Asset Management System

ERA Assessment Report

Report for:	Western Power Corporation
LR ref:	1660006
Assessment dates:	26th May – 6th June 2008
Assessment location:	Perth Western Australia
Assessment criteria:	ERA Audit Guidelines: Electricity, Gas and Water Licences
Assessment team:	Peter Glaholm (80 hours)
LR office:	6th Floor, The Fawkner Centre 499 St Kilda Road Melbourne, Victoria 3004

	Name	Signature	Date
Auditor	Peter Glaholm		1/10/08
Reviewer	Terry Askeland		1/10/08
Auditee	Geoff Barnett		1/10/08

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1. Executive Summary

Assessment outcome of the ETL2 and EDL1:

A requirement of both the Transmission Licence ET2 and the Distribution Licence EDL1 is that the asset management system is audited for effectiveness every 24 months. This report investigates the effectiveness of Western Power's asset management system during the period 30th March 2006 to 31st March 2008. Western Power became a separate entity following desegregation from the generation and supply businesses in April 2006. This is therefore the first asset management report.

Generally it is felt that the Western Power asset management system, which is applicable to both the transmission (ETL2) and distribution (EDL1) systems, is effective and, in some areas, aligned with good industry practice. The Network Performance Branch of the Customer Services division (the Asset Managers) has modelled the asset system on the requirements of PAS55-1 Specification for the optimized management of physical infrastructure assets. This is in line with global best practice as PAS55-1 is being adopted by asset intensive business around the world especially in the utilities sector. An Asset Management Policy is available detailing the high level requirements from the asset management system and that this policy was aligned with other organisational policies.

Initially 3 divisions had been established aimed at asset management and works delivery, but these had since been consolidated into 2 divisions, Customer Service (with specific asset management responsibilities) and Service Delivery (to deliver the Works Programme). It was apparent during this assessment that there were still some confusion amongst staff as to their specific roles and responsibilities within the various processes. This is understandable given the amount of change undergone by the business in a short period. It was also apparent that numerous initiatives were underway and whilst each of these initiatives was seen to be worthwhile, Western Power would benefit from prioritising the various initiatives so that they can get the best business outcome without staff being subject to 'initiative overload'.

As required by the ERA Audit Guidelines: Electricity, Gas and Water Licences, 12 elements of the asset management system have been rated for effectiveness based on the rating scale given in Section 7.4.2 Table 3 of the above guidelines. It should be understood that these ratings are based on the system and processes in place during the period of this audit. It was evident throughout this audit that Western Power are refining and improving their processes and the movement between the end of March and the time of audit was considerable in some areas. Therefore this audit should be taken as a baseline for future audits whereby significant improvements would be expected.

Throughout the assessment Western Power staff co-operated fully and positively with the ERA Auditor. Full details of the interviews undertaken and the outcome of the assessment are given in the main body of the report.

Areas for management attention.

Recommendations have been detailed in the Findings Log at the back of this report however the following are considered to be key areas for management attention:

Western Power has recently undergone an intensive period of change. A period of stability would allow staff to better understand their roles and responsibilities.

Asset lives, in some cases, have been extended due to increased knowledge of the system indicating that assets are capable of lasting longer than theoretical mean time to failure. This methodology has the potential to cause resource/funding problems in the future as many assets will reach the extended end of life together. However it is likely that some assets will fail before this extended end of life as failures will generally occur around the mean time to failure. This could substantially increase operational expenditure. Therefore, especially for Distribution assets, it is important that good condition information is also available to complement the age profile data such that more informed decisions can be made for feeding into the capital expenditure budgeting process. This will inevitably mean, to maintain an acceptable level of system reliability, an increase in capital expenditure budget will be required. Western Power should ensure that accurate condition information is being collected on its assets.

Process mapping: It is evident that there is a lack of understanding of key processes within Western Power. This has been evidenced in various areas such as issue of work programs, implementation of new requirement (e.g. bundled pole inspections) etc. Whilst it is recognised that work is ongoing to rectify this in some areas, priority should be given to mapping key processes. This mapping should include roles and responsibilities, inputs and outputs from the various stages of the process, reporting requirements etc. Whilst all processes will benefit from this mapping it is recommended that it should be undertaken on a priority basis with those processes which are key to delivering Western Power's requirements. These should include:

- The development, handover, delivery and reporting of the Capital Expenditure works programme
- The development, handover, delivery and reporting of the Operational Expenditure works programme.
- The change control process for both Capital Expenditure and Operating Expenditure works programmes.
- The risk management framework

The mapping of these processes will also ensure that staff is aware of their responsibilities and that the new business structure is accurately detailed.

Document Review: Following the recent changes many documents refer to the previous 3 divisional structure and in some cases the structure prior to desegregation. These documents should be reviewed and updated to the new structure but again this should be done on a prioritised basis with those documents associated with the key processes detailed above being reviewed first.

This report is an accurate presentation of the reviewer's findings and opinions.

Recommended Changes to Licences EDL1 and ETL2

In both Distribution Licence EDL1 and Transmission Licence ETL2, the definition of the distribution system and transmission system is as follows:

Distribution system is described in Schedule 1 and means any apparatus, equipment, plant or buildings used, or to be used, for, or in connection with, the transportation of *electricity* at nominal voltages of less than 66kV.

Transmission system is described in Schedule 1 and means any apparatus, equipment, plant or buildings used, or to be used, for, or in connection with, the transportation of *electricity* at nominal voltages of 66kV and higher.

As part of this audit it is apparent that these definitions are not strictly accurate. The split between the transmission and distribution assets is actually at the lower voltage outgoing feeders from zone substations. This means that transmission assets include the lower voltage switchgear in zone substations which can be at voltages down to 6.6kv.

It is recommended that both the Transmission and Distribution Licences are amended to reflect this. Alternatively Western Power could consider realigning the business to reflect the existing licence definitions.

2. Assessment Summary

2.1 Introduction

This audit was commissioned to provide to the licensee, an Asset management System Review report (for licences EDL1 And ETL2), as required under Section 14 of the Electricity Industry Act 2004, reporting on the effectiveness of the asset management systems for both licences.

2.2 Scope of Assessment

The assets owned and operated by Western Power in relation to distribution licence EDL1 and Transmission Licence ETL2.

2.3 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.

2.4 Opening Meeting and Overview

The auditor was presented with an overview of the Western Power structure. Western Power had become a separate entity following desegregation from the generation and supply businesses in April 2006. Initially 3 divisions had been established aimed at asset management and works delivery, but these had since been consolidated into 2 divisions, Customer Service (with specific asset management responsibilities) and Service Delivery (to deliver the Works Programme). Western Power is responsible for the electrical transmission and distribution networks connected to the SWIS, South West Interconnected System.

2.5 Confidentiality Statement

None of the information gathered by Lloyd's Register Asia, about the organization, including the contents of reports, will be disclosed to any other party without Western Power's written consent. The ERA (Authority) will be publishing the final report on its website.

3. ERA Criteria: Assessment Findings

Asset Management Effectiveness Summary

An outline of the key findings against the ERA's twelve review areas, including both transmission and distribution, is presented below: further details are provided in the following sections. Unless specifically stated all findings relate to both the Distribution (EDL1) and Transmission (ETL2) Licences.

