CLIENTS | PEOPLE | PERFORMANCE

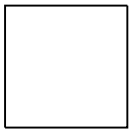
# Western Power

## Asset Management System Review

### Final Report

October 2011

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT



*This Asset Management Systems Review Report ("Report"):*

1. *has been prepared by GHD Pty Ltd ("GHD") for Western Power;*
2. *may only be used and relied on by Western Power;*
3. *must not be copied to, used by, or relied on by any person other than Western Power without the prior written consent of GHD;*
4. *may only be used for the purpose of assessing the compliance of Western Power's Asset Management Systems to the Audit Guidelines: Electricity, Gas and Water Licences, August 2010, Economic Regulation Authority.*

*GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than Western Power from or in connection with this Report.*

*To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.*

*The services undertaken by GHD in connection with preparing this Report:*

- *were limited to those specifically detailed in section 2.2 of this Report;*
- *did not include interviews with all Asset Management Staff, review of all documents and data related to the Asset Management System or field verification of data.*

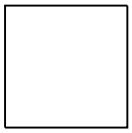
*The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking services and preparing the Report ("Assumptions"), including (but not limited to):*

- *the staff interviewed were appropriately qualified and experienced in their respective area of expertise.*
- *The documents and data provided as evidence of policy, procedure and practice were representative of the content of those types of information and data used throughout Western Power in its asset management systems.*

*GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect.*

*Subject to the paragraphs in this section of the Report, the opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the time of preparation and may be relied on until 3 months, after which time, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions and any recommendations.*

# Contents





## Table Index



## Appendices

# Executive Summary

This Asset Management System Review (AMSR) Report has been prepared by GHD Pty Ltd (GHD) on Western Power's Transmission and Distribution Asset Management Systems. The AMSR was completed in accordance with the Asset Management Systems Review Plan, June 2011 and with the Economic Regulation Authority's "Audit Guidelines: Electricity, Gas, and Water Licences", August 2010.

Section 14 of the Electricity Act 2004 requires every licensee to provide the Economic Regulation Authority ("the Authority") with a report by an independent expert on the effectiveness of the asset management system not less than once in every 24 month period. Western Power was required by the Authority to complete an AMSR for the period 1st November 2009 to 30th April 2011. This was the third audit conducted on the Western Power asset management system under the requirements detailed in Distribution Licence EDL1 and Transmission Licence ETL2.

Western Power is a State Government owned corporation that builds, maintains and operates the electricity network in the south west of Western Australia. The Western Power Network forms the vast majority of the South West Interconnected Network (SWIN), which together with all of the electricity generators, comprises the South West Interconnected System (SWIS). Western Power's role is to ensure the SWIS delivers a safe, secure and reliable electricity supply to just over one million connected customers including homes, businesses, factories, mines, schools, hospitals and public transport providers. The SWIS consists of nearly 88,000 km of power lines stretching from Kalbarri in the north, Kalgoorlie in the east and Albany in the south, the electricity network is one of the largest isolated networks in the world.

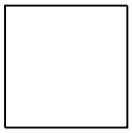
This Report includes a summary of the review methodology, details the effectiveness review outcomes, documentation of what information was reviewed and who was interviewed during the AMSR. The Report also includes an updated risk assessment, the effectiveness assessment system, review of the previous AMSR Post Audit Implementation Plan (PAIP) and a summary of the special interest areas requested by the Authority.

## Assessment Outcome for EDL1and ETL2

The effectiveness review found that Western Power has continued to make progress in implementing various initiatives undertaken since the previous review and have further aligned their asset management system to PAS55-1 (Publicly Available Specification) for the optimised management of physical assets.

The main improvements by Western Power noted at this review are:

- Clear process flows from asset condition and fault analysis to CAPEX and OPEX programs;
- Monitoring of key performance parameters and asset data through the Business Intelligence Software "Cognos";
- Continued mapping of key business processes;
- Training and exercising of the contingency and business continuity plans;
- Improvements to the ProSight works planning process;
- Introduction of field data capture to improve the efficiency and timeliness of data capture and planned work delivery;



- Introduction of upgraded functionality for the CURA corporate risk management software; and
- Longer term planning of OPEX and CAPEX through the future access arrangements forecasts.

Throughout the review, Western Power staff were well prepared, provided open and frank opinions on their asset management systems and provided evidence to support their claims against the 12 key asset management processes. The staff also had a clear understanding of the asset management processes within their area of responsibility, were consistent in their responses to questions and knowledge of corporate information and strategy. Western Power has invested a significant amount of effort in addressing the findings from the previous AMSR and has effectively documented the actions completed against each item in the Post Audit Implementation Plan (PAIP).

Overall, Western Power's asset management system was found to be adequately defined and effectively performed. The areas of improvement identified within this review suggested that there was a minor risk of non-compliance with the Licence conditions in the short to medium term.

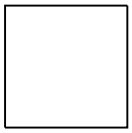
## Special Interest Investigation

The Authority suggested that the AMSR should include investigations into the following areas:

- Examine whether Westen Power's asset management documentation and systems were fit for purpose, readily available, being used and reviewed as needed;
- Investigate whether reviews and updating of the risk management controls and database were completed, particularly whether there was evidence that the risk register and tracking of the risk management systems were updated;
- Investigate whether contingency plans are related to assets and the business continuity with respect to the operations control centres (SOCC/NOCC), including the availability of contingency plans, adequacy of the plans and frequency that the plans are tested; and
- Investigate the management systems used for recording wood pole failures, determine whether failures are correctly categorised and recorded, examine the process of replacing poles based on condition is completed within the assigned priorities. The investigation was based on a random sample of 400 pole inspections to achieve a 95% confidence level.

The review team found that Western Power had generally addressed the following issues detailed in the previous AMSR report:

- A wide range of documents and data systems were reviewed during the investigations into the key asset management processes. The effectiveness review found that documents were generally current, relevant and pertinent, that the data systems were functionally effective, and that staff were proficient in the use of the documents and systems.
- The investigation into the risk management systems covered by the corporate system (CURA) and the risk registers used for distribution and transmission asset management groups. The corporate system has been updated since the previous audit and now includes the functionality to track all changes to the data, including the risk assessments, management actions and deletions or additions to the data set. The Corporate Risk and Compliance group also had a quarterly review schedule and could provide evidence that reviews had been completed. The Network Investment Branch had amended the risk registers (a spreadsheet based system) used to record and manage asset risks for transmission and distribution assets to include recording the date and author of changes to



management actions. The transmission and distribution asset risk register does not provide a full audit trail capability, but can be effectively tracked through the document management (DM) system which controls editing rights to the asset risk register. Version control of the asset risk register is managed by the Manager Network Investment Branch through DM.

- The Backup Control Centre Contingency Plans for NOCC and SOCC had been exercised at six monthly intervals during the review period. Records of the exercises had been retained and improvement actions were recorded. The operating centre staff had also exercised the various contingency and emergency plans within the Operating Centre Instructions manuals.
- The investigation into all wood pole failures during the review period of 18 months and random sample audit of 400 wood pole inspections found that the pole failures had been correctly classified and recorded, replacing poles based on condition followed the published procedures and assigned priorities were based on sound engineering principles which minimised the risk of pole failures. The replacement of poles was on schedule with the pole inspection program and inspections had been completed on all accessible poles within the past four years. The investigation could not verify that condemned poles had been replaced within the target timeframes. Additionally, the data on pole inspection backlogs was inconclusive in determining the size of the backlog as the reporting capability of the current management systems could not generate this information and Western Power was unable to provide evidence that poles had been replaced within the required timeframes.

## Areas for Management Attention

The areas of suggested improvement as an outcome of this review include:

11/01. Review the currency of all documents in the Control Centre Instructions file, register all documents in the document management system (DM) and convert the older documents to Western Power format and style.

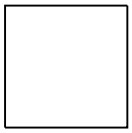
11/02. While the asset registers are up to date and complete, the accounting data (eg valuations) is captured in “MIMS Ellipse”, but not in the Asset Management systems at an asset level. Valuations are available at a network or system level. There is no automated updating function or data communication between the Distribution Facilities Management System (DFMS) and Ellipse. The financial asset register is not linked to the Asset Management Systems to provide replacement values of assets. A separate system captures Fair Value of assets.

Western Power should evaluate how asset valuation information (fair value) should be integrated between the Financial Asset Registers and the Asset Management systems to ensure that future lifecycle replacement costs can be predicted.

11/03. Continue with the Data Collection and Quality Program to all areas to achieve the target data KPI of 15 days.

11/04. Revise the NOCC and SOCC Backup Control Centre (BCC) activation checklists to record that all checks were completed, issues and problems were identified and actioned, and the checklists are signed off. Records of all activation reports should be retained and be available for audit.

11/05 Western Power should record in a central system when contingency plans, other than the BCC activation, are exercised by NOCC and SOCC staff in DM.



11/06. Recommend that a project schedule should be developed to map out which of the processes should modelled and the target dates for publishing the approved process models.

11/07. Recommend that the Wood Pole Inspection Guidelines section on non-pole asset elements should be expanded to include the non-pole inspection information on what is to be inspected and the assessment measurement protocols within the one document.

11/08. Western Power need to address the differences in the data reporting processes between DFMS and the Alliance Contractor performance, and maintain monthly records of the pole inspection rates that can be verified from DFMS and contractor's invoice claims.

11/09. Western Power should develop a standard report to track the condemnation dates for P1 and P2 assessments against the new pole installation date to monitor their performance against the pole replacement timeliness targets

# 1. Assessment Summary

## 1.1 Introduction

This AMSR effectiveness investigation was conducted to provide the licensee with an Asset Management System Review report (for the distribution licence (EDL1) and the transmission licence (ETL2)), as required under Section 14 of the Electricity Industry Act 2004. This report provides the effectiveness assessment of the asset management systems for both licences as required under Clause 20.4 of the Licences.

This AMSR audit covers the period 1st November 2009 to 30th April 2011 and was conducted between 4th and 29th July 2011 by the lead reviewer, Mark Bourhill and supported by Rupali Chawla both representing GHD Ltd. The previous review covered the period 1st April 2008 to 31st October 2009 by Lloyds Register.

The asset management systems review included assessing Western Power's effectiveness against the Economic Regulation Authority's 12 key asset management processes (section 3), Western Power's progress against the findings from the previous report (Post Audit Implementation Plan) (section 4) and a detailed investigation into special interest areas requested by the Authority (section 5).

The findings and recommendations from this review are detailed in section 6. The details of the evidence examined during this review and Western Power's staff interviewed are included in Appendix 1.

## 1.2 Scope of Assessment

This review was conducted on the asset management system used to manage the distribution and transmission assets owned and operated by Western Power. The review was completed under the 12 key asset management processes and the effectiveness criteria detailed in the Authority's Audit Guidelines, Electricity, Gas and Water, August 2010 (Audit Guidelines).

Consistent with section 6.3 'Risk based approach to audits and reviews' of the Audit Guidelines, the risk assessment was undertaken by applying the Authority's preferred risk evaluation model based on the AS/NZS ISO 31000. In addition, the International Infrastructure Management Manual (2006) and PAS55-1 were used to provide guidance on the optimised management of physical assets and as a tool to aid in determining the consequence, likelihood and control ratings. The associated review priority was calculated using the framework mandated by the Authority in Appendix 2 of the the Authority's Audit Guidelines: Electricity, Gas and Water Licences, August 2010 (Audit Guidelines) .

The review was conducted using the methodology of AS/NZS ISO31000, by identifying and assessing existing and new risks as well as following up on the findings from the previous review conducted in 2009. The reviewer has verified where appropriate, where timely and effective corrective action has been taken against those findings. As part of the review, the auditor has also considered compliance issues identified in the 2008 Distribution Wood Pole Audit Review and the application of good industry practice.

## 1.3 Limitations of Assessment

Any assessment activity is based upon the use of sampling techniques and, as such, there is always the possibility that issues will remain unidentified during an assessment. Consequently the absence of

comment on any area or system element does not necessarily imply conformance with the relevant requirements.

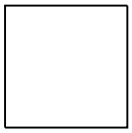
## 1.4 Opening Meeting and Overview

A meeting was held with all key process owners to introduce the GHD AMSR team, and explain the AMSR protocol and processes on 4th July 2010. The general meeting was followed by a project planning meeting with the Strategic Asset Management team. This meeting discussed the progress with the 21 findings from the previous review.

At the project meeting, Western Power requested that the audit findings identified during the AMSR include an asset management effectiveness risk assessment to assist with assigning Post Audit implementation Plan (PAIP) priorities and allocation of resources.

## 1.5 Confidentiality Statement

None of the information gathered by GHD about Western Power, including the contents of reports, will be disclosed to any other party without Western Power's written consent. While the Authority will be publishing this report on its website, the report has been reviewed by Western Power and assessed as suitable for public dissemination.



# 2. Key Process Effectiveness Scoring and Risk Review

## 2.1 Asset Management Effectiveness Summary

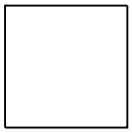
An outline of the key findings against the Authority's twelve key asset management processes, including both transmission and distribution, is detailed in the following section. Unless specifically stated, all findings relate to both the Distribution (EDL1) and Transmission (ETL2) Licences.

The effectiveness ratings and scoring system used in this report to evaluate Western Power's asset management system are detailed in Table 1 and 2 below.

Table 3 provides the Asset Management Risk Control Summary used for comparison and benchmarking of audit outcomes. The assessments were revised for the AMSR Plan to reflect the additional information collected during the review and the improved knowledge of the review team.

**Table 1 Asset management process and policy definition adequacy ratings**

| Rating | Effectiveness | Description |
|---|---|---|
| A | Adequately defined | Processes and policies are documented.<br>Processes and policies adequately document the required performance of the assets.<br>Processes and policies are subject to regular reviews, and updated where necessary.<br>The asset management information system(s) are adequate in relation to the assets that are being managed. |
| B | Requires some improvement | Process and policy documentation requires improvement.<br>Processes and policies do not adequately document the required performance of the assets.<br>Reviews of processes and policies are not conducted regularly enough.<br>The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed). |
| C | Requires significant improvement | Process and policy documentation is incomplete or requires significant improvement.<br>Processes and policies do not document the required performance of the assets.<br>Processes and policies are significantly out of date.<br>The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed). |



| Rating | Effectiveness | Description |
|---|---|---|
| D | Inadequate | Processes and policies are not documented.<br>The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed). |

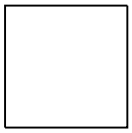
**Table 2 Asset management performance ratings**

| Rating | Effectiveness | Description |
|---|---|---|
| 1 | Performing effectively | The performance of the process meets or exceeds the required levels of performance.<br>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.<br>Process effectiveness reviews are not performed regularly enough.<br>Process improvement opportunities are not actioned. |
| 3 | Corrective action required | The performance of the process requires significant improvement to meet the required level.<br>Process effectiveness reviews are performed irregularly, or not at all.<br>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. |

At the initial AMSR project meeting with the Western Power's Asset Management Systems team, GHD agreed to include risk assessments for all effectiveness evaluations and criticality assessments for all findings and recommendations to facilitate resourcing and prioritisation of the Post Audit Implementation Plan (PAIP).

## 2.2 Risk Assessment

A risk assessment of the 12 key asset management processes for both transmission and distribution licences was completed for the AMSR Plan to determine the effectiveness review priorities. The risk assessment was revised at the completion of the effectiveness review and updated to reflect the additional information collected during the review. The revised risk assessment is included in the following table (Table 3).

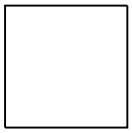


The consequence and likelihood assessment for risk management (Item 8 in the following table) were reassessed for both distribution and transmission from the AMSR Plan to reflect the increased levels of activity is managing risk, additional functionality available in the CURA software system and in the risk assessment processes for assets.

The contingency planning risk assessment (item 9 in the following table) for distribution was reduced to reflect the extent of the systems and processes discovered during the review, the evidence of contingency processes training and exercising of and by the Operations Centre staff over the 18 months of this review period, and the minimal impact of the NOCC operations on the supply of power to customers. The risk assessment for contingency planning of transmission was unchanged based on potential impact of the operations is far more extensive that distribution and the review status of a number of the documents in the Systems Operations Centre Manual (SOCC).

**Table 3 Revised Risk Assessment of Licence Compliance**

| Asset Management Area | Licence | **Consequence** (1=minor, 2=moderate, 3=major) | **Likelihood** (A=likely, B=probable, C=unlikely) | **Inherent Risk** (Low, Medium, High) | **Adequacy of existing controls** (S=strong, M=moderate, W=weak) | **Assessment of Review Priorities** (1 to 5) |
|---|---|---|---|---|---|---|
| **1. Asset planning** Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price). | ETL2 | 2 | B | M | M | 4 |
| | EDL1 | 1 | B | L | M | 5 |
| **2. Asset creation and acquisition** Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay. | ETL2 | 2 | B | M | S | 4 |
| | EDL1 | 1 | B | L | S | 5 |
| **3. Asset disposal** Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms. | ETL2 | 1 | C | L | M | 5 |
| | EDL1 | 1 | C | L | M | 5 |
| **4. Environmental analysis** Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system. | ETL2 | 2 | B | M | M | 4 |
| | EDL1 | 1 | B | L | M | 5 |
| **5. Asset operations** Operations functions relate to the day-to-day running of assets and directly affect service levels and costs | ETL2 | 2 | C | M | S | 4 |
| | EDL1 | 2 | C | M | S | 4 |



| Asset Management Area | Licence | **Consequence** (1=minor, 2=moderate, 3=major) | **Likelihood** (A=likely, B=probable, C=unlikely) | **Inherent Risk** (Low, Medium, High) | **Adequacy of existing controls** (S=strong, M=moderate, W=weak) | **Assessment of Review Priorities** (1 to 5) |
|---|---|---|---|---|---|---|
| **6. Asset maintenance** Maintenance functions relate to the upkeep of assets and directly affect service levels and costs. | ETL2 | 3 | B | H | M | 2 |
| | EDL1 | 3 | B | H | M | 2 |
| **7. Asset Management Information System (MIS)** An asset management information system is a combination of processes, data and software that support the asset management functions | ETL2 | 2 | B | M | S | 4 |
| | EDL1 | 1 | B | L | S | 5 |
| **8. Risk management** Risk management involves the identification of risks and their management within an acceptable level of risk**.** | ETL2 | 2 | B | M | S | 4 |
| | EDL1 | 2 | B | M | S | 4 |
| **9. Contingency planning** Contingency plans document the steps to deal with the unexpected failure of an asset. | ETL2 | 3 | B | H | M | 2 |
| | EDL1 | 2 | B | M | S | 5 |
| **10. Financial planning** The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term. | ETL2 | 2 | B | M | S | 4 |
| | EDL1 | 2 | B | M | S | 4 |
| **11. Capital expenditure planning** The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. Since capital investments tend to be | ETL2 | 3 | C | H | M | 2 |
| | EDL1 | 3 | C | H | M | 2 |
| **12. Review of AMS** The asset management system is regularly reviewed and updated. | ETL2 | 1 | B | L | M | 5 |
| | EDL1 | 1 | B | L | M | 5 |

# 3. Effectiveness Assessments

The following section provides a summary of the effectiveness assessments for each of the 12 key asset management processes by effectiveness criteria. The assessment ratings in the "Policy/Procedures" column are detailed in Table 1 in section 2.1 and the "Practice" column are detailed in Table 2. This "Risk" column is the assessment to the Licence of a breach if the recommendation is not actioned and was included to assist Western Power prioritise the Post Audit Implementation Plan. The risk assessments were completed in accordance with the risk exposure matrix in Appendix 2 of the Audit Guidelines.

## 3.1 Asset Planning

**Key Process**

Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price). The outcomes listed below relate to both EDL1 and ETL2.

