliance/breach registers and reports ("desktop review").

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

- Our understanding of Alinta's assets and internal processes.
- Any other factors that may influence the level or strength of controls.
- Consideration of relevant circumstances and activity that trigger specific performance issues.

At this stage, the risk assessment can only be a preliminary assessment based on reading of documentation and interviews by the auditors. It is possible that the ratings and risk assessment comments may be revised as we conduct our work and new evidence comes to light. The risk assessment is attached at Appendix 2.

System analysis / policy and procedure review

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

- Interviewing Alinta representatives and key operational and administrative staff responsible for the development and maintenance of policies and procedural type documentation
- Consideration of Alinta's response to the recommendations made by the 2017 reviews
- 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 element of the asset management system review will be performed to provide a rating as defined under Table 5 (refer below).

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

Examination of performance

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

- Consideration of reports and references evidencing activity
- Interviews with Alinta representatives and key operational and administrative staff
- Consideration of Alinta's response to the recommendations made by the 2017 reviews
- Physical visit to the power station facilities at Wagerup and Pinjarra
- Consideration of the facilities' 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.

Review fieldwork will include a visit to Alinta's Wagerup and Pinjarra facilities, plus meetings with staff at Alinta Energy's Perth office.

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

The review reports will also be structured to address all of the minimum contents specified in section 5 of the Review Guidelines.

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

Alinta is responsible for providing a separate post review implementation plan, if required.

Table 5: Process and policy rating scale

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

Table 6: Performance rating scale

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

Resources and team

Key Alinta contacts

The key contacts for this review are:

- Joshua Wozniuk Operations Manager, SWIS
- Paul Grey Head of Operations
- Catherine Rousch Manager, WA Retail Regulation

AAG Staff

AAG staff who will be involved with this assignment are:

- Margaret-Mary Gauci Senior Consultant
- Tanuja Sanders Senior Engineer
- Andrew Baldwin Executive Director
- Stephen Linden Director (QA review).

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

Timing

The initial risk assessment phase was completed on 12 July 2022, after which the draft review plan and risk assessment were presented to Alinta for comment prior to submission to the ERA for review and approval.

The remainder of the fieldwork phase is scheduled to be performed over the period mid-July to early August 2022, enabling draft and final reports to be submitted to the ERA by the due dates of 31 August 2022 and 30 September 2022 respectively.

AAG time and staff commitment to the completion of the review is outlined in the proposal accepted by Alinta. In summary, the estimated time allocated to each AMS Review activity is as follows:

- Planning (including risk assessment): 12 hours
- Fieldwork (including system analysis/walkthrough and testing/review): 108 hours
- Reporting: 50 hours.

Appendix 1 - Risk assessment key

1-1 Criteria for classification of consequence of ineffective performance

Source: Modified from Electricity Compliance Reporting Manual February 2022

Classification	Criteria for classification
Major	Classified on the bases that: • The consequences of ineffective performance would cause major damage, loss or disruption to customers; or • The consequences of ineffective performance would endanger or threaten to endanger the safety or health of a person.
Moderate	Classified on the basis that the consequences of ineffective performance affect the efficiency and effectiveness of the licensee's operations or service provision, but do not cause major damage, loss or disruption to customers.
Minor	Classified on the basis that: • The consequences of ineffective performance are relatively minor – i.e. ineffective performance will have minimal effect on the licensee's operations or service provision and do not cause damage, loss or disruption to customers; • Assessment of performance against the obligation is immeasurable; • The matter of ineffective performance is identified by a party other than the licensee; or • The licensee only needs to use its reasonable or best endeavours to demonstrate effective performance, or where the obligation does not otherwise impose a firm obligation on the licensee.

