Quantum Assurance

Rottnest Island Authority

2023 Asset Management System Review
Electricity Integrated Regional Licence (EIRL3)

Report

Economic Regulation Authority
July 2023

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Limitations of this Report

This report was prepared for distribution to the Economic Regulation Authority and the Rottnest Island Authority for the purpose of fulfilling Rottnest Island Authority's asset management system review under its Electricity Services Licence. We disclaim any assumption of responsibility for any reliance on this report to any persons or users other than the Economic Regulation Authority and Rottnest Island Authority, or for any purpose other than that for which it was prepared.

Because of the inherent limitations of any internal control environment, it is possible that fraud, error or non-compliance may occur and not be detected. A review is not designed to detect all instances of non-compliance with the procedures and controls over the licence obligations of the Electricity Services Licence, since we do not examine all evidence and every transaction. The audit conclusions expressed in this report have been formed on this basis.

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1. Executive Summary

1.1 Background

The Rottnest Island Authority ('RIA') has an Electricity Integrated Regional Licence (EIRL3) issued by the Economic Regulation Authority ('ERA') under Sections 36(1) and 37(1) of the *Electricity Industry Act 2004* (WA). Version 6 of the licence is applicable from July 2018.

The licensee is for the operating area of Rottnest Island to:

- construct and operate generating works or operate existing generating works;
- construct and operate a new distribution system or operate an existing distribution system; and
- sell electricity to customers; in accordance with the terms and conditions of this licence and for the purpose of supplying electricity to customers, otherwise than through the South West Interconnected System (SWIS).

Not less than once in every period of 24 months or such other period notified by the ERA, the ERA requires an effectiveness review of the asset management system to comply with the licensing requirements of the ERA.

The review approach is based on the compliance obligations set out in the Licence, applicable legislation, regulatory guidelines Electricity Compliance Reporting Manual (February 2023 and previous versions February 2022 and June 2020) and the 2019 Audit and Review Guidelines: Electricity and Gas Licences.

This review covers the period from 1 April 2021 to 31 March 2023. The previous review period was from 1 April 2019 to 31 March 2021.

1.2 Summary

This review has been conducted to assess the effectiveness of the Licensee's asset management system.

For 58 criteria in the asset management systems, the review rated 45 as performing effectively, 8 as opportunity for improvement and 5 as corrective action required.

The assessment of the 12 asset management components prescribed in the ERA's 2019 Audit and Review Guidelines: Electricity and Gas Licences found that:

- 4 components were rated A1 (documentation adequately defined, performing effectively).
- 4 components were rated A2 (documentation adequately defined, performance requires some improvement).

The review made 4 recommendations in respect of the asset management components, as follows:

Asset Planning

1. The Asset Management Plan – Electrical Infrastructure should describe how asset risk is determined and updated in response to condition assessment information, and processes need to be put in place to ensure asset risks are recorded and updated in the Enterprise Asset Management System (Maximo or Assetic).

Asset Disposal

2. Programmed Facility Management (PFM) to develop escalation processes to ensure the timely close-out of maintenance work orders.

Environmental Analysis

3. As planned, RIA should implement the staged electricity network development plan to June 2026 that was recently funded, including short-term and long-term infrastructure upgrade works with emphasis given to minimising supply disruptions to end-users and increasing renewable energy utilisation.

Asset Operations

4. Update the Training Matrix to demonstrate staff and contractor training requirements, including staff and contractor responses to wind turbine and solar farm disruptions . Reassess resourcing requirements to clear overdue work orders.

1.3 Conclusion

For the review period from 1 April 2021 t0 31 March 2023, the electricity generation, distribution and supply under the Electricity Integrated Regional Licence EIRL3 are considered to be operated with an effective approach. There have been continued improvements in the asset management system including the planning, operations and maintenance of the facilities since the previous review.

We confirm that the ERA's 2019 Audit and Review Guidelines: Electricity and Gas Licenses have been complied with in the conduct of this review and the preparation of the report, and that the review findings reflect our professional opinion.

Quantum Management Consulting & Assurance

[redacted]

Geoff White
Director

1 August 2023

2. Asset Management System Review

2.1 Description of Infrastructure

Rottnest Island - one of Western Australia's premier recreation and holiday areas, is situated some 15 kilometres to the west of Fremantle. The Island is an A-Class Reserve governed by the *Rottnest Island Act 1987* which establishes the Rottnest Island Authority (RIA) as a statutory body to control and manage the Island on behalf of the West Australian Government. The Island receives approximately half a million visitors annually – made up of day trippers and holiday makers, accommodated at the islands premium and budget holiday spaces, Discovery Rottnest Island, Samphire Rottnest, Rottnest Hostel, and the Campgrounds.

The RIA has overall responsibility for the electricity services. The services are contracted to Programmed Facility Management (PFM) who's management and field staff on the Island perform the management, operation and maintenance of the water services, as set out in the Rottnest Island Facilities Utilities and Support Services (FUSS) Contract.

In 2021/22, there were 25 business customers, being commercial lessees on the Island. There are no residential customers.

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The licensee is for the licence area of Rottnest Island to:

- construct and operate generating works or operate existing generating works;
- construct and operate a new distribution system or operate an existing distribution system; and
- sell electricity to customers; in accordance with the terms and conditions of this licence and for the purpose of supplying electricity to customers, otherwise than through the South West Interconnected System.

RIA is required to comply with the terms and conditions of their licence, including applicable legislative provisions and performance reporting as set out in the Electricity Compliance Reporting Manual (February 2023 and previous versions February 2022 and June 2020).

This audit and review covers the period from 1 April 2021 to 31 March 2023. The previous audit and review period was from 1 April 2019 to 31 March 2021.

2.2 Objectives and Scope

The objective of the review was to assess the adequacy and effectiveness of the asset management system in place for the undertaking, maintenance and monitoring of the licensee's assets.

The scope of the review included an assessment of the adequacy and effectiveness of the asset management system by evaluating the key processes of:

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

An initial risk assessment is performed to enable the review to be focused upon the higher risk areas by determining the audit priority from 1 to 5 of each area, as per the table below. Priority 1 and 2 audit areas require more in-depth testing that priority 4 and 5 audit areas.

Assessment of Review Priority

		Control Risk		
		High (weak controls)	**Moderate**	**Low (strong controls)**
Inherent Risk	**High**	Audit priority 1	Audit priority 2	
	Medium	Audit priority 3	Audit priority 4	
	Low	Audit priority 5		

The highest priority areas (priority 1, 2 or 3) based on inherent risk and the previous review's effectiveness ratings were:

- Asset Planning
- Environmental Analysis
- Risk Management.
- Contingency Planning.

2.3 Asset Management Process and Performance Rating Scales

The adequacy of process policy and definition and the performance of the key processes were assessed using the scales described in the tables below. The overall effectiveness rating for each asset management process is based on a combination of the process and policy adequacy rating and the performance rating.

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 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 significant improvement	• Process 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 improvement (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).

Asset Management Performance Ratings

RATING	DESCRIPTION	CRITERIA
1	Performing effectively	• The performance of the process meets or exceeds the required levels of performance. • Process effectiveness is regularly assessed, and corrective action taken where necessary.
2	Opportunity for improvement	• The performance of the process requires some improvement to meet the required level. • Process effectiveness reviews are not performed regularly enough. • Process improvement opportunities are not implemented.
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 implemented.
4	Some action required	• Process is not performed, or the performance is so poor that the process is considered to be ineffective.

2.4 Summary of Asset Management System Effectiveness Ratings

The review's assessment of the asset management system process and policy definitions and their effectiveness, based on the ratings scale in Section 2.3, is shown in the table below.

Section 2.6 provides further details of the current rating results for each process in the asset management system.

