McGill Engineering Services Pty Ltd

Engineering, Adjudication & Arbitration Services ABN 45 106 691 169

NEWGEN NEERABUP PARTNERSHIP GENERATION LICENCE EGL 18 ASSET MANAGEMENT SYSTEM REVIEW

Prepared By Kevan McGill
Date 27 June 2013

McGill Engineering Services Pty Ltd

Engineering, Adjudication & Arbitration Services ABN 45 106 691 169

Phillip MacMahon
Operations Manager
ERM Power
PO Box 7152 Riverside Centre
Queensland 4000

Dear Mr MacMahon

Asset Management System Review Electricity Licences

The fieldwork on the asset management system review of Generation Licence EGL 18, for the review period (1 April 2010 to 31 March 2013) is complete and I am pleased to submit the report to you. The report reflects my findings and opinions.

The Licensee is an entity established by the owners to operate and maintain the plant and accordingly the full scope of asset management is not able to be carried out by the Licensee.
In my opinion, the Licensee maintained, in all material aspects, effective control procedures in relation to the Generation Licence (EGL 18) for the review period and in my opinion, for the functions that it is able to carry out, the Licensee maintained an effective asset management system in relation to the Generation licence (EGL 18) for the review period on the relevant clauses referred to within the objectives section of this report.

Yours sincerely

Kevan McGill
Director

Date 27 June 2013

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Executive Summary

This asset management review was conducted in accordance with the guidelines issued by the Economic Regulation Authority (*Authority)* for the review period (1 April 2010 to 31 March 2013).

The plant is a gas turbine operating in the WEM as a peak mode plant when the SWIS is operating near maximum generation demand. The plant consists of 2 Siemens 170MW open cycle gas turbines operated as one unit with a single 330KV Western Power transmission line connecting to the Western Power Neerabup substation. The gas supply is by a full sized (26 inch) lateral from the Dampier to Bunbury Natural Gas Pipeline.

OVERALL CONCLUSION

The Licensee is an entity established by the owning partners to operate and maintain the plant and accordingly the full scope of asset management is not able to be carried out by the Licensee. The Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and does not have the capacity to undertake strategic asset management functions.

In my opinion, the Licensee maintained, in all material aspects, effective control procedures in relation to the Generation Licence (EGL 18) for the review period.

In my opinion, for the functions that it is able to carry out, the Licensee maintained an effective asset management system in relation to the Generation licence (EGL 18) for the review period on the relevant clauses referred to within the objectives section of this report (Page 7).

ASSET MANAGEMENT SYSTEM REVIEW

A summary of the findings of the asset management system review is:

RATINGS

The reviewer's assessment of both the process and policy definition rating and the performance rating for each key process in the Licensee's asset management system is assessed using the scales described below.

Asset management process and policy definition adequacy ratings

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

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

Asset management review effectiveness 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	Opportunity for improvement	• The performance of the process requires some improvement to meet the required level. • Process effectiveness reviews are not performed regularly enough. • Process improvement opportunities are not actioned.
3	Corrective action required	• The performance of the process requires significant improvement to meet the required level. • Process effectiveness reviews are performed irregularly, or not at all. • Process improvement opportunities are not actioned.
4	Serious action required	• Process is not performed, or the performance is so poor that the process is considered to be ineffective.

The overall effectiveness rating for asset management process is based on a combination of the process and policy adequacy rating and the performance rating.

The summary table used to report effectiveness in asset management review reports is shown below.

ASSET MANAGEMENT EFFECTIVENESS SUMMARY

ASSET MANAGEMENT SYSTEM	Asset management process and policy definition adequacy rating	Asset management performance rating
Asset planning	A	1
Asset creation/ acquisition	A	1

Asset disposal	A	Not Rated
Environmental analysis	A	1
Asset operations	A	1
Asset maintenance	A	1
Asset Management Information System	A	1
Risk Management	A	1
Contingency planning	B	2
Financial planning	A	1
Capital expenditure planning	A	1
Review of AMS	A	1

It is not implied that any assessment at “A” or “1” means that there is not scope for continuous improvement, rather that no recommendations for improvement have been recommended in this report.

RECOMMENDATIONS

Opportunities for improvement:

Contingency planning	**Process/Policy rating** B	**Effectiveness rating** 2
9. Contingency planning Contingency plans document the steps to deal with the unexpected failure of an asset.		
Recommendation		
Consideration is given to developing contingency plans arising from safety and commercial risk management plans for the generators. (Non mandatory recommendation Audit guidelines 11.9).		

ASSET MANAGEMENT SYSTEM REVIEW

ASSET MANAGEMENT SYSTEM REVIEW OBJECTIVES

Under the *Electricity Industry Act 2004* (the Act) section 14, a generation Licensee must develop and maintain an asset management system to manage the significant asset base for ongoing service delivery to its customers. The Act requires a review of the asset management system every two years (or other time approved by the *Authority).*

This report is an impartial review of the Licensee's asset management effectiveness under the ERA guidelines.