1-2 Likelihood ratings

Source: Review Guidelines: Electricity and Gas Licences March 2019

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

1-3 Preliminary adequacy ratings for existing controls

Source: Review Guidelines: Electricity and Gas Licences March 2019

Level	Description
Strong	Controls mitigate the identified risks to a suitable level
Moderate	Controls only cover significant risks; improvement required
Weak	Controls are weak or non-existent and do little to mitigate the risks

Appendix 2 - Risk assessment

1. Asset Planning	
Key process	Asset planning strategies focus on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price)
Outcome	Asset planning is integrated into operational or business plans, providing a framework for existing and new assets to be effectively utilised and their service optimised

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent risk rating	Controls assessment	Review priority
1.1	Asset management plan covers the processes in this table	Moderate	Probable	Medium	Moderate	Priority 4
1.2	Planning process and objectives reflect the needs of all stakeholders and are integrated with business planning	Moderate	Unlikely	Medium	Strong	Priority 4
1.3	Service levels are defined in the asset management plan	Moderate	Probable	Medium	Strong	Priority 4
1.4	Non-asset options (e.g. demand management) are considered	Minor	Unlikely	Low	Strong	Priority 5
1.5	Lifecycle costs of owning and operating assets are assessed	Minor	Probable	Low	Strong	Priority 5
1.6	Funding options are evaluated	Minor	Unlikely	Low	Strong	Priority 5
1.7	Costs are justified and cost drivers identified	Minor	Probable	Low	Strong	Priority 5
1.8	Likelihood and consequences of asset failure are predicted	Major	Probable	High	Strong	Priority 2
1.9	Asset management plan is regularly reviewed and updated	Minor	Probable	Low	Strong	Priority 5

2. Asset creation and acquisition						
Key process	Asset creation/acquisition is the provision or improvement of assets					
Outcome	The asset acquisition framework is economic, efficient and cost-effective; it reduces demand for new assets, lowers service costs and improves service delivery					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options	Moderate	Probable	Medium	Strong	Priority 4
2.2	Evaluations include all life-cycle costs	Moderate	Probable	Medium	Strong	Priority 4
2.3	Projects reflect sound engineering and business decisions	Moderate	Probable	Medium	Strong	Priority 4
2.4	Commissioning tests are documented and completed	Moderate	Probable	Medium	Strong	Priority 4
2.5	Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood	Major	Probable	High	Strong	Priority 2

3. Asset disposal						
Key process	Asset disposal is the consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets					
Outcome	The asset management framework minimises holdings of surplus and underperforming assets and lowers service costs. The cost-benefits of disposal options are evaluated					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process	Moderate	Probable	Medium	Strong	Priority 4
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Minor	Probable	Low	Strong	Priority 5
3.3	Disposal alternatives are evaluated	Minor	Unlikely	Low	Strong	Priority 5
3.4	There is a replacement strategy for assets	Moderate	Probable	Medium	Strong	Priority 4

4. Environmental analysis						
Key process	Environmental analysis examines the asset management system environment and assesses all external factors affecting the asset management system					
Outcome	The asset management system regularly assesses external opportunities and threats and identifies corrective action to maintain performance requirements					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
4.1	Opportunities and threats in the asset management system environment are assessed	Moderate	Probable	Medium	Strong	Priority 4
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	Moderate	Probable	Medium	Strong	Priority 4
4.3	Compliance with statutory and regulatory requirements	Moderate	Probable	Medium	Moderate	Priority 4
4.4	Service standard (customer service levels etc) are measured and achieved.	Moderate	Probable	Medium	Strong	Priority 4

5. Asset operations						
Key process	Asset operations is the day-today running of assets (where the asset is used for its intended purpose)					
Outcome	The asset operation plans adequately document the processes and knowledge of staff in the operation of assets so service levels can be consistently achieved					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
5.1	Operational policies and procedures are documented and linked to service levels required	Moderate	Probable	Medium	Moderate	Priority 4
5.2	Risk management is applied to prioritise operations tasks	Moderate	Probable	Medium	Moderate	Priority 4
5.3	Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition	Moderate	Probable	Medium	Strong	Priority 4
5.4	Accounting data is documented for assets	Moderate	Probable	Medium	Moderate	Priority 4
5.5	Operational costs are measured and monitored	Moderate	Probable	Medium	Strong	Priority 4
5.6	Staff resources are adequate and staff receive training commensurate with their responsibilities	Moderate	Probable	Medium	Strong	Priority 4

