ABN 20 009 454 111

Review Report

Regional Power Corporation (T/A Horizon Power) Electricity Integrated Regional Licence Asset Management System Review

August 2014

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Executive Summary

Regional Power Corporation (T/A Horizon Power) (Horizon Power or the licensee) holds an Electricity Integrated Regional Licence (EIRL2) issued by the Economic Regulation Authority (the Authority) under Sections 7 and 15 of the Electricity Industry Act 2004 (WA) (the Act). The licence enables Horizon Power to construct and operate power generating, transmission and distribution facilities and to supply electricity in accordance with the licence conditions.

Sections 13 and 14 of the Act requires Horizon Power to provide the Authority with a report by an independent expert on the effectiveness of their Asset Management System. In March 2014 Horizon Power commissioned Qualeng to carry out the Asset Management System review (the review) for the period 1 April 2011 to 30 June 2014. The review has been conducted and this report prepared in accordance with the Authority's "Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014)" (the guidelines).

THE ASSETS

The services are provided to an area of approximately 2.3 million square kilometres extending from the Kimberley in the North to Esperance, Norseman and Hopetoun in the South and including the Pilbara, Gascoyne, Mid West and Southern Goldfields regions in Western Australia. Electricity is supplied to 38 non-interconnected or islanded systems in regional towns and remote communities, one major interconnected system, the North West Interconnected System (NWIS) and the connected transmission network between Kununurra, Wyndham and Lake Argyle.

In addition to power generating plant in Carnarvon, Marble Bar, Nullagine, Kununurra and Wyndham, Horizon Power also owns generating plant that is managed by a third party and purchases electricity from third parties. Horizon

Power owns or has interests in gas pipelines (including the Onslow and Mid West Pipelines), secondary systems including SCADA, communication and protection, mobile generating fleet, metering assets, Fleet, including light and heavy vehicles and registered plant, commercial and residential properties, Information Technology and Telecommunications.

Horizon Power supplies electricity to approximately 100,000 residents and 10,000 businesses, including major industry. The transmission system, the NWIS, is about 450 km in length and consists of the transmission line between Dampier in the West Pilbara and Goldsworthy in the East Pilbara with ring systems in Karratha and Port Hedland, operating at voltages up to and including 220kV. The distribution system is nearly 6000 km in length and comprises 6.6kV, 11kV, 22kV and 33kV systems.

THE REPORT

The report includes:

(i) a summary of the objectives, the scope of the task and details of this review;

(ii) the licensee's actions in response to the previous review recommendations;

(iii) key findings and recommendations from this review and

(iv) a post review implementation plan listing the review recommendations and the responses and actions proposed by Horizon Power. Although this plan does not form part of the report, it is included to complete the documentation.

LICENSEE'S RESPONSE TO PREVIOUS AUDIT RECOMMENDATIONS

Horizon Power has taken corrective actions to address the recommendations of the 2011 Asset management review. The recommendations were managed systematically and the response show an appropriate approach and commitment by Horizon Power. All corrective actions have been closed. Details of the actions and assessment are included in Table 2 – "B" - Asset Management System Review 2011 Ineffective Components Recommendations, Section 2.1 of the report.

ASSET MANAGEMENT REVIEW EFFECTIVENESS SUMMARY

The review has found that Horizon Power has an effective asset management system (AMS) and is committed to continuous improvement and regulatory compliance through its approach to the management of the assets, an extensive improvement program to upgrade its IT and asset management systems and regular management reporting on the operation of the assets.

At the start of the review period Horizon Power AMS relied primarily on legacy systems that were common with and maintained by Western Power. During the review period the licensee implemented the Business Transformation Program which managed the separation of the AMS legacy systems from Western Power and created a smaller number of better integrated systems in Horizon Power. Other minor systems that had been implemented separately within Horizon Power required

adjustments, where applicable, to fit in within the new system framework. While some of the AMS individual systems retained the same software maker, all "Transformation" systems had to be established from the ground up within Horizon Power and the data transferred from the legacy systems to the new systems.

- The review found that the Business Transformation Program created some disruption to the operation of the systems. At the same time, Horizon Power had adopted a proactive approach and had taken the opportunity to address long standing issues with the legacy systems and to establish an improvement path for the future operation of the assets and the systems.

Some of the visible improvements were:

- a more effective, flexible and up-to-date management reporting framework;
- stronger management and monitoring of data quality;
- continuous improvement of systems to achieve improvements in the process and productivity;
- stronger IT governance both on projects and operation areas.

The main findings of the review were:

- the quality of data in the Asset Register needs to be improved; Horizon Power has identified that the data quality in the Asset register needs to be improved and has implemented programs and a number of activities to achieve this. Progress results from these programs show improvement of data consistency against set targets;
- review and control of documentation was lagging during the review period due to the Business Transformation Program and the AMS restructure, documentation updates were kept on hold awaiting the system development;
- closure of tasks in the system has lagged, partly due to delays caused by the new systems implementation learning curve. Operational tasks are covered by Work Orders which are generated by the AMS and have due dates for completion. Open tasks are reported in Management Reports and have increased with some tasks left open for around six months.

One opportunity for improvement was identified in regard to the VETtrack training system. Horizon Power has been gathering all its training information from the Districts into VETtrack, its corporate training database to enable future access by the Districts. This work is not complete and progress of this work will need continued support.

Overall the review found that the licensee's attitude towards compliance, both in the Bentley and in the Broome office, was always constructive, focused and cooperative.

The review concluded that Horizon Power asset management system, whilst undergoing major changes, was operating effectively during the review period. Gaps that have been identified are currently being addressed.

The review of the Asset Management System is summarised below in Table 3. Definition of the ratings is given in Table 4 and Table 5.

SUMMARY OF ISSUES AND RECOMMENDATIONS

Issues identified and recommendations made in the review are listed in Table 1.

Table 1- Current Review Asset System Deficiencies / Recommendations

Table of Current Review Asset System Deficiencies/ Recommendations			
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Recommendation**
1	1.1	A2 Asset management plan covers key requirements. ▸ During the review Horizon Power noted that, due to the Business Transformation Program and system restructure, documentation updates were kept on hold awaiting the system development.	1/2014 Restart documentation review and updates following the completion of the Business Transformation Program. The documents supporting the asset management system should receive review in accordance with a review program.
	5.1	A2 Operational policies and procedures are documented and linked to service levels required. ▸ The "Policies and Procedure Register" (HP3010410) includes lists of policies and procedures relating to the business, however some of the documents quoted are now past their review date and some of the documents such as the "Operations Strategic Plan 2008/09 to 2011/12" appear to be out of date.	Refer to Recommendation 1/2014.

Table of Current Review Asset System Deficiencies/ Recommendations			
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Recommendation**
2	5.3	C3 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. ▸ The quality of data (where quality is conformance to requirements) in the Asset Register has not yet achieved the level necessary for satisfactory operation of the AMS; programs are already in place to improve the data accuracy.	**2/2014** Complete the implementation of programs aimed at improving the quality of data in the Asset Register to achieve the level necessary for satisfactory operation. These include at present: "A&W Field 3272 Quality Data Capture" project due for completion in 2016 and "Asset Data Accuracy Project", due for completion in 2014.
3	5.5	B2 Staff receive training commensurate with their responsibilities. ▸ Horizon Power has been gathering all its training information from the Districts into VETtrack, the corporate training database to enable future access by the Districts. This work is not complete and progress of this work will need continued support	**3/2014** (**OFI**) Gathering all training information from the Districts into VETtrack and enabling a portal to allow access to the District will need continued support to achieve completion.
4	6.3	A2 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule. ▸ By June 2014 there were 66 Work Orders open which were due to have been completed by that date; five WO were due for completion by 31 December 2013.	**4/2014** 66 overdue Work Orders were open in June 2014. Five of the Work Orders were due for completion by 31 December 2013. Implement action to close, delete or justify Work Orders open past the due date.
	7.1	B2 Adequate system documentation for users and IT operators. ▸ The Review noted examples of documentation with lapsed review dates.	Refer to Recommendation 1/2014 for review and updating of out of date documentation
	7.3	A2 Logical security access controls appear adequate, such as passwords. ▸ It is noted that both documents ("Information Technology Policy & Guidelines" and "Access Control Guidelines") have review frequencies	Refer to recommendation at 1/2014 for document review and updates.

Table of Current Review Asset System Deficiencies/ Recommendations			
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Recommendation**
		and dates either lapsed or inconsistent, and should be reviewed as part of Recommendation 1/2014.	
5	7.5	B1 Data backup procedures appear adequate. ▸ There are checklists in place for power outage events as well as disaster recovery test guides, Ref: "DR Test Guide: Wintel", although the latter appeared to be in draft form, with no document owner recorded or signatory identified.	**5/2014** Documentation such as the "DR Test Guide: Wintel" , "TCS Reliability Report User Guide" and "Asset Management Reporting, Cognos Express Procedures" should be formally issued so that their currency can be maintained/verified. Refer to Recommendation 1/2014 for overall requirement.
	7.6	A1 Key computations related to licensee performance reporting are materially accurate. ▸ Several user guides were sighted, further providing confidence of a repeatable reporting process: ◦ TCS Reliability Report User Guide; and ◦ Asset Management Reporting, Cognos Express Procedures. Neither of the above appeared as controlled / final documents.	Recommendation 5/2014 applies.
	8.1	A1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system. ▸ In line with the strategy of putting on hold current documentation until the development of the Business Transformation Project noted under EC1.1 the "Risk Management Policy (22 June 2011)" and the "Risk Management Framework (22 June 2011)" had not been updated at the time of the Review.	Recommendation at 1/2014 for document review and update applies

Table of Current Review Asset System Deficiencies/ Recommendations			
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Recommendation**
6	9.1	B2 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks. ▸ The Instruction Module issued December 2012 indicated that the "West Kimberley Contingency Plan" should have been finalised, but the plan last issue was April 2011.	**6/2014** Update or finalise Contingency Plans as identified.
	12.1	B2 A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current. ▸ Review of the "Polices & Procedures Register" showed that most of the procedures were past the due review, eg Pandemic Response Plan was due for review by 15 August 2011.	Recommendation 1/2014 applies
		Special Areas	
7	Special Area 1.4	Data integrity of the data that has been imported to the systems from the legacy systems. ▸ Not all data present in the legacy system was found to be useful for the operation of the assets, in addition new attributes were identified that were not present in the legacy system. The result was that only around 45% of the fields in the new AMS were able to be populated from the legacy fields. The remaining attributes will have to be populated through future in field inspections. Horizon Power have recognised the importance of this shortcoming and identified a project for collecting the data, the "A&W Field 3272 Quality Data Capture" project which is now in Ellipse but due for completion in 2016.	**7/2014** Progress the "A&W Field 3272 Quality Data Capture" project. Process of inspection and audits should be managed to ensure that the asset management data is complete and accurately records the attributes and conditions of real life assets.
8		▸ Data tests have shown that there are still discrepancies between the systems and between the data in the legacy and the new systems. The Review has noted that even the legacy systems had long standing problems with data accuracy, so full integration of data with legacy system is no guarantee of data accuracy. It is important that a process of inspection and audits be undertaken to ensure that the asset management data is complete	**8/2014** Continue with Asset Data Accuracy Project to achieve the set objectives.

Table of Current Review Asset System Deficiencies/ Recommendations			
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Recommendation**
		and accurately records the attributes and conditions of real life assets.	
9	Special Area 1.5	Currency of the data in the asset management systems. ▸ The lag in data processing is evident in the Asset Management Reports which report on the trends of WIP (Work In Progress), where the gap between "New Work" value and "End of Month WIP" value has doubled since January 2013.	**9/2014** Progress actions to reduce the amount of data entry lag.
10	Special Area 1.6	Reporting capability, with a particular focus on reporting required for regulatory purposes under the licence. ▸ In regard to current reporting the review noted that the June 2014 AMR was not yet able to report on the quantity of equipment with no Earth Resistance readings (this required a relationship to be created to parent equipment which was due to have been created in May 2014, the resolution was imminent at the end of June 2014); ▸ The lack of completeness of the data in equipment attributes means that there is a limitation on the capability of reporting the asset information.	**10/2014** Pursue the completion of actions necessary for regulatory reporting such as Earth Resistance Reading.

POST REVIEW ACTION PLAN

The review has resulted, where applicable, in findings and recommendations that require corrective actions by the Licensee.

The recommendations have been listed in the Post Audit Implementation Plan 2014. Responses including actions, responsibilities and dates for completion have been completed by the Licensee.

This report is an accurate representation of the findings and opinions of the auditors following the review of the client's conformance to nominated Licence conditions. The review is reliant on evidence provided by other parties and is subject to limitations due to the nature of the evidence available to the auditor, the sampling process inherent in the review process, the limitations of internal controls and the need to use judgement in the assessment of evidence. On this basis Qualeng shall not be liable for loss or damage to other parties due to their reliance on the information contained in this report or in its supporting documentation.

The Post Review Implementation Plan is a document prepared by the licensee in response to the recommendations provided by the review. As it represent the licensee's views and actions it does not form part of the review.

Approvals				
Representation	**Name**	**Signature**	**Position**	**Date**
Auditor:	M Zammit		Lead Auditor / Projects Director, Qualeng	14 November 2014

Ref:	54/15	
Issue Status		
Issue No	**Date**	**Description**
1	17 Sep 2014	First formal issue incorporating review comments
2	14 Nov 2014	Revised as per review

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1 OBJECTIVES AND SCOPE OF REVIEW

1.1 BACKGROUND

Regional Power Corporation (T/A Horizon Power) (Horizon Power or the licensee) generates and supplies electricity to areas outside of the South West Interconnected Network (SWIN) in Western Australia under the EIRL2 Electricity Integrated Regional licence (the licence) granted by the Economic Regulation Authority (the Authority) on 30 March 2006 (Licence is now at Version 18, 19 April 2013).

The licence has been issued under Sections 7 and 15 of the Electricity Industry Act 2004 (WA) (the Act) and enables the licensee to construct and operate power generating, transmission and distribution facilities and to supply electricity in accordance with the licence conditions.

The services are provided to an area of approximately 2.3 million square kilometres extending from the Kimberley in the North to Esperance, Norseman and Hopetoun in the South and including the Pilbara, Gascoyne, Mid West and Southern Goldfields regions in Western Australia. Electricity is supplied to 38 non-interconnected or islanded systems in regional towns and remote communities, one major interconnected system, the North West Interconnected System (NWIS) and the connected transmission network between Kununurra, Wyndham and Lake Argyle. In addition to power generating plant in Carnarvon, Marble Bar, Nullagine, Kununurra and Wyndham, Horizon Power also owns generating plant that is managed by a third party and purchases electricity from third parties. Horizon Power owns or has interests in gas pipelines (including the Onslow and Mid West Pipelines), secondary systems including SCADA, communication and protection, mobile generating fleet, metering assets, Fleet, including light and heavy vehicles and registered plant, commercial and residential properties, Information Technology and Telecommunications.

Horizon Power supplies electricity to approximately 100,000 residents and 10,000 businesses, including major industry. The transmission system, the NWIS, is about 450 km in length and consists of the transmission line between Dampier in the West Pilbara and Goldsworthy in the East Pilbara with ring systems in Karratha and Port Hedland, operating at voltages up to and including 220kV. The distribution system is nearly 6000 km in length and comprises 6.6kV, 11kV, 22kV and 33kV systems.

Under sections 13 and 14 of the Act Horizon Power's systems must be subject to independent reviews at 24 month intervals to determine whether the licensee has an effective asset management system. The original review period ended on 31 March 2013, however, due to the transition of Horizon Power's asset management system from the legacy information technology (IT) systems operated on its behalf by Western Power to the Ventyx Ellipse platform taking place in 2013 through the Business Transformation Project, the Authority granted Horizon Power an extension to the review period from 24 to 39 months. Qualeng has been engaged by Horizon Power to conduct the asset management system review (the review) for the period 1 April 2011 to 30 June 2014.

The review has been conducted and this report prepared in accordance with the Authority's "Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014)" (the guidelines).

1.2 REVIEW OBJECTIVES

The purpose of the asset management system review is to:

- *Assess the effectiveness of the measures taken by the licensee for the proper management of assets used in the provision and operation of services and, where appropriate, for the construction or alteration of relevant assets.*

1.3 REVIEW SCOPE

1.3.1 Scope of Asset Management System Review

The scope of the asset management system review includes the assessment of the adequacy and effectiveness of the licensee's 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.

Each of the system processes was evaluated against effectiveness criteria defined in the guidelines.

In addition the asset management system review examined the actions taken by Horizon Power to address the issues and recommendations identified during the previous review.

Key documentation examined by the auditors is listed in Appendix A.