The review conducted between March and April 2013 examined the asset management processes used by the Licensee in delivering the services to its customers. These services include lifecycle processes for:

- Asset planning;
- Asset creation/acquisition;
- Asset disposal;
- Environmental analysis;
- Asset operations;
- Asset maintenance;
- Asset management information system (AMIS);
- Risk management;
- Contingency planning;
- Financial planning;
- Capital expenditure planning; and
- Review of the asset management system.

As well as the processes, the asset management supporting systems were tested as to their use and effectiveness. Data used by the Licensee was also examined with respect to its effectiveness for asset management and the delivery of outcomes.

Tests were undertaken through interviews and investigation of the processes to assess whether they were being performed as documented.

The Licensee appointed McGill Engineering Services Pty Ltd to conduct the review of its Generation Licence with approval from the Authority. A preliminary assessment was conducted with the Licensee's management to determine the inherent risk and the state of control for each compliance element of the Licence obligation. McGill Engineering Services Pty Ltd then prioritised the audit coverage based on the risk profile of the Licensee with an emphasis on providing greater focus and depth of testing for areas of higher risk to provide reasonable assurance that the Licensee had complied with the standards, outputs and outcomes under the Licence obligations.

The audit was conducted in a manner consistent with Australian Auditing Standards (AUS) 808 “Planning Performance Audits” and AUS 806 “Performance Auditing”. McGill Engineering Services Pty Ltd evaluated the adequacy and effectiveness of the controls and performance by the Licensee relative to the standards referred in the Generation Licence through a combination of enquiries, examination of documents and detailed testing for Electricity Generation Licence EGL 18 for the Licensee.

LICENSEE’S BUSINESS

The Licensee is an entity set up by its owning partners to operate and maintain the generation plant. As a consequence not all of the asset management system elements are carried out by the Licensee. The plant is a gas turbine operating in the WEM as a peak mode plant when the SWIS is operating near maximum generation demand. The plant consists of 2 Siemens 170MW open cycle gas turbines operated as one unit with a single 330KV Western Power transmission line connecting to the Western Power Neerabup substation. The gas supply is by a full sized (26 inch) lateral from the Dampier to Bunbury Natural Gas Pipeline.

REVIEW (AUDIT) PERIOD

The review (audit) period is 1 April 2010 to 31 March 2013. The previous review period was 26 March 2008 to 31 March 2010

SCOPE LIMITATION

The review was undertaken by examination of documents, interviews with key persons and observations and is not a detailed inspection of physical items.

ACTIONS FROM LAST AUDIT

Item	Recommendation	Action Taken	Further recommendations
Asset operations	Consideration is given to scheduling regular starts to verify that valves are operating correctly. (Non mandatory recommendation Audit guidelines 11.9).	The plant operated as base load plant while NewGen Kwinana had a major service. This running discovered a start up issue which is now resolved.	None. Item is closed
Risk management	Consideration is given to developing safety risk management assessment that could be implemented for the generating plant as for the pipeline. (Non mandatory recommendation Audit guidelines 11.9). The commercial risks should be assessed and	Safety risks are developed with JSA for all works. Risk management assessments built into incident handling processes. Commercial contingencies carried over.	Item 1 Closed Item 2 Carried over.

	documented. (Non mandatory recommendation Audit guidelines 11.9).		
Contingency planning	Consideration is given to developing contingency plans arising from safety and commercial risk management plans for the generators. (Non mandatory recommendation Audit guidelines 11.9). Consideration is given to installing generator circuit breakers at the plant to reduce single mode failures. (Non mandatory recommendation Audit guidelines 11.9).	Operation in winter exposed an issue with low gas temperature on start up. Low temp gas issue has been resolved Generator breakers considered. Not commercially viable.	Item 1 Contingency planning is a continuing work in progress. Item 2 Closed

REVIEW OPINION/CONTACTS

The report to the Licensee and the *Authority* clearly expresses the opinion of the reviewer in respect of the findings of the review.

The key contacts were:

- Licensee
    - Philip MacMahon Operations Manager, Bruno Lanciano Power Station Manager
- McGill Engineering Services Pty Ltd
    - Kevan McGill, John McLoughlin

The audit was conducted during April/May 2013. Kevan McGill took 90 hours and John McLoughlin 6 hours on the review.

\Stage	**Auditor**	**Standard**
1. Risk & Materiality Assessment Outcome - Operational/ Performance Audit Plan	K McGill	ASA 300 Planning ASA 315: Risk Assessments and Internal Controls AUS 808: Planning Performance Audits AS/NZS 4360:2004: Risk Management ERA Guidelines
2. System Analysis	K McGill	AUS 810: Special Purpose Reports on Effectiveness of Control Procedures
3. Fieldwork Assessment and testing of;	K McGill John McLoughlin	AUS 502: Audit Evidence AUS 806: Performance Auditing

• The control environment • Information system • Compliance procedures • Compliance attitude		
4. Reporting	K McGill	ASA 300 Planning AUS 806: Performance Auditing

STATEMENT OF INDEPENDENCE

To the best of my knowledge and belief, there is no basis for contraventions of any professional code of conduct in respect of the audit.