6. Asset maintenance						
Key process	Asset maintenance is the upkeep of assets					
Outcome	The asset maintenance plans cover the scheduling and resourcing of the maintenance tasks so work can be done on time and on cost					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
6.1	Maintenance policies and procedures are documented and linked to service levels required	Moderate	Probable	Medium	Moderate	Priority 4
6.2	Regular inspections are undertaken of asset performance and condition	Major	Probable	High	Strong	Priority 2
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Major	Probable	High	Moderate	Priority 2
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary	Major	Probable	High	Strong	Priority 2
6.5	Risk management is applied to prioritise maintenance tasks	Moderate	Probable	Medium	Moderate	Priority 4
6.6	Maintenance costs are measured and monitored	Moderate	Probable	Medium	Strong	Priority 4

7. Asset management information systems							
Key process	An asset management information system is a combination of processes, data and software supporting the asset management functions						
Outcome	The asset management information system provides authorised, complete and accurate information for the day-to-day running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards						
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**	
7.1	Adequate system documentation for users and IT operators	Minor	Probable	Low	Strong	Priority 5	
7.2	Input controls include suitable verification and validation of data entered into the system	Moderate	Probable	Medium	Strong	Priority 4	
7.3	Security access controls appear adequate, such as passwords	Minor	Probable	Low	Strong	Priority 5	
7.4	Physical security access controls appear adequate	Minor	Probable	Low	Strong	Priority 5	
7.5	Data backup procedures appear adequate and backups are tested	Moderate	Probable	Medium	Strong	Priority 4	
7.6	Computations for licensee performance reporting are accurate	Minor	Unlikely	Low	Moderate	Priority 5	
7.7	Management reports appear adequate for the licensee to monitor licence obligations	Minor	Probable	Low	Strong	Priority 5	
7.8	Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation	Moderate	Probable	Medium	Moderate	Priority 4	

8. Risk management						
Key process	Risk management involves the identification of risks and their management within an acceptable level of risk					
Outcome	The risk management framework effectively manages the risk that the licensee does not maintain effective service standards					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
8.1	Risk management policies and procedures exist and are applied to minimise internal and external risks	Moderate	Probable	Medium	Moderate	Priority 4
8.2	Risks are documented in a risk register and treatment plans are implemented and monitored	Moderate	Probable	Medium	Moderate	Priority 4
8.3	Probability and consequences of asset failure are regularly assessed	Major	Probable	High	Strong	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 major disruptions to service standards.					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Major	Probable	High	Moderate	Priority 2

10. Financial planning						
Key process	Financial brings together the financial elements of the service delivery to ensure its financial viability over the long term					
Outcome	The financial plan is reliable and provides for the long-term financial viability of the services					
Ref	**Effectiveness criteria**	**Consequence**	**Likelihood**	**Inherent risk rating**	**Controls assessment**	**Review priority**
10.1	The financial plan states the financial objectives and identifies strategies and actions to achieve those	Moderate	Probable	Medium	Strong	Priority 4
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Minor	Probable	Low	Strong	Priority 5
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Minor	Probable	Low	Strong	Priority 5
10.4	The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period	Minor	Probable	Low	Strong	Priority 5
10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Minor	Probable	Low	Strong	Priority 5
10.6	Large variances in actual/budget income and expenses are identified and corrective action taken where necessary	Minor	Probable	Low	Strong	Priority 5

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 for these works 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	The capital expenditure plan provides reliable forward estimates of capital expenditure and asset disposal income. Reasons for the decisions and for the evaluation of alternatives and options are documented