1.3.2 Special areas

In addition to the review of the 12 asset management system elements, the Authority

specified that a close examination of the asset management information systems was required, specifically:

1. the functionality of the information technology used to manage asset data;
2. the performance of the mData21 metering system, accuracy and timeliness of data import into the metering database;
3. inter-working of the asset management systems;
4. data integrity of the data that has been imported to the systems from the legacy systems;
5. currency of the data in the asset management systems;
6. reporting capability, with a particular focus on reporting required for regulatory purposes under the licence.

1.4 REVIEW PERIOD

The review covers the period between 1 April 2011 to 30 June 2014. The review was due on 31 March 2013, however, as noted in section 1.1, due to the Business Transformation Project the Authority granted Horizon Power an extension to the review period from 24 to 39 months. The previous review covered the period 1 October 2009 to 31 March 2011.

The review was carried out between June and September 2014.

1.5 REVIEW METHODOLOGY

The review followed the methodology defined in the Authority's "Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014)", (the guidelines) including:

- Review of documentation;
- Review of actions taken in response to recommendations in previous review;
- Preparation of a review plan, risk assessment and system analysis;
- Fieldwork including the document review and meetings;
- Reporting.

These activities were supported by additional investigations to further clarify aspects of the procedures.

A review plan was prepared which outlined the objectives, scope, risk assessment, system analysis, fieldwork plan, the report structure, key contacts and auditing staff.

The review adopted a risk based approach where a preliminary risk and materiality assessment was carried out on each asset management system (AMS) element to evaluate the risks resulting from non-compliance and/or lack of controls.

The existing controls were rated and review priority assigned based on the rating of

existing controls and the risk resulting from lack of controls. Tests were also defined for each AMS element to assess the effectiveness of the current system.

1.6 LICENSEE'S REPRESENTATION

Licensee representatives that participated in the review meetings or were requested to clarify aspects of the licensee's operation were:

Bentley Office:

- Justin Murphy, Manager Asset Management Services
- Neetha Lakshman, Senior Compliance and Performance Engineer, Asset Management Services
- Bill Bignell, Senior Asset Frameworks Engineer, Asset Management Services
- Paul Thomas, Manager Technology
- Geoff White, Manager Customer Service
- Jeff Campbell, IT Security Risk & Governance Specialist
- Terry Absolon, Customer Services Process Manager
- Marion O'Connor, Training Scheduler
- Shane O'Byrne, Technical Training Coordinator
- Craig Julian, General Manager NIS Business
- Mike Houlahan, Manager Finance
- Cate Bertram, Finance Business Partner
- Azar Azam, Finance Business Partner.

Broome Regional Office

- Scott Beckwith, Manager Kimberley Business, Broome Customer Office
- Daren Hickey, Works Delivery Coordinator, Broome Customer Office
- Jodie Lynch, Retail and Community Manager
- Robert Banks, Power Systems Officer
- Neil Scott, Power Systems Officer.

1.7 LOCATIONS VISITED

The following facilities were visited during the audit / review:

- Horizon Power head office, Perth
- Horizon Power Broome regional office.

1.8 AUDITING TEAM

A summary of the auditing resources utilised in the performance of the review is listed

below.

Item	Resource	Description	Hours
1	M Zammit	Project Director and Lead Auditor	210
2	S Campbell	Senior Engineer, Document Reviewer and Verifier	108
3	M Cavanagh	Reviewer	42
4	Support staff	Document control	-

1.9 KEY DOCUMENTS AND INFORMATION

Main documents accessed by the auditors are listed in Appendix B.

1.10 LIMITATIONS AND QUALIFICATIONS

In regard to the review process, the reviewer relies on evidence coming to the reviewer's attention showing that the control procedures are not effective, when the initial process and procedures do not provide sufficient evidence to the level that would be required by a review.

Due to the review sampling process, the nature of the evidence available to the reviewer, the limitations of internal controls and the need to use judgement in the assessment of evidence there are limitations in the level of accuracy that can be obtained in the review and errors and non-compliances may remain undetected.

The Post Review Implementation Plan (PRIP) is a document prepared by the licensee in response to the recommendations provided by the review. As it represents the licensee's views and actions it does not form part of the review, however it has been included in Appendix A in order to complete the documentation of the review and in accordance with the guidelines.

1.11 ABBREVIATIONS

AMP	Asset Management Plan
AMIS	Asset Management Information System
AMS	Asset Management System
AS	Australian Standard
Authority	Economic Regulation Authority
CAPEX	Capital Expenditure
DM	Document Management
DSOC	Declared Sent Out Capacity
EC	Effectiveness Criteria

EH&S	Environmental Health and Safety
ETAC	Electricity Transfer Access Contract
GE	General Electric International Inc
HV	High voltage
KPI	Key Performance Indicators
LCC	Lifecycle costs
LV	Low voltage
NA	Not applicable
NAA	Network Access Agreement
O&M	Operation and Maintenance
OFI	Opportunity for Improvement
OHSE	Occupational Health, Safety and Environmental
OPEX	Operating Expenditure
PAIP	Post Audit and Review Implementation Plan
SAMP	Strategic Asset Management Plan
SLA	Service Level Agreement
YTD	Year to Date

2 KEY FINDINGS AND RECOMMENDATIONS

2.1 LICENSEE'S RESPONSE TO PREVIOUS REVIEW RECOMMENDATIONS

Table 2 – "B" - Asset Management System Review 2011 Ineffective Components Recommendations shows the previous review (2011) findings and recommendations, proposed actions by the licensee, dates and responsibility, updated status if available and verification of actions carried out in the current audit.

Table 2 – "B" - Asset Management System Review 2011 Ineffective Components Recommendations (Resolved during the current Review period)

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
1.3	B2 **EC 1.3 Asset Planning – Demand Management** Non-asset options (e.g. Demand management) are considered. ▸ Trials of demand side management were completed in November 2010. The results of these trials are under review.	▸ Continue with the evaluation of demand side management trial and the development of policy and procedures.	3 February 2012	No
3.1	B2 **EC 3.1 Asset Disposal** Under-utilised and under-performing assets are identified as part of a regular systematic review process. ▸ Treatment of asset under-utilisation could be improved but asset	▸ Consider a policy and/or procedures to clarify treatment of under-utilisation.	9 January 2012	No

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
	disposal/replacement may be impractical due to statutory/regulatory requirements and the cost of disposal being higher than retention costs.			
3.2	B2 **EC 3.1 Asset Disposal** The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken. ▸ There is no explicit policy/procedure for asset evaluation due to under-utilisation however asset poor performance or under-utilisation are regularly reviewed and corrective actions are evident for performance improvement.	▸ Consider a policy and/or procedures to clarify treatment of under-utilisation.	20 September 2011	No
4.4	A2 **EC 4.4 Environmental Analysis** Achievement of customer service levels ▸ A number of targets are not being achieved in some of the districts and overall.	▸ [**OFI**] District reports should include wood pole inspections / QA audits targets and actuals	31 January 2012	No
5.1	A2 **EC5.1 Asset Operations** Operational policies and procedures are	▸ The finding of contract personnel without the required competency on work sites shows that the auditing process is effective, however an	25 November 2011	No

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
	documented and linked to service levels required. ▸ Audits on projects identified contract personnel that did not have the required training/competency on the work site.	improvement is required on the system of project supervision/contractor approval to prevent non qualified contractor personnel from entering job locations and endangering themselves and other workers.		
5.3	B2 **EC5.3 Asset Operations** Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical / structural condition and accounting data. Asset records are stored in a number of legacy systems which are shared with Western Power (WP). Horizon Power is striving to streamline all assets record systems through a two year "Transformation Program", however at this point it is still reliant on WP for managing some of the systems as both organisations share the same technology model. ▸ Inaccuracies existing in the asset records are being corrected by validating data through physical	▸ Continue the implementation of streamlined asset record systems. ▸ Continue to update asset registers to improve the accuracy of the data.	10 November 2011 10 November 2011; Business Transformation Project to redevelop asset register.	

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
	verification.			
5.5	B3 **EC5.5 Asset Operations** Staff receive training commensurate to their responsibilities. ▸ At the Control Centre in Karratha training for operators has been conducted, however relevant training records are not controlled by the Workforce Capability Improvement Group which is responsible for workforce training and improvement in the Operations Division. Competency approval of HPCC operators has not been implemented. The approval is given solely by the Horizon Power Control Centre (HPCC) Supervisor. TCS (Trouble Call Management System) Training module has been completed and delivered but more resources are required to complete and deliver further module(s).	▸ Develop and implement a competency approval procedure / training schedule for HPCC operators. Ensure appropriate training at HPCC is conducted in a timely fashion. ▸ Complete and deliver HPCC training modules. ▸ Consider adding HPCC/ENMAC (Electricity Network Management and Control) training and certification into VETtrack.	27 August 2012 As above As above	No
6.2	B2 **EC6.2 Asset Maintenance** Regular inspections are undertaken of asset	▸ [**OFI**] There is a need to review a possible gap in Transmission maintenance services delegation which may preclude access to	30 September 2011	No

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
	performance and condition. ▸ Inspections of substations and transmission lines are managed from the Karratha office using local resources for most of the inspections. Problems that arise are referred to the District Operations Officer (DOO) Transmission, Port Hedland, support was provided by Karratha, however as officer(s) were seconded elsewhere there was a possible gap in delegation precluding access to systems records and Work Orders. Alternative arrangements were put in place during the review.	systems records and Work Orders. ▸ [**OFI**] District reports should report on wood pole inspections / QA audits targets and actuals as part of their performance monitoring. (Action at item 4.4)	31 January 2012	
7.5	C3 **EC7.5 Asset Management Information Systems** Data backup procedures appear adequate. ▸ All restoration of data is done by Western Power. Recovery was tested in December 2010 and issues were raised that will need to be resolved. There was no evidence that the actions taken by	▸ Continue with separation program from Western Power and ensure that processes of software acceptance, back up, restoration are robust, documented and transparent. ▸ Ensure that there is a process for recording, investigating and following up to conclusion IT incidents	20 September 2011 2 February 2012	No

EC Item	Asset management effectiveness rating/ Asset Management System Component & Criteria / details of the issue	Auditors' Recommendation	Date Resolved	Further action required (Yes/No/Not Applicable) & Details of further action required including current recommendation reference if applicable
	Western Power were documented to Horizon at the time of the testing.			
9.1	A2 **EC9.1 Contingency Planning** Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.. ▸ There are some specific contingency procedures which are used in some of the district and are not documented in the district plans. For example, Carnarvon Generation plan should include the response plan for the loss of PLC software.	▸ Identify and document specific contingency procedures in district contingency plans, for example, Carnarvon Generation plan should include the response plan for the loss of PLC software	30 September 2011	No
12.2	B2 **EC12.2 Review of AMS** Independent reviews (egg internal audit) are performed of the asset management system. ▸ While internal audits of IT systems were performed by the Internal Auditors, there was no clear evidence of IT carrying out audits of software implementation.	▸ IT should carry out audits of software applications to ensure their performance and implementation, this may be appropriate for the validation of the Transformation Program.	11 November 2011	No

2.2 ASSET MANAGEMENT REVIEW EFFECTIVENESS SUMMARY

The review of the Asset Management System is summarised below in Table 3. The table lists each of the 12 key asset management processes together with the effectiveness criteria for each key component. Definition of the ratings is given in Table 4 (process and policy definition) and Table 5 (performance).

Table 3: Asset management effectiveness summary

ASSET MANAGEMENT SYSTEM	Asset management process and policy definition adequacy ratings	Asset management performance ratings
1. Asset planning	**A**	**1**
2. Asset creation/ acquisition	**A**	**1**
3. Asset disposal	**A**	**1**
4. Environmental analysis	**A**	**2**
5. Asset operations	**B**	**2**
6. Asset maintenance	**A**	**2**
7. Asset management information system	**B**	**2**
8. Risk management	**A**	**2**
9. Contingency planning	**B**	**2**
10. Financial planning	**A**	**1**
11. Capital expenditure planning	**A**	**1**
12. Review of asset management system	**B**	**1**

Table 4: 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.

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

Table 5: Asset management review performance rating scale

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

2.3 OBSERVATIONS SUMMARY

The findings of the asset management system review are reported in Table 6.

The table separately rates Horizon Power's asset management process and policy definition adequacy and performance in accordance with the Authority's requirements. The guidelines rating definitions are reproduced in Table 4 and Table 5.

Where appropriate or where the adequacy of the asset management process and policy definition is rated C or D, or the asset management performance is rated 3 or 4, recommendations are included to address the issue(s) that have resulted in those ratings. The licensee's corrective actions are included in the Post Review Implementation Plan, a copy of which is attached in Appendix A.

2.4 ASSET MANAGEMENT REVIEW SUMMARY TABLE

Key findings and recommendations arising from the Asset Management System Review are listed against their Effectiveness Criteria (EC) in the following table.

LEGEND

Key	Description
▸	Finding
1. Text	Recommendations
[**OFI**]	Opportunity for Improvement

Table 6 Asset Management System Review

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
1	**Asset Planning**	**Adeq & Perf**	Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised.	
1.1	Asset management plan covers key requirements	A2	Horizon Power asset management system uses a structure which is based on the requirements of the best practice international asset management specification "PAS 55-2:2008 Asset Management" (where PAS = Publicly Available Specification). The review found that the asset management plan was adequately defined and that the process needed some improvement as noted in regard to updates of documentation. During the review period Horizon Power asset management system employed two key documents for the management of assets:	**1.** Restart documentation review and updates following the completion of the Business Transformation Program. The documents supporting the asset management system should receive review in accordance with a review program.

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• the Asset Management Framework (AMF) (Ref 1.18) which sets the direction for the Asset Management System within Horizon Power and provides a high level overview of asset management processes; • the Asset Management Plan (AMP) which summarises the key findings out of the annual analysis of the assets and sets the proposed work for the next management period. The AMP itself is built on AMPs which are prepared annually by each individual region and are the responsibility of Regional Managers. The application of the PAS55 specification is rigorously detailed and applied in practice resulting in a thorough asset management plan. In addition the system framework includes an internal checking matrix to substantiate the alignment with both the PAS55 and ERA asset management system requirements. A new Asset Management System (AMS) is going to be used in the next review period. This system was not reviewed as it is beyond the scope of this review. ▸ During the review Horizon Power noted that, due to the Business Transformation Program and system restructure, documentation updates for policies and procedures were kept on hold awaiting the system development. Further details are provided at EC5.1.	
1.2	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning.	A1	Horizon Power's planning process is highly defined due to the need to meet government budgeting and funding requirements. The process follows an annual calendar, with several review and approval steps and is documented in the AMF. The AMF scope includes the assessment of the needs of HP's stakeholders. Stakeholders are reviewed in detail in the AMF and their needs identified, from requirements originating from Government, the Authority, Energy Safety, local government, business and small customers. The State Government's Strategic Energy Initiative (Energy 2031) set the long term direction for HP's major stakeholder.	

<table>
<tr><th>EC No.</th><th>AMS Element / Criteria</th><th>Rating</th><th>Review summary (▸ Findings)</th><th>Recommendations</th></tr>
<tr><td></td><td></td><td></td><td>
Stakeholder needs are then converted into Horizon Power's Asset Management Policy and objectives. Objectives reflect:

Load Forecasts and System studies conducted every two years to identify the high level program of work necessary to achieve the asset performance criteria;
Customer demands;
External risks.