I have not done or contemplate undertaking any other work with the Licensee.

There are no independence threats due to:

- self-interest – as the audit company or a member of the audit team have no financial or non-financial interests in the Licensee or a related entity;
- self-review – no circumstance has occurred where:
    - the audit company or a member of the audit team has undertaken other non-audit work for the Licensee that is being evaluated in relation to the audit/review; or
    - when a member of the audit team was previously an officer or director of the Licensee; or
    - where a member of the audit team was previously an employee of the Licensee who was in a position to exert direct influence over material that will be subject to audit during an audit/review.

There is no risk of a self-review threat as:

- no work has been
    - undertaken by the auditor, or a member of the audit/review team, for the Licensee within the previous 24 months; or
    - the auditor is currently undertaking for the Licensee; or
    - the auditor has submitted an offer, or intends to submit an offer, to undertake for the Licensee within the next 6 months; and
- familiarity – there is no close family relationship with a Licensee, its directors, officers or employees,
- and is not nor is perceived to be too sympathetic to the Licensee's interests.

RECOMMENDATIONS

The conclusions of each of the elements of the licence are summarised in the following table.

Contingency planning	**Process/Policy rating** B	**Effectiveness rating** 2
9. Contingency planning Contingency plans document the steps to deal with the unexpected failure of an asset.		
Recommendation		
Consideration is given to developing contingency plans arising from safety and commercial risk management plans for the generators. (Non mandatory recommendation Audit guidelines 11.9).		

POST REVIEW PLAN

The License will provide a Post Review Implementation Plan.

REVIEW EVIDENCE

The following evidence was considered.

- Generation Licence
- Asset management agreement
- Decommissioning Plan
- Asset management system document
- Financial statements
- Job safety and environmental analysis procedure
- Licence fee invoices, journal entries
- Land lease payments
- Land purchase documents
- Outage reports
- Servers back up schedules
- ERA annual returns
- Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report

ASSET MANAGEMENT SYSTEM REVIEW RESULTS AND RECOMMENDATIONS

Asset Planning	**Process/Policy rating** A	**Effectiveness rating** 1

1. *Asset planning*

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

Observations

Asset Planning Process/Plan and its currency
The Licensee is an entity established by the owning partners to operate and maintain the plant and accordingly the full scope of asset management is not able to be carried out by the Licensee. The Licensee's role, business model and resources are those consistent with operating and maintaining gas turbine generation plant and does not have the capacity to undertake strategic asset management functions.

There is a documented whole of life asset management plan for this asset. For the level of asset planning that is done, annual, and five year plans include commentary about:

- Operating budget
- Capital budget
- Scheduled maintenance
- Major overhaul plans
- Planned outages
- Technical issues
- Cash flow forecast
- Opportunities and Threats including a review of the Market, contracts, regulatory compliance, with key actions to mitigate risks
- KPI's
- Performance review (financial and operational)
- Operating statistics

There is an agreement that covers the asset management obligations of the Licensee to be carried for the owning partners. However, there is no formal strategic asset plan covering the broader or strategic elements by the Licensee. The owners make the decisions if and when to invest and will make the disposal decisions. The owners have a Business Development team (in Brisbane) which has the capacity to carry out these functions. As an energy company asset planning is a key business function.

Allocation of responsibilities / statutory obligations
The organisational arrangements allocate responsibilities. There is documentation (such as the part owners (ERM Power Pty Ltd) policy manual) requiring compliance with statutory obligations. Staff responsibilities are assigned in local plan and policy documents.

Evaluation Criteria summary Licensee

- Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning

Response: The Licensee cannot carry out these functions and if they are carried out it will be by the owning partners. For the functions carried out by the Licensee the AMP meets the requirement.

- Service levels are defined

Response: The AMP defines service levels.

- Non-asset options (e.g. demand management) are considered

Response: The Licensee cannot carry out these and if they are carried out it will be by the owning partners. The Licensee is responsible for the utilisation of the existing plant which is very low as it is a peaking plant with capacity to increase utilisation subject to availability of fuel and IMO requiring extra despatch of this plant.

- Lifecycle costs of owning and operating assets are assessed

Response: The AMP meets this criterion as lifecycle costs of owning and operating assets are assessed.

- Funding options are evaluated

Response: The Licensee cannot carry out evaluation of funding options for development outside this plant and if it is carried out it will be by the owning partners. The Licensee has been given a funding model by the owning partners for the licensed plant but this does not extend beyond this scope.