LICENCE EDL1

ASSET MANAGEMENT SYSTEM	Not performed	Performed informally	Planned and tracked	Well defined	Quantitatively controlled	Continuously improving
Process Effectiveness rating	0	1	2	3	4	5
Asset planning			X			
Asset creation/ acquisition				X		
Asset disposal			X			
Environmental analysis				X		
Asset operations			X			
Asset maintenance			X			
Asset Management Information System			X			
Risk management				X		
Contingency planning				X		
Financial planning					X	
Capital expenditure planning			X			
Review of AMS			X			

LICENCE ETL2”

ASSET MANAGEMENT SYSTEM	Not performed	Performed informally	Planned and tracked	Well defined	Quantitatively controlled	Continuously improving
Process Effectiveness rating	0	1	2	3	4	5
Asset planning			X			
Asset creation/ acquisition				X		
Asset disposal			X			
Environmental analysis				X		
Asset operations				X		
Asset maintenance				X		
Asset Management Information System				X		
Risk management				X		
Contingency planning				X		
Financial planning					X	
Capital expenditure planning			X			
Review of AMS			X			

Asset Management Risk Control Summary

Distribution Licence EDL1

ASSET MANAGEMENT SYSTEM	Consequence	Likelihood	Inherent risk rating	Adequacy of existing controls	Audit Priority
	Minor Moderate Major	Likely Probable Unlikely	Low Medium High	Strong Moderate Weak	1 - 5
Asset planning	Moderate	Probable	Medium	Moderate	3
Asset creation/ acquisition	Moderate	Unlikely	Medium	Strong	4
Asset disposal	Minor	Unlikely	Low	Strong	5
Environmental analysis	Moderate	Probable	Medium	Moderate	3
Asset operations	Major	Unlikely	High	Strong	1
Asset maintenance	Moderate	Probable	Medium	Moderate	3
Asset Management Information System	Minor	Unlikely	Low	Moderate	4
Risk management	Moderate	Probable	Medium	Moderate	3
Contingency planning	Moderate	Probable	Medium	Moderate	3
Financial planning	Moderate	Probable	Medium	Moderate	3
Capital expenditure planning	Major	Unlikely	High	Moderate	1
Review of AMS	Minor	Probable	Low	Moderate	4

Transmission Licence ETL2

ASSET MANAGEMENT SYSTEM	Consequence	Likelihood	Inherent risk rating	Adequacy of existing controls	Audit Priority
	Minor Moderate Major	Likely Probable Unlikely	Low Medium High	Strong Moderate Weak	1 - 5
Asset planning	Moderate	Probable	Medium	Moderate	3
Asset creation/ acquisition	Moderate	Unlikely	Medium	Strong	4
Asset disposal	Minor	Unlikely	Low	Strong	5
Environmental analysis	Moderate	Probable	Medium	Moderate	3
Asset operations	Major	Unlikely	High	Strong	2
Asset maintenance	Major	Unlikely	High	Moderate	1
Asset Management Information System	Minor	Unlikely	Low	Moderate	4
Risk management	Moderate	Probable	Medium	Moderate	3
Contingency planning	Major	Unlikely	High	Strong	2
Financial planning	Moderate	Probable	Medium	Moderate	3
Capital expenditure planning	Major	Unlikely	High	Moderate	1
Review of AMS	Minor	Probable	Low	Moderate	4

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 relates to both ETL2 and EDL1.

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.

Effectiveness criteria	Review approach	Audit Findings for ETL2 and EDL1	Risk Controls
Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Assess the adequacy of the asset planning process	Asset Plans are prepared by Western Power. Asset Missions (life cycle costing and asset performance requirements) exist for specific assets, and Asset Management Plans for Transmission and Distribution assets are prepared annually. Comments are sought from all stakeholders on an annual basis on the draft Transmission Asset Management Plan and the Distribution Asset Management Plans. Annual planning reports are presented annually to the ERA and industry forums for feedback and comment.	Adequate

Effectiveness criteria	Review approach	Audit Findings for ETL2 and EDL1	Risk Controls
Service levels are defined Non-asset options (e.g. demand management) are considered	Assess the adequacy of the asset management plan Assess whether the asset management plan is up-to-date and implemented in practice	Service levels are defined in the corporate strategy and customer charters. The implementation of the asset management plan is reflected in the annual works program that requires delivery by Services Delivery. The prioritisation of work is not optimised; however the introduction of the Investment Optimisation Planning Tool should assist this. There is a significant backlog in both capital expenditure and operational expenditure that requires management. Resource problems are being remedied by Alliances, but unlikely to have little impact until 08/09. Non asset solutions such as embedded generation and demand side management are now being considered, and where appropriate, implemented.	Good

.	Assess whether the plan clearly assigns responsibilities and whether these have been applied in practice	Western Power has recently undergone a structural re-organisation. The staff appears aware of their responsibilities, but this is not consistently reflected in the documentation, policies and procedures evident within Western Power.	Adequate
Lifecycle costs of owning and operating assets are assessed		Lifecycle costing is assessed in the Business Case process.	Adequate
Funding options are evaluated Costs are justified and cost drivers identified		All projects undergo an optioneering process. The various options consider various cost drivers, the implications and cost justification. Options and costing are available in the business case proposals.	Good
Likelihood and consequences of asset failure are predicted		The Business Asset Ranking Tool (BART) process is being introduced which will formally address this area.	Adequate
Plans are regularly reviewed and updated		The Asset Management Plans are produced annually. This is translated to delivery by the Works Program. The Works Program is formally reviewed via two governance meetings, the Works Program Committee and the Program Performance Committee. A formal change control process is in place but has been changed recently which had led to some confusion and a delay in approving changes.	Adequate

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	Assess the adequacy of policies and procedures covering the creation and acquisition of assets	Guidelines exist for the preparation of Business Cases, ensuring a consistent approach to the underpinning methodology. Excel based models are used to calculate lifecycle costings on a NPV basis. Non asset solutions such as embedded generation and demand side management are now being considered, and where appropriate, implemented. Whilst consideration is given to non-asset solutions on both the transmission and distribution systems, it is currently prevalent in the Distribution Country zone.	Good
Evaluations include all life-cycle costs	Select a sample of creations/ acquisitions over the review period and confirm that adequate procedures have been followed and actual costs are as predicted	Several projects were examined and it was noted that optioneering is undertaken examining the various solutions to a problem. Each option is costed and, as part of this costing, life cycle costs are evaluated.	Good

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Projects reflect sound engineering and business decisions		Projects are generated from the Asset Management Plans and Annual Planning Report covering current asset condition and network capacity issues respectively. This provides the engineering basis for the works. Business justification is assured through the Business Case process required before specific projects are approved.	Good
Commissioning tests are documented and completed		Handover certificates are prepared for all newly commissioned equipment: copies are kept by the Operational Control Centre. The Handover certificates include protection levels and any outstanding defects.	Adequate
Ongoing legal/environmental / safety obligations of the asset owner are assigned and understood		Legal obligations are monitored by the Compliance section. Environmental obligations by Environmental Land Management Services. Occupational Health and Safety is monitored by the Occupational Health Safety section. All staff are trained in their obligations in this area.	Good

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Under-utilised and under-performing assets are identified as part of a regular systematic review process	Assess the adequacy of policies and procedures covering the identification of under-performing assets, disposal of assets and replacement strategy	Transformer and line loadings are reviewed annually to identify areas requiring reinforcement. Condition and performance is monitored and information used in the Transmission Investment Planning Database and Distribution Asset Management Plan database. Performance and condition information is much better in transmission. Underutilisation is typically not an issue due to the growth being experienced on the network. The focus of Western Power's Asset Management Plan is to reduce utilisation in line with the technical code requirements.	Adequate
The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Determine whether a regular review of the usefulness of assets is performed	Poor performance is monitored by the Reliability Section and corrective action taken when necessary	Adequate
Disposal alternatives are evaluated	Select a sample of disposals over the review period and confirm	The auditor is unable to comment on Asset Disposal as during the course of the	N/A

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
	that adequate procedures have been followed	assessment, no disposal issues were evident due to under-utilisation. In fact, Western Power's network is under-going considerable expansion: in the past five years, trended forecast capacity has been increased four times. Where asset have been disposed of due to end of life/fault, adequate procedures have been followed.	
There is a replacement strategy for assets		Replacement strategies are available for all asset types in transmission and distribution. It was noted that for the period of this audit, the Distribution Asset Management Plan outlines overall life expectancy based on age profile with little condition assessment included. It was also evident that, in most cases, the asset lives have been extended and that this has the effect of moving their expected replacement date into the future (in most cases 15-20 years). This methodology has the potential to cause resource/funding problems in the future as many assets will reach the expected end of life together. However it is likely that many assets will fail before this extended end of life which could substantially increase operational expenditure.	Adequate

3.4 Environmental Planning

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Opportunities and threats in the system environment are assessed	Review achievement of performance and service standards over the audit period	Opportunities and threats are identified as part of the risk management process and corrective action is taken by adjusting the works program. Performance and service standards are monitored and reported monthly internally and annually to the ERA. The ERA will then produce an annual performance report.	Adequate
Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved	Investigate any breaches and assess corrective action taken	Investigations into poor performance are conducted by the Network Reliability Branch. Corrective action is taken when the network is found to be outside of performance standards, e.g. voltage limits. Standards are set for rectification of problems and these are measured and reported on.	Good
Compliance with statutory and regulatory requirements	Investigate any breaches and assess corrective action taken	Western Power has developed a legal and regulatory compliance database in conjunction with Mallesons Stephen Jacques. This database was interrogated and found to be very	Good