The objectives were identified through the "Fit for Purpose" asset management strategy from 2006 to 2011, later extended to 2017 due to delayed budget allocation. Those objectives were revised in 2011 as indicated below:
<table>
<tr><th>"Fit for Purpose" Objectives 2006-2011</th><th>Revised Objectives 2011 onwards</th></tr>
<tr><td>• Safety</td><td>• Safety</td></tr>
<tr><td>• Regulatory</td><td>• Regulatory</td></tr>
<tr><td>• Capacity</td><td>• Capacity</td></tr>
<tr><td>• Reliability</td><td>• Reliability</td></tr>
<tr><td>• Quality</td><td>• Quality</td></tr>
<tr><td>• Age</td><td>• Asset Service</td></tr>
<tr><td>• Economics</td><td>• Economics</td></tr>
</table>
This strategy was supported by the Asset Lifecycle Strategy from 2011, which is based on Risk Management and Asset Serviceability (condition monitoring). The Asset Lifecycle approach will extend the criteria from seeking the lowest initial cost to considering the full cost of the asset over its life. With Asset Serviceability, assets will not be replaced on age but will be assessed on
</td><td></td></tr>
</table>

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			condition and risk. From 2014 onwards this strategy will also include "Targeted Proactive Maintenance", which is aimed at maximising the utilisation of assets whilst managing the risk of asset failure. Strategies for achieving those objectives are also documented in the AMF.	
1.3	Service levels are defined.	A1	The Fit for Purpose objectives drive the definition of service levels. Service levels and key performance indicators are defined in detail in the AMF (Ref. 1.18 p 90) and are then tracked in management reports.	
1.4	Non-asset options (e.g. demand management) are considered.	A1	The Review found that non-asset options are considered by the licensee, the level of documentation is adequate and the process performance meets requirements. Demand management is considered in the "2011 Demand and Energy Forecast, FY2011 to FY2021" which provides the ten year demand and energy forecasts, guides the asset development plan and incorporates two main mechanisms for demand side management: • GSS (Grid Support Services) pays customers to disconnect from the network thus controlling demand; • Customer photovoltaic technology for management of demand through additional power production; • Where feasible and available, other non-asset options considered include the use of Independent Power Producers (IPP) electricity supply, thus avoiding new asset creation. The licensee has noted in its "Capacity Planning Module (no 5)" that in accordance with state government plans, the licensee has to plan its asset funding over a ten year period and IPPs plans are not readily available or accessible over such a period. Evidence of the application of demand management was found in the review.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
1.5	Lifecycle costs of owning and operating assets are assessed. (also at 2.2)	A1	Through review of documentation and meeting with the Manager Asset Management Services, the Senior Compliance and Performance Engineer and the Senior Asset Frameworks Engineer the audit gathered evidence that the Lifecycle costs (LCC) of owning and operating assets are assessed. The main process for assessing LCC is contained in the "Operations Division Instruction Module 2 – Project Evaluation". Business Cases include LCC where complex assessments are required. LCC are monitored through the entry of costs in Ellipse, reporting, budgeting and the development of AMPs. The Asset Class documents set the requirements for asset life expectancy which in turn determines the annualised cost of the asset. This is compared to Asset Serviceability which provides information on asset life based on its actual condition. Specific analysis of actual LCCs are performed for assets as in the following examples where actual LCCs are analysed and used to improve the cost models: • "Life Cycle Comparison Model between steel and wood poles" (HP3248809) was carried out during the review period; • "Life Cycle Cost Model for Streetlight" (HP3279782); • "Asset Class Distribution Transformer" (HP3463733).	
1.6	Funding options are evaluated.	A1	The sources of funds for all capital expenditure and recurrent costs are appropriately identified and evaluated with a high level of detail in Asset Management Plans and in the Corporate Budget.	
1.7	Costs are justified and cost drivers identified.	A1	Business Cases identify project costs and evaluate alternative option, where required, on the basis of LCC. Every project Business Case has to identify its cost driver.	
1.8	Likelihood and consequences of asset failure are predicted.	A1	Likelihood and consequences of asset failure are predicted in Horizon Power's risk register. The "Risk Management Framework" defines the process and provides the risk register template used to record the risks.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			The "Asset Management Plan Instruction Module 8, Asset Service" (HP3494517) has the instructions for calculating the likelihood and consequences of asset failure: • Horizon Power utilise information available in house and from other utilities and regulating authorities to establish generic lifetimes for groups of assets with similar duties or operating regimes; • assets are routinely inspected to ensure that they are serviceable; • condition monitoring is implemented to determine when service assets will not be fit for service and to predict when they should be replaced; • annual reviews are carried out to consider the age, condition, maintenance regime and consequences should the asset fail and the likely risk of failure based on inspections and condition monitoring noted above; probability of failure is evaluated based on the serviceability index of the asset; • once each assets likelihood and consequences of failure are determined the major assets and system are reviewed. These factors form the basis for the decision to continue to maintain the asset, upgrade the asset, refurbish or replace it. Review of assets is carried out annually, while a major review of major assets (major assets are zone substations, power stations (buildings and grounds), fuel systems, bore water systems, feeder systems etc) is carried out every four years. Asset service evaluation plans are reviewed and updated on a two yearly cycle. Asset failure risks are identified in the risk register together with mitigation actions, responsibilities and dates for actions. Some of the review processes are: • annual Executive Risk Workshop attended by all General Managers; • annual Divisional Risk Workshop attended by all Divisional Managers and Team Leader as well as selected staff; • monthly Executive meetings attended by all General Managers;	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• monthly Divisional Risk meetings attended by Managers and Team Leaders; • two monthly Audit and Risk Management Committee (ARMC) meetings; • two monthly risk updates and reports to the ARMC and the Board including feedback from the General Managers on the Divisional Operational risks. Further details of risk review are provided below in the "Risk Management" Section, EC8.3. There was evidence to show the continuous operation of the risk register.	
1.9	Plans are regularly reviewed and updated.	A1	The AMP and the AMF were reviewed and updated annually during the Review period. In addition the performance of the plan is reviewed monthly at Performance meetings through the Asset Management Reports (AMRs). The process for preparation of the AMP and District AMPs has been outlined at EC1.1. The District work plans, which result from the annual review of the existing District AMP by the Districts, are entered into Ellipse, part of the Horizon Power AMS. The collection of the Districts work plans forms the new operation AMP. • The process of preparation of the AMPs is complex: the process starts in July – August with the preparation of system studies and load forecasts; • the AMF review is commenced in August based on previous year experience, performance and current budgets; non-performing plant and systems not achieving service levels are identified and plans prepared to rectify the issues; • preliminary work programs are prepared by the Districts by December; • the work programs are incorporated into District AMPs; projects are identified and prioritised on the basis of the licensee's objectives and risks; • the overall AMP and budgets are reviewed by the central asset	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			management function around March-April; • the AMP is presented to management, the Executive and the Board for approval in July – August; • budgets are submitted to Government for approval around September and plans are adjusted to suit funds by December.	
2	**Asset Creation and acquisition**		A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.	
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions.	A1	The Review found that the level of documentation is adequate and the process performance meets requirements. A procedure is in place to document the process for project approval. The process require budgets six years ahead for all maintenance work (defined as "planned" and "emergent" work by Horizon Power) and 11 years ahead for capital works. The process of evaluation and approval categorises projects in three tiers on the basis of cost: • Quickbase justification for projects between $0 – 100K; • Non-complex Business Cases for > $100K to $5M; • Complex Business Cases for > $5M. Several projects were reviewed, including: • a "Complex Business Case", the "NC000020 BUSINESS CASE PART C – Install 3rd Transformer at Wedgefield (HP_3658847)"; • "Esperance ESR0035- Business Case (HP_3500320), Remove Copper Conductor Bow And Kalgoorlie Streets Esperance". The documentation showed that processes for project evaluations were in accordance with the procedure. Customer funded projects are not subject to risk analysis.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
2.2	Evaluations include all life-cycle costs.	A1	Evaluations of major projects include the Lifecycle costs (LCC) of owning and operating assets. The main process for assessing LCC is contained in the "Operations Division Instruction Module 2 – Project Evaluation". Business Cases include LCC where complex assessments are required. Examples of LCC applications were reviewed: • "Life Cycle Comparison Model between steel and wood poles" (HP3248809) was carried out during the review period; • "Life Cycle Cost Model for Streetlight" (HP3279782); • "Asset Class Distribution Transformer" (HP3463733); • "Submission to the Operations Management Team, Pole Top Switch Economic Review (HP3679301)".	
2.3	Projects reflect sound engineering and business decisions.	A1	Project evaluations are subject to a structured and rigorous process of analysis, review and approval which takes place at several stages of the project development. The project management process is defined in the "Project Management Methodology, Lifecycle Road Map and Work Instructions" (DMS #3194953). Projects are identified as Complex or Non-Complex projects depending on value and complexity. Non-Complex projects are split into Standard, Simple and Minor. Projects go through the following phases: • Phase 1 is the Concept Phase, to determine whether the organisation needs and wants the project; • Phase 2 is "Options Assessment and Selection", to explore the solutions and recommend a solution, For Complex projects a Business Case has to be submitted; • Phase 3 is "Define and Approve", to define and present the solution with better costing, benefit analysis, final specifications and comprehensive plans. In this Phase both Complex and Non-Complex projects require the	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			submission of a Business Case. Approval of Business Cases is accomplished through the Executive Planning Meeting; • Phase 4 is "Design and Deliver', and includes: ◦ Complete and verify design; ◦ Construct and install; ◦ Commission and hand over; • Phase 5 is "Evaluate and Close", to assess lessons learnt and close project; • Phase 6 is "Reflect and Realise", to afford the customer the opportunity to provide feedback.	
2.4	Commissioning tests are documented and completed.	A1	The requirements for commissioning are defined in the "Project Management Methodology, Lifecycle Road Map and Work Instructions" (DMS #3194953). Commissioning records were available for the projects reviewed during the audit and were satisfactory. Some of the projects reviewed: • "Pole Replacement, Lot 137 Barker St Broome", WK006990, LV Service Connection Test Form, November 2012; • "450 Amp Supply for 9 Murrena St, Wedgefield", PP011144, Distribution Transformer and Switchgear commissioning sheets, September 2011; • "Trump St - Truck Parking Bay, Leonora, Replacement of 2 spans of overhead HV & LV with new underground HV & LV circuits, new ground type kiosk substation and 2+1 RMU", ER010403, commissioning tests April 2012 to July 2013.	
2.5	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.	A1	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood through the CWM (Construction Work	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			Management) process. The CWM process is published on-line. Each project has to follow the steps built in the process which include a formalised set of requirements at each step. Through examination of the CWM process and the project "HV Feeder – Broome", the review confirmed the management of legal/environmental/safety obligations. The entry menus provide links to associated documentation and require input of data to complete the compliance steps.	
3	**Asset Disposal**		Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.	
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process.	A1	The Review found that the identification of under-utilised and under-performing assets is performing effectively through a regular systematic review process. Identification of under-utilised and under-performing assets is provided by the monthly Asset Management Report (AMR) which, through a series of performance tables and charts identifies those assets. The review process is performed formally in the preparation of the annual Districts AMPs. The AMF provides direction of the process used to assess and identify underutilised and under-performing assets, a full AMF Instruction Module, "Module 18 – Asset Disposal" (DMS# 3481733) provides the guide to the process, together with the Capacity Module ((Module 5) and the Economics Module (number 9). The AMPs then identify those assets that should be retired and create projects for their disposal. The review examined the mobile generation fleet analysis sample, the Cummings KTA50 have a history of high fuel consumption and are difficult to maintain resulting in escalated O&M lifecycle costs. A disposal and replacement strategy is planned for all Mobile Fleet with this engine for the next 10 years. GN02, GN03, GN18, GN19 and GN20 are Cummings KTA50s and will be	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			replaced when due for a major overhaul. GN01 is scheduled for disposal as it is deemed to be not fit for purpose and out of the serviceable life. The Pilbara Underground Power Project (PUPP) has also resulted in asset disposal and removal of assets from the asset register.	
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken.	A1	Underutilised and under-performing assets are identified in the monthly Asset Management Report (AMR) which, through a series of performance tables and charts provides a progress status on the performance of those assets. Brief reasons for lack of performance are provided in the AMR. Modules 5, 9 and18 of the AMF provide the process for examining the assets and the criteria for taking corrective actions and/or disposal. AMPs report the reasons for asset upgrades or disposal.	
3.3	Disposal alternatives are evaluated.	A1	The AMF Module 18 noted above provides the outline of the disposal procedure and has reference to the policies in place for asset disposal. For the Operations Division the policy “Operations Asset Disposal Policy” (DM #3166522) is in place. Disposal alternatives are considered as part of the asset retirement process.	
3.4	There is a replacement strategy for assets.	A1	Horizon Power “Fit for Purpose” strategy and the “Asset Lifecycle Strategy” have established the criteria for the replacement of assets considering the full cost of the asset over its life. With the “Asset Serviceability” strategy assets will not be replaced on age but will be assessed on condition and risk. Criteria for replacement of assets include: • service period expected of the asset; • condition of asset; • maintenance requirements of asset; • the above criteria lead to a calculation of risk based on the asset type, life, condition and the consequences of failure.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			With Horizon Power's requirement for the annual preparation of a 10 year capital work budgets, asset replacement is part of long term planning. As noted at EC1.1 the AMP itself is built on AMPs which are prepared annually by each individual District and are the responsibility of Regional Managers. As the review of the AMPs is carried out annually the replacement strategy is regularly reviewed and updated.	
4	**Environmental Analysis**		The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain requirements.	
4.1	Opportunities and threats in the system environment are assessed.	A1	Through interviews and examination of long term forecasts and annual reviews of the AMS the Review found that opportunities and threats in the system environment are assessed. Long term forecasts and annual reviews of the AMS analyse the opportunities and threats in the system environment: • forecasts and analysis are documented in the Demand and Energy Forecast (eg. reviewed the "2011 Demand and Energy Forecast 2010-11 to 2020-21"); • the AMP reviews annually the external factors that have affected or will impact on the asset operation. The forecasts are distributed to the regions for their review prior to approval. • The AMF has identified that Energy Safety will introduce Safety Case legislation shortly. The implementation of the Safety Case (2014 – onward) will require increased rigour in Horizon Power's management systems. The CURA Risk Management system will need to be expanded to identify the risks associated with each of Horizon Power's assets, systems and processes. • The Demand and Energy Forecast has identified the falling demand from the contraction in mining activities and the impact of Photovoltaic (PV)	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			Customer Installations. Changes resulting from those factors have been forecast. • At regional level, the Kimberley region AMP has carried out a long term review of resourcing hours against the various work drivers (CAPEX, OPEX, Customer Funded and Faults). From this review it can be seen that additional resources will be required to complete the projected distribution work plans. • At project level each project identifies the risks incurred should the project be delayed or put on hold so that the consequences of variations in funding which may postpone those projects are identified.	
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved.	A2	The Review found that there is adequate documentation and that performance of the process requires some improvement as performance standards are not always achieved. Performance standards are monitored monthly in the Asset Management Report (AMR). Reviewed: • AMR June 2012 • AMR June 2013 • AMR April 2014 • AMR June 2014. A variety of indicators are employed to trace the performance of the asset month-on-month and year-on-year. The performance standards are grouped into several main categories: • safety • reliability • quality	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• cost • asset service • regulatory • service delivery. Not all performance standards are achieved continuously; traffic light indicators provide a graphic overview of which areas are not achieving the performance standards. Brief reasons for performance issues are provided in the AMR. Areas that are not performing are subject to review through the annual asset planning processes. The audit noted that construction QA audits were tracked up to 2013 and were not tracked in 2014. In 2014 the responsibility for the audits was shifted to the regions where the Asset Manager responsible for the asset has the authority to audit the work performed by Works delivery on its assessment of the risk.	
4.3	Compliance with statutory and regulatory requirements.	A2	The Review has found that Horizon Power has policies and processes in place for managing the compliance with statutory and regulatory requirements: • the AMF outlines the process for the management of compliance with statutory and regulatory requirements; • the “Safety and Regulatory Planning Module (no 4)” outlines the process of developing long term plans to meet Horizon Power’s Safety and Regulatory objectives for all of Horizon Power’s assets; • a Governance Policy is in place; • a Compliance Policy and Program are in place; internal audit procedures are in place for the verification of compliance; • the Online Compliance Register provides the legislative obligations	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			relevant to Horizon Power. The obligations are updated every quarter to ensure the register reflects current law. The Online Compliance Register is accessed through Horizon Power's intranet, Powerlink; • the Corporate Risk Register (CURA) records non-compliance risks and solutions. A performance objective for the assets is statutory and regulatory compliance. The AMR monitors the performance of the AMS in respect of statutory and regulatory requirements. AMR reports monthly on performance, targets and breaches. Reasons for breaches and corrective actions are provided in the AMRs. Reports showed (among others): • Unassisted Pole Failures per 10,000 Poles; • Supply reliability with SAIDI, SAIFI performance; • Critical safety issue defects (missing signs on poles, anti-climbing or overheads attachments missing); • Electrical incidents; • Power Quality Complaints; • Wood poles inside and outside or planned life; • Supply interruptions by length and duration. (additional details are provided under EC4.4). In regard to compliance with regulatory codes such as the Electricity Industry (Network Quality and Reliability of Supply) Code 2005 Horizon Power employs a number of systems to manage its compliance: • the Electricity Network Management and Control system (ENMAC) and the Trouble Call System (TCS) monitor faults and initiate investigations; duration of interruptions are monitored through these systems;	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• Power Quality Investigations address faults and customer complaints regarding power quality issues; • planned outages over 4 and 6 hours are monitored and reported; • customers with special health needs are identified in the system; • there are procedures for notification of planned outages as well as compensating customers where applicable; • a number of strategies are in place including providing alternative power supplies to mitigate interruptions. Audits have been conducted by Energy Safety with actions identified and managed by the business. Any action that is required as a result of these audits is identified in the AM planning process with project identified to address the actions. Prevention of breaches is guided by the AMP Instruction Modules (specifically No 4 – Safety and Regulatory Planning) which identifies systems breaching or at risk of breaching statutory and regulatory requirements and provides directions for mitigating plans as well as targets for compliance. All risks are captured into CURA which is a risk management system that deals with the identification, analysis, treatment of risks including the actions. Breaches from non-compliance with statutory and regulatory requirements are entered in CURA together with the associated risks All incidents are recorded using Cintellate software which manages Environment, Health, Safety (EHS) and risk related performance arising from incidents. Each incident is investigated to identify the measures required to reduce unacceptable risk to an acceptable level which has been set as a “Target”. Investigations are covered by a procedure, the “Incident Investigation: Asset Failure & Protection Operation Investigation Procedure”. Long term corrective actions are evident in the districts AMPs which identify	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			safety and regulatory issues as part of their annual review and create response work plans. Specific procedures are in place to deal with the investigation of unassisted pole failures and unassisted bare overhead conductor failures. Samples of breaches and investigations were reviewed.	
4.4	Achievement of customer service levels.	A2	The Review found that there is adequate documentation and that performance of the process requires some improvement as customer service levels are not always achieved. AMR reports monthly on targets, performance and breaches and is presented in the Monthly Performance Meeting. Not all service levels are achieved continuously, traffic light indicators provide graphic view of which areas are not performing to standard. Brief reasons for performance issues are provided in the AMR. Areas that are not performing are subject to review through the annual asset planning process and management meetings. Reports provided by the regions are checked by the corporate asset management group and regions alerted to red flags, often with comments from central management, regions are then responsible to correcting underlying issues. Every feeder was analysed for its performance and causes of interruptions identified in the AMR; 3494 out of 3785 interruptions were due to tropical cyclone Christine leaving 291 interruptions due to other factors. SAIDI, stipulated in the Electricity Industry (Network Quality and Reliability of Supply) Code 2005, was over requirements in around seven townsites in 2014, main reason was external factors such as storms. SAIDI performance was reviewed over the review period, noting that a level not greater than 290 minutes is required (these figures are the average over four years of the yearly SAIDI, for the four years ending at the end of the period; the normalised figures are the yearly average): 2013-14 330 min. (155 min normalised; cyclone Christine) 2012-13 297 min (202 min normalised; three tropical cyclones, flood) 2011-12 302 min (203 min normalised; four tropical cyclones and two	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			heavy storms). (where normalised figures are obtained by removing interruptions due to factors outside of Horizon Power's control). Under the Customer Charter the licensee is committed to repair street lights within 5 working days for the NWIS and 9 days in other areas. Reporting is performed annually through the report "Code of Conduct for the Supply of Electricity to Small Use Customers Report". The AMRs provide month by month monitoring of the performance. Through the Review period the performance showed a slight improvement: 2011-12 number of repairs completed outside charter: 56 (17%) 2012-13 14 (5%) 2013-14 40 (14%). A project "LED Streetlight Retrofit" has been planned in the AMP 2013-14 for the replacement of 7304 existing streetlights with energy efficient LED streetlights. The change will result in higher efficiency, better safety through the use of less hazardous materials and, on the basis of available information, lower replacement frequency (consequently lower maintenance and less faults).	
5	**Asset Operations**		Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.	
5.1	Operational policies and procedures are documented and linked to service levels required.	A2	The AMF documents the operational policies and procedures that drive the operation of the assets. The AMF provides the description of the operation of the AMS. Performance of the review and updating of documentation requires some improvement. While the AMF provides directions and information on the structure and scope of the system and references the applicable documents, the areas and districts Operational Management Plans are prepared on a yearly basis to describe the full scope and strategies required to achieve the required service and performance levels. In particular these plans identify the corporate objectives and the operational	Recommendation as per EC 1.1