- Costs are justified and cost drivers identified

Response: Costs of the plant are monitored and costs are justified and cost drivers identified for the licensed plant.

- Likelihood and consequences of asset failure are predicted

Response: The AMP meets this criterion as there are risk assessments of asset failure and consequences.

- Plans are regularly reviewed and updated

Response: The detail of the AMP is reviewed in an ongoing manner with individual equipment plans updated in the CMMS as operating experience dictates.

Evaluation Criteria summary Owners

- Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning

Response: For the functions carried out by the Licensee the AMP meets the requirement.

- Service levels are defined

Response: The AMP defines service levels.

- Non-asset options (e.g. demand management) are considered

Response: The owners will make investment decisions if a non asset solution is an outcome that will result in a decision not to invest.

- Lifecycle costs of owning and operating assets are assessed

Response: The AMP meets this criterion as lifecycle costs of owning and operating assets are assessed.

- Funding options are evaluated

Response: Funding options where an investment decision is made are evaluated.

- Costs are justified and cost drivers identified

Response: Costs of the plant are monitored and costs are justified and cost drivers identified.

- Likelihood and consequences of asset failure are predicted

Response: The AMP meets this criterion as there are risk assessments of asset failure and consequences.

- Plans are regularly reviewed and updated

Response: The review of the broader aspects is undertaken by the owners.							
Asset management process and policy definition							
Process	☑	Policy	☑				
Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.							
Asset management performance							
Process	☑	Documentation	☑	Availability	☑	Use	☑
Issues							
The Licensee has an agreement with the owners to carry out the asset management of the plant to defined service levels. The Licensee conducts the shorter timeframe asset management elements, (operations, maintenance and contingency planning) and longer term issue for the licensed assets such as the environment and whole of life of the plant issues. Other than a strategic overview, the elements of an asset management process exist. The owning bodies such as ERM Power Pty Ltd in Australia carry out the long term and strategic elements of an asset management system. The Licensee does not carry out these functions as it is not within their capacity to undertake this work. The rating based on the owners is A/1. As the Licensee is unable to carry out all the roles defined in the Audit Guidelines the ratings would be Not Rated/ Not Rated.							
Recommendation							
None - as the Licensee will never have the capacity to undertake the strategic roles.							

Asset Creation	Process/Policy rating A	Effectiveness rating 1

2 Asset creation and acquisition

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

Observations

Policies and procedures for asset creation / sample creation activities
Procurement of major electricity plant is a very significant exercise taking considerable time. There has been no asset creation of the generation plant in the audit period. The responsibility for asset creation does not belong to the Licensee as the Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and they do not have the capacity to undertake asset creation functions. The owners have a Business Development team with the capacity to carry out these functions. There has not been any major capital development on this site since commissioning.

Meeting statutory obligations Licensee
There are documents requiring employees and contractors to meet statutory obligations.

Evaluation Criteria summary

- Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions

Response: The Licensee cannot carry out these functions as the Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and they do not have the capacity to undertake asset creation functions.

- Evaluations include all life-cycle costs

Response: The Licensee cannot carry out these functions as the Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and they do not have the capacity to undertake asset creation functions.

- Projects reflect sound engineering and business decisions

Response: There will be no asset creation by the Licensee.

- Commissioning tests are documented and completed

Response: This will be the outcome of the owning partners deciding to create an asset and when the operating and maintenance contract with the Licensee is put in place – before or after commissioning. The commissioning of this plant was completed and documented with acceptance testing and handover checklists.

- Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood

Response: The responsibilities of the AMS (Asset Management System) are assigned to the Licensee in the operating and maintaining contract by the owning partners.

Evaluation Criteria summary Owners

- Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions

Response: The owners carry this function. A non asset solution would be a decision not to invest. There has been asset creation in the audit period.

- Evaluations include all life-cycle costs

Response: The owners carry this function. Life cycle costing is part of the evaluation.

- Projects reflect sound engineering and business decisions

Response: The owners carry this function. Any creation decision will be based on sound engineering and business decisions.

- Commissioning tests are documented and completed

Response: This will be the outcome of the owning partners deciding to create an asset and when the operating and maintenance contract with the Licensee is put in place – before or after commissioning.

- Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood

Response: The responsibilities of the AMS (Asset Management System) are assigned to the Licensee in the operating and maintaining contract by the owning partners.

Asset management process and policy definition

Process	☑	Policy	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☑	Availability	☑	Use	☑

Issues

The owning bodies such as ERM Power Pty Ltd in Australia carry out the long term and strategic elements of an asset management system. The Licensee does not carry out these functions. There has been no asset creation activity in the review period.

The rating based on the owners is A/1. As the Licensee is unable to carry out all the roles defined in the Audit Guidelines the ratings are Not Rated/ Not Rated.

Recommendation

None - as the Licensee will never have the capacity to undertake the asset creation roles.