Summary of Asset Management Performance Ratings

Process and Policy Definition – Adequacy Rating	Performance Rating for Effectiveness Criteria					
	Rating	1 Performing effectively	2 Opportunity for improvement	3 Corrective action required	4 Some action required	Total
	A -Adequately defined	45	5	-	-	**50**
	B – Requires some improvement	-	3	5	-	**8**
	C – Requires significant improvement	-	-	-	-	**-**
	D – Inadequate	-	-	-	-	**-**
	Total	**45**	**8**	**5**	**-**	**58**

Asset Management System Performance Ratings

ASSET MAN/AGEMENT SYSTEM COMPONENT & EFFECTIVENESS CRITERIA	Process and Policy rating				Performance rating				
	Adequately defined	Requires some improvement	Requires significant improvement	Inadequate	Performing effectively	Opportunity for improvement	Corrective action required	Serious action required	Not Rated
	A	B	C	D	1	2	3	4	NR
1. Asset planning	**A**				**1**				
1.1 Asset management plan covers the processes in this table.	✓				✓				
1.2 Planning process 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 options (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 are regularly reviewed and updated.	✓					✓			
2. Asset creation/ acquisition	**A**				**1**				
2.1 Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions.	✓				✓				
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	**A**					**2**			
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.		✓					✓		

ASSET MAN/AGEMENT SYSTEM COMPONENT & EFFECTIVENESS CRITERIA	Process and Policy rating				Performance rating				
	Adequately defined	Requires some improvement	Requires significant improvement	Inadequate	Performing effectively	Opportunity for improvement	Corrective action required	Serious action required	Not Rated
	A	B	C	D	1	2	3	4	NR
3.3 Disposal alternatives are evaluated.	✓				✓				
3.4 There is a replacement strategy for assets.	✓				✓				
4. Environmental analysis	**A**					**2**			
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 Achievement of customer service levels.	✓				✓				
5. Asset operations	**A**					**2**			
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.	✓				✓				
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	**A**					**2**			
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.	✓				✓				

ASSET MAN/AGEMENT SYSTEM COMPONENT & EFFECTIVENESS CRITERIA	Process and Policy rating				Performance rating				
	Adequately defined	Requires some improvement	Requires significant improvement	Inadequate	Performing effectively	Opportunity for improvement	Corrective action required	Serious action required	Not Rated
	A	B	C	D	1	2	3	4	NR
6.5 Risk management is applied to prioritise maintenance tasks.	✓					✓			
6.6 Maintenance costs are measured and monitored.		✓				✓			
7. Asset Management Information System	**A**				**1**				
7.1 Adequate system documentation for users and IT operators.	✓				✓				
7.2 Input controls include appropriate 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.	✓				✓				
8. Risk management	**A**				**1**				
8.1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.	✓				✓				
8.2 Risks are documented in a risk register and treatment plans are actioned and monitored.	✓				✓				
8.3 The probability and consequences of asset failure are regularly assessed.	✓				✓				
9. Contingency planning	**A**				**1**				
9.1 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.	✓				✓				

ASSET MAN/AGEMENT SYSTEM COMPONENT & EFFECTIVENESS CRITERIA	Process and Policy rating				Performance rating				
	Adequately defined	Requires some improvement	Requires significant improvement	Inadequate	Performing effectively	Opportunity for improvement	Corrective action required	Serious action required	Not Rated
	A	B	C	D	1	2	3	4	NR
10. Financial planning	**A**				**1**				
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 indicative 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	**A**				**1**				
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 that the capital expenditure plan is regularly updated and implemented.	✓				✓				
12. Review of asset management system	**A**				**1**				
12.1 A review process is in place to ensure that 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.	✓				✓				

2.5 Status of Previous Review Recommendations

The previous review covered the period from 1 April 2019 to 31 March 2021 and was reported in December 2021. Recommendations from the previous review are listed in the following table together with the current status of actions to address the recommendations.

Reference (no./year)	Previously Assessed Process and Policy Deficiency (Rating, Asset management process, Details)	Previous Auditor's Recommendation and *Action Taken*	Date Resolved	Further action required
A. Resolved before end of previous review				
	Nil			
B. Resolved during current review period				
01/2021 02/2021	**Asset Planning** **B3** *(1.2) Lifecycle costs of owning and operating assets are assessed.* A risk register is kept which details asset information, risk assessment and serviceability on major assets e.g. Generators, HV Power distribution, Wind Turbine. However, this risk register does not provide detailed and actual lifecycle costing to operate individual assets at an engineering level. A Life cycle costing (LCC) model was maintained by PFM for a portion of the audit period; however, we note that the person in charge of upkeeping the LLC model left PFM in January 2020 and this task is no longer performed. We note that PFM was unable to provide any evidence that this LLC model was performed during the audit period. **B3** (*1.8) Have the likelihood and consequences of asset failure been predicted?* The Enterprise Risk Management Plan (ERMP) does not report residual risk after the application of controls.	1. Continue the development of the Assetic system for the purpose of key assets risk management and lifecycle costing modelling to be implemented by the agreed due date (September 2021). 2. Develop and implement a formal handover process upon termination of an employee to ensure business continuity and the passing on of critical knowledge. ***Status: Completed*** *The new Asset Management System – Assetic has been implemented to perform these functions. The following are complete:* • *mapped infrastructure, developed an asset listing.* • *costs being tracked at granular level with new Financial BU categories established.* • *All lifecycle costing models for the electricity system have been completed within Assetic and went live as at September 2021.*	July 2022	Nil

Reference (no./year)	Previously Assessed Process and Policy Deficiency (Rating, Asset management process, Details)	Previous Auditor's Recommendation and *Action Taken*	Date Resolved	Further action required
03/2021	**Asset Maintenance** **C2** (*6.6) Asset Maintenance - Are the maintenance costs measured and monitored?* Some maintenance costs are captured and noted in a separate spreadsheet. Information on labour hours and parts is entered into Navision, a system that is separate from Maximo.	• *Infrastructure Asset Managers have received training on the Assetic system and wherever possible a handover from the outcoming incumbent on the Asset Management Plans, lifecycle cost models and maintenance schedules.*		
04/2021	**Asset Planning** **C3** (*1.5) Asset Planning - Lifecycle costs of owning and operating assets are assessed.* A Life cycle costing (LCC) model is maintained by PFM and reviewed on a quarterly basis. This model details asset information, risk assessment and serviceability on major assets e.g. Generators, HV Power distribution, Wind Turbine. However, it was noted that the LCC does not provide detailed and actual life cycle costing to operate individual assets at an engineering level.			
05/2021	**Asset Creation and Acquisition** **B3** *(2.2) Evaluations include all lifecycle costs.* Two RIA Business Case templates are available for use; Project short form ($5ok- = $25ok) and Project long form (over $25ok). The two Business Cases sighted include areas such as investment proposal, scope (including cost benefit analysis) and a finance plan. However, no evidence was sighted on consideration of detailed breakdown of lifecycle costs on operations and maintenance.			

Reference (no./year)	Previously Assessed Process and Policy Deficiency (Rating, Asset management process, Details)	Previous Auditor's Recommendation and *Action Taken*	Date Resolved	Further action required
06/2021 10/2021	**Capital Expenditure Planning** **C3** (*11.3) The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan.* A Life cycle costing (LCC) model is maintained by PFM and reviewed on a quarterly basis. This model details asset information, risk assessment and serviceability on major assets e.g. Generators, HV Power distribution, Wind Turbine. However, it was noted that the LCC does not provide detailed and actual life cycle costing to operate individual assets to inform accurate CAPEX planning for the future years based on the asset age and condition. **Risk Management** **C3** *(8.3) Risk Management - Probability and consequences of asset failure are regularly assessed.* Risk management on an asset level is available and conducted within the asset management system (Maximo) which lists each asset's likelihood and consequence of asset failure. However, it was confirmed with the PFM Compliance Manager that ongoing review and risk management of the assets are not being conducted on a routine basis as it was noted through our walkthrough and review of the Maximo Electrical Assets Register that some assets had missing or inappropriate risk ratings.			
07/2021	**Asset Operations** **B3** *(5.2) Risk management is applied to prioritise operations tasks.* Our review of the Maximo asset register revealed that some assets had missing or inappropriate risk ratings, which indicates that ongoing review and risk management of the assets are not being conducted on a routine basis. Through walkthrough with the Asset Manager and the Asset Maintenance Manager, it was observed that informal risk	PFM should create and provide detailed risk modelling in relation to the capacity, availability and load of the diesel generators, to ensure that maintenance tasks are prioritised in terms of risk.	July 2022 .	Nil

Reference (no./year)	Previously Assessed Process and Policy Deficiency (Rating, Asset management process, Details)	Previous Auditor's Recommendation and *Action Taken*	Date Resolved	Further action required
08/2021 09/2021	management appears to have been conducted in the power house through the redundancy applied to the diesel generator capacity. However, no formal evidence has been provided that the reliability and availability levels of the generators in relation to the load being managed. **Asset Maintenance** **B3** *(6.5) Risk management is applied to prioritise maintenance tasks.* Our review of the Maximo asset register revealed that some assets had missing or inappropriate risk ratings, which indicates that ongoing review and risk management of the assets are not being conducted on a routine basis. Through walkthrough with the Asset Manager and the Asset Maintenance Manager, it was observed that informal risk management appears to have been conducted in the power house through the redundancy applied to the diesel generator capacity. However, no formal evidence has been provided that the reliability and availability levels of the generators in relation to the load are being managed. **B3** *(8.1) Risk management policies and procedures exist and are applied to minimise internal and external risks.* Our review of the Maximo asset register revealed that some assets had missing or inappropriate risk ratings, which indicates that ongoing review and risk management of the assets are not being conducted on a routine basis. Through walkthrough with the Asset Manager and the Asset Maintenance Manager, it was observed that informal risk management appears to have been conducted in the power house through the redundancy applied to the diesel generator.	***Status: Completed*** *The RIA is to leverage from the development of Assetic to perform risk based maintenance tasks.* *Predictor models can be utilised for the modelling. Ongoing and reviewed in PFM Electrical sub-group meeting.*		
C. Not resolved				
	Nil			

2.6 Detailed Review Observations

The review period is 2 years from 1 April 2021 to 31 March 2023.