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			policies and activities required to satisfy the objectives of safety, regulatory, capacity, reliability, quality, asset service, economics. The Operations Procedure System (OPS) is published on Horizon Power's internal network PowerLink. This includes • AMPs and tools to assist the districts in the preparation of asset management plans; • AMS and training; • engineering standards library; • interim instructions and specifications; • policies procedures and processes; • reporting and data. Throughout the Review all the staff interviewed had excellent grasp of the AMS and the documentation associated with its operation. Throughout the Review meetings were held over several days, both at the Bentley and in the Broome offices. Challenges by the auditors were promptly met by Horizon Power's staff, with documents sourced in real time from the AMS and processes verified. On the basis of meeting performance the Review formed the opinion that Horizon Power staff had good knowledge of the AMS and that the AMS had been effectively implemented. ‣ The "Policies and Procedure Register" (HP3010410) includes lists of policies and procedures relating to the business, however some of the documents quoted are now past their review date and some of the documents such as the "Operations Strategic Plan 2008/09 to 2011/12" appear to be out of date. It is noted that due to the Business Transformation Project Horizon power has put a temporary hold on documentation review until the development is completed.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
5.2	Risk management is applied to prioritise operations tasks.	A1	Risk Management is applied across the board on all plans and activities performed. Operational planning, in terms of all the objectives, is performed with reference to the risks of failure. Those objectives, safety, regulatory, capacity, reliability, quality, asset service and economics represent risk hurdles which then drive the priority and selection criteria for operational plans and tasks. Instruction Module Datasheets are part of the AMF and assist the asset managers to assess the risks of the issues that may impact their area of operation. Risks identified in risk workshops and risk analysis are recorded in the CURA data base and are used for task timing and prioritisation.	
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 and accounting data.	C3	The Review found that there is a need for improvement of the documentation and of the process of managing the asset register. In the review period Horizon Power transitioned from legacy systems which have been shared with Western Power since 2006 to Horizon Power's own asset management systems. During the review period the asset register was initially provided by: • DFIS - Distribution Facilities Information System storing geographical information of distribution assets and as constructed drawings; • DFMS - Distribution Facilities Management System, database and reporting system storing equipment location, maintenance and technical data; • Ellipse, work management system; • T Systems - Storing all major assets information for transmission and generation; location, history and technical information of transmission equipment, circuit and rating information, location and physical information of transmission lines.	**2.** Complete the implementation of programs aimed at improving the quality of data in the Asset Register to achieve the level necessary for satisfactory operation. These include at present: "A&W Field 3272 Quality Data Capture" project due for completion in 2016 and "Asset Data Accuracy Project", due for completion in 2014.

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			Post Business Transformation the new systems are: • Ellipse - Horizon Power Enterprise Resource Planning (ERP) system; • GIS - Geographical Informational System; • WMD - Workforce Mobility Delivery; achieved by using mDrover software package from Yambay. Ellipse is now the primary asset register. Operation of the systems was verified by examining asset records and work management packages and witnessing the performance of the steps of the AMS processes during the Broome site review. The legacy systems had inaccuracies and gaps in the data. The transition to the new systems has allowed: • a review of the needs for the asset attributes that were stored in the old systems and adoption of a set of attributes that are geared for the future operation of the assets; • better assessment of the work required to acquire all the data which is missing but will be necessary for the proper future operation of the assets; ▸ a quantification of the data inaccuracies in the registers. Horizon Power through its new processes has identified the gaps in the accuracy of the data and has proceeded to put in tactics to deal with the issues. This work is still in progress, two work programs are proceeding and are noted at the next finding (▸) below. Two types of data inaccuracies have been identified: ◦ inconsistency of the data in the new systems against the data in the legacy systems and possibly against the assets; ◦ inconsistency of data across the new systems.	

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			The review found that during the review period, Horizon Power employed three instances of the asset register: • initially the legacy asset register which had inaccuracies in the data; • the first stage of the new asset register which was "as delivered" and for which the data had not been reliably transferred and was missing field information; • a final stage of the new asset register with improved knowledge of status of the records and programs in place to bring the accuracy of the data to acceptable levels; progress with this development was evident and targets were being progressively achieved at the end of the review period. ▸ The quality of data (where quality is conformance to requirements) in the Asset Register has not yet achieved the level necessary for satisfactory operation of the AMS; programs are already in place to improve the data accuracy. Two of the programs are: ◦ "A&W Field 3272 Quality Data Capture" project due for completion in 2016, to deal with inconsistency of the data against the real assets; ◦ Asset Data Accuracy Project, due for completion in September 2014, to deal with inconsistency of the data cross the new systems.	
5.4	Operational costs are measured and monitored.	A1	Operational costs are budgeted in the AMPs and recorded in the work management system, Ellipse. Data from Ellipse is extracted in standard spreadsheets that provide the data for the monthly Asset Management Reports. AMRs are supported by Business Performance Report which provide monthly updates of Profit and Loss and information on activities, trends, and impact of events. The Business Performance Reports and formal presentation of costs are provided to Divisional management on a monthly basis.	
5.5	Staff receive training commensurate with	B2	The Review found that the system is undergoing change and that both the	**3.** (**OFI**) Gathering all training

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
	their responsibilities.		documentation and the performance of the process requires some improvement. During the review period Horizon Power relied on existing systems, such as spreadsheets, for tracking employees and contractors' training. The AMF provides the policies and structure for managing competency definition and training. ▸ Horizon Power has been gathering all its training information from the Districts into VETtrack, its corporate training database to enable future access by the Districts. This work is not complete and progress of this work will need continued support Staff job descriptions and qualification requirements are documented and were reviewed. Districts maintain local skill matrices indicating the requirements and the qualifications and competency of personnel. The matrices indicate mandatory refresher requirements. Under the current system Horizon Power was using IDNow for issuing cards to contractors, now moving to use VETtrack, All contractor had to fill application forms, The ID card was issued and scanned, records and scans showed personnel qualifications and competencies.	information from the Districts into VETtrack and enabling a portal to allow access to the District will need continued support to achieve completion.
6	**Asset Maintenance**		Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.	
6.1	Maintenance policies and procedures are documented and linked to service levels required.	A1	Maintenance policies are defined in the AMF. During the review period Horizon Power used a mixture of: • preventive, required fixed time/cycle based maintenance; • reactive and predictive maintenance (incorporating inspections) on the basis of risk assessment; • corrective to fix conditions identified during inspection; and • reactive maintenance (emergency) for minimising costs.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			The "AMP Instruction Module – No 10 Maintenance Tactics" (HP3495599) provides very comprehensive directions for maintenance strategies and creation and management of maintenance work plans. Maintenance Instructions/Work Instructions were included in the hard copy "Field Instructions Manual, Distribution Design Catalogue" issued to the field staff with a process in place for recording and updating of the document until 12 months ago. Manuals are now available on-line and are uploaded onto mobile equipment.	
6.2	Regular inspections are undertaken of asset performance and condition.	A2	The Review found that there is adequate documentation and that performance of the process requires minor improvement. The maintenance strategies driving the inspection regime are documented in the AMF and the "AMP Instruction Module – No 10 Maintenance Tactics" (IM10). Recommended inspections (Maintenance Scheduled Tasks (MST)) are defined in IM10 for all types of assets including frequency of the inspection. Standard Jobs are defined work packages that cover inspections of assets to identify potential failures. Both MSTs and Standard Jobs are entered in Ellipse and provide Work Orders (WO) for forthcoming inspections. WOs are closed once the job is completed by the Districts. Monthly AMRs report on inspection performance. Results of inspections are recorded in mDrover (previously DFMS) and reports noted above list the inspections and where applicable, identify asset "conditions". The outcomes of the inspections and corrective actions are recorded MDrover (and DFMS) with Ellipse managing the work order generated. Work management data entered in Ellipse is easily queried and standard reports are generated both in the Districts to demonstrate and verify inspection "campaigns" and in Bentley's office to feed the AMRs data. In addition the inspection programs are summarised in the Districts AMPs. The AMRs monitor a suite of asset performance and condition indicators as per the following reports: • report "0376 AMR Unassisted Pole Failures";	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• report "0381 AMR Transmission and Generation Defects"; • report "0385 AMR Asset Age of Poles; • vegetation management; • District reports provide full rundown on asset inspection campaigns. District reports are reviewed both by District management and by the central asset management group (Asset & Works, Asset Work Services). AMRs are reviewed by Horizon Power's operation management and Executive. In addition AMRs are uploaded to Horizon Power's intranet allowing staff access to the information. Between June 2013 and January 2014 Horizon Power previous inspection system was replaced by mDrover. Initially the new system had a few problems which had to be addressed. These problems have been identified and the inspection process shows a positive improvement trend: • Discussions with Horizon Power's asset management staff and site staff indicated that mDrover is a flexible tool, with more user friendliness than legacy systems. The auditors witnessed the superior capability to display images and inspection information. Improved user and operator accessibility is enabling the system to be upgraded readily and acquire new features to suit more sophisticated inspection and user requirements. The new inspection system mDrover has a tool called "Defect Manager" which stores inspection data and identifies the defects found in inspections. At the Broome site audit the system was queried on samples of assets reviewed. A comparison was made of asset defects existing in the legacy system DFMS and the newer records were found to correspond, showing that on this sample of six assets the records had been transferred satisfactorily. A larger sample was later analysed as part of the Special Areas review (Table 7 Special Areas Review).	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			Inspections are moving to employing tablets in the field. Tablets have the capability of taking pictures and have been loaded with the Construction Manual. Feeder routes are traced from GIS, the trace creates a job list in Campaign Manager, this information is uploaded into mDrover which then creates the data for inspection which goes to the tablets. Once the inspection is carried out and the new information entered into the tablets, it is then communicated to mDrover and some of the asset data is uploaded into Ellipse. Inspection data will stay in mDrover as Ellipse is a work management not an asset condition tool, mDrover will keep the asset conditions. With the Business Transformation program a decision was taken that not all of legacy history would be transferred into mDrover, only current history (ie, history of current asset), previous history at that location is kept in DFMS. ▸ Inspections at times lag the required schedules, however monitoring is comprehensive and allows corrective actions to take place.	
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule.	A2	Maintenance plans are adequately documented in AMPs. Performance of maintenance schedules is satisfactory except for the lag of work order entry. MSTs have been established to align with the predefined maintenance frequency outlined in Horizon Powers Maintenance Tactics Instruction module. MSTs and Standard Jobs are reviewed annually with adjustments made to the scope and cost as required. Where the frequency deviates from what has been outlined in the Instruction Module, the District Asset Management Coordinator provides reasons for the changes to the Regional Manager, the change is then conveyed to the Assets and Works Group which review and record the change. The changes are documented in the AMPs and subject to management review and approval. Maintenance performance is reported in monthly AMRs. The AMRs use data that is queried from Ellipse into Daily AMR Extracts. The Extracts include reports such as “Work Orders Overdue” and Transmission and Generation Defects” which tracks findings and WO for their rectification.	**4.** 66 overdue Work Orders were open in June 2014. Five of the Work Orders were due for completion by 31 December 2013. Implement action to close, delete or justify Work Orders open past the due date.

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			In the short term maintenance plan timing can be affected by priority maintenance tasks, such as emergency tasks. This was noted in the range of reports produced, for example the June 2013 AMR showed lagging wood pole inspections. However a number of WOs were found to be significantly behind required dates: ▸ By June 2014 there were 66 Work Orders open which were due to have been completed by that date; five WO were due for completion by 31 December 2013.	
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary.	A1	Failures are reported in the AMPs and operation/maintenance plans formulated and adjusted on the basis of the earlier asset history. Details of the failure investigations process, procedures and requirements are contained in the document "Hazard/Incident Reporting, Notification and Investigation Procedure" DM3016578. Additional documents provide the workflow for failure investigation: • "Incident Investigation Asset Failure & Protection Operation Investigation Procedure" (HP3293098) • "Hazard/Incident Reporting, Notification and Investigation Procedure" DM# 3016578 (quoted in AMF Sec 4.9.1) • Unassisted Conductor Failure Investigation Procedure (HP3606577) • Incident Investigation Unassisted Pole Failure Investigation Procedure (HP3231453). Investigations are documented in reports, the "Esperance - WF85 Running earth Conductor Failure - EXC14-100A" was reviewed.	
6.5	Risk management is applied to prioritise maintenance tasks.	A1	Maintenance tasks are based on standards described in the AMF and the "AMP Instruction Module – No 10 Maintenance Tactics". Each asset has a	

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			maintenance strategy which drives the maintenance interval and is based on the impact of failure. The impact is driven by the likelihood and consequences of failure, the required reliability and safety. For corrective planned and reactive maintenance, tasks receive a priority level depending on the required urgency of job completion, so that an Action level 1 priority applies to job where a failure may be due in two weeks or failure may stop generation or a key process, reducing to priority 2 and 3 for lower criticality. Asset are divided into two priority categories with priority assets defined as Category 1 Assets such as hospitals, emergency services and customers on life support. Category 1 assets receive a higher priority than other assets. Works generated by a number of systems impact on the prioritisation of maintenance and cause changes in the timing of maintenance tasks: • works such as fault rectification arising from TCS; • emergency management; • maintenance plans; • inspections; • investigations.	
6.6	Maintenance costs are measured and monitored.	A1	Maintenance costs are measured and monitored continuously. The Review found that: • maintenance job costs are entered in Ellipse, tracked in the regions against planned costs and reported monthly in the AMRs for every region; • further analysis is performed in the regions to check financial performance;	