Asset Disposal	Process/Policy rating A	Effectiveness rating Not Rated

3. Asset disposal

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

Observations

Policies and procedures for asset disposal / sample disposal activities
There is no disposal action in the audit period to form an opinion about effectiveness. The plans to decommission the site on disposal have been sighted. The responsibility for asset disposal belongs with the owners and not the Licensee. The owning partner has a Business Development team to carry out these functions. The owning partners have commitments with their financiers about disposal of significant assets.

Meeting statutory obligations
There are documented obligations of the Licensee's employees to comply with statutory obligations.

Evaluation Criteria summary Licensee

- Under-utilised and under-performing assets are identified as part of a regular systematic review process

Response: The Licensee is responsible for the utilisation of the existing plant which is very low as it is a peaking plant with capacity to increase utilisation subject to availability of fuel and IMO requiring extra despatch of this plant. The operation and maintenance contract with the owners has a focus on performance.

- The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken

Response: The Licensee has new plant and underutilisation is natural for peaking plant. The operation and maintenance contract with the owners has a focus on performance.

- Disposal alternatives are evaluated

Response: There is no likelihood of disposal of the plant as it is the sole asset and will not be a decision by the Licensee but by the owning partners.

- There is a replacement strategy for assets

Response: The AMS meets this criterion and allow for equipment replacement but not plant replacement.

Evaluation Criteria summary Owner

- Under-utilised and under-performing assets are identified as part of a regular systematic review process

Response: The Licensee is responsible for the utilisation of the existing plant which is very low as it is a peaking plant with capacity to increase utilisation subject to availability of fuel and IMO requiring extra despatch of this plant. The operation and maintenance contract with the owners has a focus on performance.

- The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken

Response: The Licensee has new plant which is underutilisation which is natural for peaking plant. The operation and maintenance contract with the owners has a

focus on performance.

- Disposal alternatives are evaluated

Response: There is no likelihood of disposal of the plant as it is the sole asset and will be a decision by the owning partners.

- There is a replacement strategy for assets

Response: The AMS meets this criterion and allow for equipment replacement but not plant replacement.

Asset management process and policy definition

Process	☑	Policy	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☒	Use	☒

Issues

The owning bodies such as ERM Power Pty Ltd in Australia carry out the long term and strategic elements of an asset management system. The Licensee does not carry out these functions. There has been no asset disposal activity in the review period.

The rating based on the scope of asset management available to the Licensee is B/Not Rated with a decommissioning plan but there is no likelihood of asset disposal happening and if any asset disposal occurs the owning partners will make the decisions. The owners are rated A/Not rated.

Recommendation

None - as the Licensee will never have the capacity to undertake the asset disposal roles.

Environmental analysis	Process/Policy rating A	Effectiveness rating 1

4. Environmental analysis

Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.

Observations

Standards / monitoring / reporting / breaches
The Licensee has environmental management policies. Reporting and monitoring tools are appropriate.

The Licensee has air and water discharge environmental licences.

The owners have the responsibility for market surveillance for expansion opportunities or threats. The owners have a Business Development team to carry out these functions. The Licensee has in its whole of life asset plan, gas sharing with the Kwinana plant and operational strategies for differing gas availability of this plant for 30 years.

The principal external threat is gas availability. There is some line pack available as the pipeline is as large as the Dampier/Bunbury pipeline and this will give about 9 hours running. The customer has some capacity to allocate gas but otherwise there is no alternative but to constrain operation to the level of gas available. There are no major spares holdings for critical plant failures such as a generator transformer. Critical minor spares are held.

The input of the external environment to asset planning is carried out by the Licensee for this plant but not strategic environmental issues.

Evaluation Criteria summary Licensee

- Opportunities and threats in the system environment are assessed

Response: Opportunities/threats for this plant are part of the contract with the owning partners. The Licensee cannot carry out the external functions as the Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and they do not have the capacity to undertake external environmental functions outside those affecting this plant.

- Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved

Response: The local AMS meets this criterion with service standards defined and measured and achievement of performance has been met. The Licensee has done well against our Operating agreement for the site.

- Compliance with statutory and regulatory requirements

Response: The AMS meets this criterion and the Licensee's policy documents require compliance with statutory and regulatory obligations. There have been no environmental breaches.

- Achievement of customer service levels

Response: The achievement of performance has been met. The levels set in the Operating agreement has been met.

Evaluation Criteria summary Owner

- Opportunities and threats in the system environment are assessed

Response: Opportunities/threats for this plant are part of the contract with the owning

partners.

- Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved

Response: The local AMS meets this criterion with service standards defined and measured.

- Compliance with statutory and regulatory requirements

Response: The AMS meets this criterion and the Licensee's policy documents require compliance with statutory and regulatory obligations. There have been no environmental breaches.

- Achievement of customer service levels

Response: achievement of performance has been met.