**Outcome**

Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning | Western Power has adopted a consultative approach to the asset planning processes and published an Asset Management Policy, which is available on public display. The planning processes are aligned to "Transform the Core" objectives and are published in the Statement of Corporate Intent. The policy is implemented in practice through the Network Investment Strategy documents. Planning is shared between Strategic Asset Management (primarily policy and | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | procedures responsibilities) and Operational Asset Management (primarily asset management practice).<br><br>The transmission asset planning process used the Transmission Investment Planning database to track emerging asset needs from the condition assessment as well as TRIS system to monitory equipment rating capabilities. The distribution asset planning processes were mostly based on condition assessments to identify assets which needed upgrading, renewal or replacement requirements.<br><br>All asset management staff understood the content of the Corporate Strategic Plan and their role in achieving the mission, goal and objectives of the plan and its implications on their roles and responsibilities. | | | | |
| Service levels are defined | The service levels are well defined in the Distribution and Transmission Asset Management Plans, Asset Strategy documents and Asset Mission documents. Staff understood how assets contribute to providing a reliable and effective power network. | None identified | A | 2 | N/A |
| Non-asset options (eg demand management) are considered | Western Power staff provided examples of non-asset solutions for optimisation asset capabilities. This was particularly evident with transmission where the load rating management system is used to manage network demands and defer upgrades of equipment. The system also allows asset managers to identify the key assets which limit line and | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | system maximum capacities. There are fewer opportunities for non-asset solutions with the distribution system as the assets are the direct connection to the customer. | | | | |
| Lifecycle costs of owning and operating assets are assessed | The Distribution and Transmission Asset Management Plans include a summary analysis of the lifecycle costs. All Business Cases are required to address the whole of life costs of new assets. The Annual Network Investment Plan development includes review and optimisation of Opex and Capex forecasts on an annual basis. | None identified | A | 1 | N/A |
| Funding options are evaluated | There are limited funding options available to Western Power as the majority of revenues are provided from the Government funding through the Department of Treasury and Finance. The Network Investment Strategy considers customer funded works; however the revenues flow back to the Department of Treasury and Finance and do directly fund any of the asset management activities. | None identified | A | 1 | N/A |
| Costs are justified and costs drivers identified | The Asset Management Policy and Framework documents clearly define the process of justifying costs and linking asset expenditures to the business objectives. The Distribution and Transmission Asset Management Plans include identifying why each type of expenditure is required and the rationale for the expenditures. Western Power's staff understood the reason for justifying costs and the linkage to "Transforming the Core" objectives | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Likelihood and consequences of asset failure are predicted | The risk assessments and failure modes evaluations and analysis is included at a good level of detail in Asset Management Plans, the Asset Management Strategy and Asset Mission documents. Risk assessment was consistently based on the Corporate Risk Assessment Procedures. The failure modes analysis was included the Asset Strategy documents, which had been prepared for each type of asset in the distribution and transmission networks. | None identified | A | 1 | N/A |
| Plans are regularly reviewed and updated | Western Power used a Document Management System (Hummingbird) which records the details of when documents were created and, where necessary, the due date for review. All of the planning documents had been revised by the due dates and had been revised during the review period. | None identified | A | 1 | N/A |

## 3.2 Asset Creation and Acquisition

**Key Process**

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

**Outcome**

A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for EDL1 and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions. Evaluations include all life-cycle costs | Western Power uses a standard Business Case template to establish the purpose, scope of works, options analysis, constraints and opportunities and rationale for the recommended option. Each Business Case document is supported by a benefits and cost analysis, investment evaluation model that considers the whole of life cycle costs, and estimate cost breakdown. Business Cases are prepared for all new capital investment projects. Western Power staff understood the business case process and the lifecycle cost evaluation model. Non assets solutions were considered in the "Other Consideration" section of the Business Cases supplied as evidence and included a "No action" option. | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1 and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Projects reflect sound engineering and business decisions | The Business Cases included well-presented arguments on why an option was recommended based on business and technical merit. In the Replacement of Voltage Transformers Business Case, the medium capital cost option was recommended because it provided the best cost to benefit ratio and balanced business risk against technical excellence. This and several other business cases reviewed by the AMSR team contained sound rationale for the recommended options and discussed the engineering and business implication reasons for selecting a recommended option. | None identified | A | 1 | N/A |
| Commissioning tests are documented and completed | The Secondary Systems Engineering Branch is responsible for planning and conducting commissioning of all assets. The commissioning processes include preparation of the commissioning and handover plan, collation of suppliers/manufacturers test certificates and quality assurance checklists and performance reports. Western Power provided the project files for several projects as evidence of commissioning practice. | None identified | A | 1 | N/A |
| Ongoing legal/environmental/safety obligations of the asset owner are assigned and | The Risk and Compliance Branch provided evidence of policy and procedures for monitoring and complying with ongoing legal, environmental and safety obligations. This information is communicated to all staff via the internal webpage (BusBar) and stakeholder briefings when required. The Distribution and Transmission Asset Management Plans | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1 and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| understood | include sections within the Asset Management Drivers section which is evidence of performance. | | | | |

## 3.3 Asset Disposal

**Key Process**

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

**Outcome**

Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Under-utilised and under-performing assets are identified as part of a regular systematic review process | Western Power use a combination of condition assessment, capability monitoring and annual asset reviews to identify under-utilised or under-performing assets. The distribution approach was primarily based on condition assessment, while transmission combines condition and capability in the evaluation process.<br><br>Distribution used the example of drop out fuses to explain the process of how under-preforming assets were identified as part of the regular and systematic review valuation process. In most cases, the condition assessment process identified assets in | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | poor condition that needed to be replaced.<br><br>Transmission use condition assessments and equipment rating system to identify under-performing and under-capacity equipment. Transmission also use capability (rating) modelling to optimise asset performance across the network. The example of the Marriott Road 132kV line was used to show how each section of the line was evaluated and the rationale for disposing and retaining sections of the line. The evaluation of performance is also defined in the Asset Mission documents. The TRIS system is used to measuring and monitoring the rating capacity of all assets throughout the transmission network. | | | | |
| The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken | The Business Case "Expulsion Drop-out Fuses" was used to explain the process of evaluating the cause of performance problems with drop out fuses and the investigation and sourcing of a suitable low fire risk replacement.<br><br>An example business case involving the upgrading of a transmission line was used to explain the process of evaluating which assets were needed to meet future demands and which would not be required. The preservation of power easements was a significant consideration with this project. | None identified | A | 1 | N/A |
| Disposal alternatives are evaluated | The drop out fuse project examined a wide variety of technical solutions before selecting a modified fuse that worked in the existing fuse carrier and contained the molten metal within the fuse tube. | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | The redundant sections of the transmission line included poles, insulators and lines. The age of the poles prevented reuse or salvage. The insulators were returned to store for reuse and the cable was sold for scrap value through the store's system. | | | | |
| There is a replacement strategy for assets | The asset strategy documents for all assets include an evaluation of the replacement options and provide recommendations for renewals and replacement of the assets at the end of their lives. | None identified | A | 1 | N/A |

## 3.4 Environmental Analysis

**Key Process**

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

**Outcome**

The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Opportunities and threats in the system environment are assessed | Opportuinities and threats were well covered in Section 2.2.1 (Asset Drivers) in the DAMP and Section 3.3 (Asset Management Drivers) in the TAMP documents. The information management systems are used to assist in identifying emerging trends and challenges by the Reliability Analysis Section within In-service Asset Management Branch. Staff interviewed demonstrated a competent knowledge of internal and external business influences and changes which could impact on the need for and use of assets to meet the performance and safety requirements of providing transmission and distribution services. | None identified | A | 1 | N/A |
| Performance standards (availability of service, capacity, continuity, emergency response, etc) | Performance targets are set on the DAMP and TAMP. Western Power's KPIs are published and circulated monthly and summarised quarterly in the Asset Condition and Performance Report. The quarterly asset | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| are measured and achieved | management KPIs include Transmission Substation and Line integrity, Distribution Pole condemnation rates, condemned pole backlog, SWIS distribution pole integrity index, pole inspection backlog, asset initiated fire events, unassisted distribution wires down, pole top fires, and pole transformers condition ranking. | | | | |
| Compliance with statutory and regulatory requirements | Monitoring of compliance obligations is completed by the Risk and Compliance Branch and the asset management implications are documented in the DAMP and TAMP. Legislative and Regulatory compliance obligations are detailed in the compliance policy and framework, reported by breach and quarterly assurance and management reports. | None identified | A | 1 | N/A |
| Achievement of customer service levels | The compliance reports include network reliability (SAIDI and SAIFI), compliance with the customer charter, public safety and transform the customer experience, (complaints and enquiries closure). While SAIDI had exceeded the target in April 2010, the average performance (187 system minutes) over the rolling 12 month period was within the target (221). SAIFI was 1.9 against a target of 2.5. Customer charter complaints, and closure of complaints and enquiries were within targets. Public safety was at the target level of 11. Most targets levels had been increased over the review period. | None identified | A | 1 | N/A |

## 3.5 Asset Operations

**Key Process**

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

**Outcome**

Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved. Evidence seen to support the review findings is shown Appendix 1.

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Operational policies and procedures are documented and linked to service levels required | The operations policy and procedure document includes control room procedures, restoration of supply after an event, contingency event response, and standards and planning of work. NOCC and SOCC maintain two sets of Control Centre Operating Instructions (procedures) files with most of the procedures documents recorded in the DM system. A sample review of the transmission and distribution files revealed that 15% of the transmission documents were not recorded in DM, 10% were out of the review date and four documents | 11/01. Review the currency of all documents in the Control Centrem Operating Instructions files, register all documents in DM and convert the older documents to Western Power format and style. | A | 3 | Low |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | were still in SECWA format. Two of the distribution documents were not current and overdue for review. The contents of the out of date documents were relevant and correct. | | | | |
| Risk management is applied to prioritise operations tasks | Transmission have a planning section who prepare switching programs and prioritise operations programs based on a well-defined risk management system, including response to emergency events and safety issues at the highest priority through to routine planned maintenance requests at the lowest level. Distribution uses a Distribution Network Access Request (DNAR) process to plan and schedule operations. The instigator of the DNAR includes information of why the operation is required, which allows the planners to allocate priorities on a daily basis. Safety, emergency and hazards operation have the highest priority, the restoration of supply with planned | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | maintenance at the lowest level. | | | | |
| 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 | Western Power provided a Data and Information Pack that detailed the various systems used for asset management. The systems were demonstrated for the audit team.<br><br>Transmission holds the asset register and asset attributes detail in "specifications" modules in the Transmission Plant Management System (TPMS). The data is uploaded to MIMS Ellipse system on a daily basis and whenever changes are made in MIMS Ellipse, an updater changes the data in TPMS directly.<br><br>Distribution holds the asset register and attributes data in the Facilities Management System (DFMS). Linkages to the MIMS Ellipse (accounting data) is not automated and asset details are entered into MIMS Ellipse manually.<br><br>The financial and accounting information is held in Ellispse and | 11/02. While the asset registers are up to date and complete, the accounting data (asset valuations) is captured in at a summary level in MIMS Ellipse, but not in the Asset Management systems at an asset level. Valuations are available at a project, network or system level. There is no automated updating function or data communication between the DTMS and Ellipse. The financial asset register is not linked to the Asset Management Systems to provide replacement values of assets. A separate system system captures Fair Value of assets.<br><br>Western Power should evaluate how asset valuation information (fair value or replacement value) should be integrated between the Financial Asset Registers and the Asset Management systems to ensure that future lifecycle replacement costs can be predicted. | A | 3 | Medium |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | the Financial Asset Register. The valuation information in these systems is based on capital expenditure spends and includes the original installation costs and date of installation for each project, but not a valuation at the asset level that could be used for lifecycle cost analysis or predictive forecasting of future expenditures (beyond the current five year forecasts using condition appraisals). The fair value of all assets has been prepared (completed in Jun 2011), but is not directly linked to Ellispse, DFMS or TPMS. This information was not assessed during the AMSR.<br><br>The Integrated Asset Management project (ISAM) is currently underway to improve the integration of asset data between the systems. | | | | |
| Operational costs are measured and monitored | Operational costs are captured in MIMS Ellipse from timesheet and work orders. Monthly operational expenditure reports are available | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for EDL1and ETL2 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | and compared with the approved budget in the Production Plan. | | | | |
| Staff receive training commensurate with their responsibilities | Both distribution and transmission operations centres had induction and refresher training programs for all operations centre staff and could demonstrate that staff had completed the pre-requisite training and had been scheduled for refresher training.<br><br>The Depot Pack provided by Asset Operations Operational Technical Excellence included the Training Management System that recorded the prerequisite training requirements for all types of work and the competence assessments of all staff authorised to operate the network assets. | None identified | A | 1 | N/A |

## 3.6 Asset Maintenance

**Key Process**

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

**Outcome**

Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Maintenance policies and procedures are documented and linked to service levels required | Policies and Procedures are documented in DM. These include the Preventative Maintenance Policy, Preventative Maintenance Plan, Maintenance Guidelines and Maintenance Criteria. Maintenance strategies are set down in the Asset Strategies documents for all asset types. In all documents sighted, the maintenance routines were linked to achieving and retaining levels of service for supply reliability and availability by preserving the asset condition and performance. The Asset Mission and Asset Strategy documents include performance expectations and requirements. The Condition Appraisal procedures documents were current, clear and comprehensive enough to understand what was required, how to conduct the inspection and what information was to be | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | recorded. | | | | |
| Regular inspections are undertaken of asset performance and condition | The maintenance planning is based on standardised asset condition assessment inspection documents, such as the Pole Based Inspection Program and Regular Substation Inspections. The scope of the inspection and testing is set out in the Asset Strategy documents and created as planned maintenance routines in either DFMS for distribution or MIMS Ellipse for Transmission. | None identified | A | 1 | N/A |
| Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule | Maintenance Plans are included in the Asset Strategy, Catalogue of Maintenance Timescales, Catalogue of Equipment Types and Definition of Condition Severities. Maintenance work is generated from DFMS for distribution and MIMS Ellipse for transmission. The monthly performance reports for both groups (Workload Dashboards) are generated from the data warehouse by Cognos and published on the internal webpage (BusBar). This report includes graphs on completion and open work orders, types of work, priorities of open work orders and other useful management and monitoring information. | None identified | A | 1 | N/A |
| Failures are analysed and operational/maintenance plans | Failure analysis is completed by the Operational Asset Management Branch. The Distribution | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| adjusted where necessary | Delivery use a Mailbox system to gain feedback from field staff as well as condition assessment data as the trigger to investigate maintenance practice where trends are detected.<br><br>The transmission group use the condition assessment and testing information to monitor plant on a quarterly basis through Query Trouble Reports. Causes of failures are investigated and solutions implemented to prevent recurrence. Trending of the data and review of the maintenance planning is completed when the monthly trends point to a problem with the planned maintenance routines. The TAMP and DAMP include an analysis of asset failures and strategies to address issues and problems. | | | | |
| Risk management is applied to prioritise maintenance tasks | Corrective and planned maintenance work orders are assigned a five scale priority based on health safety as the highest score down to planned routine tasks at the lowest level. Transmission has been applying a criticality assessment to assign maintenance priorities. | None identified | A | 1 | N/A |
| Maintenance costs are measured and monitored | Maintenance costs are monitored in the monthly performance reports and quarterly reports to the board. The costs are measured against the annual budget set in the Annual Work Program (AWP) and | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | the Production Plan.<br><br>Transmissions have developed a system of unit rates for planned and unplanned maintenance tasks on key assets and monitor the unit rates on an annual basis. They also cited the example of helicopter works, which was justified on cost benefit basis against the traditional vehicle based maintenance crew. While the helicopter had a far higher cost rate, the production efficiency far exceeded traditional methods of cleaning insulators. | | | | |

## 3.7 Asset Management Information System

**Key Process**

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

**Outcome**

The asset management information system provides authorised, complete and accurate information for the day-to-date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Adequate system documentation for users and IT | Western Power provided a Data Management Information Pack and demonstrated the various transmission and distribution systems to the review team. The systems documentation included the Network | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| operators | Asset Data Standard, Network Asset Data Governance Framework and Backup and Recovery Policy. Each system has a set of user guides and manuals and operators are trained in the systems on the job. The operators who demonstrated the distribution and transmission systems displayed a high level of skill and knowledge in explaining the systems and answering questions. | | | | |
| Input controls include appropriate verification and validation of data entered into the system | Western Power have chosen to limit the number of staff authorised to amend data in both transmission and distribution information systems. All systems had user identification and password controls on entry and authorisation (read or write) access was controlled by the user identification. Unauthorised users could not amend the data. Both sets of systems had data validation rules for most entry fields and data verification was conducted on a daily and weekly basis as a standardised set of reports that document the changes that had occurred during the period. | None identified | A | 1 | N/A |
| Logical security access controls appear adequate, such as passwords | As discussed above, the user identification and password define the access permissions. Information Technology controls the issue of new access requests through an IT Request form, which has to include the appropriate authorised signatory. | None identified | A | 1 | N/A |
| Physical security access controls appear adequate | All of the Western Power offices visited had electronic and security personnel access controls in place. A photo ID access card is the only way to gain unescorted access to the buildings. Computer patch panels and cabinets are locked and the data servers are off | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | site in a secured facility. | | | | |
| Data backup procedures appear adequate | Backup procedures are established in the Backup and Recovery Policy and occur daily, weekly and monthly. The process is managed for all systems by the IT Branch. | None identified | A | 1 | N/A |
| Key computations related to licensee performance reporting are materially accurate | Western Power has implemented a knowledge management system based on Cognos to collect information from all sources into a central reporting system. The review team did not detect any inaccuracies in the information reported by the dashboards or any of the plans and reports reviewed for the AMSR. | None identified | A | 1 | N/A |
| Management reports appear adequate for the licensee to monitor licence obligations | The information on BusBar provides management reports from all areas of asset performance reporting required by the licence. The State of the Distribution Networks is an example of a comprehensive report on all aspect of the condition and performance of assets on an annual basis. Another documents which demonstrates Western Power's effectiveness is the quarterly report on asset management to the Board. This report includes asset performance reporting on key KPIs and issues.<br><br>The previous AMSR found that Western Power's procedures require that records are received within 15 days. While this has improved through the Data Collection and Quality Metro project, which introduced scanning of field records and electronic field data capture, the objective of 15 days was not achieved during the review | 11/03. Continue with the Data Collection and Quality Program to all areas to achieve the target data KPI of 15 days. | A | 3 | Medium |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | period, but should be achieved in the next review period once the system is fully functional. Improvements have also been implemented in the delivery of as constructed information from contractors through contract administration and reporting procedures. | | | | |

## 3.8 Risk Management

**Key Process**

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

**Outcome**

An effective risk management framework is applied to manage risks related to the maintenance of service standards. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system | The risk policies are contained in the Corporate Risk Management Policy documents and the procedures are in Risk Management Framework document. The policy and procedure is based on AS/NZS ISO 31000:2009. The risk process, as applied to asset management, is detailed in the Asset Management Policy documents and described in the OAM Risk Management Flow Chart that explains the responsibilities and logic of identifying, analysing, evaluating, treating, and monitoring and reviewing risks. The staff interviewed demonstrated an awareness and competence with the risk assessment and management processes and consistently used the corporate risk assessment criteria to evaluate process and asset risks. | None identified | A | 1 | N/A |
| Risks are documented in a risk register and treatment plans | The Network Perfomance Branch use an asset risk register based on a standard spread sheet format. The system was | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| are actioned and monitored | previously called BART, but has been renamed “Asset Risk Register” (ARR). The register is used to evaluate the risk exposure of events and failures, document management and mitigation actions and responsibilities as well as record the dates that risks entries were amended or adjusted. The registers contain an auditable trail on what and who has changed the information in the register. There is a separate register for transmission and distribution, and both use a standardised format and colour coding system. Risks assessed as high or extreme exposure have to be elevated to the Corporate Risk Register (CURA).<br><br>The Corporate Risk Register (CURA) is managed by the Risk and Compliance Branch and is an organisationally based risk assessment and management system. | | | | |
| The probability and consequences of asset failure are regularly assessed | The asset risk register is formally reviewed annually and updated where necessary. Asset risk originators can and are encouraged to amend risk entries when risk treatment actions have been completed or progressed.<br><br>The corporate risk register is reviewed quarterly by Risk and Compliance Branch with input from the relevant Division and Branch stakeholders. A record of the reviews is kept as a spreadsheet registered in DM and the timetable for future reviews were sighted as evidence. CURA now has the functionality to record who made any change, when the change occurred and what was changed. The audit trail is | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | accessed at the Organisational Level using the "Detailed Audit Trail" function. | | | | |

## 3.9 Contingency Planning

**Key process**

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

**Outcome**

Contingency plans have been developed and tested to minimise any significant disruptions to service standards. Evidence seen to support the review findings is shown in Appendix 1.