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
1		**ASSET PLANNING**		A	1
1.1	2	Asset management plan covers the processes in this table	The RIA has an Asset Management Policy (May 2020) that includes alignment with ISO55001 and the State Governments Strategic Asset Management Framework (SAMF). The SAMF requires State Government public sector bodies to prepare Strategic Asset Plans. Key objectives of the Asset Management Policy are to: • Define the principles and approach to asset management at Rottnest Island Authority • Promote and imbed a culture of best-practice asset management • Align with and support achievement of the strategic goals established in the Rottnest Island Management Plan 2020-2024. The Policy describes that RIA will establish and maintain an Enterprise Asset Management System which includes the Asset Management Policy, Asset Management Strategy, Asset Management Objectives, Asset Management Plans and the Computerised Maintenance Management System (CMMS) together with the tools, activities, processes and organisational structure for effective asset management. The RIA produced Strategic Asset Plans, the most recent is for 2022-2023. The SAP sets out the Rottnest Island Authority's (RIA) approach to utilising and investing in its assets over the next 10 years to deliver on its strategy as set out in its Mission Statement and Outcomes. The SAP articulates the high-level requirements of the RIA's future asset network to support its service delivery objectives. It also outlines the investment priorities for transitioning to the future asset network given the gaps, strengths and risks of the current asset portfolio. A Strategic Asset Management Plan (SAMP) 2021 - 2030 provides alignment between the RIA strategic business objectives, stakeholder requirements and the resulting asset management objectives to ensure that the assets are being managed to provide the value required of them.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
			The Asset Management Plan – Electrical Infrastructure has been prepared and references the SAMP as providing the overarching approach to managing the assets. The Plans state the purpose is to detail the RIA approach to : • The management of the assets; • The compliance with regulatory requirements; and • Communicating the funding needed to provide the required level of service over a 10 year planning period.		
1.2	3	Planning processes and objectives reflect the needs of all stakeholders and are integrated with business planning.	Section 1.3.3 of the Asset Management Plan – Electrical Infrastructure includes an assessment of stakeholder needs and interests and section 2.2 discusses strategic and corporate goals and how these influence the Plan.	A	1
1.3	4	Service levels are defined in the asset management plan	Customer and Technical Levels of Service are listed in section 2.4.1 of the Asset Management Plan – Electrical Infrastructure.	A	1
1.4	4	Non-asset options (e.g. demand management) are considered	The concept of non-asset options is considered in the demand management section of the Asset Management Plan (section 3.4).	A	1
1.5	3	Lifecycle costs of owning and operating assets are assessed	RIA provided a copy of a Business Case for Electrical Infrastructure developed in May 2021 that includes estimates of the lifecycle costs of owning and operating the electrical infrastructure assets. This includes operating costs and capital upgrade expenditure.	A	1
1.6	4	Funding options are evaluated	The Asset Management Plans make no reference to funding options. Funding is dependent upon State Government funding from the annual budget submission process in May each year.	A	1
1.7	4	Costs are justified and cost drivers identified	The Asset Management Plans describe the process for the RIA approving the annual planned maintenance program performed by PFM. Business Cases are written to support the need for capital investment projects which include investment drivers linked to Corporate Strategy, Service Impacts, Benefits and Performance Indicators. The reviewer sighted the Electrical Infrastructure Business Case (November 2022) that sets out the costs, justification and drivers of future upgrades.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
1.8	3	Likelihood and consequences of asset failure are predicted.	Section 4.1.4 of the Asset Management Plan discusses asset criticality and risk of failure. A table of electrical infrastructure assets assessed as critical is included. A demonstration of the Maximo system managed by PFM was provided. This showed many assets are listed with a risk rating. However the process for reviewing the risk rating, especially following any asset condition assessment activities was not clear. With work proceeding on populating the new Assetic system at the current time, there appears to be a lack of clarity around the process for updating asset risk assessments. ***Recommendation 1/2023*** *The Asset Management Plan – Electrical Infrastructure should describe how asset risk is determined and updated in response to condition assessment information, and processes need to be put in place to ensure asset risks are recorded and updated in the Enterprise Asset Management System (Maximo or Assetic).*	B	3
1.9	4	Asset management plan is regularly reviewed and updated	The Asset Management Plan – Electrical Infrastructure was developed in May 2021. The Asset Management Plan (section 6.1) states the Plan will be reviewed every 12 months as a minimum or when there is a significant driver from the network or other events that requires revision. The Plan was due for review in May 2022 and is overdue for review. As there have not been any major changes to the electrical infrastructure since the Plan was developed, this is considered an opportunity for improvement.	A	2
2		**ASSET CREATION/ ACQUISITION**		A	1
2.1	4	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions.	The Electrical Infrastructure Business Case dated November 2020 was provided for review. The business case demonstrated assessment of multiple options to meet growth, to replace aging assets and to align with strategic objective to increase the renewable energy utilisation from 30% to 75%. In terms of non-asset solutions, do nothing options were considered (but rejected as not meeting energy requirements).	A	1
2.2	3	Evaluations include all life-cycle costs.	The evaluation for the Electrical Infrastructure Improvement Project included present value costs comparison of the options, considering initial capital cost, ongoing operation cost and replacement cost.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
2.3	4	Projects reflect sound engineering and business decisions.	The requirements of the Business Case (BC) reflect sound business decisions. The Business Cases are Authorised by the Chief Financial Officer and the Chief Executive (or Executive Director for the short form BC). The content of the business case includes statements of need and justification, alignment to Corporate Strategy, objectives and benefits, measures of success, alternative option analysis, cost benefit analysis, capital cost estimation, procurement planning and risk management. The RIA use internal (and contract) Project Managers and engage specialist consultants and contractors to complete investigations, designs, third party reviews and construction works.	A	1
2.4	4	Commissioning tests are documented and completed.	The requirement for commissioning is not specifically mentioned in the Asset Management Plans or the RIA template “High Level Project Management Plan”. Inclusion in the Project Management Plan template is a suggested improvement to ensure this activity is planned for during the design and procurement phase as specific tests may need to be completed and identified in the scope of work, or a commissioning plan requested from the contractor including documentation to verify the tests are completed. The reviewer was provided with several Commissioning/Inspection & Test Plans related to the installation of Generator 8. These confirmed that commissioning tests are documented and completed. There were no distribution network upgrades during the audit eriod. The commissioning activity is noted in the PFM procedure for handover of new assets, but handover is potentially too late to trigger planning for commissioning. *Observation for improvement: Include a commissioning plan in the Project Management Plan template to ensure this activity is planned for during the design and procurement phases.*	A	2
2.5	4	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.	The reviewer was provided with RIA Licence and Compliance Register that lists the statutory and regulatory licences and other compliance requirements including reporting to the regulatory authorities. The RIA’s Contracts and Project Officer monitors compliance. Any breaches or non-compliance issues are logged in the Breaches and Non-Compliances Register. There were some minor issues logged and actioned in the audit period.	A	1