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent risk rating	Controls assessment	Review priority
11.1	There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates	Moderate	Probable	Medium	Strong	Priority 4
11.2	The capital expenditure plan provides reasons for capital expenditure and timing of expenditure	Minor	Probable	Low	Strong	Priority 5
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Minor	Probable	Low	Strong	Priority 5
11.4	There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented	Minor	Probable	Low	Strong	Priority 5

12. Review of asset management system	
Key process	The asset management system is regularly reviewed and updated
Outcome	The asset management system is regularly reviewed and updated

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent risk rating	Controls assessment	Review priority
12.1	A review process is in place to ensure the asset management plan and the asset management system described in it remain current	Minor	Probable	Low	Strong	Priority 5
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system	Moderate	Probable	Medium	Moderate	Priority 4

Appendix 3 - Previous review recommendations

The following recommendations were made by the 2017 reviews (assigned to each of Alinta Wagerup and Alinta Pinjarra):

Issue 1/2017 (Wagerup)

Asset planning: 1(a) Asset management plan covers key requirements.

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:

1. Requires updating to reflect the following aspects of the power station's operations:
    - 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:
    - Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks
    - A brief description of any known and significant risks relating to assets
    - Consideration and documentation of legal and compliance requirements.

Recommendation 1/2017	**Action Plan 1/2017**
Alinta Wagerup update its AMP to: (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: • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements.	Alinta Wagerup will update its AMP to: (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 • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. **Responsible Person:** Wagerup Plant Manager **Target Date:** August 2018

Issue 1/2017 (Pinjarra)

Asset planning: 1(a) Asset management plan covers key requirements.

Although the Alinta Energy Pinjarra Cogeneration Plant – Asset Management Plan FY2018 - FY2022 (AMP) generally reflects Alinta Pinjarra's expectations and requirements for managing its generation assets, the AMP can be further improved as it does not clearly address the following elements expected by Alinta Energy's Asset Management Framework:

- Contingency plans designed to mitigate the business impact of incidents or emergencies arising as a result of realised asset related risks
- A brief description of any known and significant risks relating to assets
- Consideration and documentation of legal and compliance requirements.

Recommendation 1/2017	Action Plan 1/2017
Alinta Pinjarra update its AMP to explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements	Alinta Pinjarra will update its AMP to explicitly incorporate the following elements of its Asset Management Framework and EGL obligations: • Contingency plans • Known and significant risks relating to key assets • Legal and compliance requirements. **Responsible Person:** Head of Asset Management **Target Date:** August 2018

Issue 3/2017 (Wagerup)

Asset Operations: 5(a) Operational policies and procedures are documented and linked to service levels required

Asset Maintenance: 6(a) Maintenance policies and procedures are documented and linked to service levels required

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. We recognise that Alinta Wagerup has mitigating processes and controls in place, including:

- 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.

Recommendation 3/2017	Action Plan 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.	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. **Responsible Person**: Wagerup Plant Manager **Target Date**: March 2018

Issue 3/2017 (Pinjarra)

Asset Operations: 5(a) Operational policies and procedures are documented and linked to service levels required

Asset Maintenance: 6(a) Maintenance policies and procedures are documented and linked to service levels required

In 2014, NEM Energy [heat recovery steam generator (HRSG) manufacturer] was commissioned by Alinta Pinjarra to design and implement major modifications to the Plant's cogeneration units to improve steam production capacity at low GT Loads. The updated drawings relating to those modifications are not yet fully integrated into the O&M system managed by Alcoa on Alinta Pinjarra's behalf.