Asset management process and policy definition

Process	☑	Policy	☑				

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☑	Availability	☑	Use	☑

Issues

There are no material environmental breaches reported. The air emission license initially required 6 monthly stack testing and routine calibration of the continuous emissions monitoring system. Due to the infrequent operation of the power station (less than 5% capacity factor to date) it is not possible to comply with these testing requirements unless the units were operated specifically to produce emissions to test. The licence has been modified to reflect this position.

There are no contingency plans for back up generation to minimise outages outside of line pack, this is the policy position chosen by the Licensee and the owning partners and is not unreasonable for a peaking plant.

The rating based on the scope of asset management available to the Licensee is A/1. On the roles defined in the Audit Guidelines the rating is for the owners is A/1.

Recommendation

None

Asset operations	Process/Policy rating	Effectiveness rating
	A	1

5. Asset operations

Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.

Observations

Policies and procedures for asset operation / sample activities
The plant has not been despatched on load. The generation assets are a simple/open cycle gas turbine. The plant is constructed to appropriate standards. The operational policies are well documented.

The asset register is part of the Licensee's maintenance IT system.

Training/ resources / exceptions
The Licensee operates the plant. The resourcing is appropriate and ongoing training is evident as are the operating procedures and practices.

Evaluation Criteria summary

- Operational policies and procedures are documented and linked to service levels required

Response: The local AMS meets this criterion with service standards defined. Operational procedures are documented.

- Risk management is applied to prioritise operations tasks

Response: The local AMS meets this criterion with operations (maintenance predominantly) based on risk assessment.

- Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data

Response: Asset registers are contained with the appropriate information in the IT system.

- Operational costs are measured and monitored

Response: Operational costs – equipment, fuel, staffing, contracts and materials are measured and monitored.

- Staff receive training commensurate with their responsibilities

Response: Staff receive training commensurate with their responsibilities

- Performance measures such as unplanned outages

Response: Outage log including forced outages has been implemented.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☑	Use	☑
Issues							
The asset operation is appropriate for the duty. The rating based on the scope of asset management available to the Licensee is A/1. On the roles defined in the Audit Guidelines the rating is A/1.							
Recommendation							
None							

Asset Maintenance	Process/Policy rating A	Effectiveness rating 1

6. Asset maintenance

Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.

Observations

Policies and procedures for asset maintenance / sample activities
Maintenance costs are closely monitored as they are a key indicator of performance.

Maintenance is controlled by an IT system (MEX - V12.5.0.0) that coordinates tasks, incorporates condition, risk, breakdown and time based maintenance. Work orders are prioritised on the basis of the works impact on safety, environment and operational availability. Spare parts required for standard jobs and inventories are being developed as part of the system.

The asset plan for operations, maintenance and contingencies contains performance measures. The equipment manufacturer requires maintenance to their standard and frequency to validate warrantee conditions.

Training / resources / exceptions
Maintenance is scheduled well into the future and these actions appear appropriate for the type of equipment. The resourcing is appropriate and ongoing training is evident as are the operating procedures and practices. High Voltage training occurs. Plant maintenance appears to take due allowance of any exceptions in the licensed plant.

Evaluation Criteria summary

- Maintenance policies and procedures are documented and linked to service levels required

Response: The local AMS meets this criterion with service standards defined. Policies and procedures are documented.

- Regular inspections are undertaken of asset performance and condition

Response: The local AMS meets this criterion with inspections undertaken as part of manufacturer's maintenance conditions.

- Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule

Response: The AMS meets this criterion. Maintenance plans are documented and completed on schedule. The plant is very new, so condition is good. The equipment manufacturer requires maintenance to their standard and frequency to validate warrantee conditions.

- Failures are analysed and operational/maintenance plans adjusted where necessary

Response: Failures are analysed and adjustments made where necessary.

- Risk management is applied to prioritise maintenance tasks

Response: Risk management is the key method of prioritising maintenance tasks.

- Maintenance costs are measured and monitored

Response: Maintenance costs are measured and monitored.

- System maintenance strategy, including the methodology used to maintain the system and frequency of maintenance activities.

Response: The AMS meets this criterion with maintenance strategies defined.

- Performance measures such as unplanned outages

Response: Outage log including forced outages has been implemented.

Asset management process and policy definition							
Process	☑	Policy	☑	Documentation	☑		
Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.							
Asset management performance							
Process	☑	Documentation	☒	Availability	☑	Use	☑
Issues							
The maintenance is appropriate for the duty required. The rating based on the scope of asset management available to the Licensee is A/1. On the roles defined in the Audit Guidelines the rating is A/1.							
Recommendation							
None.							

Asset Management Information System	Process/Policy rating A	Effectiveness rating 1

7. Asset Management Information System (MIS)

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

Observations

Policies and procedures
The Licensee has a competent asset management information system with a number of elements.

It has complex spreadsheets managing expenditure and a dedicated maintenance management database (MEX V12.5.0.0) to control a complex list of items. The maintenance system links project management to scheduled tasks to standard work plans (assisting with safety and change management), asset register and parts inventory. Documentation is appropriate.