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			The ongoing obligations for compliance monitoring have been assigned to the contractor, PFM, under the Rottnest Island Facilities, Utilities and Support Services (FUSS) contract between the RIA and PFM. FUSS Volume 2 lists legal/environmental and safety obligations required of PFM in operating and maintaining the services on Rottnest Island including the electricity generation and distribution network. A monthly FUSS service report includes a section on Regulatory Compliance – reporting on monitoring and licence conditions being met as per the Licence and Compliance register.		
3		**ASSET DISPOSAL**		A	2
3.1	4	Under-utilised and under-performing assets are identified as part of a regular systematic review process.	The Asset Management Plan – Electrical Infrastructure (section 4.5) provides a brief discussion of asset disposal with the reasoning for asset disposal closely related to the criteria for asset renewal (asset condition and risk). It was discussed that under-performance is typically the reason for decommissioning and disposal. Under performing assets are identified by PFM from monthly inspections and performance monitoring. PFM create work orders for corrective action (maintenance). Once an asset is decommissioned or has failed catastrophically and beyond repair it will be disposed of in an environmentally responsible manner. The RIA asset disposal process is followed which includes ensuring the RIA Fixed Asset Register is updated. The decision to reuse or dispose of an asset is made with consideration of the potential to: • Re-use the asset; • Utilise the asset as an emergency spare; or • Salvage the asset components as strategic spare parts. Where there is a high cost to dispose of an asset, the asset may be retained in a decommissioned state until funding is available. In this situation, inspections are scheduled to ensure the asset does not cause a safety risk. The monthly FUSS service report has a section for reporting on any assets decommissioned.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
			The RIA has a Notification of Asset Disposal Form to be completed. The Executive Director has authority to approve the disposal of assets with a written down value of $10,000 or lower. Above this limit, disposal has to be approved by the Board.		
3.2	4	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken.	Under performing assets are identified by PFM from monthly inspections and performance monitoring. PFM create work orders for corrective action (maintenance). The reviewer did not receive any samples of failure analysis and also the monthly reports have shown decline in performance of assets over time with recurring faults. Recommendations from inspections have not been implemented and there are overdue work orders that have direct impact on the electrical network performance. This depicts failure in undertaking corrective action in a timely manner, which requires improvement. ***Recommendation 2/2023*** *PFM to develop escalation processes to ensure the timely close-out of maintenance work orders.*	B	3
3.3	3	Disposal alternatives are evaluated.	The process for considering disposal alternatives is described in the Asset Management Plan including sale, demolition or relocation. The Notification of Asset Disposal Form requires the reason for disposal to be described. The process is shown in the Asset Disposal process chart. The reviewer was provided with information related to the diesel generators that confirmed disposal alternatives were reviewed. Diesel generators disposal is based on operational hours and condition assessments. The condition assessments for Generator 1 and Generator 4 together with oil analysis results were used to assess disposal alternatives and whether new units would be installed to replace the existing units. No distribution network assets were replaced during this period.	A	1

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3.4	4	There is a replacement strategy for assets.	The Asset Management Plan – Electrical Infrastructure (section 4.2) states that new assets result from either: • Using the asset register to forecast the renewal costs using acquisition year and the useful life to estimate when renewal year will occur; or • Using capital renewal expenditures forecasts from external condition modelling systems (CMMS software). The asset condition information in the AMP shows a significant number of electrical generation and distribution assets have approached end-of-life or have degraded beyond the expected degradation. The asset condition is monitored through the monthly service reports and a detailed monitoring database and reporting in Assetic Predictor model. The asset condition, asset risk and asset life data has been recorded in the new Assetic system (data store). This was confirmed by review of Assetic Predictor reports. The reviewer sighted the SP02210 - RIA HV Network Development Staging Plan that shows the existing assets and the staged replacement based on consideration of the design life, asset condition, risk of failure and end-of-life replacement strategy for Existing Assets - February 2023, Stage 1 by June 2023, Stage 2 by June 2024, Stage 3 by June 2025 and Stage 4 by June 2026.	A	1
4		**ENVIRONMENTAL ANALYSIS**		A	2
4.1	2	Opportunities and threats in the system environment are assessed.	The Strategic Asset Management Plan 2021-2030 (SAMP) and the Electrical Infrastructure Asset Management Plan identify opportunities and threats in the asset management system environment through identifying the aged condition of electrical infrastructure, financial constraints, customer trends, replacements with key asset risks quantified and strategies formulated to address the issues, including recommendation of capital projects. Additionally, opportunities and threats in the asset management system environment are also assessed in the SAMP, including: • Long term asset planning; • Management of increased visitor-related demand; • Effective management of the existing asset portfolio; • Significant environmental, cultural and visitor constraints; • Outsourcing approach; and • Renewable energy.	A	1

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			The reviewer confirmed the opportunities and threats in the system environment are assessed each month and reported upon for review and further action in the Monthly FUSS Reports.		
4.2	4	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved.	The performance standards (availability, capacity, continuity and incident response are measured and reported in the monthly FUSS Reports and the FUSS Service KPI Report – YTD to March 2023 and 2021/22. The reviewer sighted the Network Quality and Reliability of Supply Reports to the ERA for 2020/21 and 2021/22 and confirmed the performance standards are being achieved. All short-term and long-term upgrade works are undertaken with a key objective of minimising supply disruptions to the power system and hence end-users. The current peak demand is 1300kW and currently the Island has 2400kW of diesel generation, plus solar and wind which equals supply capacity of 3600kW which is considered to be more than enough supply to meet the current and future demand. RIA has completed studies to shortlist preferred options that align with their strategic goal to increase renewable energy utilisation from the current 30% to 75% in the next 5 years. State Government funding has been obtained. The RIA has recently developed a staged network development plan that will be implemented based on recent Government funding provided. Such funding will be used to increase generation to meet forecast growth and to upgrade the network and also address compliance issues. The staged network development plan sighted shows 5 stages and the proposed works by each year end from June 2023 to June 2026. ***Recommendation 3/2023*** *As planned, RIA should implement the staged network development plan to June 2026 that was recently funded, including short-term and long-term infrastructure upgrade works with emphasis given to minimising supply disruptions to end-users and increasing renewable energy utilisation. This will improve the performance standards re availability of service, capacity and continuity.*	B	3

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4.3	4	Compliance with statutory and regulatory requirements.	The RIA Licence and Compliance Register lists the statutory and regulatory licences and other compliance requirements including reporting to the regulatory authorities. The RIA's Contracts and Project Officer monitors compliance. Any breaches or non-compliance issues are logged in the Breaches and Non-Compliances Register. There were some minor issues logged and actioned in the audit period.	A	1
4.4	4	Achievement of customer service levels.	Service standards (including customer service levels) are measured, and annually reported by PFM in the Network Quality and Reliability report, which is independently audited by a qualified third party every three years. It was noted through inquiry with the Asset Manager that in the event of loss of service to a customer, and subsequent re-energisation, the duration and lower level of service is recorded within the work order created. The above is logged electronically in Maximo and available for reporting when needed. In case of an outage, the Restoration Priority Register Electrical Services Procedure governs the re-energisation priority in line with customer service levels requirements. The average length of interruptions to any customer premises should not exceed 290 minutes (calculated as the total annual interruption minutes per customer premises, calculated for each of the last 4 years and then averaged over the 4 years) for areas that apply to Rottnest Island Authority. The average length of interruptions reported for the 4 years to 2021/22 was 62.72 minutes which is within this KPI.	A	1
5		**ASSET OPERATIONS**		**A**	**2**
5.1	4	Operational policies and procedures are documented and linked to service levels required.	The *Electricity Industry Network Quality and Reliability of Supply Code* requires the licensee must establish systems to monitor compliance with the requirements to ensure, so far as is reasonably practicable, that: • the supply of electricity to a customer is maintained; and • the occurrence and duration of interruptions is kept to a minimum. PRO-RNI-I02-001 is the Independent Power Quality Monitoring and Evaluation Procedure. The power station consists of 1 – 600kW wind turbine, a 600kW – solar array (dc) and 500kW solar PB inverter (ac) solar farm and eight diesel generators (3 Low	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
			Load Diesel generators and 5 prime power diesel generators) with a total generation output of 2,500kW. All short-term and long-term upgrade works are undertaken with a key objective of minimising supply disruptions to the power system and hence end-users. The current peak demand is 1300kW and currently the Island has 2400kW of diesel generation, plus solar and wind which equals supply capacity of 3600kW which is considered to be more than enough supply to meet the current and future demand. The current peak demand is about 1,300kW inclusive of the Sandfire Hotel development and proposed Lodge development. PFM has full operational responsibility for both diesel generation facilities and renewables. As such has full responsibility in providing generation capability and operating the network in a compliant and efficient manner. Maintenance of the renewables, solar farm and wind turbine are coordinated in accordance with the needs of the assets and in conjunction with PFM who manage dispatch. In addition, the solar farm and the wind turbine are remotely monitored by EMCAM and Enercon remotely. PFM have full operational visibility and control of all assets. The Facilities, Utilities and Support Services (FUSS) contract provides governance and expectations on support services provided by PFM to RIA. Through a walkthrough with the Asset Manager, it was noted that operating manuals and procedures for all major plant and equipment exist. These operating manuals are either attached to the Maximo system, are from the Library at the Power House or are at the various trade buildings. The asset management system (Maximo) creates a job plan at a set frequency, which details operational procedures for the particular asset and is in line with the applicable operational manual. Maximo communicates with Promapp, which is the iPad interface that the maintenance operators use to perform their scheduled tasks. Jot Forms are also used for recording more specialised data of some assets not covered by Promapp. The tasks are detailed and designed in accordance with the relevant operational manual in relation to the relevant asset. Once a task is complete it is signed off on Promapp or Jot Forms, and results are communicated back to Maximo. On a higher-level, PFM maintains operational procedures such as the Restoration Priority Register and the Planned Outage Notification procedure, which details timelines and service levels to maintain e.g. 72 hours advance notifications to customers prior to planned outages.		