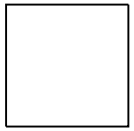
| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks | Western Power have a Business Continuity Policy and Framework which sets out the corporate policy and procedures for contingency management. These are supported by a Crisis Management Plan and Business Impact Assessment procedure to determine when contingency plans are required.<br><br>This AMSR primarily focussed on the Network Operations Centre because its failure can have a massive impact on Western Power's capacity to supply power | 11/04. Revise the NOCC and SOCC BCC activation checklists to record that all checks were completed, issues and problems were identified and actioned, and the checklists are signed off. Records of all activation reports should be retained and be available for audit. | A | 2 | Medium |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | to its customers. During the document reviews, the Information Technology Continuity Plan was reviewed. The review team concluded that the IT systems had sufficient backup and recovery processes and presented a moderate risk to the asset management systems.<br><br>The Network Operations Control, transmission and distribution, procedures are contained in the Control Room Instructions folders. There are contingency plans and procedures to guide the operators for a multitude of asset failures and emergency responses situations. The contingency plan for a critical failure of the Operations Centre is contained in the Network Operations – Backup Control Centre (BCC) Activation, which was used to test that plans had been activated. The Operations Centre staff had records of the six monthly testing of the contingency plan and provided copies of the past activation reports and the checklists. Distribution provided schedules of emergency and contingency plans tests over the 18 months of the review period. Transmission | | | | |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | provided an extract from SCADA data historian to show that contingency and emergency plans had been activated over the review period.<br><br>The sample checklists provided by NOCC and SOCC were different formats and styles, were incomplete and could be standardised to improve the procedures and record keeping as evidence that the BCC activation had been conducted regularly. | | | | |
| | A suggested improvement is that Network Operations create and maintain a log book to record when any contingency plan or procedure was activated. The log book would make verification easier by having the evidence available for immediate review, rather than extracting the information from SCADA, DM and other systems. | 11/05 Western Power should record in a central system when contingency plans, other than the BCC activation, are exercised by NOCC and SOCC staff in DM. | | | |

## 3.10 Financial Planning

### Key Process



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

**Outcome**

A financial plan that is reliable and provides for the long-term financial viability of the services. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| The financial plan states the financial objectives and strategies and actions to achieve the objectives | Western Power follows the Department of Treasury and Finance guidance for producing a five year financial plan. The various financial documents prepared for the State Budget process include information on the objectives, strategies and actions. The quarterly Corporate Performance Reports provide summaries of the financial position through the financial year with commentary on deviations from the budget.<br><br>The financial plan is based on inputs from the Annual Works Program (AWP) and the Ten Year Capital Expenditure Plan. | None identified | A | 1 | N/A |
| The financial plan identifies the source of funds for capital expenditure and recurrent costs | The Strategic Development Plan 2009/10 to 2013/2014 and Amended Proposed Revisions to the Access Arrangements for the South West Network owned by Western Power includes the advice that the capital and recurrent costs are to be met from the Government annual budget allocation. The documents also include a discussion of tariff pricing forecasts to recover CAPEX and OPEX expenditures and liabilities. Appendix G provides the background information | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | on the context and purpose of the additional debt funded capital expenditure agreement with the Treasurer. | | | | |
| The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) | Appendix D of the Strategic Development Plan includes Western Power's Summary of Balance Sheet in the current financial year and the projections over subsequent four years of the five year financial plan. This information is also included in the Annual Report. | None identified | A | 1 | N/A |
| The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period | Appendix C of the Strategic Plan includes the Cash Flow Forecast over the five years of the financial plan, and details the total inflow of funds from receipts and borrowings.<br><br>While Western Power is not required to financially plan beyond the five years of the State budgetary process, Corporate Finance have used the planning information from the Asset Management sources to complete a indicative prediction of the future expenditures over the AA4 (2017/18 to 2021/22) and AA5 (2022/23 to 2026/26) periods. | None identified | A | 1 | N/A |
| The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services | The Strategic Plan also includes the summary of Capital and Operating Expenditure in Appendix F. The table provides a breakdown of expenditures by Customer Access, Asset Replacement & Renewal, Growth, Regulatory Compliance, Service Improvement, Regulated Expenditure and Unregulated Expenditure. Table 12 in the same Appendix includes a breakdown of operations and | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | maintenance expenditure for the AA2 period (2009/10 to 21011/12) and totals for the AA3 period (2012/13 to 2016/17). | | | | |
| Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary | Western Power is required by Government to manage within the approved budget allocations. The annual financial cycle includes an annual forecast process in July, which sets the base financial targets. The annual financial forecasts are reviewed on a quarterly basis and adjusted for approved business cases and Government initiatives<br><br>The variances in actual to budget are reported in the monthly corporate performance reports which include explanations and comments on any deviations from the approved budgets. The variances in actual against budget are also reported in the quarterly Corporate Performance Reports with explanations for the reason for each deviation in forecast expenditures. | None identified | A | 1 | N/A |

## 3.11 Capital Expenditure Planning

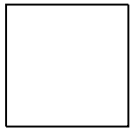
### Key Process

The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next five years would usually be based on firm estimates.

**Outcome**

A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates | The Capital Expenditure Plan is principally developed for the Access Arrangement submissions from analysis of the asset replacement, renewals and maintenance requirements as well as external drivers and Government directives. The plan is aligned with the key strategies and corporate intent. The CAPEX/OPEX Network Investment Planning cycle explains how the capital investment plan is revised annually and links to the AWP and Production Plan. New projects are document and justified with a Business Case and then included in the Network Investment strategy when approved. The Capital Expenditure Plan is also detailed in the DAMP and TAMP with support information on the need for the investment. | None identified | A | 1 | N/A |
| The plan provides reasons for capital expenditure and timing of expenditure | The reasons for capital expenditures and timing are documented in each project Business Case for the planning analysis processes. Once approved, the justification and scheduling information is transferred to the Network Development Plan and the AWP. | None identified | A | 1 | N/A |
| The capital expenditure plan is consistent with the asset life and condition identified in the asset management | The planning process for identifying renewals projects for both transmission and distribution is based on the condition appraisal process. The condition ratings for asset types are used to review and adjust the remaining useful life of assets | None identified | A | 1 | N/A |



| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| plan | and the forecast replacement dates. The information is reviewed quarterly. | | | | |
| There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned | As stated above the planning process is an annual system of asset performance and condition. The Network Investment Strategy is revised annually and expanded to the next year in the 10 year forecast. The delivery of the capital works program is reviewed quarterly by the Works Program Committee. | None identified | A | 1 | N/A |

## 3.12 Review of AMS

**Key Process**

The asset management system is regularly reviewed and updated.

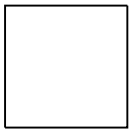
**Outcome**

Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency. Evidence seen to support the review findings is shown in Appendix 1.

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| A review process is in place to ensure that the asset management plan and the asset management system | The DAMP and TAMP are registered in Western Power's document management system. The current DAMP was revised in October 2010 and is scheduled for review again in November 2011. The TAMP was revised in November | None identified | A | 1 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| described therein are kept current | 2010 and is next scheduled for review in 2011. The DAMP and TAMP are currently in draft status pending the publication of the Network Management Plan, which will merge the content of both AMPs into a single document.<br><br>All of the Asset Management documents reviewed during this ASMR were current, with the exception of the Operations Centre Instructions (see finding 11/01), had been reviewed within the scheduled timeframe and were suitable for their required purpose. | | | | |
| Independent reviews (eg internal audit) are performed of the asset management system | Western Power's asset management systems have been subjected to an independent review on three occasions since 2005 as well as the Energy Safety investigations into wood pole failures. The AMSR team and Western Power's In-service Asset Management team had a number of discussions on the wording of independent review and internal audit in the Audit Guidelines document and the requirement for an audit at 24 month intervals in the Licences. The AMSR team interpreted the meaning to be that Western Power should have internal audit process that reviews the asset management systems on a periodic or scheduled basis. GHD accepted Western Power's interpretation that the Licences requirement of an independent review every 24 months was the primary requirement of the effectiveness audit and that internal audit processes would be good proactice. Therefore this | None identified | A | 2 | N/A |

| Effectiveness Criteria | Audit Findings for ETL2 and EDL1 | Recommendations | Policy/ Procedure | Practice | Risk |
|---|---|---|---|---|---|
| | asset management process was assessed as adequate.<br><br>GHD suggested that Western Power should implement an internal audit program as good asset management practice and that the system should be based on cost benefit assessment of measurable improvement in the asset management systems. If implemented, the internal audit program should consider the scope and timing of the Licence audits and be designed to assess all aspects of the asset management systems on a five yearly cycle. | | | | |



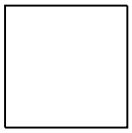
## 3.13 Summary of Effectiveness Assessments

The following table is a summary of the effectiveness assessments for each of the 12 key asset management processes.

**Table 4 Asset Management Effectiveness Summary EDL1 and ETL2**

| ASSET MANAGEMENT SYSTEM | Asset management process and policy definition adequacy rating | Asset management performance rating | | | |
|---|---|---|---|---|---|
| | | Lowest Rating | Rating 1 (%) | Rating 2 (%) | Rating 3 (%) |
| **Asset planning** | A | 2 | 87.5 | 12.5 | 0 |
| **Asset creation/ acquisition** | A | 1 | 100 | 0 | 0 |
| **Asset disposal** | A | 1 | 100 | 0 | 0 |
| **Environmental analysis** | A | 1 | 100 | 0 | 0 |
| **Asset operations** | A | 3 | 60 | 0 | 40 |
| **Asset maintenance** | A | 1 | 100 | 0 | 0 |
| **Asset Management Information System** | A | 3 | 83.3 | 0 | 16.7 |
| **Risk management** | A | 1 | 100 | 0 | 0 |
| **Contingency planning** | A | 2 | 0 | 100 | 0 |
| **Financial planning** | A | 1 | 100 | 0 | 0 |
| **Capital expenditure planning** | A | 1 | 100 | 0 | 0 |
| **Review of AMS** | A | 2 | 50 | 50 | 0 |

The scores in the table above are the lowest score for each of the effectiveness criteria in each key asset management process. The scores are not intended to represent the average or mean assessment, rather the conservative viewpoint of Western Power asset management systems effectiveness. In all areas, Western Power could demonstrate through evidence that there are policies and procedures, which were current, relevant and effective. In most key processes, Western Power could demonstrate by examples and staff evidence that the policies and procedures were implemented and that staff consistently understood and applied the correct procedure in conducting their asset management activities. Where any of the effectiveness assessments were equal to “C” or “D” for policy and process and “3” or “4” for performance, recommendations have been include in the relevant sections of the key asset management process assessments (sections 3.1 to 3.12).



As the effectiveness criteria has changed since the previous AMSR, a direct comparison between the effectiveness assessment scores has not been possible. The previous AMSR assessments of Western Power's key asset management processes for distribution (EDL1) were that six processes were "Planned and Tracked" (score of 2), five processes were "Well Defined" (score of 3) and one process (Financial Planning) was "Quantitatively Controlled (score of 4). The results for transmission (EDL2) were slightly better with three processes "planned and Tracked" (score of 2), eight processes were "Well Defined" (score of 3) and one process (Financial Planning) was "Quantitatively Controlled (score of 4).

# 4. Special Investigations Outcome

The Authority requested that the review team conduct a special investigation into the following issues. The information in italics has been extracted from the Minutes of the Meeting between the Authority, Western Power and GHD as recorded by Western Power's record of discussion.

## 4.1 Asset Management Documentation System

The Authority requested that GHD investigate the following:

*"The section 32 notice has an outstanding item related to the processes used by the asset management division in WP. The current status indicates that the processes will be reviewed and integrated into the Holocentric document management system, but this project is not expected to be completed until mid-2012. The auditor has been asked to look at the documents/systems used by the asset management division to see if they are fit for purpose, readily available, being used in the day to day work of the division and being reviewed as needed. The intention is to focus on the issue initially identified in the 2008 AMSR, i.e. the staff did not have an understanding of the key processes in respect of the capital and operational expenditure works programme, which was due to a lack of documented processes."*

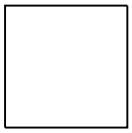
Western Power has been introducing Business Process Modelling (BPM) using Holocentric mapping and viewing software. The implementation commenced in January 2009 and is scheduled to continue through to July 2012. From that point, process owners will be able to develop the process mapping of their areas of responsibility. The Continuous Improvement team have identified over 1000 processes and have trained 70 modellers, who will develop the process models for all of the key processes.

The business process modelling team provided a demonstration of the Holocentric work flow process mapping and demonstrated the progress in mapping key processes called the "Works Governance Model". The model has been developed to the first two levels (using standardised terminologies and definitions. The demonstration also included how key processes were linked to the correct versions of reference documents held in DM and the capacity to map inputs and outputs. The software allows the user to present information in a number of formats, including standard linear flow charts, responsibility matrices (RACI – Responsible, Accountable, Consulted and Informed), and Business Artefacts Relationship Models. Members of the Asset Management team have been trained in using the software and are assisting the dedicated modellers

During the AMSR review period, 680 processes had been mapped, 497 processes are under development, the Process Modelling Standard and Guidelines, and BPM Framework had been published. However the action in the 2009 AMRS Report (finding 09/19) of completing all of the key processes in Holocentric within 12 months has not been achieved. The key processes identified in the previous AMSR had been completed to the Business Process Level (level 2), but not yet to the Process Step (level 3) or System Process Diagram Level (level 4). The key asset management processes were:

1. Handover, delivery and reporting of the OPEX/CAPEX expenditure works program,
2. Change Control for OPEX/CAPEX, and
3. Risk Management Framework.

Evidence of the handover, delivery and reporting of the OPEX/CAPEX were described in a number of documents and flow charts, responsibilities and roles were adequately detailed in the Network



Performance Asset Management Process (DM# 7733751), the Annual Planning Cycle Interpretative Guide (DM# 7389850) and the Network Investment Strategy document (DM# 7314528).

Evidence of the Change Control Process (DM#7030476) was sighted and included a well detailed process flow chart that clearly detailed each step in the process and the responsibilities for each activity and task.

The risk management framework process is included in the Risk Management Framework document (DM# 3017083) and the OAM Risk Management Flow Chart details the roles and responsibilities for all steps in the risk assessment process.

The AMSR team found that all staff interviewed understood the asset management processes and had access to the procedures documents which described the processes graphically and texturally. The completion of the process mapping will take some time and the timeline for completion of the asset management process mapping has been developed in detail. As the processes have been documented, are understood and are practiced, the investigation concluded that the policy and procedures were adequately defined (Rating A), and the implementation of the processes were being performed effcectively (Rating 1). GHD suggest that the previous finding "Western Power should ensure that the mapping of key processes on Holocentric is completed within project timescales" was an open finding, which was impractical to omplement within the suggested timeframes. The previous finding did not consider that the key asset management processes were already adequately mapped within the various asset management documents and that transferring this information to a central management system (Holocentric) would be an improvement suggestion and not an asset management effectiveness requirement.

GHD suggest that Western Power should prepare a project implementation schedule to complete the mapping of the key asset management processes to level 3 and 4, so that the processes are available within a single source document. GHD also understand that Western Power intend to complete the business modelling of asset management processes as and when resources are available and on a cost benefit basis.

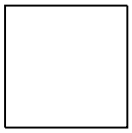
**Finding 11/06**. Recommend that a project schedule should be developed to map out which of the processes should modelled and the target dates for publishing the approved process models.

## 4.2 Risk Management

The Authority requested that GHD investigate the following:

*"Risk management has been raised in both previous AMSR's. The CURA risk management system is not able to track when the risk owner has reviewed the risks if the review does not result in an update in the database. This means that Western Power is unable to state when the risk was last reviewed with confidence. Western Power informed the Secretariat that they have a manual workaround that involves the risk owner emailing the risk management team when they have done their review. The auditor was asked to examine this process."*

The investigation into risk management included interviews with In-service Asset Management, Network Investment and Corporate Risk and Compliance Branch staff. The review also examined the transmission and distribution asset risk register and the corporate risk register system. The transmission and distribution risk register (Asset Risk Register (ARR)), previously called BART, are Microsoft excel spread sheets based on a standard risk assessment template and common colour coded systems for



risk exposure. The asset risk register is compliant with Western Power's Corporate Risk Framework and Australian Standards AS/NZS 31000 series. All asset risks with an exposure of high and above are escalated into the Corporate Risk Register and monitored on a quarterly basis. The Corporate Risk register is managed by Risk and Compliance Branch through the CURA risk and compliance software. The review of CURA confirmed that the processes and practices was compliant with Western Power's Corporate Risk Management Policy and Framework and with Australian Standards ISO31000. CURA has an organisational hierarchy structure, which allows risk events to be managed at Corporate, Divisional, Branch and project level. CURA provides Western Power's Board with key information on where to focus resources to business and corporate risks.

All staff understood the reasons and processes used for risk assessment, and were consistently using the Corporate Risk Assessment protocols to assess probability and consequence of failure events, determine risk exposures, document risk controls, and develop risk management and mitigation plans.

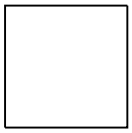
The asset risk register included the assessment of consequence, probability and exposure for each of the six risk categories in the consequence definition matrix in the Corporate Risk Assessment Criteria. The aset risk register includes details of the authors, dates and reference materials for each risk assessment. The asset risk register also include details of who is responsible for managing and monitoring the risk events by assigning the risk event to an "owner". Amendments to the management actions were documented in the transmission and distribution register within the RMF comments workbook, including the date that amendments were made and who made the change, and what was changed or updated. The asset risk register does not have data entry protection, or full auditable trails; rather data security is reliant on manual entry of changes in the RMF comments section. The primary data security control is through restrictions on editing through DM.

While the asset risk register does not include an audit trail capability, data integrity and security are being managed through the author/editing controls in DM. The register is fully reviewed at least annually, amended periodically by the asset risk owners and reported to the Branch and Divisional Manager in the monthly and quarterly reports. The asset risk register was assessed as adequate for assessing asset failure events and managing actions to reduce the consequence or probability of risk events.

Asset risk assessment and management was also evident in all Business Cases, asset strategies (Missions and Strategy), and the Asset Management Plans (DAMP and TAMP).

The investigation into the Corporate Risk Management system (CURA) reviewed the functionality of the system, checked that high and extreme risks in the asset risk register were included in CURA and checked whether the system recorded who, what and when information was changed in the system. The AMSR team confirmed that all of the high and extreme risks in the asset risk register were included in CURA and that the information was the same in both systems. One of the Risk and Compliance Branch staff members was responsible for reviewing the information in CURA on a quarterly basis and producing information update reports for Management and the Board. A schedule of reviews had been prepared and was being followed.

The CURA system demonstration included an overview of the data entry screens, the menu systems and investigation into whether the previous AMSR findings had been actioned. The system had different functions for the various levels of the organisation based hierarchy. For example, a Transactional Audit trail was available at the risk level, which recorded the names and date/time of anyone changing an entry in the database, but not what was changed. However at the Organisation Level, a Detailed Audit Trail function was available that held records of all changes, including when the change was made and who



made the change, which field was changed, the old field data and the new field data. This function provided all of the information needed to close out the previous AMSR finding.