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		comprehensive and well managed. The database include a risk assessment of impacts should a breach of statutory or regulatory requirements occur.	
Achievement of customer service levels	Review the adequacy of reporting and monitoring tools	Reporting is carried out by the Network Reliability (section within Network Performance Branch). Data from the Trouble Call Management System is validated using the Reliability Data Validation tool. This process was investigated and found to be robust.	Good

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

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Operational policies and procedures are documented and linked to service levels required	Assess the adequacy of policies and procedures covering operations functions	The Network Operations Control Centre is accredited to ISO9001. Key policies and procedures as required by ISO9001 are documented and held on Document Management System. A sample of these policies and procedures were reviewed and found to be appropriate and adequate. All operational activities that could take over 4hrs to return to service require a contingency plan to be prepared.	Adequate
Risk management is applied to prioritise operations tasks	Assess the adequacy of staff resourcing and training	All control room staff are trained as Switching Operators and are certified as such, receiving biannual refresher. Records of that training are kept by Operational Control Centre managers. In the field, vocational qualifications have been introduced with a linesperson requiring Cert3. Training is in	Adequate

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		hand for existing staff, with over 100 staff receiving gap training in the past year. With the planned growth in capital expenditure, there remains concern over the adequacy of resources to deliver the planned works especially commissioning personnel.	
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	Confirm the policies and procedures have been followed during the review period by testing of asset register, observation of operational procedures, analysis of costs, etc	For distribution assets, key asset data is held between the Distribution Facilities Management System and Distribution Facilities Information System). The Distribution Facilities Information System is a Geographical Information System. The transmission database, Transmission Investment Planning Tool, downloads its information via the data warehouse from parent databases, Transmission Plant Management System, Transmission Lines System, and Transmission Protection Equipment System and Transmission Ratings Information System. Asset data includes information on asset type, location, components, recent inspections and defects. Remaining life, replacement costs data are held in Distribution and Transmission Asset Management Plan database.	Adequate
Operational costs are measured and monitored	Assess the significance of exceptions identified and whether adequate corrective action has been taken	Monthly operational expenditure reports are produced and reviewed against budget. There was a significant backlog in pole inspections; corrective action has been taken by modifying the	Adequate

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		inspection process. It was not possible to fully assess the effective of this new process but indications appear to show that the situation is improving.	
Staff receive training commensurate with their responsibilities	Assess the significance of exceptions identified and whether adequate corrective action has been taken	Additionally, operational staff has access to a number of manuals providing guidance on key operational activities. The Switchgear Instruction Manual was viewed and appeared an excellent tool	Adequate

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

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Maintenance policies and procedures are documented and linked to service levels required	Assess the adequacy of policies and procedures covering maintenance functions	During the assessment, the auditor reviewed a number of maintenance documents which provide the required link to service levels. Generally, the maintenance arrangements appeared adequate and in line with industry norms. It was noted that maintenance policies do not have a set review period.	Adequate
Regular inspections are undertaken of asset performance and condition	Confirm the policies and procedures have been followed during the review period by testing of maintenance schedules, analysis of costs, etc	Asset lives, in some cases, have been extended due to increased knowledge of the system indicating that assets are capable of lasting longer than theoretical mean time to failure. This methodology has the potential to cause resource/funding problems in the future as many assets will reach the extended end of life together. However it is likely that some assets will fail before this extended end of life as failures will generally occur around the	Requires improvement

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		mean time to failure. This could substantially increase operational expenditure. Therefore, especially for Distribution assets, it is important that good condition information is also available to complement the age profile data such that more informed decisions can be made for feeding into the capital expenditure budgeting process. This will inevitably mean, to maintain an acceptable level of system reliability, an increase in capital expenditure budget will be required. Although regular inspections of the assets are undertaken, it was noted that d1uring the period of the audit condition information especially on the Distribution System has been insufficient.	
Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Assess the significance of exceptions identified and whether adequate corrective action has been taken	Maintenance activities for the Distribution assets are recorded and work orders created by MIMS Ellipse: an industry standard package that enables maintenance planning and review. Backlogs in preventative maintenance do exist and that these require to be managed. This is not an unusual situation for asset intensive industries such as Western Power.	Adequate

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		Asset Missions are being developed for WP's assets that are in effect a maintenance strategy.	
Failures are analysed and operational/maintenance plans adjusted where necessary		Throughout the audit period, failures in both the Transmission and Distribution systems were analysed by Network Performance and, where required, policies amended.	Adequate
Risk management is applied to prioritise maintenance tasks		For the period of the audit, risk management processes are not evident in the prioritisation of maintenance tasks. It is apparent that engineering judgement is applied, and this can be a pragmatic way to deal with risk providing justifications are documented and subjected to appropriate peer review. There were examples of risk assessments: the catalogues of asset condition defined severity levels of defects and maximum periods for rectification. It was stated that maintenance activities will form part of the risk management process for the 08/09 work programme.	Requires improvement
Maintenance costs are		As stated previously operational	Adequate

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
measured and monitored		expenditure costs are monitored and reported monthly	

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Adequate system documentation for users and IT operators Input controls include appropriate verification and validation of data entered into the system Logical security access controls appear adequate, such as passwords Physical security access controls appear adequate Data backup procedures appear adequate	Assess the adequacy of policies and procedures covering the general control and security of the computer systems used to provide management information on service standards/licence obligations	Measures are in place to verify the accuracy of data entered onto the various databases. However the measures around the timeliness of data received from the field need to be improved. Access to the key asset information systems is by user name / password. Most users had read only access: the ability to alter source data was limited to specific users who had password protection to their accounts. Document access controls are very well executed and maintained throughout the document management system. Data backup is in line with Western Power corporate Information Technology requirements, which have a contract with KAZ for disaster recovery.	Requires Improvements Good Good
Key computations related to licensee performance reporting are materially accurate	Confirm that management reports on service standards/licence obligations are	The Reliability Data Validation process reviews raw data from the Trouble Call Management System before it is converted	Good

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Management reports appear adequate for the licensee to monitor licence obligations	being reviewed and significant exceptions to service standards are promptly followed up and actioned.	into Western Power's Key Performance Indicator's of System Average Interruption Duration Index etc. The process of Reliability Data Validation was examined and is subject to managerial review before data changes are made. Records are kept of changes made enabling independent review, if required. Monthly performance reports are prepared illustrating trends in Key Performance Indicator's and causal factors influencing them. Sample line charts and pie charts were viewed. Reports are prepared for regulators, senior management and distribution within Western Power. Sample reports were reviewed and found to be adequate.	

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

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	Assess the adequacy of policies and procedures covering risk management and contingency planning	Western Power has introduced new risk management processes under the risk management framework. The risk management policy and framework is available on the Document Management System. The CURA risk database system has been introduced to enhance the application of the corporate and business unit risk registers.	Adequate
Risks are documented in a risk register and treatment plans are actioned and monitored	Assess whether the risk management policies and procedures have been applied in practice	The corporate risk management framework has been applied across all divisions. Whilst risks have been documented and actions recorded, the formal review of treatment plans needs to be better documented on CURA.	Adequate
The probability and consequences of asset failure are regularly assessed	Assess the adequacy of staff understanding and training on risk management	All asset risks are rated initially using the Risk Management Framework (RMF), then for those risks rated Medium or Low the Business Asset Ranking Tool was utilised to further prioritise and rank the risks. It was stated that it is intended to eventually to use the Business Asset Ranking Tool methodology for those risks rated Extreme and High to allow further	Adequate

		prioritisation to be undertaken. Consequence of asset failure is considered as part of the BART methodology and where necessary asset missions updated.	

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Determine whether contingency plans have been developed and are current	Contingency plans are available within Western Power and are held on the Document Management System. A Contingency Plan for IT services was viewed and found to be acceptable and tested.	Good
	Determine whether contingency plans have been tested. If so, review the results to confirm that any improvements identified have been actioned.	A Contingency Plan for the failure of critical transformers exists, with mobile 132kV and 66kV transformers. These transformers have been used in real situations successfully, indicating that the process is practicable and feasible. In addition, as part of contingency testing, a rapid response transformer had been transported to each site to ensure that access was adequate Contingency Plans for Network Operation Control Centre and System Operation Control Centre outage exist and procedures state that these should be regularly	Good Requires Improvement

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		tested, however for various reasons these had fallen behind schedule and should be reinstated. The level of contingency planning is considered appropriate and line with industry norms.	