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5.2	3	Risk management is applied to prioritise operations tasks.	The Rottnest Island Power Risk Register outlines detailed risks on an individual asset level. The PFM Risk Management Framework is applied to this register which includes assessing the severity, likelihood, inherent risk, mitigation options, action plan and action owner of each individual asset risk. Furthermore, risk management on an asset level is available and conducted within the asset management system (Maximo) which lists each assets' likelihood and consequence of asset failure. However, our review of the Maximo Outstanding Work Order Tracker shows that overdue tasks had not been escalated in accordance with PFM's Risk Management Framework. The risk ratings of relevant work orders seem to have inappropriate risk ratings with low to medium priorities, which indicates that ongoing review and risk management of the assets are not being conducted on a routine basis. ***Refer Recommendation 2/2023*** *(in section 3.2 above).*	B	3
5.3	4	Assets are documented in an Asset Register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition and accounting data.	Asset records are included in the Maximo system maintained by PFM. A demonstration provided of Maximo was unable to provide an Asset Register view but in interrogating individual assets, information on asset type, location and material could be determined. Fields also existed to show asset condition but these were not always populated and it was unclear what the process was for updating the condition assessment following the completion of asset condition assessment work orders. It is to be noted that assets related to Solar Farm and Wind Turbine are not integrated within the Maximo system, so there is no one database associated with the electrical network at the Rottnest Island. There are also separate spare parts inventory lists. RIA are in the process of populating a new computerised maintenance management system with asset records (Assetic) with the intention to replace the Maximo system. Based on the business case provided for the Enterprise Asset Management System Project, through implementation of Assetic the RIA expect to improve their asset management performance, particularly in whole of life costing, reducing a reactive approach to asset failure and improving the provision of well justified asset growth and renewal plans. The RIA has progressed with the assembly of as-constructed information on the electrical infrastructure during the review period. A survey company was engaged to assemble the as-constructed data and has provided this in AutoCAD format, with	A	2

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			the source of data classified to describe the accuracy which ranges from physically surveyed (accurate) to located by GPS or unknown/digitised source. *An improvement is to include the ability to identify the assets contained in Maximo/Assetic on the as-constructed plans.*		
5.4	4	Accounting data is documented for assets.	Operations and Maintenance expenditure is tracked against budget in the RIA Financial Management System and monthly financial reports. There is also a detailed asset register maintained by Finance including accounting data.	A	1
5.5	4	Operational costs are measured and monitored.	The Electrical Infrastructure Asset Management Plan provides Operations and Maintenance (O&M) cost annual forecasts for a 10 year period. The CFO provided an outline of the process used to set and monitor budgets, with the Opex and Capex budgets set by Directors and approved by the Board before start of the Financial Year. The RIA Finance Team meet with the Director on a monthly basis to discuss how actual spending is tracking against the budget. This is reported to the Board by the CFO at each Board meeting (a sample report was provided). Budget variations may require Board or Executive Director approval depending on the nature of the project. Project Management Plans are required for all Capex and Opex projects between $50K and $250K. Some improvement is required to enable operating (and maintenance costs) to be monitored in a meaningful way. Recognising that not all of the Electricity network O&M costs may be spent by PFM, the monthly FUSS service report prepared by PFM appears to be an opportunity to include monthly reporting of budget alongside the other performance metrics provided. *Opportunity for Improvement – Whilst O&M budgets are monitored from a Finance point of view, more understanding of service costs could be gained by drilling down to report on the fuel usage and maintenance and labour costs of electricity production separately. The ability to track this information against the performance reporting in the monthly FUSS service report would be ideal.*	A	2
5.6	4	Staff resources are adequate and staff receive training commensurate with their responsibilities.	A staff training matrix was provided by PFM. However the training matrix appears to be not maintained as the dates are not current and no up-coming training requirements have been identified for staff and/or contractors. Some training for particular employees has been shown as mandatory. This appears to be used mainly	B	3

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			to highlight where training or qualification needs to be renewed (e.g. some drivers licences show expired dates and have been highlighted as mandatory). From the site visit, PFM seemed to be adequately resourced to operate and maintain the electricity network. However, review of the work orders database showed some overdue tasks that had not been escalated for completion. This may be a lapse in the work order management or could be through lack of appropriate resourcing to complete the backlog. PFM's contract does not include maintenance of the Solar Farm and Wind Turbine. Reliance is placed on the external contractors that support the Solar Farm (EMCAM) and the Wind Turbine (ENERCON). PFM do not have contractors that carry out initial response to solar farm or wind turbine supplies. PFM has basic training to carry out initial responses to wind turbine and solar farm. Both assets may also be isolated remotely. The Training Matrix should be updated to show the relevant training for RIA and PFM staff and to show the coverage of the diesel generators, wind turbines and solar farm. ***Recommendation 4/2023*** *a) Update the Training Matrix to demonstrate staff and contractor training requirements, including initial responses to wind turbine and solar farm disruptions.* b) *Reassess resourcing requirements to clear overdue work orders.*		
6		**ASSET MAINTENANCE**		A	2
6.1	4	Maintenance policies and procedures are documented and linked to service levels required.	The Rottnest Island Facilities Utilities and Support Services (FUSS) contract between RIA and PFM defines service levels which are measured to KPI's and reported on a monthly basis as required by the PFM KPI Performance Reporting Manual. Furthermore, the monthly FUSS service report outlines utilities' performance such as planned and unplanned outages, trips, capacity, availability and outputs, updates, innovations and risk and opportunities. The Multi Utility Asset Management Plan (MUAMP) and the Electrical Infrastructure Asset Management Plan detail the maintenance strategy for key assets. As per the Maximo system walkthrough, it was noted that a Preventative Maintenance Plan is	A	1

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			assigned to each electrical asset and a Job Plan created with a Work Order on the required maintenance frequency in Maximo.		
6.2	4	Regular inspections are undertaken of asset performance and condition.	The Electrical Infrastructure Asset Management Plan includes an Appendix which lists the annual PFM maintenance list, many of the tasks being inspection activities. A demonstration of Maximo verified maintenance tasks loaded to undertake these inspection activities. However, the process for gathering information from the inspection tasks and updating condition assessments and any required response does not appear to be documented. RIA are in the process of populating a new computerised maintenance management system with asset records (Assetic) with the intention to replace the Maximo system. Also, the maintenance list only covers the PFM maintenance list and does not include any of the ENERCON and EMCAM maintenance lists for the Wind Turbine and Solar Farm respectively, although the Asset Management Plan is meant to provide a plan for the entire Electrical Network of Rottnest Island of which Wind Turbine and Solar Farm are part of. The Maximo demonstration, although limited to a few assets, also was unable to explain what happens as a result of an inspection task. While inspection activities were shown completed in Maximo, there was no information loaded to indicate what the outcome of the inspection was, or if the condition assessment had been updated as a result of the inspection. If any corrective actions need completing from the maintenance inspection, a corrective work order should be raised by the Island Office, however evidence of such works is not reflected in Maximo. Inspection of the solar farm revealed the panels are failing at an extremely high failure rate of approximately 80 to 100 panels per year. The failures are due to moisture ingress. However, the cause is either manufacturing defects or frame damages due to the hold-down clips being installed too tightly. The Manager Electricity and Fuel Infrastructure confirmed that *t*he solar farm is monitored on a 24-hour basis and responses undertaken in accordance their severity and safety and compliance requirements, and weather condition. Strings are isolated where appropriate to ensure safety and operation of the asset. Vegetation management is undertaken as and when required notwithstanding it is an A class reserve.	B	2