The AMSR team concluded that the previous finding on CURA had been actioned and was closed out.

## 4.3 Distribution Wood Pole Review

The Authority requested that GHD investigate the following:

*"Distribution wood pole management. The auditor has been asked to examine the process for recording wood pole failures to determine whether they are being correctly categorised as assisted/unassisted failures. This will involve sampling the records to at least achieve a 95% confidence level. The auditor has also been asked to examine the process for replacing poles that have been inspected and rated high priority (replace within weeks) and medium priority (replace within a few months) to determine whether the replacement has been done in a timeframe consistent with the approved replacement policy. Again, sampling should be to a 95% confidence level."*

While the number of transmission poles is significantly less than distribution poles, the investigation included both licences. The distribution wood pole review included reviewing the following documents in table 5 below. The investigation also included reviewing inspection and condition classification records in DFMS to confirm the data extracted in spread sheets by Data Management and Quality Section.

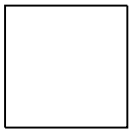


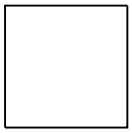
**Table 5 Wood Pole Evidence Reviewed**

| Document Name | DM Number |
|---|---|
| Pole Inspection Results - Line KW-MSR 81 | 5067143 |
| Wood Pole Inspection Guidelines | 5449945 |
| Pole Failure Data 2009/10 | 5486723 |
| Pole Investigation Process Overview | 6342396 |
| Pole Based Inspection Program | 6804587 |
| Wood Pole Management Plan 2010 | 6811698 |
| Pole Failure Data 2010/11 | 7582329 |
| Auspoles Investigation Report | 8366132 |
| Asset Data Report Metadata | 8444642 |
| Pole Inspection Extract Map | 8444636 |
| Pole inspection Extract from DFMS | 8444661 |
| Western Power's Wood Pole Management Systems: Regulatory Compliance Assessment. Detailed Technical Report, 20 October 2006 | 4436854 |
| 2008 Distribution Wood Pole Audit Review, A Review of Western Power's Response to the 2006 Regulatory Compliance Assessment of Western Power's Distribution Wood Pole Management Systems, May 2009 | 7460018 |
| Energy Safety Order Number 01-2009 | 6648142 |

### 4.3.1 Inspection Program

The investigation into the programming of inspections was based on selecting 394 pole inspection records from DFMS using a random pole number generator which had been developed for quality auditing of DFMS records. The sample number was selected to achieve a 95% confidence level with a sample size of 297,900 pole inspections due within the 18 months of the audit period with a 5% margin of error. The data extract process is described in the Asset Data Extract Metadata (DM#8444642) and plotted in a map (DM#8444636) of the Licence boundaries to demonstrate that the sample poles is a good representation across the SWIS network. The investigation reviewed all of the records in the data extract and checked 43 records in the sample set with the data reported in DFMS. This investigation found that Western Power was following the procedures and policy in inspecting poles, recording the outcomes of the good wood tests, and determining the strength index.

Within the sample data set, 11 poles had been classified as unserviceable (nine P1 and two P2) based on the good wood and serviceability index. 196 poles were recorded as serviceable or reinforceable priority 2. 193 records had no entry against the "Results of Pole Serviceability" field. The 11 unserviceable records were checked in DFMS and the data in the extract aligned with the DFMS records.



The Serviceability Index calculation and assessment of "serviceability" was in accordance with the procedure in Wood Pole Inspection Guidelines (DM# 5449945).

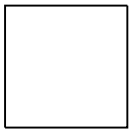
17 records had default installed dates of 1/1/1901 and 84 records had 1/1/1970. Of these, all of the 1901 dates had estimated install dates from the field inspections and 46 of the 1970 records had estimated dates. Western Power were aware of the default dates in their data set, but advised that as age was not used in predicting maintenance or pole replacement, correcting this data was a low priority. They also advised that they were similarly aware of the missing data in a number of fields and had instigated changes to their field data capture processes to ensure that all essential data field were completed by the field inspectors.

The Wood Pole Inspection Guidelines document includes a significant amount of information on the process of determining the good wood test results and determination of the serviceability index, but only a single paragraph to assessing the cross arm, insulators and lines. Western Power advised that the information on inspecting other equipment attached to the poles is included in the Catalogue of Inspection Types and Definitions. However, this is not a procedures document and the process of assessing the condition of the non-pole elements is reliant on the inspector's awareness of the Catalogue and the field data collection forms.

**Finding 11/07.** Recommend that the Wood Pole Inspection Guidelines section on non-pole asset elements should be expanded to include the non-pole inspection information on what is to be inspected and the assessment measurement protocols within the one document.

The investigation into wood pole investigations covered the management of Inspection Backlogs over the audit period. The investigation looked at the Pole Inspection Backlog Report (DM#6717700), Bundled Pole Inspection Services 09/10 and 10/11 (DM#6321838 and DM# 7582098), Bundle Pole Inspection Backlog by Asset ID and Maintenance Zone July 2011(DM#8465872) and Pole inspection Extract from DFMS (DM#8444661). The investigation also included interviews with Anesh Boodhram, David Langdon, Roger Petit, Stu Green, Andy Neeman, Nick Howard, Will Wong, Steve Samuels, Allan Micherton, Sundy Tjhim, Ian Winks, Con Zaekis, Johan Jankowitz and Eddie Kuen.

The DFMS data extract provided evidence that 183,470 poles had been inspected during the 18 months of the audit period. As there is 630,000 distribution wood poles which are to be inspected once every four years, more than 248,250 poles (1.5 x 630,000 / 4) should have been inspected to reduce the backlog on poles inspections. Western Power staff also advised that all but 942 poles had been inspected in the last four years. The difference between the targets and that reported in DFMS was discussed with Western Power at follow up interviews, where staff advised that not all inspections completed during review period had been recorded in DFMS because of Quality Control issues with the field captured data and the start-up issues with the new electronic reporting process. Western Power provided data from the two pole inspection contractors showing that 164,196 poles had been inspected between Nov 09 and Jun 10 and 126,122 poles between Jul 10 and Apr 11. The source data is the monthly invoice claims for the two network contractors, which are independently checked by Western Power before payments are processed. The total number of inspections reportedly completed by the contractors during the review period of 290,318 exceeds the target numbers needed to reduce a backlog. However, the difference between the contractors reported numbers of inspections (290,318) and that recorded in DFMS (183,470) indicated that 106,848 pole reports had not been loaded to DFMS. This is a significant issue as 37% of inspections were not recorded within the distribution asset management system (DFMS) during the review period. The number is far higher than that expected from a data entry



or quality control problem. A third source of data (Wood Pole Inspection Tracker (DM#7582098 and DM#6321838) shows that 258,565 poles were inspected during the audit period.

While Western Power advised that they had inspected all but 946 inaccessible wood poles over the past four years, the evidence did not support this claim and indicates that the backlog of inspections may be increasing. Because of the difference in pole inspection numbers from the two sources, the AMSR team did not have confidence in the actual number based on the differences in inspection numbers between the reporting systems. The team recognise that the Cognos data warehouse management system should address this problem in the next audit period by providing an auditable data source trail.

**Finding 11/08.** Western Power need to address the differences in the data reporting processes between DFMS and the Alliance Contractor Performance, and maintain monthly records of the pole inspection rates that can be verified from DFMS and contractor's invoice claims.

### 4.3.2 Failure Classification

The investigation into failure classifications reviewed data from the Trouble Call System (TCS), pole inspection data extract from DFMS and sample of DFMS records to confirm whether pole failures were correctly classified as "assisted" or "unassisted". The definition of pole failure is included in "Identification and Investigation of Unassisted Pole Failures" (DM#7467671). An Unassisted Pole Failure (UPF) is defined as:

- Failure due to deterioration (rot, termite infestation or fibre strength loss) and the pole has fallen down, or
- Where only conductors or stays are supporting the pole, ie the pole base has no resistance to bending moment.

This definition is consistent with Energy Networks Association (ENA)'s definition adopted by the Power Poles and Crossarms Forum.

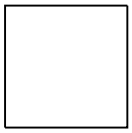
- Failure below the design load as stipulated in CB1 2003 (wind speed taken as 140 kmph)

Strong winds are assessed to be in excess of the design wind speeds specified in Australian Standard HB C(b) 1 2006 – Guidelines for design and maintenance of overhead distribution and transmission lines.

The investigation reviewed the pole failure reports summaries for 1176 pole failures between November 2009 and April 2011. Pole failures were classified by cause into:

- Unassisted,
- Vehicles,
- Bush Fires,
- Lighting,
- Vegetation,
- Thunderstorms, and
- Major Storm Events.

For all of the 77 unassisted pole failures during the audit period, a pole failure investigation was completed and a report prepared in accordance with Western Power's procedures. For assisted pole



failures, an investigation was not completed during the review period. Confirmation on whether pole failures had been correctly classified was reliant on the TCS reports summaries, which provided information of what was reported by field staff or the public and follow up information from a field supervisor where the original report was erroneous. In the majority of the reports, the failure appears to be correctly classified as the cause was obvious. In the minority of records (approximately 20%), the failure cause was not clear from the report description and a clear determination was not possible. In many records, the initial diagnosis of assisted pole failure (based on wind) was changed to unassisted once the wind speed was determined to be less than 140 kmph.

There was no evidence that pole failures had been incorrectly classified from the random sample of 385 pole failures in the TCS reports and the pole investigation reports confirmed that unassisted pole failures had occurred because of wood strength degradation through rot, termites or failure of the soil bearing pressure.

### 4.3.3 Replacement Priorities and Timelines

The replacement priority and timeline investigation attempted to determine whether poles which had been "condemned" through the condition assessment process were replaced within the required 2 week timeframe for P1 (high priority) and two months for P2 (medium priority) poles. The investigation attempted to extract a report from DFMS on all P1 and P2 condition assessments during the review period which was not possible within the timeframe of this review. The data could be extracted from DFMS for the pole assessments, but then needed to be linked through inspection dates and work order completion dates for the pole replacement. Currently DFMS does not have this level of functionality and preparing the data would require significant staff resources. Western Power acknowledge that they could not provide this information during the review period. The introduction of the Cognos system has provided Western Power with the capability to generate reports by condemnation classification, but does not currently track response timeframes against target replacement times. The quarterly "Asset Condition and Performance Report (DM#5338092) for 01 January 2011 to 31 March 2011, shows that the condemned pole backlog had exceeded the target of 5000 over all of the AMSR period and that the backlog has escalated to 7,927 in March 2011 due to the amended pole inspection process, which identified more condemned poles that the old method.

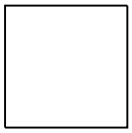
As an interim measure, the eleven condemned poles (nine P1 and two P2) included in the random data extract were reviewed manually through DFMS. The date of the pole inspection was compared to the recorded new pole installed date. In all cases, the new poles were installed within the two weeks and two months timeframes. However, Western Power acknowledged that they do not have a report that tracks pole replacement timeliness over the AMSR period and that generating a report within the AMSR timeframe was not possible.

**Finding 11/09.** Western Power should develop a standard report to track the condemnation date for P1 and P2 assessments against the new pole installation date to monitor their performance against the pole replacement timeliness targets.

## 4.4 Contingency Plans

The Authority requested that GHD investigate the following:

*"The auditor has been asked to examine the Western Power contingency plans related to assets (i.e. what happens if a HV transformer fails etc) and business continuity in respect of the operations centres*



*(SOCC/NOCC). The auditor is to report on the availability of documented contingency plans, the adequacy of the plans and the frequency with which the plans are tested. A corollary to this testing is an examination of whether the outcomes of the tests are analysed and any identified improvements implemented."*

The Business Continuity investigation of the operations centres included visiting the East Perth facility, conducting interviews with transmission and distribution staff, reviewing the Operations Centre Instruction Folders and reviewing the records of the contingency operations and activation of the Backup Control Centre (BCC) Activation plan. Western Power's Continuity Management Framework document was reviewed to check that the current Contingency Plans were compliant with policy and procedures.

The Operations Centre Folders for SOCC (transmission) and NOCC (distribution) include contingency plans for all known natural disasters and asset failures and provided clear guidance to the operators on what immediate and follow-up actions were required to isolate hazards, protect assets and restore customers' supply. The instructions included directions on operating the system, contact personnel and activation of the Crisis Management Centre when needed. The operation of the BCC Activation included a checklist for testing the procedure. The SOCC and NOCC BCC had been tested at six monthly intervals during the AMSR period and evidence was provided in the "BCC Trial Form" (DM#2182759) and the "Tick n' Flick for quarterly and annualtesing of the EBS", Appendix 14 to the Changeover to and Operation of Emergency Back up SCADA (EBS) (DM#1484152).

The BCC testing records included a checklist of each system and function with comments on where systems did not perform adequately. The Managers of the distribution and transmission operations centres advise that any issue or problem noted on the checklist was actioned by the staff member conducting the test as a priority action. Issues in the sample checklists included slow speed with email connections, individual telephones not working, error messages with software systems, equipment failures (computer monitors) and even lack of stationary or access controls. The checklist records included the date of the test and were registered in Western Power's document management system (DM). The example for NOCC was an electronic form, which did not include a sign-off by the tester or a record on whether the follow-up actions to issues had been actioned. The SOCC quarterly and annual EBS form was paper based, more procedurally based than the checklist based NOCC BCC Trial form, and included details of follow-up actions, who was responsible for actioning the item and a date column for when the action had been completed. Both forms had advantages and should be reviewed to achieve a more consistent and complete format. While the forms were recorded in DM once completed, a hard copy was not kept at the Operations Centre, which would have been useful to demonstrate to the AMSR team that the BCC test activation had been completed regularly.

The sample checklists provided by SOCC did not have checks against each of the items and the date complete column had a ticks but no date recorded. The sample checklists for NOCC lacked an actions taken section and a sign off by the author. This issue has been captured in Finding 11/04 in section 3.9 of this report.

During the review of the Operating Instructions folders, two of the NOCC documents had not been reviewed by the due date and there were numerous problems with the currency and format of the SOCC documents. These issues have been recorded in finding 11/01 in section 3.5 of this report.

# 5. Progress on findings from November 2009 Audit

| Finding No. | App Licence | Finding: |
|---|---|---|
| 1 | EDL1<br>ETL2 | Western Power should introduce a formal documented process to ensure that all Capex and Opex plans are optimised to ensure any inefficiency is removed. Inputs to the process should include:<br>◗ System Planning (for any capacity schemes)<br>◗ Network Reliability (for any network improvement schemes)<br>◗ Asset Replacement (for any condition based schemes)<br>◗ System Management (for coordination of system outages and<br>◗ network access over the period of the plan)<br>◗ Maintenance (for co-ordination of maintenance with projects)<br>◗ Resource Management (for input on resource availability to deliver the plan)<br>Meetings held should be formally documented and minuted |

**Western Power Management Action Stated in 2009 Report:**

Western Power will establish regular meetings with representatives from System Planning (for any capacity schemes), Asset Replacement (for any condition based schemes), Network Reliability (for any network improvement schemes), System Management (for co-ordination of system outages and network access over the period of the plan), Maintenance (for co-ordination of maintenance with projects) and Resource Management (for input on resource availability to deliver the plan). The purpose of these meetings will be to discuss the following:

*Optimising the work across each area (e.g. delay maintenance in some areas due to short capacity expansion works planned in the area, bundling work, etc).

*Improving communication between project sponsors, resource management and System Management allowing knowledge of planned works to be shared earlier in the planning process. This will improve resource and outage planning capabilities.

Meetings held will be formally documented and minuted.

**Western Power Stated Position at 2011 Audit:**

A consolidated asset plan (CAP) has been created with entries in the Ellipse database that show the location of future projects with asset replacement, capacity expansion or customer driven drivers. Advanced knowledge of these projects prevents duplicated effort http://busbar/resources/worksManagementTools/Consolidated_Asset_Plan.html (DM#6364677)

A Sponsors Forum committee has been created that meets regularly to form a common set of priorities. This forum enables optimisation opportunities to be highlighted. Terms of Reference - Sponsors Forum (DM#6673890)

| |
|---|
| A production plan is developed each year by the operational asset management team in consultation with the operations division and sponsors this enables all parties a 12 month view of the work ahead.<br>◗ Distribution Production Plan 2010-11 (DM#7571155)<br>◗ Transmission Production Plan 2010-11 (DM#7370872) |
| **Evidence Provided:**<br>Demonstration of the document management system (DM), data warehouse reporting (Cognos), Minutes of Meetings, Annual Planning Cycle, Distribution and Transmission Production Plans, and Quarterly Performance Reports. |
| **Author's Opinion:**<br>Western Power has adopted a more consultative approach to the development of CAPEX and OPEX and has documented the outcomes of CAPEX and OPEX reviews and the program development. The use of project sponsors and project managers combined with the gated approvals process ensures that the relevant stakeholders are engaged during the planning processes. |
| **Recommendation:**<br>Finding Closed Out |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 2 | EDL1<br>ETL2 | Western Power should ensure that, during the optioneering phase of projects, there is consideration given to the overall life cycle costs to ensure that the most cost effective option is selected. This should include a determination of how changing of one asset will impact on the life cycles of associated assets. |
| **Western Power Management Action Stated in 2009 Report:**<br>Asset life cycle costs will be taken into account as part of the optioneering phase of business case development. The required processes will be developed and implemented under Western Power's Business Improvement project (Big Rock) for both transmission and distribution assets. | | |
| **Western Power Stated Position at 2011 Audit:** | | |

| |
|---|
| Western Power has received a number of indicators that the options process within the network investment planning process has significantly improved during the AA2 period as business improvement initiatives have been implemented.<br><br>The NFIT review (DM#8098017) undertaken by PB provided commentary and evidence that the business cases developed during the business case project and following the implementation of the Iinvestment evaluation model (IEM) were vastly improved from earlier business cases. Their assessment of NFIT risks associated with these business cases were significantly lower than business cases completed prior to the project.<br><br>PB have also provided feedback on the new business case template & guidelines (DM#8299166), stating that overall, the template was of high quality and provided sound guidance (inclusive of options analysis guidance) to business case writers.<br><br>Other indicators of improvements have been evidenced in the positive feedback received from the ERA on the Collgar (see DM#8230438) and Overhead Customer Service Connections pre-NFIT submissions (see DM#8299591). |
| **Evidence Provided:**<br><br>All of the Business Cases for sample projects included options analysis based on whole of life costs and supported by a cost model that detailed the maintenance and operations costs of the options. |
| **Author's Opinion:**<br><br>Life cycle cost analysis was evident in all of the Business Cases reviewed for "Asset Creation" process and within the financial evaluation sections of the Asset Strategy and Asset Management Plans. Life cycle costing was adequately addressed in the project development processes. |
| **Recommendation:**<br><br>Finding Closed Out |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 3 | EDL1<br>ETL2 | Western Power should align the production of the State of the Network report with the production of the DAMP such that information is consistent across the two reports. Western Power should also consider including a profile of asset age against mean time to failure rather than a simple average age profile. |
| **Western Power Management Action Stated in 2009 Report:** | | |

| |
|---|
| 1. Western Power will align the annual development of the DAMP and the Distribution State of the Network Report. It will provide data from a single source to ensure data is consistent across both reports<br><br>2. Western Power will review the viability of including a profile of asset age against mean time to failure in the DAMP. A review document will be produced and recommendations implemented. |
| **Western Power Stated Position at 2011 Audit:**<br><br>Currently and going forward, reviewing of the DAMP (DM # 3273896) and State of the Network Report (DM# 4752901) shall be assigned to the same individual.<br>The Annual Planning Cycle Process (DM# 7500617) has been developed and rolled out across the business requiring all planning activities to be aligned appropriately. The reviewing of these documents is included in the business wide annual planning cycle and will now be in alignment with the Annual Planning Cycle process. Also refer to the Annual Planning Cycle Interpretation Guide (DM # 7389850)<br>The DAMP and the Distribution State of the Network Report have since been aligned. for the last financial year. This shall continue for all future revisions.<br><br>ALCA (Asset Life Cycle Analysis) modelling includes asset failure data, which was compiled by Davies Consulting Inc. This has been incorporated into the DAMP (DM # 3273896). Refer to section 5.4. Therefore asset failure rates are being produced and are within the asset management plan. MTTF at this stage cannot be supported by the business, due to DATA constraints. However, as part of AA3 preparation, further modelling will be done for most N-RTF Assets. |
| **Evidence Provided:**<br><br>Cognos data warehouse. BusBar Dashboards for transmission and distribution. State of the Network Report. Distribution and Transmission Asset Management Plans. |
| **Author's Opinion:**<br><br>Western Power has introduced a centralised data warehouse to collect and report of common corporate information and data. All Branch and Divisional reports are linked to this data through the "Cognos" system. The same corporate data is evident in all levels of documents investigated for this review. |
| **Recommendation:**<br><br>Finding Closed Out |

| Finding No. | App Licence | Finding: |
|---|---|---|
| 4 | EDL1<br>ETL2 | The 'Training Provider' database is reactive, only monitoring courses held. There is no system monitoring that annual refresher training is due or has been completed on time. Therefore staff that have not completed the annual refresher training could be operating on the network outside of Western Power requirements. Western Power should introduce a proactive training database that identifies when refresher training is due. |

**Western Power Management Action Stated in 2009 Report:**

1. Western Power is determining business requirements with respect to an enterprise learning/training management system; this will incorporate the requirements to record and manage employee and contractor training records. The business requirements will be finalised by May 2010. These requirements will be reviewed against MIMS Ellipse Training Module functionality and gaps determined.