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			• end of year District AMPs provide a commentary on overall management of costs; • maintenance costs are reported in a variety of other reports: ◦ the "Monitoring of Operational maintenance and capital cost expenditure" financial report provides an analysis of maintenance costs by District, variances and reasons for variances; ◦ the Operation Division Performance Presentation reports on the same information in the Performance meeting; ◦ adhoc meetings requested by the General Manager; and ◦ items over and under budget are highlighted and District or Finance corrective actions noted; management of variances is reviewed in this report under EC10.6.	
7	**Asset Management Information system (MIS)**		The asset management information system provides authorised, complete and accurate information for the day-to-date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.	
7.1	Adequate system documentation for users and IT operators.	B2	**Asset Management System changes** During the audit period, Horizon Power undertook large scale changes across their Asset Management Information Systems (the Business Transformation Program) to effectively remove all reliance on and separate from Western Power's legacy systems, as per "Program Management Plan, Business Transformation". Section 4.8 of Horizon Power's "Asset Management Framework, 2013/14 to 2024/25" goes through in some detail the importance of this transformation to the business. By early 2013 the following new systems were live throughout Horizon Power:	Refer to Recommendation at EC1.1 for review and updating of out of date documentation

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• Ventyx Ellipse – Logistics, Payroll, Procurement, HR, Finance, Work Management, • GE TCS/ENMAC – Fault Management, • GE SmallWorld – Geographic Information System, • IBM Cognos Express – Reporting, • Gentrack Velocity – Integrated customer billing, revenue, and meter data management system.; and • Yambay mDrover – Repository of Inspection and Defect data. Following 'go live' for the above systems, data quality issues became apparent. For this reason, the current review, originally scheduled for 2013, was postponed to 2014. The data quality issues are acknowledged in Section 7.0 of "Asset Management 2013/14, Asset & Works Chapter" and a rectification project commenced early 2014 "Asset Management System Rectification for ERA Compliance" (AMSREC). This followed the "Distribution Data Reconciliation" (DDR) project in 2013. The review noted that not all data quality issues were a direct result of the Business Transformation Programme; many issues pre-existed as part of the legacy systems. From discussion and documents provided for the review, Horizon Power have made significant progress in regards to reducing the severity of low data quality by providing priority to rectification tasks that have a safety impact. Both targeted (safety related) tasks and routine (e.g. inspection) tasks continue to improve data quality, while an ongoing system of health checks provide ongoing alerts of potentially new issues requiring rectification. There is currently an overall accuracy of more than 95% in data integrity for	

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			Priority 1 assets (critical assets) and safety related issues, with a target of 99% by September 2014. For other criteria the targets are: • 95% alignment of Priority 1 asset attributes (not related to safety); • 95% alignment of Priority 2 Equipment Counts; • 95% alignment of Priority 2 asset attributes; where Priority 2 assets are all assets other than Priority 1. Further information on data integrity is reported in the Special Area section, item 1.4. Priority 2 assets will be corrected over time or as the need arises. **Documentation** The Review found that there is adequate documentation however some of the documentation updates have not been met and that performance of the process requires some improvement. Horizon Power's Learning Guide represents a repository of context sensitive help and training, published online and accessible throughout the group. It is understood that updates to the Learning Guide are a default requirement for new projects, as required. The Learning Guide is supported by a comprehensive suite of Horizon Power procedural and process documentation, as well as third party manuals for each required area of the asset management information system. Through live demonstration and discussion with Horizon Power personnel, the review generally found system documentation comprehensive. However, there were examples of documentation with lapsed review dates; although for the most part these dates were only recently lapsed and understandable given the quantum of change over the last two years.	

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			▸ The Review noted examples of documentation with lapsed review dates. The ease and speed with which documentation was found and accessed live during interviews with Horizon Power personnel was remarkable.	
7.2	Input controls include appropriate verification and validation of data entered into the system.	A2	Horizon Power's information systems are able to provide both real time and near real time feedback for users with respect to data quality. By design, attribute fields are configured to accept the requisite data types and ranges. As expected, certain rules are in place to expect certain data contingent on the values of related data fields as is the case with inspection and defect data. Routine health checks further flag data quality issues, sometimes within 24 hours, after that data is updated, as is the case with metering. Districts are often provided the reporting alerts necessary to correct data quality issues as soon as next business day. In the case of new additions to the asset register, quality assurance and control is done by peer review as per Horizon Power's "GIS Smallworld Updating Rules Standard". This reasonably comprehensive document outlines expectations in respect of a core component of data entry. ▸ Historically, asset data integrity and quality were not as tightly controlled as is the case currently. The Review has found that the level of current verification and validation of asset data is excellent and better than the current industry benchmark observed by the auditors. The level of information on data accuracy is being provided in real time, which, currently, has not been encountered in the electricity industry, with results provided daily to rectify the causes of errors and drive improvement.	

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7.3	Logical security access controls appear adequate, such as passwords.	A2	The "Information Technology Policy & Guidelines" document details the expectations of all who utilise the information systems of Horizon Power. The document covers local and remote security, data handling, electronic (including mobile) messaging and data handling. Horizon Power's "Access Control Guidelines" further detail the usage of security profiles controlling the access privileges of password authenticated users. The risk of data corruption is minimised by ring-fencing production and development systems. ‣ It is noted that both documents have review frequencies and dates either lapsed or inconsistent, and should be reviewed as part of Recommendation at EC1.1. Over 40 hours of interviews and meetings the Review witnessed nine staff accessing live various elements of the AMS and responding to the auditors' challenges. At all times the system's access controls appeared suitable to the staff authority levels. The Review concluded that Horizon Power's security access controls appear adequate and consistent with industry practice.	Refer to recommendation at EC1.1 for document review and updates.
7.4	Physical security access controls appear adequate.	A2	During interviews with Horizon Power personnel, physical security access controls were discussed for both Horizon Power owned facilities as well as their outsourced data centre partner, Fujitsu. The review noted that facilities are secured by card access. The review also noted a user on-boarding process consistent with adequate physical access controls. Any potentially new user of the information system is taken through a vetting process comprising Human Resources, prior to a request being possible for security card access. Security cards can then only be approved by the person recorded as the new user's formal leader. Any change to security card access also requires approval from a formal leader. Access to	

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			the data centres of both Bentley and Karratha is limited to very few personnel. In March of 2014 an internal audit "IT Controls Assessment" was undertaken to benchmark the maturity of the Technology Group, Customer Services Group and North West Interconnect System (NWIS) Group across eight IT management and security domains. This revealed a disparate maturity level across the three groups, with the NWIS Group ranking lowest and Technology Group highest. Horizon Power have undertaken to continue health checks for the risks identified while remediation work is in progress for 2014/15. As actions are in progress and monitored through the licensee programs and internal audit the Review has concluded that no further recommendations are necessary.	
7.5	Data backup procedures appear adequate.	B1	Horizon Power's data backup procedures appear adequate and routinely tested. The review noted the following: • Backup success is being monitored – evidence was provided by way of a snapshot of results for June 2014. • No information technology related incidents were reported by Horizon Power for at least the last year. • Backup testing comprises routine tests of actual (daily) restore operations and disaster recovery tests (annually). • An "IT Disaster Declaration and Execution Plan" is in place covering data centre / computer room loss and data connectivity. • A Fujitsu Backup / Recovery procedures document was sighted. • There are checklists in place for power outage events as well as disaster recovery test guides, Ref: "DR Test Guide: Wintel". ▸ The DR Test Guide: Wintel appeared to be in draft form, with no document owner recorded or signatory identified.	**5.** Documentation such as the "DR Test Guide: Wintel", "TCS Reliability Report User Guide" and "Asset Management Reporting, Cognos Express Procedures" should be formally issued so that their currency can be maintained/verified. Refer to Recommendation at EC1.1 for overall requirement.

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
7.6	Key computations related to licensee performance reporting are materially accurate.	A1	Cognos Express is Horizon Power's principal reporting tool, in use over the last 2-3 years. This allows up to real time on demand reporting if required. The Review noted: "Horizon historically produced an Asset Management Report in Excel with feeds from various source systems, as well as data entry. The historical process involved following a lengthy manual procedure for each monthly report." (extract from Asset Management Reporting, Cognos Express Procedures). With this more systemised reporting tool, there doesn't appear to be the risk of incorrect data resulting from corrupt (sometimes extremely large) Excel files. Several user guides were sighted, further providing confidence of a repeatable reporting process: • TCS Reliability Report User Guide; and • Asset Management Reporting, Cognos Express Procedures. ▸ Neither of the above appeared as controlled / final documents. Additionally, the ability to further automate and have reports sent on schedule appears to be a distinct possibility, further removing the element of human error. Several example reports related to performance reporting were discussed during site interviews with Horizon Power. Sample reports were also provided for further review. The review noted that Horizon Power utilises a process of review for the reports being generated. Anomalies are picked up based on experience when reviewing the data, with comments sent to the regions,	Recommendation at EC7.5 applies.

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			suggesting corrective action where required. These comments remain attached to the report until the data returns. From the discussions with Horizon Power personnel and document examination, the review concluded that key computations related to licensee performance reporting are materially accurate, with any unexpected results further investigated as part of a logical process. This process was evident in some reports as the data, especially during the initial stages of the Business Transformation Project, was not available or was found to be in error by the licensee. In addition the Business Restructure at the end of 2013 resulted in losses in resources and expertise which resulted in some of the data handled manually not being correctly interpreted. Notes were observed by the Review in the AMRs indicating the extent of the issue and the expected time of resolution.	
7.7	Management reports appear adequate for the licensee to monitor licence obligations.	A1	The ability of Cognos to generate reports frequently and on demand allow Horizon Power to assess asset management outcomes potentially as they are recorded in the field. Based on the breadth of reporting reviewed and discussed with Horizon Power, management reports appear adequate for monitoring licence obligations. Horizon Power's primary management report is the monthly Asset Management Report (AMR) which uses data queried from the systems. In addition data is continually loaded onto Horizon Power's online pages, on a Dashboard that allows in detail monitoring of performance over a large range of parameters. The AMR has been in operation for the full Review period and over the previous period. Some of the performance indicators have changed over time however the AMR has been in use continuously. AMRs monitor monthly: • Unassisted Pole Failures per 10,000 Poles; • SAIDI, SAIFI;	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			• Critical safety issue defects (missing signs on poles, anti-climbing or overhead attachments missing); • Electrical incidents; • Power Quality Complaints; • Wood poles inside and outside of planned life; • Supply interruptions by length and duration. AMRs are addressed to the General Manager, Regional Managers and the Asset Managers at each of the regional depots. Copies of the report are published on the Horizon Power's web page for general consumption of the business.	
8	**Risk Management**		An effective risk management framework is applied to manage risks related to the maintenance of service standards.	
8.1	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.	A1	**Background** Over the review period, Horizon Power fundamentally changed their outlook on risk. In October 2013 the value of lost load (VoLL) concept was introduced, which places a financial value on unserved load and better quantifies risk. Essentially, Horizon Power now assesses the cost to the community of taking action vs. the cost to the community of not taking action when evaluating projects. The VoLL concept has been applied to justify changing Horizon Power's SAIFI target. Around February 2014 a revised asset management framework was issued to the regions to reflect this change from the previously more deterministic risk model to the current probabilistic risk model. This new framework adopts a more rigorous, less subjective risk model using as its basis a loss of life value. Rather than avoid risk, Horizon Power now assess works based on an acceptable level of risk to the organisation. The general outcome is more focused asset management (less wasteful and more targeted spend). The review noted that the majority of asset management planning over the	Recommendation at EC1.1 for document review and update applies

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			course of the review period has been undertaken using Horizon Power's previous risk management framework. However, planning currently in place, which commenced towards the end of the review period, is utilising the revised risk management framework. For this reason, the Review considers both risk management frameworks, with emphasis on Horizon Power's previous risk management framework. **Effectiveness** Horizon Power's "Risk Management Policy (22 June 2011)" confirms the organisation wide stance on risk management. The policy appeared consistent with discussions entered into with Horizon Power personnel. The "Risk Management Framework (22 June 2011)" outlines the implementation of Horizon Power's risk management processes. The review noted several examples consistent with this framework. ▸ In line with the strategy of putting on hold current documentation until the development of the Business Transformation Project noted under EC1.1 the above documents had not been updated at the time of the Review. A submission to the Board of Directors reflecting Horizon Power's revision to the Asset Management System resulting from the Strategic Review of the Risk Management Framework was formalised on 18 June 2014, as per the following synopsis: "The Asset Management System has been revised to efficiently manage risk and to take a more commercial approach which will minimise the cost of delivering Horizon Power's business objectives. This has been achieved by: • Risk Management ◦ Where Good Industry Practice does not exist, safety is managed to "as low as reasonably practical" (ALARP). ◦ The application of commercial principles that balance risk with cost of mitigation in order to deliver best value to Horizon Power. ◦ Reliability targets are to be managed on a risk basis that considers	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
			community needs. • Accountabilities ◦ Clear definition of roles and responsibilities." This submission to the Board also summarises the changes to the Asset Management System and confirms alignment with ERA guidelines and the industry standard ("PAS55, Standards for Asset Management"). The review noted that Assetivity conducted an independent desktop audit of the revised Asset Management Strategy, confirming alignment with the ERA's Guidelines. The review noted that Horizon Power appear to have a comprehensive suite of documentation pertaining to risk management policies and procedures, indicating that the asset management system encompasses due consideration of both internal and external risk factors.	
8.2	Risks are documented in a risk register and treatment plans are actioned and monitored.	A1	The "Risk Management Framework (22 June 2011)" outlines the recording, treatment, actioning and monitoring of risks. Horizon Power's strategic and divisional risks are captured in CURA, while other tools such as Cintellate and the modules of the asset management system themselves will generally contain asset specific risks. Considered together, these systems work well to not only record risks, but ensure treatment plans are actioned and monitored. CURA, for example, will set due dates for identified risks, alerting lapses to responsible parties and escalating as appropriate when tasks remain outstanding over set time periods. Cintellate records unassisted asset failures and tracks any necessary investigations through to closure. Risks are subjected to an extensive range of reviews: • annual Executive Risk Workshop attended by all General Managers; • annual Divisional Risk Workshop attended by all Divisional Managers and	

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			Team Leader as well as selected staff; • monthly Executive meetings attended by all General Managers; • monthly Divisional Risk meetings attended by Managers and Team Leaders; • two monthly Audit and Risk Management Committee (ARMC) meetings; • two monthly risk updates and reports to the ARMC and the Board including feedback from the General Managers on the Divisional Operational risks; • discretionary Risk Health Check at six monthly intervals at Executive and Divisional levels; • processes are identified in the Risk Management Framework. The risk (probability and consequence) of asset failure underpin Horizon Power's asset management planning process. During interviews with Horizon Power personnel, project and job examples were used to demonstrate the evaluation of risk on both Capex and Opex planning. A desktop review of an extract from CURA also confirmed that Horizon Power is recording, actioning and monitoring identified risks.	
8.3	The probability and consequences of asset failure are regularly assessed.	A2	The "Risk Management Framework (22 June 2011)", Section 3.3.2 breaks down risk analysis into assessment of the highest level of consequence and the likelihood of the risk occurring at this highest level of consequence. "The combination of inherent consequence and likelihood then forms the inherent risk rating." Horizon Power's planning cycle ensures that asset failure risks are assessed at least annually, across several layers of the organisation, from Board level to individuals and teams allocated work packages. Risk workshops operate year round at strategic, divisional, group, project and activity levels as part of a regular review cycle.	

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			In 2013, an internal review (supported by external consultants KPMG) re-considered the risks contained within the 2013/14 Asset Management Plan Business Case submission in several risk workshops. The review found some areas of concern in regards to the application of the Risk Management Framework and resulted in all projects decreasing in risk except for one increasing in risk (Ref "BOARDDEV-2243 Item 2.2 – ARMC Report AMP Risk Review", "BOARDDEV-2315 Item 2.1 AMP Risk Review (1), BOARDDEV-2322 Item 2 Tabled at Meeting"). The above provides further evidence that risk is monitored for possible adjustments to work plans and priorities.	
9	**Contingency Planning**		Contingency plans have been developed and tested to minimise any significant disruptions to service standards	
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.	B2	Contingency Plans are documented at various levels across Horizon Power and include: • a Corporate Crisis Management Plan; • separate contingency plans for districts and assets. The "AMP Instruction Module – No 11 Contingency Planning (HP3362664)" guides the preparation of Contingency Plans. At the last update (December 2012) the Module indicated that a number of plans were due to be finalised including East and West Kimberley, Gascoyne, Mid West, metering and SCADA. The Review observed that: • Corporate Services and the Crisis Management Team (CMT) nominated in the Corporate Crisis Management Plan are responsible for the annual activation drill and desktop scenario for the leadership group. They are also responsible for the coordination of an annual review of the Horizon Power's crisis and emergency management capability. • Horizon Power's overall crisis and emergency management capability is	**6.** Update or finalise Contingency Plans as identified.