Recommendation 3/2017	Action Plan 3/2017
Alinta Pinjarra work with Alcoa to ensure updated drawings of the modified HRSG units are fully integrated within the O&M system.	Alinta Pinjarra will work with Alcoa to ensure updated drawings of the modified HRSG units are fully integrated within the O&M system. **Responsible Person**: Head of Asset Management and Alcoa WA Operations CoGen Supervisor **Target Date**: June 2018

Issue 4/2017 (Wagerup)

Asset operations: 5(b) Risk management is applied to prioritise operations tasks

Asset maintenance: 6(e) Risk management is applied to prioritise operations tasks

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

Through discussion with personnel on-site and examination of Alinta Wagerup's Risk Register, we observed that 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)
- 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.

Recommendation 4/2017	Action Plan 4/2017
Alinta Wagerup: a) Develop its site Risk Register to include all risk elements relevant to: • The site environment • Maintenance of the asset • Contingency planning (refer to Issue 6/2017) • Current diesel fuel arrangements b) Complete the data migration of work orders (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.	Alinta Wagerup will: a) Develop its site Risk Register to include all risk elements relevant to: • The site environment • Maintenance of the asset • Contingency planning • Current diesel fuel arrangements (b) Complete the data migration of work orders (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. **Responsible Person**: Wagerup Plant Manager **Target Date:** March 2018

Issue 4/2017 (Pinjarra)

Asset Maintenance: 6(e) Risk management is applied to prioritise maintenance tasks

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

Alinta Pinjarra applies the Alinta Energy group-wide risk management framework across its asset management activities. Alcoa also applies a structured, risk based approach to its O&M activities, performed in accordance with the O&M Agreement.

However, Alinta Pinjarra 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. For example, in relation to Alinta Pinjarra's decision to extend the Unit 1 critical rotor inspection to be delayed until the 3rd major inspection in 2023, the impact of that decision (e.g. on other maintenance activity and cost forecasts) had not been reflected in Alinta Pinjarra's records of the risks associated with the Unit 1 gas turbine rotor prior to and subsequent to the decision
- The Pinjarra site risk register does not capture all risk elements identified through the contingency planning process (refer to Issue 5/2017) or the insurer risk reduction recommendations.

In relation to 6(e) Risk management is applied to prioritise maintenance tasks:

- In relation to the major inspection of a "U1 Gas Turbine Rotor" initially scheduled for November/December 2017 and classified in the AMP as a medium risk, Alinta Pinjarra engaged MHI to assess whether the major inspection could be delayed. In April 2016, MHI concluded that it was possible for the critical rotor inspection to be delayed until the 3rd major inspection scheduled for 2023, enabling Alinta Pinjarra to make a decision not to purchase a replacement rotor. Although Alinta Pinjarra had demonstrated its assessment of risk in prioritising maintenance tasks, the impact of that decision had not been reflected in Alinta Pinjarra's records of the risks and related treatments associated with the Unit 1 gas turbine rotor prior to and subsequent to the decision.

Recommendation 4/2017	**Action Plan 4/2017**
Alinta Pinjarra: (a) 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 (b) Further develop its site Risk Register to include all risk elements relevant to its management of the power station assets, including the contingency planning process and insurer risk reduction recommendations.	Alinta Pinjarra will: (a) 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 (b) Further develop its site Risk Register to include all risk elements relevant to management of the power station assets, including the contingency planning process and insurer risk reduction recommendations. **Responsible Person**: Head of Asset Management and Alcoa WA Operations CoGen Supervisor **Target Date:** March 2018

Issue 6/2017 (Wagerup), Issue 5/2017 (Pinjarra)

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

As Alinta Wagerup's and Alinta Pinjarra's contingency plans and arrangements are currently maintained/described in different processes and documents, they have the opportunity to further ensure the completeness and consistency of their contingency planning arrangements by capturing all of their 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.