Access to write to the database is controlled (passwords) and changes are tracked. There is good documentation for data recovery procedures which include operating on the Perth office server and backing up the servers in Brisbane to ensure data integrity. The power station is a controlled access site which provides adequate physical security for IT systems.

Exceptions
The plant has not operated sufficiently to determine exceptions.

Evaluation Criteria summary

- Adequate system documentation for users and IT operators

Response: The MEX system is sufficiently documented. It is easy to use and reasonably intuitive, there are user manuals.

- Input controls include appropriate verification and validation of data entered into the system

Response: The system is easy to use with a maintenance focus rather than a database focus and includes appropriate verification and validation of data entered into the system.

- Logical security access controls appear adequate, such as passwords

Response: Logical control is adequate with hierarchical access by password.

- Physical security access controls appear adequate

Response: Physical security is adequate with the system on access controlled generation site.

- Data backup procedures appear adequate

Response: Data backup is robust.

- Key computations related to Licensee performance reporting are materially accurate

Response: Key computations related to Licensee performance reporting are materially accurate, to the extent possible to assess with visual inspection.

- Management reports appear adequate for the Licensee to monitor licence obligations

Response: Management reports appear adequate for the Licensee to monitor licence obligations to the extent possible to assess with visual inspection. Sighted a version of the monthly report with indications of progress against preventive

	maintenance, completion of actions from audits and incident reports, environmental compliance, commentary about compliance with system management needs.						
Asset management process and policy definition							
Process	☑	Policy	☑	Documentation	☑		
Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.							
Asset management performance							
Process	☑	Documentation	☒	Availability	☑	Use	☑
Issues							
The rating based on the scope of asset management available to the Licensee is A/1 On the roles defined in the Audit Guidelines the rating is A/1.							
Recommendation							
None							

Risk management	Process/Policy rating	Effectiveness rating
	A	1

8. Risk management

Risk management involves the identification of risks and their management within an acceptable level of risk.

Observations

Policies and procedures

There is a detailed safety risk matrix for the pipeline. There is evidence that risk based approaches being carried out particularly as it affects security of the plant. The generating plant has had risks identified and managed through a number of different approaches. Being a proven and standard design, the V. 94.2 units incorporate a proven degree of redundancy and safety protective systems. Design and construction is to Australian and international standards. Additionally the entire project was the subject of a HAZOP study (Hazard and Operability review). Other than major plant failures the commercial risks are not formally developed and the Licensee should benefit from a commercial risk assessment and any response plans that could arise. Risk management assessments have been implemented in the incident reports.

Training

There is evidence of training and awareness by staff of risk based approaches particularly in approaches to tasks where JSA (Job Safety Analysis) are prepared for all work.

Evaluation Criteria summary

- Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system

Response: The AMS meets this criterion. Risks are assessed and drive maintenance in particular.

- Risks are documented in a risk register and treatment plans are actioned and monitored

Response: The local AMS meets this criterion. The risk register is set out in the AMP.

- The probability and consequences of asset failure are regularly assessed

Response: The AMS meets this criterion. The probability and consequences of asset failure are regularly assessed.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☑	Use	☑

Issues

The rating based on the scope of asset management available to the Licensee is A/1 On the roles defined in the Audit Guidelines the rating is A/1.
Recommendation
None.

Contingency planning	Process/Policy rating B	Effectiveness rating 2

9. Contingency planning

Contingency plans document the steps to deal with the unexpected failure of an asset.

Observations

Development of contingency plans / currency
The line pack is a reasonable contingency for short gas interruptions. The Licensee has chosen to not provide liquid fuel as not a commercially viable option.

The plant has a single line to Neerabup substation and a trip on either machine trips both. Consideration was given to circuit breakers for both gas turbines at the plant so a trip of one will not isolate both. But the option was considered not financially vi9able.

Opportunity to run as base load in winter exposed operating issues such as low gas temperature on start up. Warranty rectification has been implemented.

The Licensee has detailed maintenance scheduled out for several years, with minor and major shutdowns allowed to deal with potential issues.

The maintenance regime is geared to keeping the plant operational without forced outages.

Testing of contingency plans
The Licensee tests safety systems routinely.

Evaluation Criteria summary

- Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks

Response: The contingency for gas shortage is the line pack in the lateral pipeline.
There has been no test scheduled to assess effectiveness of the line pack on desk top basis as very hard to simulate without cutting off gas.
The trip of the transmission line on a single unit failure demonstrated the value of installing generator switches.
Any contingencies arising from generator safety and commercial risk planning should be documented.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Inspected site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☑	Use	☑

Issues
There are no documented strategic contingency plans for the generator as a result of there being no implemented commercial risk management plans for the generator This is a continuing work in progress.. The rating based on the scope of asset management available to the Licensee is B/2, On the roles defined in the Audit Guidelines the rating is B/2.
Recommendations
Consideration is given to developing contingency plans arising from safety and commercial risk management plans for the generators. (Non mandatory recommendation Audit guidelines 11.9).