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			subject to annual consideration by the Board of Directors and the Managing Director; • the Executive Committee reviews the crisis and emergency management capability through an annual presentation; • Employee and contractors inductions include briefing on relevant Emergency Response Procedures; • members of the Emergency Management Teams and Crisis Management Teams are nominated and participate in annual training exercises; • actions arising from tests and real events are added to CURA for monitoring until completion. Plans are subject to annual testing across the business, some validation occurs under actual emergencies: • A test was carried out in July 2013 of Horizon Power's Crisis and Emergency Management. • There were several Emergency Management Team activations in 2013 in response to cyclones. The review examined the Kimberley region contingency plans. The Region has plans for each of the two districts, addressing critical assets and their possible failure modes. The plans include a risk assessment for each event and response actions. The comprehensive plans include information relating to equipment types, major and important customers, essential contact numbers, minimum strategic spare stock levels and generation emergency response. Contingency Plans documentation is extensive: • West Kimberley Contingency Plan DMS 3069485	

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			• East Kimberley Contingency Plan is DM#3241788 • Crisis Management System DMS 3126443 • Emergency Procedure, Severe Storm, Cyclone, Flood and Bushfire Response DMS 3066717 (EPSCFBR) • Staff Contact Details DMS 3202158 • Feeder Restoration Process DMS 3221736. Documentation related to contingencies was examined at the Broome regional office review. Reviewed: • "West Kimberley Contingency Plan" DMS 3069485 updated 4/4/2011 and • EPSCFBR DMS 3066717 Rev J 30/9/13. ▸ The Instruction Module issued December 2012 indicated that the "West Kimberley Contingency Plan" should have been finalised, but the plan last issue was April 2011. The West Kimberley Contingency Plan is to be used in conjunction with the crisis management system and ECSSFP above. It includes information relating to equipment types, major and important customers, essential contact numbers, minimum strategic spare stock levels and emergency generation response. It has a number of responses depending on the type of emergency: • critical customer response plan in the event of loss of supply; • loss of supply to major customers (all have back-up generation); • strategic spare holdings; • emergency generation responses and demand side management through	

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			an agreed load curtailment process; • bushfire management plan; • flooding.	
10	**Financial Planning**		A financial plan that is reliable and provides for the long-term financial viability of the services.	
10.1	The financial plan states the financial objectives and strategies and actions to achieve the objectives.	A1	The financial plan is not a singular document but rather is comprised of a number of key documents which clearly articulate the financial objectives to be achieved and strategies to be implemented in Asset Management Plans. These documents (Corporate Strategic Plan, Asset Management Plan and Statement of Corporate Intent) do not contain specific strategies for the achievement of financial objectives but rather a broader set of operational strategies that should ultimately lead to attainment of financial objectives. Budgeting and reporting follow a consistent approach throughout the organisation and impress as being robust and effective.	
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs.	A1	The sources of funds for all capital expenditure and recurrent costs are appropriately identified with a high level of granularity in Asset management Plans and the Corporate Budget.	
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets).	A1	High level profit and loss and balance sheet projections are contained in the Strategic Development Plan whilst the Corporate Budget contains highly detailed profit and loss statements.	
10.4	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period.	A1	The Corporate Budget contains detailed forward annual income projections covering a 10 year period.	

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10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services.	A1	Detailed projections/forecasts for aggregate operations, maintenance, administration and capital expenditure are contained within the Corporate Budget whilst individual District Asset Management Plans address the same at a localised level.	
10.6	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.	A1	Significant variances in actual to budget outcomes are identified in monthly performance reporting at both the District and Operating Division level. This includes commentary and remedial action taken/planned where appropriate. Additionally, regular review meetings are held where the progress of projects and works is monitored and action initiated where necessary. The Review observed: • a number of variances due to repairs required after weather events; • variances due to rollover of project funds from one financial year to the next; • a significant saving of 13.5% in maintenance costs in the 2011-12 financial year. The Review examined a significant variance in: • the Carnarvon Power Station Development Project. The project was established to develop a nominal 18 MW automated gas and diesel power station at Mungullah allowing retirement and decommissioning of the existing Iles Road power station. The project budget was not fully expended by 2011-12, however due to a lack of rollover of project fund allocation, funds were lost from the overall project budget. The project team submitted a Change Request at the end of 2013 demonstrating a reduction in the scope of completion works and a request for a slightly lesser amount to complete the project. The documentation showed adequate conformance to Horizon Power procedures.	

EC No.	AMS Element / Criteria	Rating	Review summary (▸ Findings)	Recommendations
11	**Capital Expenditure Planning**		A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.	
11.1	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates.	A1	Capital expenditure planning is set out within individual District Asset Management Plans and also in the Asset Management Plan for Asset and Works. In aggregate the schedules within these Asset Management Plans contain details of all planned and projected new works, rehabilitation and replacement works, including costs, on an annualised basis over a 10 year time horizon. Long term projections are derived from current known like for like costs with appropriate allowances made for any other foreseeable factors that might be of impact. The Review found that the process was both robust and effective with good discipline evident that it is being complied with across the organisation.	
11.2	The plan provides reasons for capital expenditure and timing of expenditure.	A1	Individual drivers of capital expenditure listed in the Asset Management Plans and the Corporate Budget are clearly identified as is the timing of expenditure outlays. A Business case must be prepared, submitted and approved prior to any capital expenditure being incurred with each business case also clearly identifying the underlying drivers for the expenditure being incurred and the forecast timing of expenditure outlays.	
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan.	A1	Long term capital expenditure planning as set out in Asset Management Plans is premised on the forecast age and condition of asset life however, in line with good industry practice, a rigorous approach to condition based monitoring of all assets is maintained with subsequent risk and regulatory prioritised adjustments made to short term capital expenditure plans where appropriate.	
11.4	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.	A1	Asset Management Plans and the Corporate Budget in which the Capital Expenditure Plan is effectively embedded are updated annually as a component of the corporate planning cycle however the ongoing status of all approved Capital expenditure projects is reported and monitored regularly	

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			with remedial action initiated where necessary.	
12	**Review of AMS**		Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.	
12.1	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current.	B2	Both the asset management system and the asset management plan are subject to annual reviews and updates. Separate AMS and AMP documentation was provided for each year of the review period. Changes occurring due to the Business Transformation Program were addressed in the documentation. A major change to the systems will be implemented after this review period. The asset management system is complex and is supported by a large number of documents which are due for regular review. Many documents that support the AMS are reviewed at regular intervals. ▸ Review of the "Polices & Procedures Register" showed that most of the procedures were past the due review, eg Pandemic Response Plan was due for review by 15 August 2011.	Recommendation as per EC1.1
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system.	A1	Independent review have been performed both internally and externally. The preparation of the AMP has been managed as a Project and a Post Implementation Review (PIR) has been completed in accordance with Project Management Methodology: • the PIR was prepared by the Manager Business Services and contains the combined reviews of Horizon Power Managers. Two external reviews were completed in the review period: • a review carried out by Qualeng in March 2013 benchmarked Horizon Power's AMS against comparable systems. No recommendations were made in the review; • a review carried out by Assetivity between May and June 2014 on the AMS proposed for 2014-15; the review made 16 recommendations which were	

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			all acted on by Horizon Power as confirmed by Assetivity. The remaining findings note the length and complexity of the document, the need to incorporate operations in the system development and the need to clarify the processes of strategic planning and improvement. These recommendations will be used in the new AMS documents.	

Table 7 Special Areas Review

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
		Adeq & Perf		
	KEY TERMS Systems identification (for reference only)		CIM Common Information Model CINTELLATE Hazard and incident management system CURA Risk management system and register DMS Document Management System Ellipse Horizon Power ERP system ERP Enterprise Resource Planning ESB Enterprise Service Bus GIS Geometrical/ Geospatial Informational System mData21 Metering database SCADA (Supervisory control and data acquisition) Data system, collects data from the assets and enables remote functions TCS Trouble Call Management System WMD Workforce Mobility Delivery; achieved by using mDrover software package from Yambay Previous key systems: DFIS Distribution Facilities Information System storing geographical information of distribution assets and as constructed drawings DFMS Distribution Facilities Management System, database and reporting system storing equipment location, maintenance and technical data DQM Distribution Quotation Management Information System, addressing work management and costs DRE Data Remote Entry, providing for inspections and condition	

SA No.	Area	Rating	Special area summary (‣ Findings)	Recommendations
			monitoring of distribution assets T Systems Storing all major asset information for transmission and generation; location, history and technical information of transmission equipment, circuit and rating information, location and physical information of transmission lines, details of protection equipment system; including routine maintenance data for Maintenance Schedule Tasks (MSTs).	
1.1	Functionality of the information technology used to manage asset data		In order to examine the functionality of the information technology (IT) used to manage the asset data the Review examined the development and structure of the asset management information technology systems. The review of functionality can only be carried out once the scope and structure of each of the new systems is identified. **Background** At the disaggregation of Western Power Corporation in 2006 Horizon Power continued to share common key IT systems with Western Power and Synergy. Between 2009 and 2011 it became obvious that the systems needed to be separated from the other businesses and the Business Transformation Program (**BT** or Business Transformation) was initiated. In terms of IT changes, BT included several key projects: • Ellipse Optimise Project, to separate Ellipse from Western Power, consolidate and replace several Horizon Power's systems, including DFMS and DQM; • GIS Project, the replacement of the Western Power custom built mainframe-based DFIS with the commercial off-the-shelf GIS solution, GE Energy's Smallworld Electric Office; • Workforce Mobility to extend the separation from Western Power by decommissioning DRE and DFMS, extending the Workforce Mobility Pole Inspection Solution (WMPIS) implemented in 2011 into non-pole asset inspections;	

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			• the implementation of ESB which allows synchronisation of asset data between the platforms. At the same time Horizon Power decided to maintain the legacy data in DFMS under an Oracle system so that historical data can be retained unchanged and can be accessed if needed. The basic building blocks of BT were systems either already in operation at Horizon Power or available commercially: • Ellipse and Mobility, already in use; • Electric Office, commercially available and found superior to previous GIS solutions. Most systems went live in December 2012. **Initial Issues** There were issues at the go-live: • Some of the data in Distribution did not migrate to the correct fields. The DDR project was started to restore the data into the correct fields. At end of the project in July 2013 integrity problems were rectified; • GIS system was completed in April 2013, however in June/July 2013 the "Carrier Length" report could not be produced; • there was no construction ID (association of assets to equipment, ie. poles to cross-arms etc); • mDrover had teething problems and an interim data system had to stay in operation longer than originally planned. **The Systems** Ellipse is Horizon Power ERP System, initially owned by Mincom, then taken	

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			over by Ventyx in 2012. Pre-Transformation Ellipse supported work management, logistics, procurement, payroll, human resources and finance. The Ellipse databases were customised to serve small scale systems for Distribution, Transmission etc. The project to migrate Ellipse from the shared and customised arrangement into a single environment controlled by Horizon Power was approved by the Executive in August 2011 and went live on 3 December 2012. In summary the revised Ellipse was going to: • Consolidate several small scale systems including DFMS, DFIS, the "T" systems, REALM properties management, EARNIE payslip viewing, Capital Works Management from DQM, using Work Planner to achieve better control, reduced demand for support and lower maintenance costs; • Remove support dependence from Western Power; • Implement a Web based application through Ellipse 8.3 for improved user access; • Implement an Enterprise Service Bus to allow "plug and play" functionality; • Adopt better project management tools; • Allow functionality of risk based prioritisation; • Provide learning support through online guides (and a Web application) supporting the user directly at the time of need. The GIS implementation through GE's SmallWorld Electric Office was also designed to offer: • GIS integration with Ellipse (previously the only system that could integrate with Ellipse was ESRI); • GIS integration with mData21; • Web based browsing accessible to the Districts (originally planned to be	

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			delivered through GE's SIAS (Smallworld Internet Application Server)), now achieved through Citrix; The Transformation project allowed the analysis of the asset information held by the systems to identify whether the existing data was in use and whether there was other information that may be required to define the assets better now and in the future. The Transformation project did find that some of the fields were superfluous as they were not used at all. On that basis the decision was made not to take all the fields across to the new system. In addition new fields were introduced to allow improved asset management. Supporting the change process, an independent review was carried out through independent audit: • audits of phase 1 and 2 of the Ellipse Optimise Project by Ernst & Young. **Findings** The Review examined the functionality of the IT used to manage the asset data through interviews with the and step by step witnessing of the performance of key tasks of the work management systems: • This Review witnessed operator use of the licensee's ERP systems, as applied to capital work projects, maintenance, inspection, reporting, access to and entry of asset information. • Entries into the Ellipse system showed that the system is currently still complex with many panels required to enter work details, however most of the processing now resides within the one database, Ellipse, rather in multiple systems and improvement actions are due to take place to reduce the number of panels that need access for data entry activities. It was understood that, for some of the operations, the number of panels that require access will be reduced by half. • The operation of the mobility solution was reviewed and there was evidence of inspection, defects identification, data collection and	

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			recording. The system was easy to operate and displayed information clearly and effectively. The uploading of data from the field can take place in real time which enhances the currency of inspection data. Whilst there are still a number of activities and issues that have to be completed or addressed there is evidence of increased functionality and control of the new systems over the legacy systems through: • tighter integration of the systems; • simplification of the systems structure; • availability of both processes and data on-line on the licensee's intranet systems and in the field through mobile access; • more direct control of data management. The new systems integrate better and more extensive data quality verification processes: • the number of automatic data checks has increased from 7 to 20; • the reporting of data accuracy and validation is extensive both in terms of assets and asset attributes and is circulated to management; • monitoring of data verification is structured and prioritised with a weekly meeting reviewing the data accuracy trends; • there is evidence of decreasing errors in the data as validation takes place through the automatic "health checks" and input from the field; • the mobility solution is enabling direct uploading of inspection data to the system decreasing the inputting steps and reducing the chance of errors through multiple data handlers. **Current Issues and Solutions** Currently there is a decline in productivity as the systems are bedded in, the users become familiar with the new processes and outstanding issues are	

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			resolved. Current issues and potential obstacles are: • Ellipse/DFMS/DFIS were not originally in full synchronisation; Solution: a systemic approach is now in place to align the systems through the Asset Data Accuracy Project (ADAP) (see item 1.4); • the previous asset system did not have all GPS coordinates for its assets base; Solution: this will take place through inspection regime verification (ADAP); • at implementation, integration of the new GIS with mData21 and Geoviewer was not fully achieved; subsequently additional business requirements were identified that were outside the original work scope; Solution: this issue has been addressed by the Distribution Data Reconciliation (DDR) project; • the location of assets in GIS, whilst improving, has now highlighted the inaccuracy of the externally sourced LandGate data which is used to identify the location of property boundaries, road easements and services; this inaccuracy at times leads to unexpected outcomes as boundaries and roads may not be shown at the correct location in respect to the assets; this is an externally caused issue, the Review observed that this issue had been identified by Horizon Power and work practices made allowance for the discrepancies; • the GIS reporting model (GSA) did not originally meet Horizon Power's business requirements, this was identified and corrected during project delivery; • new data fields were introduced with the Transformation to allow improved asset management, as those fields become effective they will need to be populated with actual data and the process will take time to complete; this will take place with inspection verification; • overall the lack of end to end process documentation and an overall plan for the IT solutions and also the dependency on Western Power systems	

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			meant that there was limited internal knowledge of the systems and a lack of proper systems specifications resulting in a "like for like" adaptation which, in places, may not have been optimal. The auditors observed that the ownership of the systems has enabled Horizon Power to adopt an intense review process demonstrating a path and process for optimisation of the systems. In addition: • Health Check Reports run automatically but are checked manually highlighting the integrity status of the data across the systems; • Further data accuracy improvement will use combination field audits on safety issues, while other checks will be done by desktop checks; • Additional details on solutions have been reported in sections 1.2 and 1.4 below.	
1.2	Performance of Horizon Power (HP) mData21 metering system, accuracy and timeliness of data import into the metering database.		From August 2012, Horizon Power terminated the contractual arrangements with Western Power as metering data agent and moved all metering services in-house, including the full implementation of a new metering database mData21. Discussions with Horizon Power personnel and examination of documents indicated that problems with metering and billing synchronisation existed prior to the Business Transformation project. Previously there was commonality and duplication in the meter reading and billing processes, the new system removes duplication and streamlines the process. **Process** The mData21 "Metering and Billing Life Cycle" diagram was reviewed in the Broome regional office and its operation examined and discussed. The meter reading route is planned two months ahead, with each route including up to 250 readings.	

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			The diagram shows: • routes are sent to the handheld meter reader at Day-2; • meters are read between Day-0 and Day+2 and data inputted into handheld devices; readings are accompanied by any applicable notes; • route readings from handhelds are uploaded on to MVRS Gentrack Velocity at Day+2 for billing purposes; • meter read validation error report is produced at Day+3; • exceptions are validated by Day+11; • where readings could not be obtained mData21 produces an estimated read, which is used to generate the bill. The data from mData21 database is accessed by GenTrack Velocity which is used for billing purposes. The "Customer Timeline – Proposed standard Timeline for Horizon Power" shows that from bill generation at Day 0, the bill due date is Day+12; reminder SMS is sent at Day+14 and the first follow-up call takes place at Day+16. Velocity applies a further validation test to the meter readings. There are monthly meetings on trends in meter reading. **Accuracy** Horizon Power's metering database mData21 operates in accordance with the Metrology Procedure, which includes validation requirements in section 3.4 and prescribed testing at Schedule 8. If a validation fails the data is to be estimated in accordance with rules included in the Metrology Procedure. Validation reports have now more validation categories which are identified by the "Validation Code". Some of the codes reflect external factors impacting on meter reads such as "No reading value loaded" (typically due to dogs), resulting in a "Meter Skipped" statistic.	