2. The 6.3 MIMS ELLIPSE training module will go live April 2011 or be replaced by an alternative learning/training management system. Short term solution (Authorisations) using current system being developed by Operational Technical Excellence Branch.

3. Roll out Employee and Manager self service (with respect to the management of training records) to all users.

**Western Power Stated Position at 2011 Audit:**

Consolidated all Authorisations and Licences under a single storage depository (Western Power's ERP system – Ellipse). Established an electronic means of monitoring and managing SWIS Network Compliance. Implement a common Network Authority Card for both employees and contractors as a means of identification and relating back to the ERP system. Implement a back end set of tools that allow formal leaders and external contractors to monitor and manage Network Worker compliance on an ongoing basis. This enables both top level and grass roots level management of compliance based on accountability (DM#6815194).

The implementation of the Network Authority Card is part of a combined and integrated solution that includes renewal of the Power Training Services systems and procedures and the introduction of documentation and other key information via websites and windows tablets directly into the hands of the SWIS Network Workers. This will allow the worker to carry around a single card, replacing awkward Orange Books and multiple cards for each Authorisation and Licence.

**Evidence Provided:**

Ellipse Training Records demonstration and Depot Pack (Training Management System) demonstration (Operational Excellence).

| |
|---|
| **Author's Opinion:**<br><br>The Training Database Management (TMS) database module developed by Western Power since the last AMSR has comprehensive records of each employee and contractor's competencies, training records, authorisation levels and expiry dates for each person's Authorisations to work on the Network. The records in TMS are linked to the employee training records in Ellipse. The system clearly records each person's competencies and authorisation, and notifies supervisors and assessors when the authorisations are due to expire through the Network Competence and Career Module. |
| **Recommendation:**<br><br>Finding Closed Out |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 5 | EDL1<br>ETL2 | Western Power should introduce a process to capture where maintenance policies and procedures are not aligned with industry best practice. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>Western Power will add a new sub section (Identify the maintenance and replacement strategy assigned to this asset) within section 4 of the Asset Mission Template requiring the author to identify whether the maintenance or condition strategy is aligned with best industry practice. Asset missions will be reviewed based on their existing review schedule. | | |
| **Western Power Stated Position at 2011 Audit:**<br><br>All reviews of existing Asset Missions and writing of new Asset Missions shall follow the Document Management Control Procedure. This will ensure that the latest template is used at all times. (Refer to Section 4.2 "Document Design" DM 5015000).<br>The Asset Mission template DM 4050357 has been enhanced to include a section requiring consideration of industry best practice and benchmarking as part of the ongoing development / review of all asset missions. Refer to section 3.1.4 of the template.<br>A gap analysis of all Asset Missions was successfully completed by the AA3 Team by end 2010 and has been incorporated into the AA3 planning. (AA3 NPB Focus Asset Documentation. DM 7654805) Asset Missions are currently being updated, with due consideration to the identified gaps. This will provide the opportunity for Asset Missions to be reviewed and including a test of conformance to industry best practice when developing maintenance policies and practices. | | |

| |
|---|
| An example of a recently revised asset mission for overhead structures is available. (DM 7758936). All future asset missions will comply with the same format. The new template (DM 4050357) has been communicated to all Asset Mission writers and as per document control procedures (DM 5015000) only the approved template is available for use |
| **Evidence Provided:**<br><br>Asset Missions and Strategy documents. |
| **Author's Opinion:**<br><br>The revised Asset Mission and Strategy documents include discussion on industry practice. Asset Management Staff have attended the ICOMS conference and have been communicating with the electricity utilities on the eastern sea-board. Staff demonstrated a good awareness of best practice in asset management. |
| **Recommendation:**<br><br>Finding Closed Out |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 6 | EDL1<br>ETL2 | Western Power should ensure that the transfer of funding from preventative maintenance for distribution switchgear, and any other affected assets, to corrective maintenance budgets will not adversely affect the condition and performance of those assets over their life cycles and initiate a program to catch up on deferred maintenance activities when funds become available. |

**Western Power Management Action Stated in 2009 Report:**

1. Western Power will assess the risk and impact of transferring funding from preventative to corrective maintenance for each asset affected. This will be included as part of the change control process.

2 Document and record the risks associated with the deferred maintenance activities for each affected asset class in the Asset Risk Register.

3. Create a program of work to manage deferred maintenance activities when funding has been approved.

**Western Power Stated Position at 2011 Audit:**

**Change Control Process**

As part of the change control process, Western Power has produced documentation (Change Control Guidelines DM 7030476) and (Budget Reallocation Template DM 7286582) with the purpose of providing a set of guidelines and principles to assist project sponsors, project managers, key stakeholders and approvers, who are involved in the budget reallocation process.

**Risk and impact assessment**

A crucial element of the process is the requirement for a risk matrix of both scenarios utilising the corporate risk assessment criteria, Refer to section 5.4 page 15 of the guideline DM 7030476.

**Funding Reallocation**

Any proposed reallocation of funding will be subject to the completion of a Budget Reallocation Request Form (Budget Reallocation Template DM 7286582) which quantifies the change in terms of increased risk which is then subject to Network Investment branch approval.

The change control process (DM 7030476) was rolled out to distribution and transmission project managers and other targeted divisional and branch representatives. The process been reviewed to include a set of guiding principles to assist Project Sponsors, Project Managers, Key Stakeholders and Approvers, who are involved in the budget reallocation process. A requirement of these set guidelines and principles is to document the change in risk profile using the corporate risk framework. (DM 6242026)
A business requirement is to capture all risks in a risk register such as CURA, the WP corporate asset risk register.

The risk associated with the deferment of maintenance activities as identified during the audit, has been captured in CURA (Refer to R-000901 NP Distribution K2 Preventative Condition Based Maintenance Backlog). AWP 1112 and AA3 estimates for DAP OPEX Maintenance (K1, K2, K3 and K4) (DM 7427388) contains details of the backlog and is referenced in the CURA risk register.

The Approved Works Program (AWP) DM/37427388 10/11, 11/12 and AA3 estimates for DAP OPEX Maintenance (K1,K2,K3 and K4) planning are in place to ensure that risk remains within tolerable limits and is subject to change due to the availability of funding, therefore a snapshot of the document is available for future reference.
A breakdown of planned expenditure for maintenance activities is available in DM 7798325. This is for the remainder of the AA2 period as well as projected expenditure for the AA3 period. This demonstrates that plans are in place to address the management of the deferment / backlog as

| |
|---|
| well as the required maintenance as per the maintenance strategy.<br>The following comments refer to information contained within DM#7798325<br>The Sheet titled “Dist OPEX Summary” shows an overview of the planned expenditure to manage the planned deferment/ backlog in preventative maintenance, all corrective maintenance and also the expenditure required for preventative maintenance activities as per maintenance strategy.<br><br>Refer to sheet titled “DIST OPEX detail” for 09/10 Actual expenditure, 10/11 Revised NI (Network Investment) expenditure and the 11/12 to 16/17 proposed expenditure.<br><br>Sheet Titled “K2 Backlog in AA3 only” displays the spread of deferred / backlog preventative maintenance over the duration of the AA3 period. |
| **Evidence Provided:**<br><br>Interviews with Anesh Boodhram and David Langdon on Asset Planning included discussions on the annual review of the asset investment strategies and asset management plans. The evidence provided included the Budget Reallocation Request Form (DM#7286582), Budget Reallocation Process Flow (DM#7213478) and Change Control Guidelines (DM#7060314), |
| **Author’s Opinion:**<br><br>All proposed changes of budget allocations between programs are documented in accordance with the change control guidelines and approvals are required under the budget reallocation process. The Budget Reallocation Request Form has been introduced since the previous AMSR to address the issues with the risk and impact on assets over their lifecycle. |
| **Recommendation:**<br><br>Finding Closed Out |

| Finding No. | App Licence | Finding: |
|---|---|---|
| 7 | EDL1<br>ETL2 | Western Power should maintain focus on reducing the backlog in pole inspections by agreeing, where possible, increased budgets for any additional inspection requirements. |

**Western Power Management Action Stated in 2009 Report:**

Western Power has recently changed the wood pole inspection requirements to ensure the wood pole drill test is conducted at 300 mm below ground leading to an increase in the overall inspection costs. This change has been taken into account as part of the Access Arrangement 2 submission and will commence in July 2010. In the event that the requested increase in funding is not approved Western Power will conduct a review to ascertain the impact of the reduced inspection volumes on backlog management and risk. The results of the review will be reported to the Executive.

**Western Power Stated Position at 2011 Audit:**

**Increased Funding (OPEX)**
Sufficient funding has been secured to manage the backlog within target (less than 1000 poles) for the remainder of AA2. (DM 7337769)

**Pole Inspection Backlog Report**
The pole inspection backlog report DM 6917700 has been developed within Cognos 8 (Business Intelligence Tool). This will enable Western Power to monitor progress and proactively address any variations from the target volumes on a quarterly basis.

Governance is provided through regular meetings of the Works Program Committee to identify any concerns and decide relevant actions.

**Evidence Provided:**

Pole Inspection Backlog Report (DM#6717700), AWP (DM#7914481), AA2 and AA3 Programs, Bundled Pole Inspection Services 09/10 and 10/11 (DM#6321838 and DM# 7582098) and Bundle Pole Inspection Backlog by Asset ID and Maintenance Zone July 2011(DM#8465872). Interviews with Anesh Boodhram, David Langdon, Roger Petit, Stu Green, Andy Neeman, Nick Howard, Will Wing, Steve Samuels, Allan Micherton, Sundy Tjhim, Ian Winks, Con Zaekis, Johan Jankowitz and Eddie Kuen.

**Author's Opinion:**

Western Power provided evidence that 183,470 poles had been inspected during the 18 months of the audit period against a target of 248,250 from DFMS, which indicates that they have not reduced the backlog of pole inspections. However follow up interviews revealed that not all inspections completed during review period had been recorded in DFMS because of Quality Control issues with the field captured data and the electronic reporting process. Western provided data from the two contractors showing that 164,196 poles had been inspected between Nov 2009

| |
|---|
| and Jun 10 and 126,122 poles between Jul 2010 and Apr 2011. The total reportedly completed by the contractors during the review period of 290,318 exceeds the target numbers needed to reduce a backlog. However, the difference between the contractors reported numbers of 290,318 and that recorded in DFMS (183,470) indicated that 106,848 pole reports had not been loaded to DFMS. The differences (37% not recorded) were not adequately explained by Western Power and the explanation that data entry problems affected the loading of data into DFMS does not appear to address the issue.<br><br>Additional funds have been allocated during the AA3 period to progressively reduce the backlog of inspections. While Western Power advised that they had inspected all but 980 inaccessible wood poles over the past four years, the evidence did not support this claim and indicates that the backlog of inspections may be increasing.<br><br>As Western Power could not provide clear evident that the pole inspection backlog has been managed within the audit period, the previous finding could not be closed out. |
| **Recommendation:**<br><br>Western Power need to demonstrate that the backlog has been managed though good records and need to address the data reporting processes. Monthly records should be kept of the pole inspection rates that can be verified from DFMS (Refer to Finding 11/06 is section 4.3.1). |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 8 | EDL1<br>ETL2 | Western Power should ensure that data used in reporting media is consistent across reports by using information from the Data Warehouse. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>The equipment and Works data warehouse project in SPOW has been established to provide a single source of truth for all equipment and works reporting. Data Management will develop and internally publish key metrics of Western Power's asset base (e.g. number of wood poles) to ensure these figures are used as the official single source of the truth e.g. referenced in AA submissions. These metrics may be computed by the Data Warehouse (as applicable).<br><br>1. The top five metrics in place<br><br>2. Key remaining network asset data metrics in place | | |

**Western Power Stated Position at 2011 Audit:**

The Network Data Metrics project has been established to provide a single source of truth for asset reporting. These metrics include:

1. Total circuit length
2. Number of poles and towers
3. Total combined capacity
4. Number of transmission substations
5. Number of streetlights
6. Number of unmetered supply
7. Number of transmission substation plants

These metrics were derived in consultation with stakeholders, and all criteria and assumptions involved are stakeholder-endorsed. The figures for these metrics will be updated annually and have been published with accompanying metadata documents on the Western Power intranet site. Using these official figures has been mandated to drive consistent reporting.

1. The top 5 network metrics was rolled out to the business on the 22/09/2010
2. Stakeholders were invited on the 01/11/2010 to add additional metrics. Counts of "Transmission Substation Plants" (DM#8030115) and "Unmetered Points of Supply" (DM#7781334) were requested (DM#7658368).

The metrics were derived in consultation with stakeholders, and all criteria and assumptions involved are stakeholder-endorsed. The figures for these metrics will be updated annually and have been published with accompanying metadata documents on the Western Power intranet site. Using these official figures has been mandated to drive consistent reporting.
These key remaining network asset data metrics are now in place and are available on the Busbar intranet page.

Please see http://busbar.westernpower.com.au/ourStructure/networks/spdq/ DataManagement/Network_Metrics_2009-10.html

**Evidence Provided:**

Dashboard reports (for Distribution and Transmission) generated from Cognos draws metadata files into the data warehouse and publishes the summary information on BusBar. Additional evidence was also available in the Distribution and Transmission Asset Management Plans, and the Asset Mission and Strategy documents.

**Author's Opinion:**

The introduction of the Cognos system to collect and report on corporate data and information has significantly reduced the potential for reporting inaccurate information in various documents. The system draws metafile data using defined parameters from the various systems and uses the internal web page (BusBar) to publish common source data and information.

| |
|---|
| **Recommendation:**<br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 9 | EDL1<br>ETL2 | Recently introduced metrics for data timeliness indicate poor performance (32% within target). Western Power should introduce processes to improve this performance |
| **Western Power Management Action Stated in 2009 Report:**<br>1. Refresher data training will be rolled-out out to the providers of as-constructed data.<br>2. Increased incentives (e.g. financial) for the supply of 'as-constructed' information from contractors will be investigated. These will be implemented where it is practical to do so.<br>3. Improved reports will be developed to clearly show performance by specific areas and outstanding 'As Constructed' information. The relevant performance reports will be made available to the appropriate stakeholders (including senior management).<br>4. A backlog management plan will be developed and implemented to ensure outstanding 'As Constructed' data is provided for updating of the information systems.<br>5. The 'As-Constructed' manual will be refreshed to more clearly describe the requirements for providing 'As Constructed' information. | | |
| **Western Power Stated Position at 2011 Audit:**<br>Refresher data training has been rolled-out to the providers of as-constructed data.<br>Training was rolled out at a number of depots across the SWIS.<br>The training was delivered by John Lloyd from the Data Services Team.<br>Examples of where the training was conducted include:<br>• Western Capes Team Meeting (see DM# 7476701)<br>• Kalgoorlie & Southern Cross Safety Meeting (DM# 7682941 see Version 1D)<br>• North Country Safety Meeting: Geraldton Depot (DM# 7914584 see Version 4)<br>• Upper Great Southern Safety Meeting (DM# 7699739).<br>The training resolved the issue by making field staff aware of the minimum requirements for providing as-constructed data and/or drawings.<br>Increased incentives for the supply of 'as-constructed' information from contractors were investigated jointly with a number of internal stakeholders | | |

(see meeting invitation DM# 7676358).

**Meeting resolution:**
It was decided to include the supply of 'as-constructed' documentation as part of 'practical completion' of construction work. This initiative was implemented in March 2010 and subsequently there has been a significant improvement (reduction) in the overdue 'as-constructed' documentation backlog (see graphs in DM 6052577).
Data Management engaged extensively with Service Delivery and Alliance partners.
The contractual arrangement with the Alliance partners was amended to include providing data in a timely manner
A detailed field to office report was created, comprising of 12 measures for field to office, for the 7 accountable areas. The new field to office report measures every step in the information chain.
Performance of the above mentioned report was monitored by the Service Delivery branch managers and the Alliance Leadership Team (ALT).
Information sessions were held at local depots, which included the importance of timely delivery of As Constructed data.

Data Management have confirmed that additional resources will be brought in to address the backlog. In addition to this, the recent Data Quality and Collection Project improvements introduced such as:

- Removal of non essential data from work packages
- Rationalising the forms and limiting duplication.
- Decentralising the scanning of packages,

We are confident that a compliance of 80% field to office timeliness in 20 days will be achieved by 28 February 2011.

Large group of the stakeholders throughout the Western Power business community (including Alliance Partners and contractors) were consulted in the process of the manual re-write. Their feedback was incorporated into the final version of the manual.

A number of “As-constructed Data Quality Requirements” sessions were conducted to increase awareness among construction managers and field crews of providing good quality as-constructed data for subsequent entry in the computer systems. Guidelines on the as-constructed requirements were published on the Data Management busbar page for the field staff reference, see:
http://busbar/ourStructure/networks/spdq/DataManagement/Data_Management.html

The final version of the manual was rolled out to internal and external users 10th December 2010. The next routine review is scheduled in Dec 2013 which is in line with the new controlled documents process. Data Management will review any feedback from stakeholders for continuous improvement of the manual. The manual was also published on Busbar in Quick Links and DMT page.

An Operational Excellence project: Driving Value for Money – Improve Data Quality, is underway and the project team has assessed all aspects of the field-to-office process and initiatives have or are being undertaken to improve the field-to-office performance.