Financial planning	Process/Policy rating A	Effectiveness rating 1

10. Financial planning

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

Observations

Financial planning process / plans
The Licensee has financial plans, budgeting and monitoring processes. These are on an annual basis and upgraded year by year.

The owning partners provide guidance and approve the Licensee's budget and then monitor financial progress. The Licensee's managers are responsible for reporting actual versus budget. Revenue is retained for maintenance and capital expenditure where that is within the retained funds capacity.

Evaluation Criteria summary

- The financial plan states the financial objectives and strategies and actions to achieve the objectives

Response: The local AMS meets the obligations as it states the financial objectives and strategies and actions to achieve the objectives.

- The financial plan identifies the source of funds for capital expenditure and recurrent costs

Response: The local AMS meets the requirement with retained earnings used for capital expenditure and recurrent costs where that is within the retained funds capacity.

- The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)

Response: The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets).

- The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period

Response: The financial plan provides predictions on income for the next five years and indicative predictions beyond this period.

- The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services

Response: The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services.

- Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary

Response: Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and

environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.							
Asset management performance							
Process	☑	Documentation	☒	Availability	☑	Use	☑
Issues							
None The rating based on the scope of asset management available to the Licensee is A/1 On the roles defined in the Audit Guidelines the rating is A/1.							
Recommendation							
None							

Capital expenditure planning	Process/Policy rating A	Effectiveness rating 1

11. Capital expenditure planning

The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years.

Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next five years would usually be based on firm estimates.

Observations

Capital expenditure process / plans
The Licensee has financial plans, budgeting and monitoring processes. There are capital expenditure plan for a rolling 5 years.

Revenue is retained for capital expenditure where that is within the retained funds capacity. Only at a point where equity is required to be injected/funded from the owners will that occur. There has been no budget for any equity injection/funding.

Evaluation Criteria summary

- There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates

Response: The local AMS meets the obligations. The expenditure is that required to maintain to the manufacturer's requirements or any breakdowns is scheduled.

- The plan provide reasons for capital expenditure and timing of expenditure

Response: The local AMS meets the obligations capital expenditure is scheduled according to the service frequency (blade replacement etc) as required by the manufacturer.

- The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan

Response: The local AMS meets the obligations. The plant is very new and capital expenditure is that required to maintain to the manufacturer's requirements or any breakdowns.

- There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned

Response: The local AMS meets the obligations as the capital expenditure plan is updated annually.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☑	Use	☑
Issues							
None. The rating based on the scope of asset management available to the Licensee is A/1 On the roles defined in the Audit Guidelines the rating is A/1.							
Recommendation							
None							

Review of AMS	Process/Policy rating A	Effectiveness rating 1

12. Review of AMS

The asset management system is regularly reviewed and updated.

Observations

As a supplier of electricity the service delivery is heavily asset based and needs an AMS. There is ongoing review of asset issues relating to operations, maintenance and contingencies.

Evaluation Criteria summary

- A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current

Response: The review of the strategic level aspects cannot be undertaken by the Licensee but the AMP with the owning partners can be reviewed but as the plant has been commissioned about 12 months there is no evidence to assess review.

- Independent reviews (e.g. internal audit) are performed of the asset management system

Response: The review of the broader aspects cannot be undertaken by the Licensee. Review of the local AMS is assigned to the Station Manager and Operations Manager.

Asset management process and policy definition

Process	☑	Policy	☑	Documentation	☑	

Evidence: interviewed Philip MacMahon and listed staff on site. Documents: Include Asset Management agreement, Asset management system document, Risk management policy, Decommissioning plans, Financial statements, Job safety and environmental analysis procedure, Outage reports and Gas Pipeline Commissioning, Operations and Maintenance Hazard identification report.

Asset management performance

Process	☑	Documentation	☒	Availability	☑	Use	☑

Issues

Strategic asset planning is carried out by the owning partners and they carry out continuous review of the process. There is a division of an asset management system where the owners carry out the strategic asset planning and the Licensee caries out the whole of plant life functions including shorter term and operational functions. The Licensee cannot carry out these functions as the Licensee's business model and resources are those consistent with operating and maintaining gas turbine generation plant and they do not have the capacity to undertake asset review functions outside the licensed plant.

The local AMS has scheduled reviews. The result of the AMS is reviewed continually with usual business monitoring. There has not been a formal review of the overall AMS. A review of the Computerised Maintenance Management System (CMMS) is planned for

next FY. The owners have regular review processes. The rating based on the scope of asset management available to the Licensee is A/1. As the Licensee is unable to carry out all the roles defined in the Audit Guidelines the ratings are Not Rated/ Not Rated.
Recommendation
None - as the Licensee will never have the capacity to undertake the strategic roles.