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

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
The financial plan states the financial objectives and strategies and actions to achieve the objectives	Obtain an understanding of the financial planning, budgeting and reporting process and assess its effectiveness	The process for financial planning is now well established. Following desegregation the reporting process was inadequate but this has now been streamlined using the Mosaic system which automatically produces accurate management information. This process was examined and found to be effective.	Good
The financial plan identifies the source of funds for capital expenditure and recurrent costs The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) The financial plan provide firm predictions on income for the next five years and reasonable	Obtain a copy of the current financial plan (including budget/actual) and assess whether the process is being followed to meet effectiveness criteria	A copy of the March 08 Mosaic report was made available and examined. This report accurately reflected the quarterly report to the Minister of Energy. The accounting process is externally audited annually. The five year Strategic Development Plan and one year Statement of Corporate Intent are produced in December. 5 year proforma financial	Good

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
indicative predictions beyond this period The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary		statements are done, plus 5 year predictions are detailed in the Asset Management Plan and Network Performance Report. The Financial Plan covers both capital and operational expenditure and identifies various sources of funding. Any variances are reported to the Board on a monthly basis and corrective action, where required was undertaken. Action was taken in accordance with the governance structure of the Program Performance Committee and Works Program Committee.	

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

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Obtain an understanding of the capital expenditure planning process and assess its effectiveness	The capital expenditure process provides a 10 year forecast of expenditure for Board approval. Contributions to the plan are split between Transmission and Distribution assets. The Works Program sets the level of capital expenditure required for existing assets (Asset Management Plan) and network enhancement (Annual Planning Report). Specific projects all require a justified Business Case which takes cognisance of lifecycle costings, benefits to be obtained from the capital expenditure, options and proposed actions and responsibilities. The process for compiling the Capital Works Programme is described in the Works Program Manual – issued in July 2007. There are two main governance committees which review the Works Program on a monthly basis, the Works	Adequate

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		Program Committee and the Program Performance Committee.	
The plan provide reasons for capital expenditure and timing of expenditure	Obtain a copy of the capital expenditure plan for the current year and assess whether the process is being followed	The 07/08 Works Program was made available. It appeared to have a sufficient level of detail, including statements regarding the capability to deliver the required resources and historical trends on previous expenditure levels	Adequate
The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan		Input to the Works Program includes the Asset Management Plans for Transmission (Transmission Asset Management Plan) and Distribution (Distribution Asset Management Plan) assets. These are themselves detailed plans regarding Western Power's asset condition and age. The condition information in the Transmission Asset Management Plan it was noted to be significantly better than in the Distribution Asset Management Plan. Separate line entries for the works in the Asset Management Plan's are present in the Works Program.	Requires improvement
There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned		The Works Program & Program Performance Committees review the implementation of the capital expenditure plan. These committees comprise senior Western Power managers. The capital expenditure program is prepared on an annual basis.	Adequate

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.

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	Determine when the asset management plan was last updated and assess whether any significant changes have occurred	The two asset management plans, Transmission Asset Management Plan and Distribution Asset Management Plan, are formally reviewed and reissued on an annual basis. The information in the asset management plan supporting databases, Transmission Investment Plan Database and Distribution Asset Management Plan is updated on an ongoing basis.	Adequate
Independent reviews (eg internal audit) are performed of the asset management system	Determine whether any independent reviews have been performed. If so, review results and action taken	An external audit of the Asset Management System has been completed by the Department of Energy as part of the Safety Case audit. Action has been taken to address any issues raised.	Adequate
	Consider the need to update the asset management plan based on the results of this review	Future asset management plans will be regularly updated in accordance with the continuous improvement methodology of PAS55. The overall asset management system will be	

Effectiveness criteria	Review approach	Audit Findings	Risk Controls
		updated as a result of the management actions undertaken as a result of the findings of this review.	

Details of Individual Interviews

Assessment of:	AM Policy and Strategy	**Attendees**	Derek Perkins Asset Management and Risk Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Asset Management System PowerPoint DMS 4286234 Asset Management Policy Statement DMS 4280509 Asset Management Policy DMS 4286154 Western Power Strategic direction & plan DMS 3845853			
Evaluations and conclusions:			
It was explained that Western Power had decided to adopt the PAS55-1 Specification for the optimized management of physical infrastructure assets as the framework for their asset management system. This is in line with global best practice as PAS55-1 is being adopted by asset intensive business around the world especially in the utilities sector. An Asset Management Policy is available detailing the high level requirements from the asset management system and that this policy was aligned with other organisational policies..			

Assessment of:	Asset Risk Management	**Attendees**	Geoff Barnett Senior Network Engineer
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Risk Management Policy DMS 3842495 Risk Management Framework DMS 3017083 Asset Risk Register as at March 2008 Risk Management Framework/Business Asset Ranking Tool Risk Assessment Procedure DMS 3504683			
Evaluations and conclusions:			
An overview of the risk rating system which had been developed in conjunction with Hydro Tasmania was given. This was split into two main frameworks initially using the corporate Risk Management Framework based around the corporate			

risks of Safety, Supply Interruption, Legal, Reputation, Environment and Financial. All risks are entered onto the corporate risk database, CURA.

Where a risk was rated as Medium or Low then the Business Asset Ranking Tool was utilised to further prioritise and rank the risks. It was stated that it is intended to eventually to use the Business Asset Ranking Tool methodology for those risks rated Extreme and High to allow further prioritisation to be undertaken. It was noted that whilst the corporate Risk Management Framework is documented the Business Asset Ranking Tool process is not. It is recommended that the Business Asset Ranking Tool process be formally documented.

The asset risk register presented (as at March 2008) comprised of 159 risks. The risk register had been established following workshops held to identify risks and these had then been evaluated by the Risk Engineer. It was stated that the overall risk management process for Western Power was controlled by the Corporate Risk Section The risk register is reviewed on an annual basis and every quarter by exception. New and emerging risks are entered onto the risk register by the asset management risk engineer. It was noted that, at the time of the audit (May 2008), there was 232 active issues on the risk register thus demonstrating that the process was effective.

The top ten asset risks are forwarded for entry into CURA the corporate risk database, as was the case for each of the other branches. There was no definition as to why the top ten risks were entered although this methodology has been seen in other businesses. Western Power should consider why the top ten are used instead of, for instance, those rated Extreme, irrespective of the number. This could lead to fairly high risks in one branch not being on the corporate risk system whereas lower risks from another branch are.

It was stated that training had been carried out for selected staff within Western Power although this had not been completed as a formal process. It is recommended that to ensure consistency of risk rating that all staff undertaking risk assessments are formally trained and that this training is noted on individual's training records.

Assessment of:	Asset Plan Optimisation	**Attendees**	Geoff Barnett Senior Network Engineer
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Asset Investment Optimisation Planning Tool database Project Optimisation Procedure (Draft)			

Evaluations and conclusions:
The introduction of the Investment Optimisation Planning Tool was explained. In the period April 2006 – March 2008 the Works Programme had been developed without reference to the risk register, however, recently, each item on the Works Programme had been referenced to the risk register to ensure that the programme was addressing issues on the register. It was stated that, for the work programmes for Access Arrangement 2, the Investment Optimisation Planning Tool would be used which will ensure that issues on the risk register are directly linked to the Works Programme. This should ensure that projects are only sanctioned when they are directly linked to addressing an issue on the risk register. This is seen as a positive step and it is recommended that the implementation of the Investment Optimisation Planning Tool is given priority. It was noted that the Project Optimisation Procedure is still in draft format with no Document Management System reference. This procedure should be finalised, issued and implemented.

Assessment of:	Distribution Asset Management Plan	**Attendees**	Amit Singh Electrical Engineer
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Distribution Asset Management Plan 2006/7 Distribution Asset Management Plan 2007/8 Distribution Asset Management Plan Database			
Evaluations and conclusions:			
The Distribution Asset Management Plan database was demonstrated. This database is linked via the Data Warehouse to parent databases namely, Distribution Facilities Management System, Trouble Call Management System and Distribution Facilities Information System. The Distribution Asset Management Plan database downloads asset information from these asset databases and this information is used to prepare the annual Distribution Asset Management Plan. It was noted that for the period of this audit, the DAMP outlines overall life expectancy based on age profile with little condition assessment included. It was also evident that, in most cases, the asset lives have been extended and that this has the effect of moving their expected replacement date into the future (in most cases 15-20 years). This methodology has the potential to cause resource/funding problems in the future as many assets will reach the expected end of life together. However it is likely that many assets will fail before this extended end of life which could substantially increase operational expenditure. It was stated that for the production of future DAMP work is being undertaken to ensure that asset lives are measured as mean time to failure rather than a theoretically end of life. It was also noted that the age information of some assets was poor and therefore the overall replacement scenarios may be			

inaccurate. Statistical methodology has been used to predict asset lives and to smooth out age profiles where the installed date had been entered as a default year. However in most cases this could be mitigated by good asset condition information as, if the asset is in good operational condition the age can be irrelevant.