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			Validation exceptions per meter read routes past the audit period show that Horizon Power has set a target of 10%, this was met in three consecutive weekly periods at the end of the review period, with the last period decreasing to 8%. Comparative results from a year before showed that the average was similar but figures had a larger range. Velocity performs a comprehensive validation process on estimated bills by assessing the estimate against pre-set parameters within Velocity. Typically estimates are compared with typical consumption for that time of the year. If validation fails, the estimated bill is exception queued for manual review. The "Customer Service Process performance Weekly Dashboard 2013-14 3698314" was examined. Billing exceptions are now trending to 0, in 2012 exceptions ranged between 800 to 2000 weekly. The review found figures of 1737, 1550, 1473 (July 2013) compared to 83, 71, 10 respectively for the same period in 2014. ▸ Billing exceptions as a percentage of billing reads have dropped from an average of around 18% at the start of July 2013 to around 5% in June 2014. **Timeliness** A weekly validation report is generated on Thursdays identifying whether the meter has been read on time and where readings remain open over 5 days. ▸ Trend charts showing "Billing Exception & Unbilled > 90 days", dropped from a high of over 1700 at the start of July 2013 to under 100 at the end of September 2013 and reducing to under 50 for the remainder of the audit period. ▸ The Horizon Power target for "Final Read Completion on time in Field" is 95% and all districts bar one were achieving better results than the target	

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			(the exception averaged around the target at the end of the review period). **Performance at Broome Site**: • Service Orders which drive meter reading are now closed in the districts so corrections are managed by the districts and extra data knowledge benefits the region; • metering information and customer data are now available and accessed by regional offices; • Graphs Ref13.18 "Customer Service Process Performance Weekly Dashboard 2014-2015" shows both 2014-15 statistics compared to similar data for the same period in 2013. The graphs show: ◦ meter reading was meeting target of 96% until December 2013 with swings of 82% to 100 % in Quarter 3 and 96% to 100% in Quarter 4 2013. Subsequently the trend had been more erratic with a range of 82% to 100% in Quarter 1 2014 and 72% to 96% in Quarter 2 2014. It is noted that past the review period the trend improved significantly. Some of the issues that were identified in the transition were a drop in performance in first part of 2012 due to the loss of meter reading contractors with the knowledge that meter readings would be done internally. All meter readings have been done in house since August 2012 ("Performance Audit 2013"). Meter reads go through a validation process which has added about 20 new validation tests under the control of regional offices. A further validation process is under the control of the Billings Department. **Further Development** There is a Business Case for the roll out of smart meters by September 2014. At June 2014 smart meter technology had been implemented in Aboriginal Communities. Smart meters have the advantage of avoiding the need for	

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			meter reads, they can be readily disconnected/ reconnected. The review noted that old meters were failing meter test compliance and readings were operator dependent. The smart meter system does the meter validation after reads.	
1.3	Inter-working of the asset management systems.		The strategy adopted for the development of the new asset management systems placed Ellipse at the top of the development structure, with mDrover and GIS as separate systems. Linking the systems was a set of interfaces that allowed the conversion of data from one database to the other for successful consistency of data. IBM's CIM (Common Information Model) was the application employed to provide the framework for data exchange between the systems. The application transforms the equipment class and fields (referred to as properties or attributes) from one system type to another system type and distributes the data entered into "master" system fields to "slave" or shadowed systems. For every attribute there is a master system and slaves. Data is transmitted through the ESB. The three primary systems that are served by the application are: • Ellipse • mDrover • GIS. Ellipse takes precedence for data correctness over Mobility mDrover. Data for management reports is queried from Ellipse and outputted into data files that can be read as spreadsheets. The data is then loaded into the monthly Asset Management Reports (AMRs). The Review observed through the examination of application definition documents for the systems, the "Distribution Data Reconciliation" (DDR) Project documentation and the data accuracy trend reports that: • initially there were discrepancies in the data held by the asset	

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			management systems as observed in section 1.4 below, due to the initial conversion program necessary for the transfer of the data from the various legacy systems into the three new main systems. These discrepancies have been identified and rectification programs have been implemented to rectify them (see section 1.4 below); • the inter-working of the asset management systems is now effective as the systems are maintaining data consistency with step improvements as each batch of assets are analysed.	
1.4	Data integrity of the data that has been imported to the systems from the legacy systems.		At the start of the Business Transformation program the "Project Handover To Production Process" was updated to provide additional systematic checks to ensure: • quality and consistency of the work performed by external service providers and project teams; • acquire documentation to support the operation of the new or revised systems. The complexity and limited knowledge of the Western Power environment meant that some of the conversion hurdles had to be confronted during the development of the new systems. ▸ Not all data present in the legacy system was found to be useful for the operation of the assets, in addition new attributes were identified that were not present in the legacy system. The result was that only around 45% of the fields in the new AMS were able to be populated from the legacy fields. The remaining attributes will have to be populated through future in field inspections. Horizon Power have recognised the importance of this shortcoming and identified a project for collecting the data, the "A&W Field 3272 Quality Data Capture" project which is now in Ellipse but due for completion in 2016.	**7.** Progress the "A&W Field 3272 Quality Data Capture" project. Process of inspection and audits should be managed to ensure that the asset management data is complete and accurately records the attributes and conditions of real life assets. **8.** Continue with Asset Data Accuracy Project to achieve the set objectives.

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			Initially some asset attributes were not migrated leaving gaps that had to be addressed (Workforce Mobility Delivery – Project Review & Closure Report, DM364038). In 2013 it was acknowledged that while distribution assets such as poles, wires, transformers, sub stations etc were successfully migrated into Ellipse, mDrover and GIS there were concerns that not all attributes were successfully migrated. Typical issues were data such as date installed missing on some assets and incorrect for others. To prove that the attributes and data were consistent with the information in the legacy systems, the "Distribution Data Reconciliation" (DDR) Project was established. Under this project a number of tests were implemented to confirm that distribution data from DFMS had been converted to Ellipse correctly and update any fields which were not done. Horizon Power has 62 classes of assets, poles are one of the asset classes. At project plan approval the top 24 classes were identified as priority and included Poles, Transformers etc. Reconciliation of Priority 1 classes was due and was completed in July 2013, while class 2 assets (the remaining 38 classes) would be completed no earlier than September 2013. The project prioritisation queue was later expanded from 2 to 44 items however due to process improvement all were completed by July 2013. The other priority criterion was that data and fields where Ellipse was the master and shared with the other systems would be reconciled first. No date was set for reconciliation of Ellipse stand alone data (ref: DDR Data Reconciliation Project Brief (HP3663312)). Subsequently it was found that the process was much more efficient than anticipated and the entire project was completed in July 2013. The second set of data integrity checks is the verification that data across the new systems is consistent. These tests are still ongoing through the Asset Data Accuracy Project, noted below.	

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			The Asset Data Accuracy Project (ADAP) under the Data Update Group (DUG) was established to work on overcoming the data issues across the new systems. Resources were stretched due to current resource constraints and upcoming redundancies. Extension to ADAP (3 months) was approved on 24 June 2014 to allow the project to run to 30 September 2014 or until targets are achieved. The final objectives of ADAP were: • 99% alignment of Priority 1 Equipment Counts, alignment was 89 % at 23 June 2014; • 99% alignment of Priority 1 asset attributes that could have impact on safety; • 95% alignment of Priority 1 asset attributes, was 72 % at 23 June 2014; • 95% alignment of Priority 2 Equipment Counts, was 86 % at 23 June 2014; • 95% alignment of Priority 2 asset attributes, was 85 % at 23 June 2014. A further project, "Asset Management System Rectification for ERA Compliance", Phase 4 (AMSREC Project Management Plan) (HP3759608), was issued for approval 11 December 2013 and subject to change request approvals 20 March 2014 to include: • better association of Equipment/Assets to allow successful connectivity of construction information to assets; • transmission data migration. The entire project started 1 July 2013 and ended 10 June 2014. Overseeing the projects there were independent audit activities as listed below: • Ernst & Young Health Checks,	

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			◦ Phase 1, DM3535601 ◦ Phase 2, DM3584973; • Financial checks by K&T Business Transformation PMO; • Paul Croney, Advisor to the Board. (from Ellipse Optimise Project – Project Review & Closure Report, DM3627563v3) **Data Tests** ▸ The review examined the Report Class Match (28 June 2014) which showed that for Priority 1 Equipment, all the matches across the three systems were above 90% except for Earth Equipment Class which had 1 single match out of 7007 records leading to a very low match outcome of 0.01%, due to the earth data exercise not been done. ▸ Equipment matching reports are run regularly and showed that overall non-matching Priority 1 equipment was 10.5% on 26 June 2014 and was reduced to 3.7% by the 27th. Non-matching Priority 2 Equipment was still at 14%. ▸ The percentage of Priority 1, 2 and 3 equipment with fully matching attributes was 27%, 15 % and around 1% respectively at the end of June 2014. ▸ The percentage of Priority 1, 2 and 3 equipment without any matching attributes was 42%, 72% and 75% respectively. These reports are available on the dashboard, Horizon Power's online reporting tool. Of 1743 records reviewed in "AMR Daily Extract Jun 2014: AMReport 0392 of June 2014", 160 records were missing data, representing 9.2% of the records. Some of the data missing was Feeder, Load Type, kVA Capacity Increase, Work Type etc. Of the 10458 data fields included in the record set, 525 fields were missing	

<table>
<tr><th>SA No.</th><th>Area</th><th>Rating</th><th>Special area summary (▸ Findings)</th><th>Recommendations</th></tr>
<tr><td></td><td></td><td></td><td>
data representing 5.02%. (Checked by Qualeng)

In order to independently review the success of the data migration from the legacy systems to the new systems, the review examined data matches in a set of asset records. The asset class selected was asset poles. A set of 6000 random poles was selected and data in DFMS analysed for consistency with data in the new Ellipse/mDrover/GIS systems. The results of the examination showed the following results:
• the number of records analysed was 5644;
• the total number of attributes listed across all records provided was 166,508;
• the total number of attributes that had significant data that could be compared was 30,027;
• of the 30,027 attributes, some had blank fields in Ellipse and mDrover where data was expected and was present in DFMS, this numbered 139;
▸ the number of fields found to be inconsistent between DFMS on one side and Ellipse/mDrover was 200 (0.67%);
▸ including the 139 blank field results the total number of inconsistencies was 339 (1.13%).
As an example inconsistent fields had the following type of discrepancies:

<table>
<tr><th>Attribute</th><th>DFMS (Legacy)</th><th>Ellipse/mDrover</th></tr>
<tr><td>Foundation</td><td>Direct Buried</td><td>Concrete Encased</td></tr>
<tr><td>Pole Treatment Type</td><td>None</td><td>Galvanised</td></tr>
<tr><td>Pole Treatment Type</td><td>PAINTED</td><td>Galvanised</td></tr>
<tr><td>Total Length</td><td>11m</td><td>9.5m</td></tr>
</table>
</td><td></td></tr>
</table>

<table>
<tr><th>SA No.</th><th>Area</th><th>Rating</th><th>Special area summary (‣ Findings)</th><th>Recommendations</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>Anti-climbing</td><td>N/A</td><td>Inbuilt in Pole Design</td></tr>
<tr><td>Material Specific</td><td>Jarrah</td><td>Steel A Frame Rail[1]</td></tr>
</table>
[1]This pole has an installed date of 1/1/1986 in DFMS and 31/1/2013 in Ellipse, so it could have been replaced after the migration.

It is expected that there would be reasons for some of the discrepancies which could bring the data inconsistency to under 1%. This additional work could be done after the review.

In view of the above findings the Review has observed that:
‣ Data tests have shown that there are still discrepancies between the systems and between the data in the legacy and the new systems. The Review has noted that even the legacy systems had long standing problems with data accuracy; so full integration of data with legacy system is no guarantee of data accuracy. It is important that a process of inspection and audits be undertaken to ensure that the asset management data is complete and accurately records the attributes and conditions of real life assets.
</td><td></td></tr>
<tr><td>1.5</td><td>Currency of the data in the asset management systems.</td><td></td><td>The data stored in the new AMS reflects the data that was stored in the legacy system at migration time and since updated through work activities such as inspections, maintenance etc.
The data migrated into the system reflected the inspections and defect history from the last inspection results in DFMS. Once the data was “frozen” instances of the data went into the Ellipse “TEST” File, then into the “PROD” file. Due to the time necessary to implement and validate the new systems new data arising from work activities was left in a holding store pending the availability of the new facility for data entry.
With the implementation of the new system there has been a progressive uptake of the new processes which has resulted in slower activities.
‣ The lag in data processing is evident in the AMRs which report on the</td><td>9. Progress actions to reduce the amount of data entry lag.</td></tr>
</table>

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			trends of WIP (Work In Progress), where the gap between "New Work" value and "End of Month WIP" value has doubled since January 2013. It is noted that at the end of the review period the data processing work has been outsourced and is progressing rapidly. In addition it was noted that initially the time taken to carry out an inspection was taking much longer due to the amount of inspection questions being asked (Ref. Workforce Mobility Delivery – Project Review & Closure Report). ▸ This is offset by the ability to directly upload the inspection data from the Mobility solution into the AMS. ▸ The review noted that the reporting system showed improvement over the earlier systems, including much more scrutiny on data accuracy, weekly meetings on data issues and daily reports from live systems.	
1.6	Reporting capability, with a particular focus on reporting required for regulatory purposes under the licence.		Horizon Power systems use IBM's Cognos to provide the reporting functionality. The use of Cognos has led to increased reporting capability, wider scope of reports which are available internally in Horizon Power's Dashboard for live data updates. The scope of reporting is a function of the requirements of the internal (or external) customer. It was noted that there have been recently completed activities aiming at addressing the gaps that were present in the previous systems such as earth readings and Carrier Length Reports. These activities were included in the AMSREC Project which ended 10 June 2014 (HP3759608). The project was aimed at achieving: • better association of Equipment/Assets; • transmission data migration. The project completion noted that fixes to carrier connections had been completed by Data Services and Horizon Power Data Update Group to achieve 99.3% connectivity. The review examined documentation that	**10.** Pursue the completion of actions necessary for regulatory reporting such as Earth Resistance Reading.

SA No.	Area	Rating	Special area summary (▸ Findings)	Recommendations
			showed that in June 2013 the quantity of equipment which required and had no Earth Resistance readings was 12,764. ▸ In regard to current reporting the review noted that the June 2014 AMR was not yet able to report on the quantity of equipment with no Earth Resistance readings (this required a relationship to be created to parent equipment which was due to have been created in May 2014, the resolution was imminent at the end of June 2014); ▸ The lack of completeness of the data in equipment attributes means that there is a limitation on the capability of reporting the asset information. It is noted however that the 45% of legacy attributes which have been migrated are the attributes found sufficient to provide the information required both externally and internally under “business as usual” (ie. except as identified for connectivity issues among the new systems, the new system is capable of reporting to the same extent as the legacy system).	

3 CHANGES TO THE LICENCE

No changes to the licence conditions are recommended.

4 CURRENT REVIEW ASSET SYSTEM DEFICIENCIES/RECOMMENDATIONS

Recommendations on the actions to be taken by the licensee to address process deficiencies are listed in Table 8 and Table 9.

Table 8-Current Review Asset System Deficiencies / Recommendations (Resolved)

Table of Current Review Asset System Deficiencies/ Recommendations				
A. Resolved during current Review period				
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Date Resolved (& management action taken)**	**Auditors Comments**
		No actions resolved during current review period.		

Table 9- Current Review Asset System Deficiencies / Recommendations (Unresolved)

Table of Current Review Asset System Deficiencies/ Recommendations				
B. Unresolved during current Review period				
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
1	1.1	A2 Asset management plan covers key requirements. ▸ During the review Horizon Power noted that, due to the Business Transformation Program and system restructure, documentation updates were kept on hold awaiting the system development.	1/2014 Restart documentation review and updates following the completion of the Business Transformation Program. The documents supporting the asset management system should receive review in accordance with a review program.	
	5.1	A2 Operational policies and procedures are documented and linked to service levels	Refer to Recommendation 1/2014.	