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			An improvement is to document the procedure for gathering information from the inspection tasks, updating condition assessments and any required response, including the use of the new Assetic system.		
6.3	4	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule.	Planned/preventative maintenance plans are agreed between RIA and PFM and scheduled in PFMs Maximo application. A copy of the planned maintenance programs for electrical network infrastructure is included in an Appendix to the Asset Management Plan. A demonstration of Maximo confirmed that maintenance work orders are allocated and completed on schedule. Corrective and emergency maintenance have required response and rectification times depending on the priority of the fault. The required response times range from 30 minutes to 3 days, and the required rectification times range from 2 hours to 3 days. The work orders are tracked to completion on the system. A priority rating is attributed to each job determining the type and urgency of the work to be performed (reactive maintenance, capital works, planned maintenance and corrective maintenance). Monthly, an update on maintenance completion according to schedule is provided to the RIA through the issuance of the FUSS report. Weekly, the Office Island Manager monitors the completion of due jobs and reminds maintenance staff of their time constraints. The Office Island Manager also is in charge of producing the monthly KPI reports, which are generated through a BI report extracting data from Maximo. The report details emergency maintenance (safety issue or outage), preventative maintenance (planned maintenance) and corrective maintenance (fixing faults).	A	1
6.4	4	Failures are analysed and operational/maintenance plans adjusted where necessary.	PFM has processes in place through Maximo to analyse failures and adjust operational/maintenance plans where necessary. Where assets are deemed to be at point of failure (e.g. Generator 6 failure) work orders are raised and the appropriate personnel (maintenance providers, asset manufacturers, technicians/engineers) are engaged through the Maximo work order to review and analyse the situation and provide recommendations. This is then logged back into Maximo (e.g. changes to risk assessment and asset condition). Reporting is provided to management and the decision making occurs and appropriate action is taken. The Notice of Works Procedure is in place which requires PFM to notify RIA when an asset has failed or is at end of life. Failures are also recorded in the Outage Register and incident reports	A	1

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			are completed for each failure, which is also reported to management. Accordingly, failures are being analysed and maintenance plans adjusted. RIA utilises Assetic and ongoing maintenance reporting in assessing its maintenance needs. The reviewer sighted the Hybrid Power System Monthly Report showing that failure analysis review was carried out in Assetic.		
6.5	3	Risk management is applied to prioritise maintenance tasks.	Reactive maintenance is clearly prioritised by risk and assigned a priority (1 to 4) which determines the required response time and rectification time. Through the discussion contained in the FUSS monthly service report (referred to in criteria 6.4 above), maintenance activities are also prioritised in response to observed trends and failure analysis. As noted in criteria 5.2 above, review of the Maximo Outstanding Work Order Tracker shows that overdue tasks have not been escalated in accordance with PFM's Risk Management Framework. Also, asset failures have a direct impact on the system availability and reliability KPIs due to the ageing assets and lack of critical redundancy within the network. The risk ratings of relevant work orders seem to have inappropriate risk ratings with low to medium priorities, which indicates that ongoing review and risk management of the assets is not being fully completed. *Opportunity for Improvement – Review the process for setting risk ratings for Maximo Work Orders to confirm that risk ratings assigned are appropriate, and if applicable, adjust any existing ratings.*	A	2

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6.6	4	Maintenance costs are measured and monitored.	The Electricity Infrastructure Asset Management Plan provides Operations and Maintenance Cost annual forecasts for a 10-year period. This is developed based on manufacturer recommended preventative and routine based maintenance tasks. However, at Rottnest Island, given the aging condition of the assets, maintenance costs should also be reflective of the condition based and reactive maintenance activities. While O&M budgets are monitored from a Finance point of view, more understanding of service costs could be gained by drilling down to report on the generation and distribution network services separately. The ability to track this information against the performance reporting in the monthly FUSS service report would be ideal. Maintenance costs are reported as a whole. However, there is currently no ability to report maintenance costs on a system (e.g. electrical, mechanical, generators) or asset (e.g. Generator No 1) granular level as maintenance is outsourced by RIA. Maintenance costs of electricity production are currently not being captured and reported due to the outcome-based nature of the FUSS contract. Some improvement is required to enable operating (and maintenance costs) to be monitored in a meaningful way. Recognising that not all of the Electricity network O&M costs may be spent by PFM, the monthly FUSS service report prepared by PFM appears to be an opportunity to include monthly reporting of budget alongside the other performance metrics provided. *Opportunity for Improvement – Whilst O&M budgets are monitored from a Finance point of view, more understanding of service costs could be gained by drilling down to report on the fuel usage and maintenance and labour costs of electricity production separately. The ability to track this information against the performance reporting in the monthly FUSS service report would be ideal.*	B	2
7		**ASSET MANAGEMENT INFORMATION SYSTEM**		A	1
7.1	4	Adequate system documentation for users and IT operators.	RIA and PFM have adequate system documentation for the asset management system including the Asset Management Process Manual, Asset Register Management procedure and Maximo system documentation.	A	1

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7.2	4	Input controls include appropriate verification and validation of data entered into the system.	Data accuracy is controlled by edit checks of data fields in the Maximo system and checks by the Administrator when entering manually completed work order requests and updates – considered adequate.	A	1
7.3	4	Logical security access controls appear adequate, such as passwords.	The Maximo system has global password rules that require complex passwords, password change every 60 days and restricted reuse of passwords. Only authorised staff are provided with access to the system. Also sighted the PFM Information Security Policy, including Acceptable Usage and the RIA Operational Procedure - Identity and Access Management.	A	1
7.4	4	Physical security access controls appear adequate.	The PFM site office on the Island is locked and alarmed outside of office hours. The servers are at PFM's central office and not on the Island.	A	1
7.5	4	Data backup procedures appear adequate and backups are tested.	The system is backed up at least daily and a copy stored offsite as part of the standard IT data backup procedure. The backups are regularly tested by recovery of data files. Also sighted the backup procedures for the automated control system.	A	1
7.6	4	Key computations related to licensee performance reporting are materially accurate.	From review of source data for the performance reporting, the calculations are considered to be accurate.	A	1
7.7	4	Management reports appear adequate for the licensee to monitor licence obligations.	Maximo reporting is largely online to responsible officers. PFM provide a monthly report to RIA on performance of the FUSS contract and a dashboard report of key performance indicators, which is reviewed by RIA to confirm that the licence obligations are being met. Considered adequate.	A	1
7.8	4	Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation.	PFM has adequate system documentation for the asset management system including the Asset Management Process Manual, Asset Register Management procedure and Maximo system documentation.	A	1
8		**RISK MANAGEMENT**		A	1

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8.1	3	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.	The RIA has a Risk Management Policy and Risk Management Framework that were reviewed in November 2022. Also, PFM has a risk management policy and procedure that has been applied to develop an Enterprise Risk Management Plan covering their FUSS services on the Island including electricity services. The Plan has been applied to the operations and maintenance activities as described above. The Plan includes risk statements covering external risks such as bushfire and internal risks such as performance management. The coverage is considered to comprehensively cover potential risks to the electricity services. There is also a Power Quality Risk Management Plan and a Summer Air-conditioning supply Risk Management Plan that have assessed the risk for these services in more detail and been applied in the operations and maintenance activities. PFM also have comprehensive Occupational Health and Safety management systems.	A	1
8.2	4	Risks are documented in a risk register and treatment plans are actioned and monitored.	The Strategic Asset Management Plan 2021-2030 and the Electrical Infrastructure Asset Management Plan 2021/22 include a risk management framework to prioritise the capital projects. The operational risks are documented in the Operational Risk Register – Infrastructure including the risk "Failure to maintain a safe electrical supply to Rottnest Island" Treatment plans are monitored through the Quarterly Risk Management Summary provided to executive management.	A	1
8.3	3	The probability and consequences of asset failure are regularly assessed.	The probability and consequences of asset failure are included in the Enterprise Risk Management Plan and the Electrical Infrastructure Asset Management Plan. The Plan is reviewed and updated at least every 12 months. The coverage is considered to comprehensively cover potential risks to the electrical services. PFM also have comprehensive Occupational Health and Safety management systems.	A	1
9		**CONTINGENCY PLANNING**		A	1
9.1	2	Contingency plans are documented, understood and tested to confirm their	The RIA and PFM have documented the contingency plans in the Emergency Management Plan – Bushfire. The Plan includes key contacts for RIA and PFM, including emergency contacts, incident scenarios, emergency response and other response procedures. The scenarios include detailed action plans. The Plan	A	1