It is recommended that the methodology for compiling the Distribution Asset Management Plan is amended to take account of asset mean time to failure information and to include accurate asset condition information.

Assessment of:	Transmission Asset Management Plan	**Attendees**	Winnie Kuek Electrical Engineer
Applicable Licence(s)	**ETL2**		
Audit trails and sources of evidence:			
Transmission Investment Planning Database (TIPD) Transmission Asset Management Plan July 2005 Transmission Asset Management Plan July 2006 Transmission Asset Management Plan December 2007			
Evaluations and conclusions:			
Similar to the Distribution Asset Management Plan database, the Transmission Investment Planning database downloads its information via the data warehouse from parent databases, Transmission Plant Management System, Transmission Lines System, Transmission Protection Equipment System and Transmission Ratings Information System. It was noted that asset condition information is available within Transmission Investment Planning Database and that this is utilised when preparing the Transmission Asset Management Plan. Transmission asset remaining life is calculated on asset condition.			

Assessment of:	Preparation of Business Case for asset strategy	**Attendees**	Johan Esterhuizen Asset Strategy Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Work Programme Manual DMS 3565515 Oct 07 Project Change Control Request DMS4153735v2C Project Change Control Register DMS3396299 Guide to Preparing Business Case and Board Submissions DMS3198881			

Business Case for Project No: T0275522
Minutes of Monthly Progress Meeting 9th May 2008

Evaluations and conclusions:

The Asset Strategy section is responsible for preparing business cases for the schemes identified in the AWP for Asset Replacement and Regulatory Compliance projects. This process is documented in the Work Programme Manual. This is a gated process with Initiation moving to Gate A0, Scoping to Gate A1 and Definition to Gate A2. Following this is the implementation phase. All projects have undergone a risk assessment which for the period of this audit was fairly simplistic however this has now been incorporated into the Investment Optimisation Prioritised Tool which has a more robust risk ranking system. It was evident that during this period the initial estimation of project costs had been unreliable mainly due to unexpected increases in material and labour costs. To rectify this, an Estimation Section has now been established from which more reliable estimates of projects costs are available.
A change control process in place whereby any project variations (generally over 10% of cost) are formally requested and documented. During the period of the audit these changes were ratified by either the Programme Performance Committee or the Works Programme Committee, however due to the volume of the changes this had now been devolved to Line Management dependent on the cost variation. The efficacy of the new system will need to be evaluated at future audits.

Delegated Financial Authority is documented. The business cases are prepared and then circulated for comment/approval to the various line managers. It was stated that these sometimes were misplaced and had to be reissued. It was also noted that the Service Delivery division, in the form of an appointed Project Manager, did not generally become involved in this process. It is important that those responsible for the delivery of any project should be involved at an early stage to provide input on resources, delivery dates etc. In order to overcome these two problems an electronic business case system, e-BC, had recently been introduced which included sign off from a Service Delivery Project Manager. However it was felt that the present system was quite cumbersome to use. The e-BC process requires the business case to be circulated around the various recipients with e-mails being generated informing the recipient that action was required. There was, however, no guidelines given on time frames for each recipient to respond and therefore this could lead to delays. It is recommended that the e-BC process is streamlined and that required timeframes for response are documented.

A typical business case was examined and it was noted financial analysis is undertaken for both preferred and other options and that Access Code considerations are documented. In addition a risk assessment had been completed considering the following areas:

Management Exposure Risk
Technical Risk
Construction and Completion Risk

Market Structure Risk
Marketing Risk
Environment at Risk
Stranded Asset Risk
Regulated Pricing Risk
Legal Structure Risk
Economic Risk

Guidance was available for staff completing these risk assessments. As stated previously this risk assessment would, in future, be incorporated in the Investment Optimisation Planning Tool process.

Assessment of:	Transmission Planning	**Attendees**	Bill Bignell Transmission and Capacity Planning Manager
Applicable Licence(s)	**ETL2**		

Audit trails and sources of evidence:

Transmission Network Planning Criteria DMS 1195855
Produce Access Studies and Commissioning Testing DMS2828128
20 year Plan 2007-2027 (Summer)
Capital Project Approval: Project T0229187 Recommission transformer at Northam South Freemantle – Long Term Development Study 2008-2027
Project Planning Definition: Project T0262980 Commission transformer at Mudaring Weir substation
Capital Project Approval: Projects T0219394/N0215530 Wembley Downs Substation – Conversion to 11kV
Project Planning Definition: Project T0180161 – Establish new 132/11kV substation at Nedlands
Western Terminal Load Area – Load Area Study Notes 2008-2027
Notes for System Planning Branch's process of Load Area Planning DMS3000609v3

Evaluations and conclusions:

It was explained that the transmission system in Western Power is equipment from 330kV to the lower voltage circuit outlets at zone substations. A 20 year plan is produced for summer peak and a similar one for winter peak showing the forecast load growth for each substation. This is compiled from information from the Load Forecasting Section and information from the Supervisory Control And Data Acquisition system. The plan depicts each substation with a load curve and against capacity. Whilst the plan is produced in paper form, all the information is held on a modelling computer system (OPAL) and is easily accessible. All forecasts are predicted against the Transmission Planning Criteria.

Forecasts have typically been based on 90% of transformer cyclic rating however this had recently been reduced to 75% (currently running at approx 82%). The 20 year plan for 2007-2027 summer peaks was tabled as evidence. A risk assessment is completed for those transformers running at cyclic rating with regard to any reduced life caused by this.

Once a capacity shortfall is detected the planning section is responsible for completing an options analysis and then preparing a business case for approval which includes a risk assessment. As stated previously the e-BC electronic business case system had recently been introduced, however in the case of some projects e.g. for land purchase and purchase of equipment with long lead times, it was proving too slow and the paper based business case paperwork was utilised (see previous recommendation re e-BC)

Western Power carry a stock of two 330/132kV, and two 66/22/11kv mobile transformers as emergency (Emergency Response Transformers) in case of failure. In the event of failure causing customer interruptions these mobile transformers are deployed and connected so that the maximum disruption to the customer would not exceed nine hours. One of these had been deployed recently following a failure thus testing the emergency contingency plans. In addition Western Power hold two transformers in cold storage for as emergency back up. An emergency response transformer has been deployed to each site as part of contingency planning to ensure adequacy of access etc.

Assessment of:	Distribution Planning (Country)	**Attendees**	Dean Frost Country Regional Planning and Development Manager
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Metro and Country Regional Planning and Development Processes DMS3771462 List of Forecast Network Reinforcement Projects (AA1 Summary) 2005/6 – 2008/9 DMS 2436411v2A Justification documents for above projects			
Evaluations and conclusions:			
For the majority of this audit period, Distribution Planning for both Metro and Country areas had been carried out by one section, however, due to increasing workload this had recently been separated into two sections, Metro and Country. For outlying areas reinforcement options include, reinforcement of network, mobile generation and more recently, Demand Side Management. In more built up areas generally only reinforcement is considered, although			

business cases do consider the other options.

Relationship plans are in place to ensure that both asset replacement and reliability issues are considered when undertaking reinforcement works

Assessment of:	Legal and Regulatory Compliance	**Attendees**	Margaret Pyrchla Compliance Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Compliance Database (managed by Mallesons Stephen Jacques Quarterly Compliance Report Breach Register 2007 Breach Register 2008 (ongoing) ERA Annual Performance Report 2006/7			
Evaluations and conclusions:			
Western Power has developed a legal and regulatory compliance database in conjunction with Mallesons Stephen Jacques. This database was interrogated and found to be very comprehensive and well managed. The database include a risk assessment of impacts should a breach of statutory or regulatory requirements occur. The 2007 Breach Register (first year of obligation) was made available and it was noted that 14 breaches had occurred. Each of these breaches has an agreed remedial actions and required dates assigned. The progress against these actions is monitored by the Compliance Manager. All breaches were type 2, no type 1 breaches occurred. General Managers are required to sign letters of assurance stating whether breaches had occurred, or not, in their area of responsibility. A recent environmental breach, for clearing of native vegetation, (Breach No: 07/08) was examined and the process for logging and tracking of remedial action had been adhered to. The Breach Register was examined for all breaches and it was found that all remedial action was up to date. The database includes an area for staff to enter in any concerns regarding possible breaches; however, this system is fairly new and was little used at present probably due to a lack of knowledge of the system. Briefing sessions have begun and it is recommended that these briefing sessions are accelerated in order to raise awareness of the compliance database within the business. In addition Western Power General and Branch Managers should ensure that their staff are aware of the database and that it is used to report any breaches.			