Data Management has reviewed the asset data sheets and made improvements based on the feedback from field staff.

| |
|---|
| It is intended that all as-constructed forms/documentation including Asset Data Sheets, Commissioning Sheets, As-constructed Manual and other relevant documentation will be posted on Western Power external website for contracting companies to have easy access to. |
| **Evidence Provided:**<br><br>Ten examples of field data capture showing reporting times between 7 and 63 days. Field Data Collection and Quality project file. Training records related to the Field Data Collection and Quality project. |
| **Author's Opinion:**<br><br>Western Power has not yet achieved the 15 day responsiveness for all field reporting and as constructed information. . The new system of scanning field records at the depot and electronic submission of work orders and inspection reports has the potential to reduce the performance to the target. The introduction of performance payment measures for the alliance contracts has achieved an average data timeliness of 14 days. The average for Service Delivery has been reduced from 68 days to 17 days. While the process improvements have improved the timeliness of the performance, the target was not achieved during the audit period and the finding is not closed out. |
| **Recommendation:**<br><br>Completion of the Data Collection and Quality project should include all field operations to achieve the data timeliness KPI of 15 days. (Finding 11/03 in section 3.7). |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 10 | EDL1<br>ETL2 | Western Power should ensure that adequate controls are in place to demonstrate that risk treatment plans in the Corporate Risk Database are regularly reviewed and updated, and that records of this review are available. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>1. Western Power will nominate divisional representatives (Champions) to be responsible for ensuring that division risks are reviewed and updated every three months. The task will be included in CURA so that the representative receives a reminder two weeks before the task is due for completion. A follow-up reminder will be sent to the Senior Risk Advisor to ensure the issues are followed up. The date of completion will indicate the date of review for the entire set of division risks. | | |

| |
|---|
| 2. Develop a quarterly health check report and monitor the status of CURA risks, actions and due dates. |
| **Western Power Stated Position at 2011 Audit:**<br>1. Western Power will nominate divisional representatives (Champions) to be responsible for ensuring that division risks are reviewed and updated every three months. The task will be included in CURA so that the representative receives a reminder two weeks before the task is due for completion. A follow-up reminder will be sent to the Senior Risk Advisor to ensure the issues are followed up. The date of completion will indicate the date of review for the entire set of division risks. Champions have been nominated and regular meetings arranged - 30 June 2010<br>2. Develop a quarterly health check report and monitor the status of CURA risks, actions and due dates. Quarterly health check template for 'Extreme' and 'High' Division risks has been developed. 30 June 2010 |
| **Evidence Provided:**<br>Refer to section 4.1. |
| **Author's Opinion:**<br>Refer to section 4.1. |
| **Recommendation:**<br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 11 | EDL1<br>ETL2 | Western Power should ensure that each division is aware of the requirement to review their risks on a quarterly basis including the update requirements. It is also recommended that each division develop a methodology for the recording and monitoring of divisional risks and associated treatment plans which align with the corporate risk management framework. This review should include consideration of what divisional risks should be included in the corporate risk register and the methodology for doing so. |
| **Western Power Management Action Stated in 2009 Report:**<br>The Risk Management Framework will be reviewed and, if necessary, modified to clearly articulate the process in which branches document their | | |

| |
|---|
| risks and then in turn escalate them to the division risk register. Training for divisional 'Champions' will be included in this process. |
| **Western Power Stated Position at 2011 Audit:**<br>The Risk Management Framework is designed to manage Corporate and Division risks and includes branch and project risks as a future intention as the business matures in risk capacity. The Risk Management Framework (DM#3861477) has been modified to reflect the requirements and will be approved by the FRC accordingly (29/06/2011). |
| **Evidence Provided:**<br>Risk Management Framework (DM#3861477). |
| **Author's Opinion:**<br>The Risk Management Framework has been reviewed and now includes the process of escalating Branch and Divisional Risk events to the Corporate Risk Register. |
| **Recommendation:**<br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 12 | EDL1<br>ETL2 | Western Power should consider if a more frequent, formal review of asset risks would be appropriate to ensure adequate risk control. |
| **Western Power Management Action Stated in 2009 Report:**<br>Western Powers "Investment Strategy" Business Improvement Project #2 is the Risk Assessment Model (OE 2.2). This project will include the development of a methodology and will include consideration for the frequency for completing asset risk assessments. | | |
| **Western Power Stated Position at 2011 Audit:**<br>The frequency of asset risk assessments was considered during discussions between Branch Manager Network Investment and Senior Asset Risk Analyst, in August 2010. Western Power is developing a Network Risk Management Framework (NRMF) and Process, which will be deployed in late 2011. This translates the Corporate Risk Management Framework to directly address network risks and support asset | | |

| |
|---|
| management. The NRMF requires the regular (at least annual) update of network risks. |
| **Evidence Provided:**<br><br>Network Risk Assessment Framework (DM#7336887) and Corporate Risk Assessment Framework (DM#3861477) |
| **Author's Opinion:**<br><br>The Network Risk Assessment Framework document includes the recommendation that risks be reviewed at least annually. The Transmission and Distribution risk registers show that the risk owners have been reviewing the information on a regular basis. The evidence shows that amendment entries have been completed on at least a monthly basis. |
| **Recommendation:**<br><br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 13 | EDL1<br>ETL2 | Western Power should ensure that business continuity plan tests are completed in accordance with procedures. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>A Senior Risk Advisor will review the list of disaster recovery/business continuity plans to ensure they are properly documented and that testing is carried out on recommended dates. Electronic reminders will be set to ensure timely testing. | | |
| **Western Power Stated Position at 2011 Audit:**<br><br>Business Continuity Plans (DM# 6555356) have been reviewed and gaps recognised. The Plans have also been reviewed by their Branch owners with this finding in mind. Reminders for reviews have been entered into Cura (L&G Division 'Failure to adequately support WP's business continuity program R000831) | | |
| **Evidence Provided:**<br><br>Backup Control Centre Activation Report (DM#2182759) and Emergency Backup SCADA activation form. | | |

| |
|---|
| **Author's Opinion:**<br><br>SOCC and NOCC provided evidence that the contingency plans for activating the Backup Control Centres had been exercised at least six monthly in accordance with procedures and that records were kept in the document management system of the events. |
| **Recommendation:**<br><br>Finding Closed Out . |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 14 | EDL1<br>ETL2 | The contingency plan for the SOCC detailing evacuation to the back up control centre at Head Office should be formally issued and evidence made available that it is regularly tested. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>1. Finalise Control Room Instruction 15.09 Changeover to & Operation of Emergency Backup SCADA outlining move from Southern Terminal to Head Office. Include in this CRI 15.09 requirements for regular testing of backup control room, quarterly minimum testing (test phones, PCs and operate a few controls) and annual complete testing (Test phones, PCs and undertake complete control from backup control room).<br><br>2. Implement regular testing of backup control room as per CRI 15.09, resolve issues found and store inspection sheets. | | |
| **Western Power Stated Position at 2011 Audit:**<br><br>Control Room Instructions (CRI) 15.09 "Changeover to & Operation of Emergency Backup SCADA" (DM#1484152) and 10.09 "System Operations Emergency Control Centre" (DM#1193884) updated to reflect move of EBS from Southern Terminal to Head Office and bring these documents up to date with latest requirements, including the regular testing of the EBS and storage of inspection forms. Performance and Development Plan (PADP) for Operations Control Section Leader outlines the requirements to undertake the regular testing of the EBS (and resolve issues found). PADP for System Operations Engineering Section Leader outlines the requirements to undertake the upkeep of CRIs. Completed inspections are stored in DM file PSC/21/5(34)v1<br><br>System Operations Engineering Section have developed a Control Room Instruction Manager to manage the updating/revision of all CRIs. (DM#6229048) | | |

| |
|---|
| **Evidence Provided:**<br><br>Evidence procided is detailed in section 4.4 of this report. |
| **Author's Opinion:**<br><br>The activation procedures and processes are well documented and have been formally issued. |
| **Recommendation:**<br><br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 15 | EDL1<br>ETL2 | The Western Power business continuity plans are focussed on IT systems. Western Power should review their business continuity plans to ensure there is adequate focus on loss of facilities and personnel e.g pandemic plans for the control centres indicating minimum staffing levels to maintain safe operation of the system, total loss of the office facilities at Head Office etc. |
| **Western Power Management Action Stated in 2009 Report:**<br><br>Western Power will develop a comprehensive Business Continuity Management Implementation Plan. Its purpose will be to ensure a consistent and effective approach to the continuity of business activities during a major disruption.<br><br>1. Undertake a business impact assessment and prioritise business critical areas.<br><br>2. Conduct Division workshops to ascertain current business continuity plans and gaps.<br><br>3. Review and publish the Business Continuity Framework.<br><br>4. Training schedule developed and implemented<br><br>5. Review of testing and maintenance, identify gaps and implement changes. | | |
| **Western Power Stated Position at 2011 Audit:**<br><br>BCM Implementation Plan has been developed (DM# 6744874). BIA has been completed and business critical areas have been prioritised (DM# 6555356). | | |

| |
|---|
| **Evidence Provided:**<br><br>Operations Centre Instruction files for Distribution and Transmission including the contingency plans for natural disasters and asset failures. Backup Control Centre Activation procedure (BCC). NOCC and SOCC checklists for BCC activation. Business Continuity Management Exercise and Maintenance Schedule (DM#8288695).<br><br>Meetings have been undertaken with representatives from those Branches/Divisions with high risk processes. Gaps have been identified and minutes and follow up meetings have been documented (DM# 7411222, DM# 7415553, DM# 7539520, and DM# 6059353).<br><br>The Business Continuity Framework has been reviewed and approved by the F&RC. (DM#4734710)<br><br>BCT schedule for 2011/2012 has been developed. (DM#8288695 and DM#8336394)<br><br>BC schedule for exercise and maintenance has been developed. (DM#8362469) |
| **Author's Opinion:**<br><br>The requirements for exercising and maintaining the six critical Business Continuity Plans are detailed in Appendix 1 of the Business Continuity Management Exercise and Maintenance Schedule document and evidence of each test is documented in DM. The plans were reviewed and demonstrated that the previous finding had been adequately actioned. |
| **Recommendation:**<br><br>Finding Closed Out |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 16 | EDL1<br>ETL2 | Western Power should introduce financial plan predictions past the 5 year timeline of the Strategic Development Plan |
| **Western Power Management Action Stated in 2009 Report:**<br><br>Western Power will develop a strategy document which Includes financial planning/predictions past the 5 year timeline. This document will be submitted to the board for consideration. If endorsed it will be incorporated into normal business procedures. | | |

**Western Power Stated Position at 2011 Audit:**

The funding issue has now been identified (and recorded in CURA) as a key corporate risk, the process to address this is an on-going issue to be addressed as part of risk and debt management in the business. (CURA reference: Inadequate funding to meet our business needs R-000391)

The focus of the risk management strategies is on:

- Proactive and open engagement with DTF, OoE and other key Government stakeholders
- Agreeing the AA3 Funding Arrangement Process
- Continued evaluation of alternative funding opportunities.

Presentations to Finance and AA3 reference group & steering committee to enable common understanding on SDP 2010 and implications for Western Power and the AA3 submission. Analysis of financial position against credit ratios based on SDP expenditure also used to provide understanding of the current financial position.

**Evidence Provided:**

AA3, AA4 and AA5 financial program.

**Author's Opinion:**

While Western Power is not required to develop a financial plan beyond a five year timescale under the Department of Treasury and Financial budgetary processes and the Ministers requirements, the Treasury Branch have prepared financial plans out to 2027 for the access arrangement projections (AA3 to AA5) based on stakeholder input from Inservice and Operational Asset Management Branches development of the Investment Strategy and Asset Management Plans. The documents are evidence that Western Power is planning financial expenditure plans beyond the five years required by the Minister.

**Recommendation:**

Finding Closed Out.

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 17 | EDL1<br>ETL2 | Western Power should ensure that compliance education sessions are completed to schedule. Western Power should also ensure that records are kept of all training undertaken, e.g compliance |

| | | |
|---|---|---|
| | | and corporate risk training. |

**Western Power Management Action Stated in 2009 Report:**

1. Compliance presentations to non-SLO branches have been scheduled and will be completed by the end of the 2010 financial year.

2. The Risk & Compliance Branch maintains training records for all compliance courses (Trade Practices Act and five codes and regulations supporting Western Power's operating licences) available to staff. Attendance records for compliance presentations to the branches were always the responsibility of the relevant branch managers. However, from 01/01/2010, the Risk & Compliance Branch will also maintain attendance records in the corporate training database of all employees who have attended compliance presentations.

3. The Senior Risk Adviser will maintain training records in the corporate training database of all employees who have attended corporate risk training sessions.

**Western Power Stated Position at 2011 Audit:**

Delivery of compliance awareness presentations to the remaining parts of the business was prioritised as a KPI for the Compliance Adviser with a deadline of 30/06/2010. (DM#4683252)

Attendance records for compliance presentations to the branches have been set up within the Ellipse database system.

Eight training courses have been established in Ellipse. An attendance form has been developed for presentations. An agreement has been made that the Training Group will enter the names of those attending the various events. (DM# 6801122)

**Evidence Provided:**

Risk and Compliance Branch staff had provided information and training presentations on the compliance principles and corporate requirements to all staff. The sessions were completed in June 2010 and e-learning modules are available for new staff and refresher training for existing staff. Attendance records for selected sessions were reviewed and were recorded in the Ellipse training records.

**Author's Opinion:**

Risk and Compliance Branch provided evidence that Compliance training had been provided to staff, records of attendance were kept and the Ellipse training records were updated.

**Recommendation:**

Finding Closed Out.

| Finding No. | App Licence | Finding: |
|---|---|---|
| 18 | EDL1<br>ETL2 | Western Power should ensure that the review of technical standards is completed within the timelines indicated on the programme. |

**Western Power Management Action Stated in 2009 Report:**

Western Power will review and maintain a work plan for the review of specifications and standards on a regular basis. By June 2010, Western Power will have completed a full review of the transmission and distribution work plans, with allocation of regular review cycles, (review schedule for specifications and standards) the benefits of improved governance for the introduction of new technology and standards will be progressively delivered over the next 12 months through our Engineering Standards strategic initiative.

**Western Power Stated Position at 2011 Audit:**

The introduction of the Technology and Standards Governance (TASG) process DM#6173771 will ensure that effective controls are in place to govern the introduction of revisions to existing standards documentation, and the investigation and introduction of new technology. This process has been updated to include reference to Distribution and Transmission related activities.

The process is described in a presentation (DM#7412024). This process:

- Provides a framework and process which facilitates the prioritisation of the standards and policies work plan,
- Encourages introduction of technological innovation to the network,
- Clearly defines accountabilities and sets expectations for regular stakeholder engagement and documentation requirements, and
- Can be triggered by a request from inside the business or by external influences and stakeholders. Following initial assessment and development of project scope potential projects enter a project buffer until the required business resources can be made available.

Potential distribution standards and technology in the TASG project buffers are prioritised against criteria for organisational benefit and effort and business impact (DM#7241735) broadly in line with the Corporate Strategy, the Network Investment Strategy and the Corporate Risk Framework

Delivery of prioritised activities is managed using the Distribution work plan (DM#7542208). A similar Transmission work plan (DM#7214528) has been created and both reported against at a high level as part of Branch level performance reporting within DM#7290426.

Specific support resources from across the business were allocated for the review and development of standards as described in DM#7214528. Progress against these activities are regularly reviewed against budget and updated on a monthly basis with responsible areas. The original justification for these activities is included in DM#4532750.

The technology (specification) priorities are now managed within Transmission (DM#7949954) and Distribution (DM#7542208) to include

| |
|---|
| upstream and downstream processes including integration into the business.<br>As standards and specifications are updated the Technology and Standards Governance process ensures active consultation with Group Commercial to ensure specifications are not unnecessarily prescriptive. |
| **Evidence Provided:**<br>Engineering Standards - Technical Documents Refresh – Completion of Work Program 2010/11. Engineering Standards review and approval schedule (DM#8386274). |
| **Author's Opinion:**<br>Standards Policy and Data Quality Branch provided evidence that 62 of 80 (78%) Work Plans and 71 or 89 (80%) Technical Documents had been reviewed during 2010/11. Western Power had also introduced a risk assessment process to prioritise workloads and identify which documents could be deferred. The schedule of due dates for review and completion dates was included in DM#8386274. The document review tracking system facilitates reporting and management of the standards, specifications and manuals. |
| **Recommendation:**<br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 19 | EDL1<br>ETL2 | Western Power should ensure that the mapping of key processes on Holocentric is completed within project timescales. |
| **Western Power Management Action Stated in 2009 Report:**<br>A consistent approach to process modelling is being undertaken with identified processes being maintained within a business process repository (Holocentric Modelpedia). The repository when published will be available for access by anyone within Western Power with desktop access. The goal is to encourage the business to recognise their accountability in maintaining currency of the process diagrams, supporting work instructions and any related information; and to promote the value of having the entire organisation's business processes represented.<br>1. Create an implementation plan to promote business awareness of Holistic (business wide repository for process mapping) to all divisions of Western Power. This plan will include a schedule for the publishing of core operational end-to-end processes and will include support environment | | |

| |
|---|
| procedures and review cycles.<br>2. Deliver Holistic and the business awareness presentation to all levels and divisions of Western Power.<br>3. Publish core operational processes in Holistic. |
| **Western Power Stated Position at 2011 Audit:**<br>Created an Implementation Approach aimed at establishing a Business Process Management System (BPMS) across Western Power. The approach included establishing:<br>• Holocentric as the centralised process repository that is recognised by the business as the source of truth<br>• A governance model (defining process ownership and processes that support organisation change initiatives)<br>• A plan that enables the ongoing capture of current business processes into Holocentric<br>• A support framework to enable the business manage their own process on an ongoing basis (creating capability, establishing a process centre of excellence)<br>• Reporting to communicate progress to key stakeholders. |
| **Evidence Provided:**<br>Refer to section 4.1 above |
| **Author's Opinion:**<br>Refer to section 4.1 above |
| **Recommendation:**<br>Finding Closed Out. |

| **Finding No.** | **App Licence** | **Finding:** |
|---|---|---|
| 20 | EDL1 | Western Power should monitor the delivery of the bundled zone overhead inspection regime to ensure that overhead lines reach their next inspection cycle without any further major corrective |

| | | |
|---|---|---|
| | ETL2 | maintenance. |

**Western Power Management Action Stated in 2009 Report:**

Western Power will develop a report which, once work is completed, tracks on a regular basis by maintenance zone the amount of major corrective work required prior to the next inspection cycle. The results of this monitoring will be used to review the inspect/review process effectiveness and allow for improvements to be developed

**Western Power Stated Position at 2011 Audit:**

Western Power has developed and implemented various processes to manage and measure the effectiveness of bundled maintenance activities. This encompasses the whole process from inspection, categorisation, repair, refurbishment, replacement and the associated continuous improvement opportunities. Collectively the effectiveness process resides within the various processes for the identification and investigation of Asset Failures.

These processes can be found in DM documents:

- DM 6503276
- DM 7486283
- DM 7624612

An example of one of these processes (Poles) follows:-

A program of 4-yearly inspections is undertaken as required and defined within DM 1220966 - Catalogue of Maintenance Timescales.

The inspection program is delivered and managed by resources with clear responsibilities as defined within DM 6997711 - Quality Assurance Plan - Distribution Pole Inspection.

The inspection results are categorised and prioritised in line with the P1, P2, P3 etc as required and defined within the Catalogue of Equipment Types and Definitions of Condition Severities for Distribution Overhead Lines and entered into Distribution Facilities Management System (DFMS)

The reported conditions are then addressed under the appropriate OPEX or CAPEX programs.

When a Pole fails, the Process For Identification and Investigation of Unassisted Pole Failure DM 6503276 is used to assess whether the relevant processes have been implemented correctly.

The detailed investigation process including data collection, analysis, investigation and reporting is defined within DM 7467671 – Identification and Investigation of Unassisted Pole Failures

All Western power Investigation Reports are recorded by year in DM 6567791

Unassisted Pole Failure Investigation Report Spreadsheet.

Through this process Route Cause Analysis is used to identify the reason for the failure and appropriate corrective action whether that is due to incorrect application of process or a weakness in the process itself. A formal Report is produced as a result. Examples of outcomes are provided below :-

- A failure in the correct application of the inspection process – Investigation for pole failure at Southern Cross INCD – 1258090-m Pick ID 918915
- A failure to address Conditions correctly identified through inspection within the designated timeframe – Failure at 6255, LOC 2313 MOKERDILLUP RD [YG 0066-0002] BRIDGETOWN
- A continuous improvement opportunity to refine the process where a failure occurred despite the process having been applied correctly – A change required to (DM1220966) (Catalogue of Equipment Types and Definitions of Condition Severities for Distribution Overhead Lines) was made to incorporate additional requirements where there are multiple splits in poles.