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		operability and to cover higher risks.	includes the scenarios expected from our review of the electrical supply services. The plan was tested in a desktop scenario exercise at least annually with the latest test being in June 2022.		
10		**FINANCIAL PLANNING**		A	1
10.1	4	The financial plan states the financial objectives and strategies and actions to achieve the objectives.	The Strategic Asset Management Plan 2021 – 2030 states the financial objectives and strategies and actions to achieve the objectives. This is supported by the Electrical Infrastructure Asset Management Plan that identifies opportunities and threats in the asset management system environment through identifying the aged condition of electrical infrastructure, financial constraints, customer trends, replacements with key asset risks quantified and strategies formulated to address the issues, including recommendation of capital projects. Additionally, opportunities and threats in the asset management system environment are also assessed in of the SAMP, including: • Long term asset planning; • Management of increased visitor-related demand; • Effective management of the existing asset portfolio; • Significant environmental, cultural and visitor constraints; • Outsourcing approach; and • Renewable energy.	A	1
10.2	4	The financial plan identifies the source of funds for capital expenditure and recurrent costs.	The Plan identifies the funding for the next year but beyond that is subject to further government or internal funding being available. Further funding will be required to replace the ageing electrical infrastructure and this will need to be sought from the State government.	A	1
10.3	4	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets).	The Plan includes projections of operating costs. The RIA prepares annual budgets and produces monthly and annual financial statements of actual to budget income and expenses. Also, a Statement of Financial Position is produced.	A	1
10.4	4	The financial plan provides firm predictions on income for the next five years and reasonable	The financial plan states financial predictions until 2030/31 although these may not be fully funded.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
		indicative predictions beyond this period.			
10.5	4	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services.	The financial plan provides adequate funding for the operating expenses and the capital expenditure requirements for a year but beyond that is subject to further funding approval from government.	A	1
10.6	4	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.	Variances in actual to budget income and expenses are analysed and reported in the monthly financial statements to the RIA	A	1
11		**CAPITAL EXPENDITURE PLANNING**		**A**	**1**
11.1	4	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates.	The Strategic Asset Management Plan (SAMP) 2021 - 2030 provides alignment between the RIA strategic business objectives, stakeholder requirements and the resulting asset management objectives to ensure that the assets are being managed to provide the value required of them. This is supported by the Electrical Infrastructure Asset Management Plan that identifies opportunities and threats in the asset management system environment through identifying the aged condition of electrical infrastructure, financial constraints, customer trends, replacements with key asset risks quantified and strategies formulated to address the issues, including recommendation of capital projects. The Plans includes priorities for capital expenditure in the next year and a 10-year unfunded capital expenditure plan. The Plan includes the issues to be addressed, action proposed, responsibilities and timing over 10 years to 2030/31. The RIA has also recently developed a staged network development plan that will be implemented based on recent Government funding provided. Such funding will be used to increase generation to meet forecast growth and to upgrade the network and also address compliance issues. The staged network development plan sighted shows 5 stages and what the proposed works are expected to involve from June 2023 to June 2026.	A	1

Item no.	Review Priority (1 High to 5 Low)	Component and Effectiveness Criteria (per Audit Guidelines)	Observations and results (including any potential improvements)	Process and Policy Rating	Performance Rating
11.2	4	The plan provides reasons for capital expenditure and timing of expenditure.	The rationale and priorities for capital expenditure, including estimated timing over 10 years to 2030/31 are stated in the above Plans.	A	1
11.3	3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan.	The RIA has recently developed a staged network development plan that will be implemented based on recent Government funding provided. Such funding will be used to increase generation to meet forecast growth and to upgrade the network and also address compliance issues. The staged network development plan sighted shows 5 stages and what the proposed works are expected to involve from June 2023 to June 2026. The capital expenditure plans will be updated annually for the condition assessment of assets that is currently in progress. As noted in section 6.6 above, the current loading of assets into the new CMMS (Assetic) should position the RIA to provide a more complete asset register than is currently available.	B	2
11.4	4	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.	The RIA has a regular process to review and update their annual capital expenditure plan and to monitor actual against planned expenditure. This process is documented in the RIA's Financial Management procedures.	A	1
12		**REVIEW OF ASSET MANAGEMENT SYSTEM**		A	1
12.1	3	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current.	There is a process for the RIA and PFM to review the asset management plans as documented in the RIA's annual budgeting procedures. The RIA Asset Management Policy also documents the objectives and roles and responsibilities. There is also a process for PFM to review and update the supporting plans and procedures for the electrical services as documented in the PFM Asset Management Process Manual.	A	1
12.2	4	Independent reviews (e.g. internal audit) are performed of the asset management system.	An independent review is performed every 24 months as required by the licence.	A	1

2.7 Review Recommendations

Note: As per the Audit and Review Guidelines, only recommendations with a Policy or Process Rating of C or D and/or Performance Rating of 3 or 4 are included in this report. Other improvement opportunities are provided direct to the Licensee.

Table of Current Review Asset System Deficiencies and Recommendations

A. Resolved during current review period

Reference (no./year) Compliance rating	**Asset System Deficiency** (AMS Component/Effectiveness Criteria/Details)	**Auditor's Recommendation**	**Management Action taken by end of review period**
	Nil		

B. Unresolved during current review period

Reference (no./year) Compliance rating	**Asset System Deficiency** (AMS Component/Effectiveness Criteria/Details)	**Auditor's Recommendation**	**Management Action taken by end of audit period**
1/2023 **B3**	**Asset Planning** *1.8 - Likelihood and consequences of asset failure are predicted*. Section 4.1.4 of the Asset Management Plan discusses asset criticality and risk of failure. A table of electrical infrastructure assets assessed as critical is included. A demonstration of the Maximo system managed by PFM was provided. This showed many assets are listed with a risk rating. However the process for reviewing the risk rating, especially following any asset condition assessment activities was not clear. With work proceeding on populating the new Assetic system at the current time, there appears to be a lack of clarity around the process for updating asset risk assessments.	The Asset Management Plan – Electrical Infrastructure should describe how asset risk is determined and updated in response to condition assessment information, and processes need to be put in place to ensure asset risks are recorded and updated in the Enterprise Asset Management System (Maximo or Assetic).	Nil

Reference (no./year) Compliance rating	Asset System Deficiency (AMS Component/Effectiveness Criteria/Details)	Auditor's Recommendation	Management Action taken by end of audit period
2/2023 **B3**	**Asset Disposal** *3.2 - The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken.* **Asset Operations** *5.2 - Risk management is applied to prioritise operations tasks.* Under performing assets are identified by PFM from inspections and performance monitoring. PFM create work orders for corrective action (maintenance). The reviewer did not receive any samples of failure analysis and also the monthly reports have shown decline in performance of assets over time with recurring faults. Recommendations from inspections have not been implemented and there are overdue work orders that have direct impact on the electrical network performance. This depicts failure in undertaking corrective action in a timely manner, which requires improvement.	PFM to develop escalation processes to ensure the timely close-out of maintenance work orders.	Nil
3/2023 **B3**	**Environmental Analysis** *4.2 - Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved.* All short-term and long-term upgrade works are undertaken with a key objective of minimising supply disruptions to the power system and hence end-users. The current peak demand is 1300kW and currently the Island has 2400kW of diesel generation, plus solar and wind which equals supply capacity of 3600kW which is considered to be more than enough supply to meet the current and future demand. RIA has completed studies to shortlist preferred options that align with their strategic goal to increase renewable energy utilisation from the current 30% to 75% in the next 5 years. State Government funding has been obtained. The RIA has recently developed a staged network development plan that will be implemented based on recent Government funding provided. Such funding will be used to increase generation to meet forecast growth and to upgrade the network and also address compliance issues.	As planned, RIA should implement the staged electricity network development plan to June 2026 that was recently funded, including short-term and long-term infrastructure upgrade works with emphasis given to minimising supply disruptions to end-users and increasing renewable energy utilisation. This will improve the performance standards re availability of service, capacity and continuity.	Nil