Assessment of:	Standards and Data	**Attendees**	Mark Wilshusen Branch Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
DMS 3194478 DMS 3767315			
Evaluations and conclusions:			
This section is responsible for: Safety Compliance and Investigations Transmission Standards and Plant Distribution Standards and Policy Data Management Investigations are completed for system incidents that involve equipment failure. Other incidents involving staff and/or public injury are normally investigated by the Safety Section. Investigations are logged onto a database and it was noted that whilst timeliness of investigations is tracked and reported via Key Performance Indicators, there is no Key Performance Indicator reporting the progress of the recommendations from the investigations. It is recommended that the progress of recommendations is reported via the Key Performance Indicator process. Various initiatives regarding data were explained, including Asset System Realisation, Project Data Quality and the issue of field force tablets for work issue and data capture. All these initiatives appeared to be well managed but were subject to resource constraints which could impact delivery. It was stated that processes are in place to manage the input of data following work on the network. The process for establishing technical specifications was explained, but again due to resource constraints some of these specifications were overdue for review. It is recommended that all standards and specifications are reviewed on a regular basis to ensure that they remain valid. On the Distribution networks the Standards section would specify the equipment requirements and then Procurement would source the equipment generally on a three year contract with approved suppliers. For the Transmission network, The Standards Engineers would specify the equipment requirements with assistance from Field staff and then working with Procurement would oversee the purchase and delivery of the equipment to ensure compliance with Western Power requirements. Both transmission and distribution networks, lifecycle cost analysis is undertaken for all framework contracts. This has meant that the best cost option is usually obtained rather than purely the cheapest piece of equipment. The Standards section would also ensure that manufacturers information e.g. O&M manuals were obtained and passed into the business along with any training requirements etc. A documented process was available for the introduction of new technology			

although Western Power would generally only introduce new equipment which had a proven track record in other utilities.

Assessment of:	Reporting of SAIDI, CAIDI etc	**Attendees**	Aaron Gibbons Team Leader
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
SAIDI chart 04/2006 –03/2008			
Evaluations and conclusions:			
Information is received via the Trouble Call Management System and then fed into the Reliability Data Validation tool. This process for validation and verification of System Average Interruption Duration Index, Customer Average Interruption Duration Index etc reports to ERA was examined and found to be robust. The introduction of a new Trouble Call System later in 2008 should streamline this process. It was noted that System Average Interruption Duration Index figures had slightly deteriorated over the two year period, and graphs indicated that the main reason for this was system faults. This section is also responsible for tracking against service standards e.g. over 12 hour disruption $80 payments. Reports are issued and performance tracked.			

Assessment of:	Asset Reliability and Power Quality	**Attendees**	Ian Lau Reliability and Power Quality Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
40 worst feeders report 2005/6 40 worst feeders report 2006/7 Rogue feeder report 2005/6 Rogue feeder report 2006/7 Rogue feeder report 2007/8 Power Quality KPI Report 2007/8			
Evaluations and conclusions:			
The Reliability section investigates issues of system reliability such as repeated circuit breaker trips, repeated blown fuses, customer complaints etc. If the problem is justified then a project would be instigated to rectify the problem.			

One initiative aimed at achieving this target is the introduction of the 40 worst feeders project whereby the 40 worst performing feeders (split 50/50 urban/rural) would be refurbished. .

Assessment of:	Network Investment	**Attendees**	David Nairn Branch Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
All Works Programme (AWP) 2007/8 Program Delivery – Monthly Distribution Capex Program Report – Feb 2008 Program Delivery – Monthly Transmission Capex Program Report – Feb 2008 Program Delivery – Monthly Distribution Opex Program Report – Feb 2008 Program Delivery – Monthly Transmission Opex Program Report – Feb 2008 Distribution Program Report July 07-April 08 v1 DMS4706705 Transmission Capex: Troubled Projects Report			
Evaluations and conclusions:			
Evidence is available that adequate and accurate financial and progress reporting is in place and examined on a regular basis. There are 2 main governance meetings for the Work Programme: Programme Performance Committee Works Programme Committee These committees meet monthly and program delivery reports are submitted. Examination of the February 2008 set of reports, as detailed above, demonstrated that, in most cases, both capital expenditure and operational expenditure were behind schedule. A main contributor to this has been lack of manpower resource to undertake the works. This is an ongoing problem in Western Australia, and around the world, at present. As Western Power rely heavily on contractors for delivery of work programs this has, in some cases, been aggravated by Western Power's reluctance to let longer term contracts allowing contractors to staff up. This is being addressed by the formation of Alliances with key contractors; however, these are in their infancy and will take time to bed in. It is recommended that Western Power fully review their procurement process for letting of longer term contracts such that better manpower resource planning can be undertaken. In addition, during the period of this audit, it is evident that frustrations exist within the organisation in regard to timeliness and, in some cases, accuracy of certain processes. These include estimation of projects, the change control process, availability of work programs, the business case approval process etc. It was explained that new processes have been introduced recently that should rectify most of the problems, however, due to the immaturity of these new processes,			

little evidence was available of their effectiveness and therefore these should be examined at future audits. Western Power should also ensure that, when key processes are modified or updated, a comprehensive briefing programme is undertaken to ensure that all relevant staff are aware of the new process.

It was noted that the monthly reports were fairly lengthy and this would take considerable management time to prepare and review. A new balanced scorecard type report had been prepared and this was viewed and found to be effective. In addition a Troubled Projects report was being prepared and this allowed management to focus on the critical issues.

Assessment of:	Distribution Planning (Metro)	**Attendees**	Peter Martino Networks Planning Manager
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Metro Feeder Utilisation Report 2007/8			
Evaluations and conclusions:			

As stated previously the Distribution Planning function had recently been spilt between Metro and Country areas due to growing workloads. For the period of this audit however it had been undertaken by a single section. Annual reviews are undertaken to assess the capability of the distribution networks and highlight any reinforcement issues. The Planning Section are informed about new load connections according to the following schedule:
22kV system – loads above 1MVA
11kV system – loads above 500kVA
6.6kV system – loads above 300kVA.

There are various triggers for network reinforcement, the key ones being:

Voltage outside limits
Unacceptable fault rating
Nominal cyclic rating of feeder over 80%

Following the various reviews plans are fed into the Work Programme for delivery. Historically feeder reinforcement and load transfers have been the methodology for meeting system requirements but embedded generation and demand side management are now also considered. This was evidenced with an Air Conditioning Auto Switching trial which had recently been successfully completed.

Assessment of:	IT Security	Attendees	Tony Hancock Information Technology Quality and Security
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Disaster Recovery Rehearsal Report 27th August – 7th September 2007 Records Disaster Recovery Plan May 2007 (currently under review)			
Evaluations and conclusions:			
Western Power use KAZ in East Perth to manage their IT disaster recovery process. This involves real time updates of the critical Western Power IT systems into the KAZ back up servers. This disaster recovery process has been tested and found to be generally acceptable			

Assessment of:	Network Performance	Attendees	John Brisbane Asset Performance Manager
Applicable Licence(s)	**ETL2**		
Audit trails and sources of evidence:			
Transmission Primary Plant and Lines Failure Statistics 2006/7 Transformer Reliability Enhancement Plan 07/08 Quarterly Board Asset Performance Report Defect and Fault Database Power Transformer Maintenance Criteria DMS 1045879 Power Transformers Asset Mission DMS 4070124 Transmission Maintenance Policy Manual			
Evaluations and conclusions:			
Generally performance and condition information about the transmission system is better than that of the distribution system and this is in line with utilities around the world. A Defect and Fault Database is maintained which gathers and validates information from work orders and the system operations databases. This enables the Transmission Primary Plant and Lines Failure Statistics report to be produced detailing trends of various types of plant. This information is then fed into the TIPD from which the Transmission Asset Management Plan is produced. This was verified by cross checking the information on the Magrini Galileo 38M circuit breaker on TIPD. All transformers are subject to annual Dissolved Gas Analysis testing and equipment exists to carry out continuous monitoring if			

required. All transmission main plant items are covered by the Transmission Maintenance Policy Manual and Asset Mission Statements are being prepared. The Power Transformers mission statement was made available.