Recommendation	Action Plan
Alinta Wagerup and Alinta Pinjarra: (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 and Alinta Pinjarra's assets' operations and availability.	Alinta Wagerup and Alinta Pinjarra will: (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 and Alinta Pinjarra's assets' operations and availability. **Responsible Persons**: Wagerup Plant Manager, Pinjarra Head of Asset Manager **Target Date**: December 2017 for Wagerup. March 2018 for Pinjarra

Issue 7/2017 (Wagerup) and Issue 6/2017 (Pinjarra)

AMS Review: 12(b) Independent reviews (e.g. internal audit) are performed of the asset management system.

Although components of Alinta Wagerup's and Alinta Pinjarra's AMSs are subject to regular reviews and updates, Alinta Wagerup and Alinta Pinjarra have not applied formal processes for ensuring sufficient degrees of independence in any regular reviews of the asset management plans and underlying AMSs.

Recommendation	Action Plan
In accordance with the Alinta Energy Asset Management Framework, Alinta Wagerup and Alinta Pinjarra implement: (a) The requirement for their AMSs to be subject to independent reviews on a regular basis (b) A register or record to capture the reviews conducted on their AMSs and the independence of the associated reviewers.	Alinta Wagerup and Alinta Pinjarra will implement: (a) The requirement for their AMSs to be subject to independent reviews on a regular basis (b) A register or record to capture the reviews conducted on their AMSs and the independence of the associated reviewers. **Responsible Person**: Wagerup Plant Manager, Pinjarra Head of Asset Management **Target Date:** August 2018

Appendix B – References

Alinta Pinjarra representatives participating in the review

- Operations Manager, SWIS, Alinta Energy
- Alcoa WA Operations Cogen Superintendent
- Head of Operations, Alinta Energy
- Manager WA Retail Regulation, Alinta Energy.

AAG staff participating in the review		**Hrs**
• Andrew Baldwin	Executive Director	50
• Tanuja Sanders	Senior Engineer	18
• Margaret-Mary Gauci	Senior Consultant	4
• Stephen Linden	Director (QA review)	1

Key documents and other information sources examined

- Alinta Energy Asset Management Policy
- Alinta Energy Asset Management Framework
- Asset Management Plan Pinjarra (2021 and 2022)
- Alinta Network Access Arrangement (Pinjarra) and amendments
- Environmental Ministerial Performance and Compliance Report - 2020
- Alcoa O&M Agreement
- Alcoa Cogeneration Plant Operating and Maintenance Strategy (Pinjarra)
- Alcoa Pinjarra Powerhouse Asset Strategy
- Preparing for Environmental Emergency (Pinjarra)
- Emergency Response Manual, Pinjarra Refinery
- Learning Management System training records and status reports
- Alcoa EHS Manual
- Alcoa EHS 1.10 Emergency Response Evacuation Training
- Alcoa Pinjarra LCN Disaster Recovery Plan
- Alcoa Pinjarra Computer Centre Disaster Recovery Plan
- Alcoa Application Recovery Plan Enterprise Asset Management
- Alcoa Information Security Standard
- Alcoa WA Operations Environmental Planning (WAO)
- Alcoa Powerhouse System Strategies
- Alcoa Powerhouse HRSG Strategy
- Example Inspection E&I Work Packs
- Example Root Cause Analysis – Failure Report
- Technical Note: Pinjarra – GT02 Torque Converter Bearing Failure Overview

- Example power station performance metrics report
- Example monthly station performance reports
- Pinjarra Equipment Hierarchy
- Sample eAM system records of maintenance activity
- Sample Inspection Reports
- Sample Outage Reports
- Example GT Inspection Schedule
- EHS Risk Assessment PIN OC4 Powerhouse
- Process Risk Assessment and Action Plan - Pinjarra OC4 Powerhouse
- Alinta Energy Risk Management Framework
- Alinta Energy Fleet Risk Summary
- Example Risk Management Tool
- Example monthly management reports
- Pinjarra P&L Budget vs Actuals FY22
- Capital Project Forecasts
- Wave International Asset Management Framework Audit Report 2018
- Representations from the Alinta Energy Operations Manager, SWIS.