Reference (no./year) Compliance rating	Asset System Deficiency (AMS Component/Effectiveness Criteria/Details)	Auditor's Recommendation	Management Action taken by end of audit period
	The staged network development plan sighted shows 5 stages and what the proposed works are expected to involve from June 2023 to June 2026.		
4/2023 **B3**	**Asset Operations** *5.6 - Staff resources are adequate and staff receive training commensurate with their responsibilities.* A staff training matrix was provided by PFM. However the training matrix appears to be not maintained as the dates are not current and no up-coming training requirements have been identified for staff and/or contractors. Some training for particular employees has been shown as mandatory. This appears to be used mainly to highlight where training or qualification needs to be renewed (e.g. some drivers licences show expired dates and have been highlighted as mandatory). From the site visit, PFM seemed to be adequately resourced to operate and maintain the electricity network. However, review of the work orders database showed some overdue tasks that had not been escalated for completion. This may be a lapse in the work order management or could be through lack of appropriate resourcing to complete the backlog. PFM's contract does not include maintenance of the Solar Farm and Wind Turbine. Reliance is placed on the external contractors that support the Solar Farm (EMCAM) and the Wind Turbine (ENERCON). PFM do not have contractors that carry out initial response to solar farm or wind turbine supplies. PFM has basic training to carry out initial responses to wind turbine and solar farm. Both assets may also be isolated remotely. The Training Matrix should be updated to show the relevant training for RIA and PFM staff and to show the coverage of the diesel generators, wind turbines and solar farm.	a) Update the Training Matrix to demonstrate staff and contractor training requirements, including initial responses to wind turbine and solar farm disruptions. b) Reassess resourcing requirements to clear overdue work orders.	Nil

Appendix A - Methodology

A1. Review Approach

Our approach to meeting the requirements for the asset management system review is set out below.

Review Planning

- Conduct an initial meeting with the ERA to confirm the review approach and timing for the review, if required.
- Contact the licensee to gain an understanding of the business, relevant management plans and systems that may affect the risk assessment for planning purposes.
- Prepare a risk assessment including any specific factors or changes relevant to the licensee (in tabular form against each asset management system component).
- Submit a draft Review Plan, including the risk assessment and proposed approach, to the ERA for review and approval.
- Send a Pre-Visit Checklist of information and documentation to the licensee to enable staff to prepare for the visit (and where possible, send us information prior to the site visit).

Fieldwork

- Undertake a visit to the licensee and conduct various meetings with stakeholders, including corporate services and works/facilities management personnel, to determine the effectiveness of systems and procedures in place and to compare actual performance against the licence standards. The on-site visit included our Senior Engineer.
- Obtain copies of the latest asset management plans, performance reporting statistics and relevant correspondence between the licensee and the ERA for the audit period.
- The activities in the Asset Management System Review include:
    - analyse the documented procedures and processes for the planning, construction, operation and maintenance of assets to assess whether they are consistent with regulatory requirements under the licence;
    - interview key personnel to assess whether they understand and comply with the documented processes and procedures;
    - physically inspect the key assets and infrastructure; and
    - assess the effectiveness of the processes and system in place.

Review Reporting

- Prior to the conclusion of the visit, the lead auditor will discuss any observations and recommendations with the licensee's management to confirm our understanding of the issues and to discuss the action to be taken.
- Provide a draft report to the ERA for review no later than two weeks before the final report is due and make any revisions necessary.
- Provide the updated draft report to the ERA for review and feedback prior to finalising the report.
- Issue the final report to the ERA.
- The ERA will arrange responses to the proposed actions in the Post Audit Implementation Plan.

A2. Key Documents Reviewed

Regulatory Compliance

- Energy Coordination Act 1994
- Electricity Industry Act 2004
- Electricity Industry (Metering Code) 2012
- Economic Regulation Authority (Licensing Funding) Regulations 2014
- Electricity Compliance Reporting Manual (February 2023 and previous versions January 2023, February 2022 and June 2020)
- Electricity Integrated Regional Licence EIRL3 (Version 6)
- Operating Area Map (ERA-EL-076(A)
- Performance Audit Report (December 2021)
- Asset Management Review Report (December 2021)
- Post Audit Implementation Plan (2021)
- Post Review Implementation Plan (2021)
- Performance and Compliance Reports to the ERA for 2020/21 and 2021/22 and acknowledgment of receipt

Performance Audit

- Post Audit Implementation Plan (latest)
- Network Quality and Reliability of Supply Independent Audit Report (latest)
- 2022 and 2021 Electricity License Reporting Datasheets
- 2022 and 2021 Electricity Licence Report Datasheets - Distribution
- 2022 and 2021 Electricity Licence Reporting Datasheets NQR Code
- Email - RIA submission of 2021 and 2022 Annual Reporting and Performance Reporting under ERA integrated regional licence
- Email from RIA re publishing of ERA Electrical Performance Reports
- Fees paid to ERA for 2020/21 and 2021/22 (payment advices)

Asset Management System Review

Asset Planning

- Rottnest Island Management Plan (RIMP)
- Rottnest Island Master Plan (latest)
- Rottnest Multi Utility Asset Management Plan (MUAMP).
- Strategic Asset Management Plan (SAMP).
- Strategic Asset Plans (SAP).
- Electrical Infrastructure Asset Management Plan (EIAMP).
- SP02210 – RIA HV Network Development Staging Plan

Asset Creation/Acquisition

- Rottnest Generation Development Study Report
- Rottnest Island Electrical Infrastructure Business Case

Asset Operations and Asset Maintenance

- FUSS Contract
- FUSS Service KPI Report – YTD to March 2023 and 2021/22
- FUSS001 - Planned Maintenance Activity Report 2021/22 and 2022/23
- System Performance Measures SAIDI SAIFI CAIDI Procedure
- Rottnest Island Power Quality Report 2022
- Reactive Maintenance Monthly Tracker – YTD March 2023
- Planned Maintenance Monthly Tracker – YTD March 2023
- Planned Maintenance Procedure - Service Delivery
- Powerhouse Outages Procedure
- Planned Outage Notification Procedure
- Power Outages 2021/22 and 2022/23
- Network Quality and Reliability of Supply Reports to ERA for 2020/21 and 2021/22.
- Corrective Maintenance Monthly Tracker – YTD
- Rottnest Island Hybrid Power Station Monthly Report – March 2023
- ECAM Monthly Report – February 2023
- Rottnest Island Solar Farm Monthly Report – Sept. 2021
- Assetic Predictor Screenshots
- Training Competency Matrix.
- Maximo Priority Definitions
- Entura Event Investigation – March 2020
- Electrical Workshop – RIA-PFM Notes

Environmental Analysis • Rottnest Electrical Distribution and Connection Manual	***Asset Management Information System*** • Corporate Policy Statement 63 - Information and Related Technology • Corporate Policy Statement 70 - Information Security Management Maximo Electrical Assets Register
Risk Management • Corporate Policy Statement 56 - Risk Management • RIA Risk Register • PFM Risk Management Plan • PFM Risk Management Procedure • RIA Risk Management Framework • Quarterly Risk Management Summary Report – December 2022 • Operational Risk Register – March 2023	***Contingency Planning*** • Rottnest Island Emergency Management Plan- Bushfire • PFM Emergency Response Plan. • Electrical - Service Recovery and Contingency Plan. • Electricity Business Continuity Drill Testing evidence. • Emergency Generator Installation Procedure. Restoration Priority Register Electrical Services Procedure.
Financial Planning and Capital Expenditure Planning • Annual Report 2021-22 (website) • Board approval of the FY23 Budget. • CFO Report March 2023.	

A3. Key Contacts

The licensee's representatives participating in the audit were:

Rottnest Island Authority (RIA)

- David Pond – Environmental Compliance and Approvals Coordinator
- Rebecca Gabbitus – Manager Environment
- Roger Petit – Manager Electrical & Fuel Infrastructure
- Eamonn Williams – Manager Electrical & Fuel Infrastructure

Programmed Facility Management (PFM)

- Dan Hunt – PFM Island Manager
- Jason Vogel – Quality and Compliance Officer
- Andrew Bekker - Electrical Compliance Manager
- Clint McDonald – Electrical Supervisor (Rottnest Island)
- Jean Montocchio (JP) – Electrician and stand in Supervisor (Rottnest Island)

A4. Consultants

NAME AND POSITION	BUDGET HOURS
Geoff White - Director	40
Tanuja Sanders – Principal Planning Engineer	80
TOTAL	**120**

END OF REPORT