Network Performance section is responsible for preparing the maintenance policies for each plant item and the power transformers policy was inspected. It was noted that these policies do not have a review period set and are reviewed when updated. It is recommended that all maintenance policies have a review period set (Western Power to determine reasonable timeframes).

Recently a new initiative has seen the development of the Transformer Reliability Enhancement Plan which lists each transformer and scores its condition based on a number of criteria including age, loading, results of electrical tests, insulation degradation, oil analysis etc. This gives an overall assessment score that can help to prioritise remedial works.

Assessment of:	Network Performance	**Attendees**	John Brisbane Asset Performance Manager
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Quarterly Board Asset Performance Report			
Evaluations and conclusions:			
Information of faults on the Distribution system is taken from the Trouble Call Management System and validated. Emphasis recently has been focussed on reducing conductor clashing which is a cause of broken conductors creating safety issues and causing bushfires. The main repositories for distribution data are the Distribution Facilities Management System and Distribution Facilities Information System. Historically the quality of information on these systems has been questionable but is gradually improving. Therefore to obtain accurate information regarding bay lengths, a major contributor to conductor clashing, some lines had been surveyed from helicopter. This had enabled more focussed investigations to be undertaken. It is recommended that Western Power introduce metrics to measure the progress of information gathering and investigations into bay length problems. There are approx. 620,000 poles on the distribution network and Western Power policy states that each pole should be inspected every 4 years to assess for rot. This is obviously a large workload and it was noted that there is a backlog of 73,000 which had not been inspected within the last five years. In order to reduce this backlog a new methodology for inspection, by 'bundling' poles areas is having a significant effect although it will take some time to meet targets. In addition it was also noted that pole condemnation rates were rising however a partial cause of this is that new testing techniques have been			

introduced. This has also led to a backlog of 3500 condemned poles on the network. Additional funding/manpower will be required to reduce this backlog. Data quality and condition information on distribution substations is also unreliable. Condition catalogues one for substations and one for lines; have been prepared to assist Inspectors in assessing condition. It was stated that timeliness of data entry following inspection was also an issue.

Assessment of:	Program and Contract Management (Service Delivery)	**Attendees**	Stu Grant Support Office Manager(acting)
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Project Management Framework DMS 3358907v10			
Evaluations and conclusions:			

For the period of the audit, (after the disbandment of the Program Delivery division) the Service Delivery division had been split into 3 main delivery units, Maintenance, Transmission and Distribution with Programme Delivery Support Operations spanning all units. Preventative maintenance/inspection work, as a continuous annual process, changed little and therefore the Program Delivery Support Operations had little input.

For capital expenditure work, the projects were received as Project Planning Definitions. These were received on an ad-hoc basis throughout the year with little notice which therefore made planning and resourcing difficult. Additionally Service Delivery Project Managers were rarely involved in the up front decision process. In some cases, this lead to projects being handed over at A2 gate stage with incorrect cost estimations and unreasonable timeframes for delivery. Therefore most projects required input to the change control process. In addition there was little prioritisation conducted other than to meet overall program requirements e.g. summer readiness projects would generally have higher priority than 40 worst feeder projects. These decisions were generally left to Project Managers. Delivery of projects was often constrained by lack of switching and commissioning engineers. It was not possible to undertake manpower resource planning due to the lack of adequate planning tools.

In order to overcome these problems several initiatives had been put in place, the 'Enhance the Planning Process' (Project Playstation). The end to end process has been evaluated and it is intended to introduce a new gated process which clearly defines responsibilities throughout the project life with the asset managers (Customer Services) responsible for the identification and initiation of projects and then the service provider (Service Delivery) being involved from the scoping, through planning to construction. Customer Services will maintain a presence as budget holder throughout the process. The Primavera computer application is

being developed to assist this process. This package will also allow prioritisation of projects and provide accurate manpower requirements to allow forward planning. This process would be in line with industry best practise around the world.

It is evident that there have been significant problems in the planning and delivery of programs, and it is recognised that effort is being put into overcoming these problems. It is therefore recommended that the introduction of these new processes be given priority so that adequate program and resource management can be undertaken.

Assessment of:	Distribution Condition Monitoring	**Attendees**	Michael Round Network Engineer
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Interviews with key personnel			
Evaluations and conclusions:			
As stated previously the condition of distribution assets is not as well documented as that of the transmission network. Western Power suffers from numerous pole top fires which cause problems with safety and bushfires. One methodology of overcoming this problem is by applying silicon to insulators. However this is not a universal practice within Western Power. It has proved difficult to conduct trend analysis as information received from the field is sporadic. It is a requirement that for every pole top fire a report is completed however this is not always the case. It is recommended that Western Power ensure that the pole top fire report form is completed for every incident such that adequate trend analysis can be completed. It was noted that, following line inspections, a condition report is available listing defects and that these are then generally repaired. However, in completing this work there is no expected extended life for that particular circuit and it may be that it has to be revisited year on year. This is a very reactive methodology and it may be preferable to undertake focussed line refurbishments following the condition assessment. These line refurbishments should be undertaken on a prioritised basis and, on completion, project reviews should be undertaken to measure the overall performance of the system so that any reduction in SAIDI etc as a result on the work undertaken can be ascertained. It is recommended that Western Power consider either: 1) Continuing with reactive condition repairs with a view to extending the overall life of the circuit. The extended lifetime should be defined.			

or 2) The introduction of focussed prioritised line refurbishments.

Assessment of:	Data Quality	**Attendees**	Andy Neemann Data Management and Quality Manager
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
As Constructed Manual DMS 2399848 Data Quality PowerPoint presentation DMS 4162091			
Evaluations and conclusions:			
For existing asset data, 4 main metrics are measured: Completeness Consistency Accessibility Positional Accuracy From these metrics it is reported that data quality is approx. 80%. It was noted that, in the case of pole data, the installed date was often a default date as the actual date was unknown. This obviously can mean misleading information regarding age of poles is used in determining asset replacement strategies. It is recommended that Western Power should endeavour to collect more accurate information on pole age. This could be completed at the time of pole inspections. For new asset data metrics are in place to measure performance. These are: Field to office timeframe Office input timeframe Input correctness. The results for the period Jul07 to Apr08 were examined and in all cases it was noted that performance had significantly improved as follows: Field to office: 58days (Jul 07) to 20days (Apr08) – target 20days Office input: 20days to 12 days – target 20days Input correctness: 65% to 80% - target 70% These improvements should be recognised as significant. However it was noted there were no metrics for: Number of submissions rejected Timeframe for return of rejected submissions On exploring it was noted that 600+ jobs were awaiting further information. In addition it is unclear as to when the start date for field submissions actually occurs. It should be from the date of energisation however it is more likely that			

this is from job closure which is often much later.

When a design is produced and entered onto the Distribution Quote Management System, a skeleton of this design is added to the Distribution and Facilities Information System, such that anyone requesting safe dig information is aware that electricity network could be present. There is no clear methodology for ensuring that should this design be constructed, the Data office is notified in a timely fashion so that DFIS can be formally updated. At the time of the audit there were 2500+ designs waiting as constructed drawings.

The problem of timely accurate data from the field is a common problem within utility businesses however it is important that information is available on the various systems as soon as possible. It is recommended that Western Power introduce metrics for the measurement and timeliness of rejected as constructed drawings. In addition field staff should be targeted with supplying as constructed drawings in a timely fashion following energisation of the network not from project closedown or any other measurement point.

Assessment of:	Corporate Risk	**Attendees**	Matt Mueller Branch Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
CURA risk database			
Evaluations and conclusions:			

The overall corporate risk management process was examined. The Risk Management Framework methodology was explained and also how the highest risks are presented to the Board and Finance and Risk Committee for review on a quarterly basis. Below this corporate risk register, division risk registers had been developed detailing specific divisional risks distilled to greater granularity from the corporate risks. Risk assessments are also included in business case submissions and for all projects. For the period of this audit, the risks register were stored and reported using an Excel spreadsheet however a risk specific system, CURA, had been introduced in the last three months.