Regular meetings take place between Network Performance and Programs of Work Integration to review and monitor the progress of actions raised during investigations and records kept within DM 6567791 Unassisted Pole Failure Investigation Report Spreadsheet.

The above process demostrates that Western power has the appropriate arrangements in place to both monitor and continuously improve the process that determines the effectiveness of the bundled zone overhead inspection regime.

**Evidence Provided:**

Wood Pole Inspection Procedure (DM#5449945).

**Author's Opinion:**

The requirements for condition assessment and classification of defects for non-pole assets is included in the Catalogue of Inspection Types and Definitions. The system for tracking and monitoring is included in DFMS reports and the unassisted pole failure analysis includes overhead asset failures. The current system is being expanded to include all pole asset failure root cause analysis.

**Recommendation:**

Finding Closed Out.

| Finding No. | App Licence | Finding: |
|---|---|---|
| 21 | EDL1<br>ETL2 | Western Power should ensure that the document review process is completed within stated timeframes and that a process is available for the ongoing review of documents. |

**Western Power Management Action Stated in 2009 Report:**

1. IKM to develop and deploy a corporate document control policy and procedure detailing Western Power document control requirements and standards.

2. IKM will develop and implement a document control program to manage key document registers across the business. Business managers will be responsible for ensuring adherence to the procedures and document register reviews under their control.

3. Western Power will prepare an Enterprise Content Management (ECM) Strategy. This should be finalised by the end of this financial year. This Strategy will incorporate a section on the business need for Document Control.

4. If ECM Strategy is endorsed in principal, a business case for document-centric workflow will be created and a pilot of Document Control in DM utilising the workflow tool will be completed.

5. Upon successful completion of the pilot the workflow tool with document control functionality will be purchased and an implementation plan created and rolled out across the business.

**Western Power Stated Position at 2011 Audit:**

IKM Information and Records Management Policy has been updated to include document control.

A Corporate wide Document Control Framework is in the process of being implemented right across the business.

Implementation of the Document Control audit procedures is in the process of being implemented across the business.

A master list that will contain a list of all WP document controllers and references to branch controlled document registers has been created and deployed to all WP Branch Manager. They have been requested to

- Nominate a Document Controller for their branch.
- The nominated officer then to ensure that a controlled document register has been created, populated and managed for the branch and the reference number provided to IKM.

An Enterprise Content Management (ECM) strategy has been developed. This document has been presented and discussed with the Business Reference Group. (DM#6866691).

| |
|---|
| **Evidence Provided:**<br><br>Minutes of Meeting, Branch Reference Group Meeting, 10 September 2010 (DM#4178320). Information and Record Management Policy (DM#3004344). Documents Control Program Framework (DM#7210971). Western Power Procedures Guidelines for Document Control (DM#6884554). |
| **Author's Opinion:**<br><br>Western Power's document controls systems and processes are well defined and staff are trained in their use. The process is aligned with Government document management and control systems guidance and has been extensively reviewed since the last AMSR report. Western Power's proposed introduction of an Enterprise Content Management system was considered at the Business Reference Group Meeting of 10 September 2010, but deferred until an upgrade of the DM system was implemented and evaluated. |
| **Recommendation:**<br><br>Finding Closed Out. |

# 6. Conclusions

The AMSR found that Western Power's asset management systems have improved over the review period of 1st November 2009 to 31 April 2011 for both the Distribution (ED1) and Transmission (ET2) licences. As the Authority's audit guidelines effectiveness assessment rating system had changed since the 2009 AMSR conducted by Lloyds Register, a direct comparison of the effectiveness rating scores is not possible. However, the previous report's commentary and the number of findings which have been closed out indicate that Western Power has improved since the previous asset management systems review.

The AMSR team were encouraged by the number of Western Power staff who gave willingly of their time, were well prepared to provide evidence to support their statements and knowledge of asset management systems both within Western Power and the developments in asset management across the electricity industry in Australia. The cultural change program based around "Transform the Core" appears to have had a positive impact on staff's attitudes to Western Power's business objectives and in the application of asset management principles.

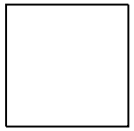
Western Power's data management systems are a combination of propriety products and in-house developed systems, which, while functional, are not fully integrated or automated. The project to integrate the various systems and introduction of the data warehouse reporting systems (Cognos) should make the task of conducting an effectiveness review more efficient in the future.

# 7. 2011 Post Audit Implementation Plan

| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| 11/01 | EDL1<br>ETL2 | Review the currency of all documents in the control centre instructions file, register all documents in DM and convert older documents to the current Western Power format and style. | Systems Management General Manager | 1. Link Document Review to KPI's.<br>2. Update Document Control Register with enhanced review dates.<br>3. Appoint SOCC Document Controller.<br>4. Confirm all key documentation is current, relevant and in DM. | October 2011<br>January 2012<br>February 2012.<br>March 2012. |
| 11/02 | EDL1<br>ETL2 | While the asset registers are up to date and complete, the accounting data (asset valuations) is captured in MIMS Ellipse, but not in the Asset Management systems at an asset level. Valuations are available at a project, network or system level. There is no automated updating function or data communication between the DFMS and Ellipse. The financial asset register is not linked to the Asset Management Systems to provide replacement values of assets. A separate system captures Fair Value of assets.<br>Western Power should evaluate how asset | Network Performance Branch Manager | Western Power's Finance Division (Finance) reached an agreement with the Department of Treasury and Finance (DTF) and the Office of the Auditor General (OAG) to use the Depreciated Replacement Cost (DRC) methodology to calculate Fair Value (FV) on the introduction of Whole of Government (WOG) reporting. DRC looks to FV the existing asset solution rather than interpose an asset solution that may be determined to be modern day equivalent (DORC). Finance perform a DRC every six months and supply this information to the DTF for the purposes of WOG reporting.<br>If the regulator or business decides to adopt a | December 2012 |

| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| | | valuation information (fair value) should be integrated between the Financial Asset Registers and the Asset Management systems to ensure that future lifecycle replacement costs can be predicted. | | DORC methodology, Finance will substitute the DRC FV data with DORC FV's.<br><br>Over the last 18 months, Finance has been rebuilding its financial Fixed Asset Register (FAR) to enable it to communicate with the Equipment Register (ER) under the Integrated Strategic Asset Management (ISAM) project. We have now delivered the electronic link and any physical asset changes in ER are automatically updated in the FAR. In the coming months, ISAM will have delivered the ability for data to also travel from the FAR to ER. When this is in place, DRC data will be available to asset management teams to use for decision making purposes (Graeme Fairley, December 2012). | |
| 11/03 | EDL1 | Continue with the Data Collection and Quality Program to all areas to achieve the target data KPI of 15 days. | Country Operations Branch Manager | 1. Western Power will install three in one scanner/copier/printers in country depots. These will reduce the time required to send data sheets from the depot to the data management team. Governance will also be put in place to ensure that all crews submit their paperwork in a timely manner.<br><br>2. Country Operations Branch will review | November 2011<br><br>November 2011 |

| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| | | | | stakeholders receiving field-to-office as-constructed timeliness reports and ensure all key stakeholders are included in the distribution list.<br><br>3. Country Operations Branch will Include a standard agenda item at meetings between Country Operations management team to discuss field-to-office as-constructed timeliness. Issues will be highlighted and managed through the minutes of meeting (Sarah Gourlay, December 2011).<br><br>4. Monthly reports will be reviewed to identify common areas of concern. This report will be reviewed by the Country Operations Branch management team on a monthly basis. (Dennis Smith, December 2011). | December 2011<br><br>December 2011 |
| 11/04 | EDL1<br>ETL2 | Revise the NOCC and SOCC BCC activation checklists to record that all checks were completed, issues and problems were identified and actioned, and the checklists are signed off. Records of all activation reports should be retained and be available for audit. | Systems Management General Manager | 1. Conduct a review of records to combine the best aspects of NOCC & SOCC Backup Control checklists where appropriate.<br><br>2. Revise procedures for conducting Back Up Control test checks to include a requirement that they are signed off on completion of noted action items and hard copies are filed on site. | December 2011<br><br>December 2011 |

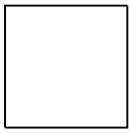


| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| 11/05 | EDL1<br>ETL2 | Western Power should record in a central system when contingency plans, other than the BCC activation, are exercised by NOCC and SOCC staff in DM. | Systems Management General Manager | 1. Identify the appropriate NOCC Work instructions that relate to contingency planning for the unexpected failure of an asset and aimed at minimising any significant disruption to service standards (Bill Dow, December 2011).<br>2. Develop a formalised approach for reviewing the effectiveness of processes related to events which could lead to potentially significant disruptions (L3) and maintain records of the reviews (Bill Dow, December 2011).<br>3. Development of a system of logging tests and events relating to significant disruptions which have occurred. (Matthew Kok, December 2011). | December 2011<br>December 2011<br>December 2011 |
| 11/06 | EDL1<br>ETL2 | Recommend that a project schedule should be developed to map out which of the processes should modelled and the target dates for publishing the approved process models. | Asset Management Systems Manager | 1. Western Power will develop a plan to model key processes for Handover, delivery and reporting against the OPEX/CAPEX works program which includes a high level scope, key milestones, resources and timelines for delivery.<br>2. Western Power will publish the processes within the timelines stated in the plan. | December 2011<br>As per the plan |
| | | | Compliance & Risk Branch | 1. Senior Risk Advisor will have the applicable software installed on her computer and be | November 2011 |

| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| | | | Manager | trained in its use (Irene Nutt, November 2011).<br>2. Develop a plan to model key risk management processes which includes a high level scope, key milestones, resources and timelines for delivery (Irene Nutt, December 2011).<br>3. Complete mapping project by applying the process mapping methodology (Irene Nutt, April 2012). | December 2011<br>April 2012 |
| | | | Network Investment Branch Manager | 1. Western Power will develop a plan to model the change control processes for the works program which includes a high level scope, key milestones, resources and timelines for delivery (Chris Gaskell, December 2011).<br>2. Western Power will publish the processes within the timelines stated in the plan (Chris Gaskell, TBA). | December 2011<br>As per the plan |
| 11/07 | EDL1 | Recommend that the Wood Pole Inspection Guidelines section on non-pole asset elements should be expanded to include the non-pole inspection information on what is to be inspected and the assessment measurement protocols within the one | Network Performance Branch Manager | At the next review of the Wood Pole Inspection Procedure (DM#: 5449945), Section 2.1.1 Basic Inspection Above Ground Line will be revised to enhance the scope, responsibilities with respect to inspection of non-pole asset (e.g. transformers, reclosers, pole top switches, fuses | February 2012 |

| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| | | document. | | etc).<br>This will include a clearer description of non-pole assets as well as a guideline to assist in identifying common conditions/defects impacting non-pole assets. | |
| 11/08 | EDL1 | Western Power need to address the differences in the data reporting processes between DFMS and the Alliance Contractor Performance, and maintain monthly records of the pole inspection rates that can be verified from DFMS and contractor's invoice claims. | Program & Works Integration Branch Manager | 1. Western Power will develop a monthly report which will compare actual distribution poles inspected against the records of poles inspected in DFMS.<br>2. Western Power will include a standard agenda item at weekly Program & Works Integration Branch meetings to discuss the report. Issues will be highlighted and managed through these meetings with resulting actions tracked in DM. | December 2011<br>December 2011 |
| 11/09 | EDL1 | Western Power should develop a standard report to track the condemnation date for P1 and P2 assessments against the new pole installation date to monitor their performance against the pole replacement timeliness targets. | Operational Asset Management Branch Manager | 1. Western Power will develop a monthly report which tracks the date poles were inspected against the date the pole is due to be replaced for P1 and P2 condemned poles. This report will track the poles which are not replaced within the replacement target dates.<br>2. Western Power will include a standard agenda item at meetings between key | December 2011<br>January 2012 |

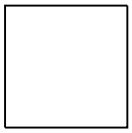
| Finding No. | Applicable License | Recommendation | Sponsor | Management Actions | Date for Completion |
|---|---|---|---|---|---|
| | | | | operational managers to discuss the report. Issues will be highlighted and managed through the minutes of meeting (Steve Bushby, January 2012). | |



# 8. Glossary of Terms

**Table 6 Acronyns and Abreviations**

| Term | Definition |
|---|---|
| AA2 | Access Arrangement No 2 |
| AMSR | Asset Management System Review |
| ARR | Asset Risk Register |
| AWP | Approved Works Program |
| BART | Business Asset Ranking Tool |
| BCC | Backup Control Centre |
| BPM | Business Process Modelling |
| BPMS | Business Process Management System |
| BRM | Business Resource Model |
| CAPEX | Capital Expenditure |
| Cognos | Business Intelligence Software System |
| CPI | Consumer Price Index |
| CT | Current Transformer |
| CURA | Risk Management Software Application |
| DAMP | Distribution Asset Management Plan |
| DFIS | Distribution Facilities Information System |
| DFMS | Distribution Facilities Management System |
| DM | Document Management System |
| DQM | Distribution Quotation Management (system) |
| EBS | Emergency Backup SCADA |
| ECM | Enterprise Content Management |
| EDL1 | Distribution Licence |
| ELLIPSE/MIMS | Enterprise Resource Planning System |
| ENMAC | Electricity Network Management and Control |
| EPWM | Enhance Planning and Works Management |
| ERA | Economic Regulation Authority |



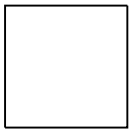
| Term | Definition |
|---|---|
| ETL2 | Transmission Licence |
| GIS | Geographical Information System |
| IEM | Investment Evaluation Model |
| ISAM | Integrated Strategic Asset Management |
| KPI | Key Performance Indicator |
| NOCC | Network Operations Control Centre (Distribution) |
| NPV | Net Present Value |
| OPEX | Operational Expenditure |
| PAIP | Post Audit Implementation Plan |
| PAS | Publicly Available Specification |
| PCB | Polychlorinated biphenyls |
| ProSight | Primavera Project Planning and Cost Control software |
| PTS | Power Training Services |
| RACE | Responsible, Accountable, Consulted and Informed |
| RMF | Risk Management Framework |
| SAIDI | System Average Interruption Duration Index |
| SAIFI | System Average Interruption Frequency Index |
| SLO | Significant Legislative Obligations |
| SOCC | System Operations Control Centre (Transmission) |
| SWIN | South West Interconnected Network |
| SWIS | South West Interconnected System |
| TAMP | Transmission Asset Management Plan |
| TCS | Trouble Call System |
| TIPD | Transmission Information Planning Database |
| TLS | Transmission Lines System |
| TPES | Transmission Protection Equipment System |
| TPMS | Transmission Plant Management System |
| TRIS | Transmission Ratings Information System |
| VT | Voltage Transformer |

Appendix A

# Documents and Data, Staff Interviewed

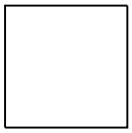
List of documents and data reviewed as evidence
List of Western Power staff interviewed

| Effectiveness Criteria: | Asset Planning |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Statement of Corporate Intent<br>Transform the Core<br>Asset Management Process DM #7733751<br>Asset Management Policy DM #7471555<br>Network Investment Strategy DM #7314528<br>Annual Planning Cycle Planning Calendar DM #7500617<br>Annual Planning Cycle Interpretation Guide DM #7389850<br>Distribution State of the Network Report DM #4752901<br>Distribution Asset Management Plan 2010/11 DM #3273896<br>Draft Network Management Plan DM #8007313<br>Process Flow from Estimating Centre Busbar Page<br>Catalogue of maintenance Timescales DM #3235127<br>Catalogue of Inspection Types and Definitions of Condition Severities for Distribution Substations DM #1200779<br>Catalogue of Inspection Types and Definitions of Condition Severities for Distribution Overhead Lines DM #1220966<br>Asset Mission - Overhead Conductors DM #5367080<br>Asset Strategy Carriers DM #8230533<br>Business Case for the Bushfire Mitigation "Wires-down" Program 2009/10 to 2011/12 DM #6937587<br>Conductor clashing caused by long spans and short cross arms One Page Risk DM #8164135<br>Overhead conductor failure in moderate and low fire risk areas DM #8163534<br>Overhead conductor failure in extreme and high fire risk areas DM #8163628<br>Replacement of Henley Cable Boxes BC DM #7026145<br>AWP 2011/12 Regulatory Breakdown DM #7914481<br>Business Case for Replacement of Overhead Customer Service Connections DM #6853443<br>Network Performance Org chart: DM #5001028<br>Network Performance profile<br>Corporate plan<br>Customer Services Division DM #6270366<br>Network Performance Branch DM #6213279<br>OPEX quarterly review with sponsors DM #6331907 | |



| |
|---|
| Agreement on Scope of Work, Budget and Delivery: DM #5443356 |
| Quarterly Report: Asset Performance: DM #5338092 |
| Pole top mitigation Strategy: DM #6085539 |
| Asset mission: HV fuses: DM #4563074 |
| Monthly KPI Performance report DM #3563456 |
| Transmission Asset Management plan DM #906804 |
| Network planning & Development Organisation chart: DM #4941337 |
| List – process flow charts, Load forecasts, System studies by load areas, Projects |
| BB 03 – Smart Planning, combined maintenance: DM #6366740 |
| Distribution Network Planning Manual: DM #5157004 |
| Metro & Country Regional Planning & development processes: DM #3771462 |
| Distribution Feeder Protection Settings policy: DM #927475 |
| Rural Distribution planning Criteria: DM #4880519 |
| A1 work flow |
| Quarterly Review DM #4189691 |
| Planning standards for country distribution capacity expansion projects: DM #4504167 |
| Planning standards for Metro distribution Capacity projects: DM #4489792 |
| Quality control plan: DM #6477769 |
| NFIT compliance summary |
| Project Initiation and Scoping: DM #3379150 |
| Long term planning – Distribution |
| Internal Relationship plan: DM #3649782 |
| Demand Management Business model: DM #6086009 |
| Memo for Business case approval: DM #3575760 |
| Asset management planning process: DM #3575760 |
| DAMP procedure |
| Network Planning and Development: Annual Planning Cycle EPWM process Project Development DM #8383151 |
| Annual Planning Cycle - Training Presentation DM #7522542 |
| Annual Planning Cycle Interpretation Guide (Scanned signed copy) DM #7668550 |
| 2010/11 Annual Planning Report |
| ERA Asset Management Review - interview information DM #8440498 |

| **Staff Interviewed** | | |
|---|---|---|
| Anesh Boodhram | Stu Green | Steven Disano |
| Dave Langdon | Andy Kondola | Douglas Thomson |



| | | |
|---|---|---|
| Roger Petit | Neil Chivers | |

| **Effectiveness Criteria:** | **Asset Creation/Acquisition** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |

Conductor Clashing Mitigation Strategy DM #6034312

Long Bay Business Case DM #6958306

Secondary Systems Engineering – Business Process Interconnections: DM #1954979

Field Protection Services – Commissioning process(Major Projects): DM #4752114

Field Protection Services – Commissioning process(Asset Replacements):DM #5184293

Appendix A – Process flow for Unplanned Plant Replacement: DM #5391004

Requesting an Archived Commissioning Project file: DM #4920658

Boulder – BLD/19_812.0 Circuit Breaker replacement checklist: DM #4920658

Program delivery Distribution projects – Portfolio report

We_n6049042_v4_metro_CAPEX_lifecycle_process_mapping_-_draft.ppt

Network Planning and Development: Annual Planning Cycle EPWM process Project Development DM #8383151