Table of Current Review Asset System Deficiencies/ Recommendations				
B. Unresolved during current Review period				
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
		required. ▸ The "Policies and Procedure Register" (HP3010410) includes lists of policies and procedures relating to the business, however some of the documents quoted are now past their review date and some of the documents such as the "Operations Strategic Plan 2008/09 to 2011/12" appear to be out of date.		
2	5.3	C3 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. ▸ The quality of data (where quality is conformance to requirements) in the Asset Register has not yet achieved the level necessary for satisfactory operation of the AMS; programs are already in place to improve the data accuracy.	**2/2014** Complete the implementation of programs aimed at improving the quality of data in the Asset Register to achieve the level necessary for satisfactory operation. These include at present: "A&W Field 3272 Quality Data Capture" project due for completion in 2016 and "Asset Data Accuracy Project", due for completion in 2014.	Horizon Power have recognised the importance of this shortcoming and identified a project for collecting the data, the "A&W Field 3272 Quality Data Capture" project which is now in Ellipse but due for completion in 2016.
3	5.5	B2 Staff receive training commensurate with their responsibilities. ▸ Horizon Power has been gathering all its training information from the Districts into VETtrack, the corporate training database to enable future access by the Districts. This work is not complete and progress of this work will need continued support	**3/2014** (**OFI**) Gathering all training information from the Districts into VETtrack and enabling a portal to allow access to the District will need continued support to achieve completion.	Work is in progress.

Table of Current Review Asset System Deficiencies/ Recommendations				
		B. Unresolved during current Review period		
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
4	6.3	A2 Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule. ▸ By June 2014 there were 66 Work Orders open which were due to have been completed by that date; five WO were due for completion by 31 December 2013.	**4/2014** 66 overdue Work Orders were open in June 2014. Five of the Work Orders were due for completion by 31 December 2013. Implement action to close, delete or justify Work Orders open past the due date.	
5	7.1	B2 Adequate system documentation for users and IT operators.	Refer to Recommendation 1/2014 for review and updating of out of date documentation	
6	7.3	A2 Logical security access controls appear adequate, such as passwords. ▸ It is noted that both documents ("Information Technology Policy & Guidelines" and "Access Control Guidelines") have review frequencies and dates either lapsed or inconsistent, and should be reviewed as part of Recommendation 1/2014.	Refer to recommendation at 1/2014 for document review and updates.	
6	7.5	B1 Data backup procedures appear adequate. ▸ There are checklists in place for power outage events as well as disaster recovery test guides, Ref: "DR Test Guide: Wintel", although the latter appeared to be in draft form, with no document owner recorded or signatory identified.	**5/2014** Documentation such as the "DR Test Guide: Wintel", , "TCS Reliability Report User Guide" and "Asset Management Reporting, Cognos Express Procedures" should be formally issued so that their currency can be maintained/verified. Refer to Recommendation at 1/2014 for overall requirement.	

Table of Current Review Asset System Deficiencies/ Recommendations				
B. Unresolved during current Review period				
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
	7.6	A1 Key computations related to licensee performance reporting are materially accurate. ▸ Several user guides were sighted, further providing confidence of a repeatable reporting process: ◦ TCS Reliability Report User Guide; and ◦ Asset Management Reporting, Cognos Express Procedures. Neither of the above appeared as controlled / final documents.	Recommendation 5/2014 applies.	
	8.1	A1 Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system. ▸ In line with the strategy of putting on hold current documentation until the development of the Business Transformation Project noted under EC1.1 the "Risk Management Policy (22 June 2011)" and the "Risk Management Framework (22 June 2011)" had not been updated at the time of the Review.	Recommendation at 1/2014 for document review and update applies	
6	9.1	B2 Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks. ▸ The Instruction Module issued December 2012 indicated that the "West Kimberley Contingency Plan" should have been finalised, but the plan last issue was April 2011.	**6/2014** Update or finalise Contingency Plans as identified.	

Table of Current Review Asset System Deficiencies/ Recommendations				
		B. Unresolved during current Review period		
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
	12.1	B2 A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current. ▸ Review of the "Polices & Procedures Register" showed that most of the procedures were past the due review, eg Pandemic Response Plan was due for review by 15 August 2011.	Recommendation 1/2014 applies	
		Special Areas		
7	Special Area 1.4	Data integrity of the data that has been imported to the systems from the legacy systems. ▸ Not all data present in the legacy system was found to be useful for the operation of the assets, in addition new attributes were identified that were not present in the legacy system. The result was that only around 45% of the fields in the new AMS were able to be populated from the legacy fields. The remaining attributes will have to be populated through future in field inspections. Horizon Power have recognised the importance of this shortcoming and identified a project for collecting the data, the "A&W Field 3272 Quality Data Capture" project which is now in Ellipse but due for completion in 2016.	**7/2014** Progress the "A&W Field 3272 Quality Data Capture" project. Process of inspection and audits should be managed to ensure that the asset management data is complete and accurately records the attributes and conditions of real life assets.	
8		▸ Data tests have shown that there are still discrepancies between the systems and between the data in the legacy and the new systems. The Review has noted that even the legacy systems had long standing problems with data accuracy, so full integration of data with legacy system is no guarantee of data accuracy. It is important that a process of inspection and audits be undertaken to ensure	**8/2014** Continue with Asset Data Accuracy Project to achieve the set objectives.	

Table of Current Review Asset System Deficiencies/ Recommendations				
B. Unresolved during current Review period				
Item No	**EC Ref**	**Rating / AMS Component Effectiveness Criteria / Details of Deficiency**	**Auditors' Recommendation**	**Management action taken by end of Review period**
		that the asset management data is complete and accurately records the attributes and conditions of real life assets.		
9	Special Area 1.5	Currency of the data in the asset management systems. ▸ The lag in data processing is evident in the Asset Management Reports which report on the trends of WIP (Work In Progress), where the gap between "New Work" value and "End of Month WIP" value has doubled since January 2013.	**9/2014** Progress actions to reduce the amount of data entry lag.	
10	Special Area 1.6	Reporting capability, with a particular focus on reporting required for regulatory purposes under the licence. ▸ In regard to current reporting the review noted that the June 2014 AMR was not yet able to report on the quantity of equipment with no Earth Resistance readings (this required a relationship to be created to parent equipment which was due to have been created in May 2014, the resolution was imminent at the end of June 2014); ▸ The lack of completeness of the data in equipment attributes means that there is a limitation on the capability of reporting the asset information.	**10/2014** Pursue the completion of actions necessary for regulatory reporting such as Earth Resistance Reading.	

5 POST REVIEW IMPLEMENTATION PLAN

The Post Review Implementation Plan (PRIP) is a document prepared by the licensee in response to the recommendations made in the review. As it represents the licensee's views and actions it does not form part of the review report, however it includes all key review findings and recommendations that have been made in the review. For each recommendation the licensee has recorded responses and corrective

actions, responsibility for the actions and a proposed date for completion.

Appendix A - Documentation reviewed

Key Documentation Reviewed

1. Asset Planning
    1.1. Electricity Integrated Regional Licence, Regional Power Corporation (t/a Horizon Power) EIRL2, Version 18, 19 April 2013
    1.2. Horizon Power Supply Areas Map -3520318
    1.3. Asset Management System Review- Post review Task Progress Report, 4/2/2014
    1.4. Horizon Power Organisation Chart (HP_3473752), Pre Restructure Dec 2013
    1.5. Organisation Chart Powerlink-June 2014, Post Restructure Dec 2013
    1.6. Job Descriptions (collection)
    1.7. Horizon Power strategic asset management plan 2011-12 (HP3273646)
    1.8. Horizon Power Asset Management Plan_2011-2012 to 2021-2022 (HP3453891)
    1.9. Asset & Works- AMP chapter 2012-13 to 22-23 (HP_3540143)
    1.10. Asset Management Framework_2012-13_to_2023-24_(HP_3475572)
    1.11. Asset Management Plan 2012-2013 to 2022-23 – SCADA (HP_3511126)
    1.12. Asset Management Plan 2012-13 to 2022-2023 (HP_3539775)
    1.13. Asset Management Plans [one for each region] for East Kimberley, Esperance, Gascoyne-Midwest, Pilbara, Western Kimberley
    1.14. Horizon Power's Asset Management Policy (HP_3468131) [2012-13]
    1.15. Transmission North AMP chapter_2012_13_(HP_3524022)
    1.16. Transmission South AMP 12_13_Chapter_(HP_3540047)
    1.17. Asset & Works AMP chapter 2013_14 to 2023_24 (HP_3676749)
    1.18. Asset Management Framework_2013_14_to_2024_25_(AMF)_(HP_3520039)
    1.19. AMP chapter for Gascoyne Midwest for 13_14 (HP_3666072)
    1.20. Esperance- AMP Chapters 2013_14 (HP_3657936)
    1.21. HP_n3664257_v2_Kimberley_AMP_Chapter_2013-2014_April_16_(HP_3671266)
    1.22. Pilbara_AMP_Chapter_2013_2014_(HP_3652256)
    1.23. Transmission_North_AMP_Chapter_2013_14_(HP_3650110)
    1.24. Transmission_South_AMP_Chapter_2013-2014_(HP_3659970)
    1.25. Horizon_Power_Statement_of_Corporate_Intent_2012_(HP_3448985)
    1.26. Statement_of_Corporate_Intent_(SCI)_2013_14_(HP_3667403)
    1.27. Statement_of_Corporate_Intent_2012_13_(HP_website)
    1.28. Policies_&_Procedures_Register_(HP_3010410)
    1.29. 2011 Demand and Energy Forecast, FY2011 to FY2021

1.30. Operations Division Instruction Module 2 – Project Evaluation

1.31. Life Cycle Comparison Model between steel and wood poles" (HP3248809)

1.32. Submission to the Operations Management Team, Pole Top Switch Economic Review (HP3679301)

1.33. 2312678 Quarterly Performance Report January to March 2014 Public Version

2. Asset Creation and Acquisition

2.1. BUSINESS_CASE_TEMPLATE_COMPLEX_PROJECTS_-_PART_A, B and C

2.2. BUSINESS_CASE_TEMPLATE_NON-PROJECTS___NON-COMPLEX_PROJECTS

2.3. Budget_2012-13_Capital_Project_Budget_Re-time_Template_(HP_3494574)

2.4. Health and Safety management plan_site based projects__HP_3693874

2.5. PMM_LIFECYCLE_ROADMAP_AND_WORK_INSTRUCTIONS_(HP_3194953)

2.6. Project management plan -Standard projects (HP_3221005)

2.7. Project Status Report TemplateHP_3571459

2.8. PROJECT_CHANGE_REQUEST_TEMPLATE_(including_Guidelines)_(HP_3221024)

2.9. PROJECT_REGISTER_AND_GATING_CHECKLISTS_(HP_3221006)

2.10. Commissioning records and project closure reports (various)

2.11. PROJECT-ESR0035

2.12. PROJECT-ESR0094

3. Asset Disposal

3.1. AMP_INSTRUCTION_MODULE_-_NO_18_ASSET_DISPOSAL_(HP_3481733)

3.2. THE_ASSET_DISPOSAL_WRITE-OFF_FORM_(HP_3170687)

4. Environmental Analysis

4.1. HORIZON_POWER_QUARTERLY_-_ELECTRICAL_INCIDENT_SUMMARY_REPORT_(HP_3291038)

4.2. HORIZON_POWER_QUARTERLY_ENERGYSAFETY_AMR_EXTRACT_(HP_3268544)

4.3. TCS_Reliability_Reporting_Proces_(using_Cognoss_Express)_(HP_3721367)

4.4. AM Reports Daily Extract

4.5. AMP Instruction Module – No 4 Safety and Regulatory Planning (HP3367070)

4.6. AMP Instruction Module – No 7 Quality (HP 3233258)

4.7. AMR[eview] June 2011

4.8. Asset_Management_Report_(AMR)_Cognos_Express_(CX)_95_Procedures

4.9. June 2013 MONTHLY_HP_- ASSET MANAGEMENT REPORT (HP_3230974)

4.10. MONTHLY HP – ASSET June 2012 MANAGEMENT REPORT (HP_3230974)

5. Asset Operations

5.1. Asset Register information Equipment Lists

5.2. Updated Replacement Cost by Age RevB

5.3. HP_Generation_data_-_December_2013_(HP_3667047)(1)

5.4. Environmental_policy_statement_-_updated_August_2013_(HP_3721624)

5.5. Safety Management Plan, 512589_1T_FV12__r4

5.6. West Kimberley District Environmental Management Plan

5.7. STANDARDS MANAGEMENT PROCESS - HANDBOOK (HP_3266332)

5.8. OPERATIONS_DIVISION_-_MANAGEMENT_TEAM_PLANNING__STRATEGY_MEETING_-_ACTION_ITEMS_(HP_3105698)

5.9. Competency_Standards_Framework_Manual_(HP_3567395)

5.10. Schedule_powerlink [Competency]

5.11. 550785_1_F0P03_[Switchgear Instruction Manual]

5.12. Technical Maintenance Guide Steel Pole (HP_3596345)

5.13. 1789785_1v8_g02_[Field Instructions-Working on Pole Top Switches With One Side Live]

5.14. 1789796_1v8_l02_[Field Instructions-Low Voltage Cable Work]

5.15. Asset Failure Investigations

5.16. Esperance - WF85 Running Earth Conductor Failure - EXC14-100A

5.17. Incident_Investigation_Asset_Failure_&_Protection_Operation_Investigation_Procedure_(HP_3293098)

5.18. Incident_Investigation_Unassisted_Pole_Failure_Investigation_Procedure_(HP_3231453)

5.19. POLE_TOP_FIRE_NR_36_9_l204_North_River_Rd_Carnarvon__AMS

5.20. Unassisted Conductor Failure Investigation Procedure (HP3606577)

6. Asset maintenance

6.1. AMP_INSTRUCTION_MODULE_-_NO_10_MAINTENANCE_TACTICS_(HP_3495599)

6.2. Campaign Asset Details Report Karratha

7. Asset Management Information System

7.1. IT Systems, documentation on CIM, ESB, Cognos, DDR, Ellipse, GIS, Mdrover, Security, Training, Data Health Check

7.2. Asset Management Services - GIS SMALLWORLD UPDATING RULES STANDARD

7.3. Visio-OPERATIONS - ASSET & WORKS - GIS GROUP - GIS PROCESS WORKFLOW (HP_3617407)

7.4. AMP_INSTRUCTION_MODULE_-_NO_1_DOCUMENT_CONTROL_AND_DATA_SOURCES_(HP_3363924)

7.5. Minutes and Agenda confirming close out for Ellipse and WMD

8. Risk Management
    8.1. CRISIS AND EMERGENCY MANAGEMENT PLAN (HP_3254129)
    8.2. EMP_04_002_-_EMERGENCY_CYCLONE,_SEVERE_STORM_AND_FLOOD_PROCEDURE_(HP_3066717)
    8.3. Risk Register - With Causes & Impacts revised due date
    8.4. RISK_MANAGEMENT_FRAMEWORK_(HP_3009588)
    8.5. RISK_MANAGEMENT_POLICY_(HP_3022921)
9. Contingency Planning
    9.1. ESPERANCE_-_ESPERANCE_DISTRICT_CONTINGENCY_PLAN_(HP_3180593)
    9.2. GENERATION_ASSET_CONTINGENCY_PLAN_EAST_PILBARA_(HP_3176794)
    9.3. GENERATION_ASSET_CONTINGENCY_PLAN_WEST_PILBARA_(HP_3176789)
10. Financial Planning
    10.1. Dec 2012 OPERATIONS DIVISION PERFORMANCE PRESENTATION
    10.2. Finance Repose Item # 11 - HP_n3438624_v1_July_2011-OPERATIONS_DIVISION_PERFORMANCE_PRESENTATION
    10.3. Finance Response Item # 2 - OAG Financial Audit Report 2012 Interim
    10.4. Finance Response Item # 4 - Working OPSDIV MAINTENANCE_WORKS_PROGRAM - 2012_13_TO_2016_17 with_Labour (HP_3566811)
    10.5. Finance Response Item # 10 - Maintenance of data in FAR
    10.6. Finance Response Item # 11 - December 2011 OPERATIONS DIVISION PERFORMANCE PRESENTATION
    10.7. Finance Response Item # 11 - July 2012 OPERATIONS DIVISION PERFORMANCE PRESENTATION
    10.8. Finance Response Item #2 - BOARDDEV-1704 Item 2.1 Annual Report for Year Ended 30 June 2012
    10.9. Finance Response Item #2 - Interim Financial Audit Management Letter 2014
    10.10. Finance Response Item #2 - OAG Financial Audit Report 2013 Interim and Final
    10.11. Monitoring of Operational maintenance and capital cost expenditure FY 11-12 - June 2012; 2012-13; 2013-14
    10.12. Financial Planning Document - April_2012 - XCo_Submission_on_Budget_Management_Framework_(HP_3519309)
    10.13. Financial Planning Document - XCo_Submission - 2012_13_Budget_Allocation_and_Management_Process (HP_3507364)
11. Capital Expenditure Planning