Annual Planning Cycle - Training Presentation DM #7522542

Annual Planning Cycle Interpretation Guide (Scanned signed copy) DM #7668550

2010/11 Annual Planning Report

Review and approval snapshot – Ellipse

Replacement of Terminal Power Transformers (Cannington Terminal) DM #6981419

AA2 replacement of Voltage Transformers DM #7062556

EPWM Training Manual DM #6236807

Works Program DM #3489385

Work Program Annual Submission Capital and Operating Expenditure DM #7440566

ERA Asset Management Review - interview information DM #8440498

Sawyers Valley Substation - Conversion from existing 66/22KVA to 132/22KV Operating Voltages - Project Definition Plan DM #3719623

Secondary Systems Engineering Branch DM #3965402

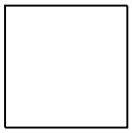
Sample Commissioning Jandakot DM #8206328, DM #8325232, DM #8368322

Sample Commissioning Balcatta DM #8373762, DM #8369812, DM #8322756

Sample Commissioning Kewdale DM #7926459, DM #7926430, DM #7339044

Sample Commissioning General DM #8398246, DM #8396624, DM #8388320

Working documents for MOWORKS to address missing pole data DM #7488651

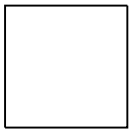


| |
|---|
| Full Metro DQM driven project status review DM #6764509 |
| Compliance Failure Reporting DM #4205081 |
| Business Continuity Management Framework DM #8391864 |
| Business Continuity Management Policy DM #5057127 |
| Quarterly Compliance Assurance Report DM #7504120 |
| Legislative and Regulatory Compliance Policy DM #3443054 |
| Internal Memo - Corporate Performance Report - February 2011 - Report is in Hardcopy only. DM #8032264 |
| Compliance Failure Notification Form DM #4104000 |
| Compliance - Quarterly Status Report - Quarter ending 31/03/2011 DM #8115447 |
| FPS - Field Protection Services Commissioning Work Instruction Manual - General and Structural DM #1135542 |
| FPS - Field Protection Services Commissioning Work Instruction Manual - Capacitor Banks DM #1139460 |
| MS Project Resources Scheduling |
| ERA Audit - July 2011 Commissioning Information |
| Kemerton 132KV Terminal - Protection Commissioning Results 2010 - Project T0269532 |
| Electrical Protection Commissioning - Kemerton - 330KV Works Associated with Binningup Desalination Project T0269532 |

| **Staff Interviewed** | | |
|---|---|---|
| Dave Langton | Al Edgar | Andy Kondola |
| Pandurang Jadhav | Brian Logue | Neil Chivers |
| Damon Tan | Peter Vasilio | Steven Disano |
| Roger Petit | Lauren Routledge | Douglas Thomson |

| **Effectiveness Criteria:** | **Asset Disposal** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |

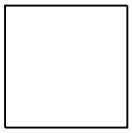
| **Audit trails and sources of evidence:** |
|---|
| Network Performance Org Chart DM #8377127 |
| Business Case for the Replacement of Expulsion Drop-out Fuses with Fire safe Fuses 2010/11 to 2011/12 #6946010 |
| Business Case - Replacement of EDOFs in ‘Low’ and ‘Medium’ fire Risk Areas DM #7063553 |
| Business Case - Overloaded Transformer Replacement Program AA2 DM #7329190 |
| Corporate Accounting - Asset Disposal Guidelines DM #2802557 |
| NP Asset Disposal Policy ( Titled "Policy Covering the Retention or Removal of Redundant Overhead or Underground Lines and Equipment") DM #2394227 |



| |
|---|
| Distribution Overhead Lines / Equipment Removal Request Form DM #7524783<br>Returned Primary plant form: DM #378785<br>ERA Governance Review – Distribution Transformer Upgrade: DM #5574605<br>Works Practices Manual: Section 6.3 DM #6143136<br>Network Planning and Development: Annual Planning Cycle EPWM process Project Development DM #8383151<br>Annual Planning Cycle - Training Presentation DM #7522542<br>Annual Planning Cycle Interpretation Guide (Scanned signed copy) DM #7668550<br>2010/11 Annual Planning Report<br>ERA Asset Management Review - interview information DM #8440498<br>Policy for Replacing Redundant Line DM #2394227<br>Disposal Policy DM #2802557 |

| **Staff Interviewed** | | |
|---|---|---|
| Dave Langdon | Roger Petit | Neil Chivers |
| Riaan Oosthuizen | Stu Green | Steven Disano |
| Chow Lam | Andy Kondola | Douglas Thomson |

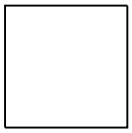
| **Effectiveness Criteria:** | **Environmental Analysis** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Network Planning and Development: Annual Planning Cycle EPWM process Project Development DM #8383151<br>Annual Planning Cycle - Training Presentation DM #7522542<br>Annual Planning Cycle Interpretation Guide (Scanned signed copy) DM #7668550<br>2010/11 Annual Planning Report<br>Fault causes that contribute the normalised unplanned SAIDI DM #6585812<br>Review of Network quality and Reliability of Supply Performance Reporting: Stantons International: DM #6484349<br>Annual Reliability Performance Report For The Public Minister: DM #6347745<br>Annual Reliability and Reporting Requirements To Regulator Process manual:<br>DM #3820607<br>SWIS Reliability Summary: DM #3973145<br>Process Document for the Metro targeted reliability reinforcement – first section | |



| |
|---|
| work: DM #4007911<br>Planned DA Manual Vol 1 – Preliminary Engineering for DAS internals: DM #4821333<br>Work Instruction – Detailed Feeder Analysis: DM #5149667<br>Compliance Failure Reporting DM #4205081<br>Business Continuity Management Framework DM #8391864<br>Business Continuity Management Policy DM #5057127<br>Quarterly Compliance Assurance Report DM #7504120<br>Legislative and Regulatory Compliance Policy DM #3443054<br>Internal Memo - Corporate Performance Report - February 2011 - Report is in Hardcopy only. DM #8032264<br>Compliance Failure Notification Form DM #4104000<br>Compliance - Quarterly Status Report - Quarter ending 31/03/2011 DM #8115447<br>Legislative & Regulatory Compliance Framework DM #3363640<br>Asset Condition & Performance Report (01Jan - 31 Mar2011) DM #5338092<br>State of the Transmission Network 30 Jun 09 DM #5439463 |

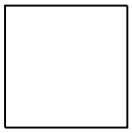
| **Staff Interviewed** | | |
|---|---|---|
| Aaron Gibbons<br>Andy Kondola<br>Neil Chivers | Steven Disano<br>Douglas Thomson | Kevin Chong<br>Ben Kraft |

| **Effectiveness Criteria:** | **Asset Operations** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Visit to SOCC and NOCC<br>Organisation structure<br>Training records – Scheduled Course assignment for Modules undertaken<br>Electrical System Safety procedures DM #6433267<br>Works Practices Manual: DM #6143136<br>NWI – 043 Network Operations, Backup Control centre Activation: DM #1994223<br>NOCC BUCC Trial Form: DM #2182759<br>Control Room Instructions Vol One & Vol Two<br>Transformer overloads procedure<br>Section 15.09 Changeover to & Operation of Emergency backup SCADA(EBS) Crisis Exercise 10 May | |



| | | |
|---|---|---|
| 2011 Report by Jim Truscott & Associates DM #8236545<br>Training Schedule NOCC Distribution DM #5169854<br>NOCC Control Room - Training Schedule and record of training DM #5422488<br>Competency Assessment Form DM #7100507<br>SOC Training Records DM #8482375<br>KPI Monthly Input Sheet for the Month of April 2011 | | |
| **Staff Interviewed** | | |
| Lewis Potterton<br>William Dow<br>Matthew Kok | Clayton James<br>Johan Jankowitz<br>Matthew Webb | Dean Sharafi<br>Zahra Jabiri<br>Vincent Tzvetkov |

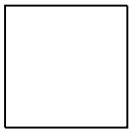
| | |
|---|---|
| **Effectiveness Criteria:** | **Asset Maintenance** |
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Maintenance criteria – Power transformers: DM #1045879<br>Asset mission tracker<br>Catalogue of Maintenance timescales: DM #3235127<br>Asset mission: Pole mounted Drop out fuses: DM #4510488<br>Risk ranking - projects<br>Agreement on Scope of works, budget and Delivery: Distribution Carrier: DM #5480892<br>Distribution Regulatory Compliance category CAPEX: DM #6071476<br>Distribution OPEX/CAPEX YTD Actuals vs Budget: DM #6184674<br>Transmission Maintenance program report<br>AWP Distribution report: DM #4997651<br>Unassisted failed pole report form: DM #2292347<br>Pole top fire report form: DM #2292347<br>Unassisted Wood Pole failure report for pick id 774652: DM #6592007<br>Pole top fire Mitigation strategy: DM #6085539<br>Internal relationship plan between CSD network performance and SDD Distribution Delivery: DM# 5189235<br>Energy Safety KPI details<br>Organisation Structure: DM #47011323<br>Planning Schedule: DM #4965797<br>Work Order Job Card: WO 02810084 | |



| |
|---|
| Work Order Job card: TW102481 |
| Work Order coding and Budgets: DM #3489385 |
| AWP Group Manager Report: DM #633453 |
| OPEX Tracker: DM #4965797 |
| Instruction Number 14 - Maintenance Categories with Account Codes and Maintenance Type Codes for Maintenance of Transmission Assets DM #365656 |
| Procedure for Reporting of Faults Raising of Work Request and Issuing Job Tickets - Instruction Number 5 DM #377730 |
| Networks Asset Management - Procedure for Obtaining Replacement Plant DM #381904 |
| Instruction Number 6 - Guidelines for Transmission Substation Maintenance DM #382063 |
| Asset Performance - Maintenance Responsibilities for Networks - Existing Transmission Assets DM #1044946 |
| Preventative Maintenance Policy DM #1045243 |
| Transmission Lines Maintenance Criteria DM #1045816 |
| Maintenance Criteria – Switchgear DM #1045858 |
| Power Transformer Maintenance Policy DM #1045879 |
| Maintenance Criteria - Power Transformers DM #1045879 |
| Maintenance Procedure Quality Verification Report Sheet DM # 1741522 |
| Battery Bank Profile DM #2083160 |
| Transformer Condition Scorecard DM #4384485 |
| Failure Modes and Root Cause Analysis - Clashing Conductors DM #5034312 |
| Summary of Pole Base Inspection Results DM #5067143 |
| Pole Inspection Results - Line KW-MSR 81 DM #5067143 |

| **Staff Interviewed** | | |
|---|---|---|
| Johan Jankowitz<br>Matthew Webb | Dean Sharafi<br>Zahra Jabiri | Vincent Tzvetkov |

| **Effectiveness Criteria:** | **Asset Management Information System** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| MS Excel_we_n6052577_v4_field_to_office<br>Field_to_office Timeliness report<br>Enmac vs GIS asset discrepancy report<br>Process to update the KPI Report | |

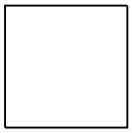


| |
|---|
| Monthly General Performance Report August/September: DM #3468707 |
| ERA Asset management Audit – Data Management Information Pack: DM #6540570 |
| Backup And Recovery: DM #2802665 |
| Tape Backup strategy: DM #2802497 |
| ERA Asset Management Audit – Data Management Information pack: DM #6540570 |
| Transmission Asset Management plan 2009/2010 to 2018/2019 |

| **Staff Interviewed** | | |
|---|---|---|
| Andy Neemann | Nicholas Howard | Peter Ridgewell |

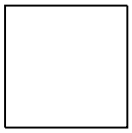
| **Effectiveness Criteria:** | **Risk Management** |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |

| **Audit trails and sources of evidence:** |
|---|
| Network Investment profile |
| Asset Management Policy DM #4286154 |
| Asset Risk Management Framework DM #6592239 |
| RMF/BART Risk Assessment Procedure DM #6592701 |
| CURA System |
| CURA Report Networks Division Risks - All Risks Overview (Mike) |
| Risk examples or Risk Per Page Report (Mike) |
| Network Performance Ranked Asset Risk Issues DM #6598662 |
| Network Performance Asset Risk Register DM #3528771 |
| Business Case for the Replacement of Distribution Carrier 2009/10 to 2011/12 in 'Moderate' and 'Low' Fire-Risk Zones DM #6876595 |
| BFM Wires Down Strategy DM #6724338 |
| Overhead Customer Service Connections Replacement One Page Risk DM #8169506 |
| Busbar Page |
| Doug's Space Archive |
| Twisties Article |
| ERA Determination |
| Risk Management policy: DM #3006290 |
| Risk Management framework: DM #3017083 |
| List of personnel trained in CURA/risk/Risk Management |
| Risk Management advisory group: DM #4022471 |



| | | |
|---|---|---|
| Corporate Risk assessment criteria: DM #3536273<br>Asset Risk Management Training Log: DM #6593411<br>Risk Assessment Matrix and Criteria DM #3341162<br>Quarterly Status Report: Risk Management - March 2011 DM #8058428 | | |
| **Staff Interviewed** | | |
| Michael Pover<br>Dave Langdon<br>Gareth Morris | Ian Hord<br>Margaret Pyrchla | Irene Nutt<br>Ruhi Bassari |

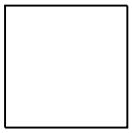
| | |
|---|---|
| **Effectiveness Criteria:** | **Contingency Planning** |
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Crisis Management Plan: DM #3022037<br>Business Continuity Plan Customer Service centre: DM #5439384<br>Business Continuity CSC Test Plan: DM #5518852<br>Crisis Exercise 10 May 2011 Report by Jim Truscott & Associates DM #8236545<br>Compliance Failure Reporting DM #4205081<br>Business Continuity Management Framework DM #8391864<br>Business Continuity Management Policy DM #5057127<br>Quarterly Compliance Assurance Report DM #7504120<br>Legislative and Regulatory Compliance Policy DM #3443054<br>Internal Memo - Corporate Performance Report - February 2011 - Report is in Hardcopy only. DM #8032264<br>Compliance Failure Notification Form DM #4104000<br>Compliance - Quarterly Status Report - Quarter ending 31/03/2011 DM #8115447<br>Sample SOC Training Records DM #8482375<br>SOC_Branch - Test of Backup Control Room at HO for 06Apr2011 DM #6874240<br>System Operations Control Room Instruction Manager DM #7695336<br>NWI-043 Network Operations - Backup Control Centre Activation DM #1994223<br>Back Up Control Centre Activation Report DM #2182759<br>Data Quality and Collection - Improve Tollgate Review Meeting - 18 Feb 2011 DM #7675800 | |



| Staff Interviewed | | |
|---|---|---|
| William Dow<br>Matthew Kok | Clayton James<br>Margaret Pyrchla | Ruhi Bassari |

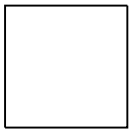
| Effectiveness Criteria: | Financial Planning |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Amended Proposed Revisions to the Access Arrangements for the South West Network owned by Western Power DM #6734262<br>Budget pack 2009/10 – 2013/14: DM #5217857<br>Corporate Performance Report June 2011 DM #7301034<br>Customer Services, Controllable Cost report<br>State Budget Process - High Level Overview DM #8408179<br>Strategic Development Plan: 2010/11 to 2014/15 DM #6627181 | |
| **Staff Interviewed** | |
| Dave Vielle<br>Tim Harris | Jane Wedgewood<br><br>Stephanie Lucas |

| Effectiveness Criteria: | Capital Expenditure Planning |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| AWP Holistic Process DM #6796971<br>AWP Distribution Report<br>AWP Group Manager Report (Transmission)<br>Distribution Production Plan DM #7563188 | |
| **Staff Interviewed** | |
| Raj Parmar | David Nairn |



| Effectiveness Criteria: | Review of AMS |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| NP Document Control Procedure DM #8399414<br>Network Performance Document Control Register DM #5015000<br>Network Performance Branch KPI procedure: DM #5487225<br>Network Performance Branch Monthly KPI report: DM #3563456<br>Network Performance - Controlled Document Register DM #5071059 | |
| **Staff Interviewed** | |
| Geoff Barnett | Ian Gibb |

| Effectiveness Criteria: | Wood Pole Management |
|---|---|
| **Applicable Licence(s):** | **EDL1, EDT2** |
| **Audit trails and sources of evidence:** | |
| Pole Inspection Results - Line KW-MSR 81, DM#5067143<br>Wood Pole Inspection Guidelines, DM#5449945<br>Pole Failure Data 2009/10, DM#5486723<br>Pole Failure Data for FY10/11 as extracted from TCS DM #7582329<br>Pole Based Inspection Program, DM#6804587<br>Wood Pole Management Plan 2010, DM#6811698<br>Raw Data on pole failures for 2009/10 as extracted from Enmac working spreadsheet. DM #6486723<br>Metadata summary - 400 randomly selected poles in swis inspected between 1/12/2009 to 30/04/2011 - data management audit 2011 DM #8444642<br>List - 400 randomly selected poles inspected between 01/12/2009 and 01/04/2011 - data management audit 2011 DM #8444661<br>Map - for data management audit DM #8444642<br>WR3426 Mobile Workforce Solution, Phase 1 Wood Pole Inspections, Requirements Specification, 11 Feb 2010, DM#6342396.<br>2008 Distribution Wood Pole Audit Review, Final Report May 2009<br>Wood Pole Management System: Regulatory Compliance Assessment, Detailed Technical Report, 20 October 2006, DM#4436854. | |



| |
|---|
| Energy Safety, Order No 01-2009, Investigation of Western Power's Wood Pole Management, DM#6648142 |
| Identification and Investigation of Unassisted Pole Failures, January 2009, DM#7467671 |
| Asset Condition and Performance Report, 01 January 2011 to 31 March 2011, DM#5338092 |
| Auspoles Investigation Report, DM#8366132 |
| Enmac Webview, Incident: INCD-1258090-m |
| Sample Records of failed poles as shown in DFMS, Report #7693519, 7356477, 7710650, 7710650, 7770054 and 7750603. |
| DFMS Condition Report samples, Pole 617247, 807033 and 90128, DM#8521799 |
| P1 Condition Management Process, April 2011, DM#8183266 |
| ERA Asset Management Review 2011, Additional Wood Pole Information, DM#8512301 |
| Jul 11 Pole Inspection Report |
| Bundled Pole Inspection Services 10/11, KPI Poles Inspected |
| Distribution CAPEX 2009/10, Distribution CAPEX Tracker |
| Process for Indentification and Investigation of Unassisted Pole Failures, DM#6503276 |
| Old TCS Registers, Condemned Poles. |
| Asset Data Report Metadata, DM#8444642 |
| Pole Inspection Extract Map, DM#8444636 |
| Pole inspection Extract from DFMS, DM#8444661 |
| Western Power's Wood Pole Management Systems: Regulatory Compliance Assessment. Detailed Technical Report, 20 October 2006 |
| 2008 Distribution Wood Pole Audit Review, A Review of Western Power's Response to the 2006 Regulatory Compliance Assessment of Western Power's Distribution Wood Pole Management Systems, May 2009, DM#7460018 |
| Energy Safety Order Number 01-2009, DM#6648142 |

| **Staff Interviewed** | | |
|---|---|---|
| Raghavendra Kulkarni | Eddie Kuek | Allan David |
| Anesh Boodhram | David Langdon | Roger Petit |
| Stu Green | Andy Neeman | Nick Howard |
| Will Wong | Steve Samuels | Allan Micherton |
| Sundy Tjhim | Ian Winks | Con Zaekis |
| Johan Jankowitz | Ian Gibbs | Geoff Barnett |

**GHD**

GHD House, 239 Adelaide Tce. Perth, WA 6004
P.O. Box 3106, Perth WA 6832
T: 61 8 6222 8222  F: 61 8 6222 8555  E: permail@ghd.com.au



**Document Status**

| Rev No. | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| 0 | M Bourhill | N McKendry | Original Signed | N McKendry | Original Signed | 14/8/11 |
| 1 | M Bourhill | N McKendry | Original Signed | N McKendry | Original Signed | 07/10/11 |
| 2 | M Bourhill | N McKendry | Original Signed | N McKendry | Original Signed | 21/10/11 |
| | | | | | | |