The CURA database was examined and it was noted that there are, at present 12 risks on the corporate risk register. It is recommended that Western Power should consider if this methodology of reporting only the top 12 risks is appropriate or whether all Extreme rated risks irrespective of number are included. These are reported on a quarterly basis to the Board. The Customer Services risk register was also examined. All staff has read only access to the registers and risk owners have write access to allow update of risks. Risks are rated before and after controls (treatments) are in place. Risk information is presented to the appropriate Divisional Leadership meetings for review however

it was noted that there is no provision for recording of risk review on CURA. It is recommended that review dates are made available on CURA. This will provide an audit trail that risks are being formally reviewed even if there is no update on actions etc.

Assessment of:	System Control System Operation Control Centre and Network Operation Control Centre	**Attendees**	Murray Caston Branch Manager William Dow Operations Support and Document Control Officer
Applicable Licence(s)	**EDL1, ETL2**		

Audit trails and sources of evidence:

Control Room Instructions Manual
CRI 01-12 Deployment of Rapid Response Transformers
NWI 43 Networks Ops Backup Control Centre.
BUCC Operational Verification DMS2395127v3

Evaluations and conclusions:

The division of system control between Network Operation Control Centre and System operation Control Centre was explained. System Operation Control Centre is responsible for the Transmission system and Network Operation Control Centre the Distribution System.

The planning process for network access was discussed. System Operation Control Centre have produced a chart indicating when outages on certain parts of the network might be allowed, this prevents staff even requesting an outage outside of these times and therefore saves time and effort. If outages are to last longer than four hours, then a contingency plan is prepared. This could include emergency load pick up, deployment of Rapid Response Transformers etc. It was stated that the RRT had been deployed to all relevant substations to ensure that it was feasible to deploy. If OK hard standings and connections had been fitted. The Rapid Response Transformer is not only used during fault conditions but also for outage back up thus assuring that staff remain competent in connection etc. A Rapid Response Transformer had recently been deployed to North Beach substation following a transformer failure.

The competency process was examined for control room staff. This appeared to

be comprehensive and well managed and in line with good industry practice.

The back up Network Operation Control Centre is located at head office and is checked weekly by Corporate IT staff. Records were viewed which confirmed this. In addition procedures state that a full test should be completed every six months. However no evidence was available that these had been carried out.

The System Operation Control Centre backup control centre is presently based at Southern Terminal although it was intended to move this facility to adjacent the Network Operation Control Centre backup at Head Office. This move was planned for the end of June 08. It was stated that, as Southern Terminal is presently a construction site, access to the backup control room is often difficult. The facility is secure and visited by IT regularly. Contingency testing has been completed regularly in the past but this has dropped off recently due to the access problems and the impending move. Black start capability is presently provided by Verve.

It is recommended that Western Power ensure that regular real time tests are carried out in the both the System Operation Control Centre and Network Operation Control Centre back up control centres. This should include actual system control from the back up and verification that communications, e.g. operational phones, are working satisfactorily.

Assessment of:	Work and Resource Planning	**Attendees**	Brett Drew Technical Services Coordinator
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Interview with key personnel			
Evaluations and conclusions:			
The Work and Resource Planning section is responsible for medium term planning of resource requirements. Their main role is to take the Approved Work Programme for 12/18 months into the future and plan the resource requirements. They will also rationalise operational expenditure and capital expenditure work such that, for instance, maintenance/inspection will not be completed on plant that is due to be replaced under a capital expenditure scheme. The resource requirements are then fed into the Resourcing Group. For the period of the audit it was stated that the above process was difficult to achieve mainly due to lateness of work programs and manpower resource constraints.			

Assessment of:	Distribution Opex and Capex Delivery Planning	Attendees	Peter Howell Team Leader
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Interview with key personnel			
Evaluations and conclusions:			
The process for wood pole inspection was examined. Wood poles are scheduled to be inspected on a four year cycle. This inspection is a two part inspection with pole condition assessment completed by a contractor followed by a full electrical inspection to include pole top fittings and conductors by a second contractor. This second inspection also acts as a QA check of the first inspection. It had been stated previously that this process was being streamlined intro a single inspection (albeit this may be by two people). Conditions (defects) are entered onto the Distribution Fault Management System and then actioned.			

Assessment of:	Automation program	Attendees	Jordan Kosek Automation Engineer
Applicable Licence(s)	**EDL1**		
Audit trails and sources of evidence:			
Team Blitz Distribution Automation Status Report 07/08 – 28 May 2008			
Evaluations and conclusions:			
The end-to-end process for identification and delivery of the automation program was examined. This end to end process had only recently been introduced however it is included in this report as evidence of continual improvement within Western Power. The previous process was explained and it was evident that it was a fairly inefficient methodology due to the number of various steps and the amount of site visits required. The new process requires fewer visits to site and these are being further reduced by training staff to undertake additional surveys whilst on site e.g. signal strength surveys. Each individual automation project is aimed at reducing System Average Interruption Duration Index minutes and the success of this measured. For 2007/8 System Average Interruption Duration Index minutes lost were reduced, on average, by 25% for each automated feeder and this had contributed a 16% overall reduction to the South West Interconnected System's System Average			

Interruption Duration Index figures. This had meant that System Average Interruption Duration Index was increasing due to system faults the overall figure was still reducing due to the benefits of the automation program.

Assessment of:	Financial Planning and Control	**Attendees**	Gair Landsborough Branch Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Board Corporate Performance Report March 2008 March Quarterly Report 2007/8			
Evaluations and conclusions:			
The corporate budget annual process was examined. The process is based around a timeframe to produce the five year Strategic Development Plan and one year Statement of Corporate Intent in December with a view of gaining approval for June. Mid year reviews are then completed against current year costs. The main governance process is via the Board and the Finance and Risk Committee. Annual external audits are conducted on the accounts. Following desegregation reporting was difficult as there were no specific systems in place however over the period of this audit, the Mosaic reporting system had been introduced which automatically produces a dashboard and scorecard against various metrics. This process was examined and the March 08 report reviewed. The process is now well established and well managed. Western Power explores various funding options and these are detailed in both the Monthly Board Report and the Quarterly report to the Minister. These reports were examined and found to be consistent.			

Assessment of:	Asset Management Review	**Attendees**	Derek Perkins Asset Investment and Risk Manager
Applicable Licence(s)	**EDL1, ETL2**		
Audit trails and sources of evidence:			
Asset Management System DMS 4286234 Safety Case Audit Findings.			

Evaluations and conclusions:
As stated previously the Network Performance branch of Customer Services Division have modelled the asset management system on PAS55-1 Specification for the optimized management of physical infrastructure assets. The structure of this system and its supporting documentation is available on the Document Management System via the Western Power intranet, Busbar, therefore is available for all staff to view. The two asset management plans, Transmission Investment Planning Database and Distribution Asset Management Plan, are formally reviewed and reissued annually. The information within the supporting databases, Transmission Investment Planning Database and Distribution Asset Management Plan database is updated on an ongoing basis as new information regarding assets is available. It was noted that an external audit had been conducted by the Department of Energy as part of the Safety Case audit. The external audit findings from the Safety Case were made available and it was noted that the Asset Management System had received a Green rating with no deficiencies.

4. Conclusions

Generally it is felt that the Western Power asset management processes are effective and, in some areas, aligned with good industry practice.

An asset management system modelled on the requirements PAS55-1 Specification for the optimized management of physical infrastructure assets has been established. An Asset Management Policy is available detailing the high level requirements from the asset management system and that this policy was aligned with other organisational policies.

Improvements are required in certain areas and a full list of findings is given at the end of this report.

There is still some confusion amongst staff as to their specific roles and responsibilities within the various processes. This is understandable given the amount of change undergone by the business in a short period.

Numerous initiatives are underway and whilst each of these initiatives is seen to be worthwhile, Western Power would benefit from prioritising the various initiatives so that they can get the best business outcome without staff being subject to 'initiative overload'.

Western Power are continually refining and improving their processes and the movement between the end of March and the time of audit was considerable in some areas. Therefore this audit should be taken as a baseline for future audits whereby significant improvements would be expected.

A total of 26 findings requiring attention were identified during this audit. These are detailed in Section 6 of this report together with post audit implementation plan for each of the findings.

Throughout the assessment Western Power staff co-operated fully and positively with the Auditor.

6. POST AUDIT IMPLEMENTATION PLAN

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
1	EDL1 ETL2	There was no definition as to why the top ten risks from each branch were entered into the Corporate Risk Database, CURA. Western Power should consider why the top ten are used instead of, for instance, those rated Extreme, irrespective of the number.	All extreme risks will be entered into risk register. Responsible Person: Geoff Barnett Responsible Branch: Network Performance	Nov 2008
2	EDL1 ETL2	It was noted that whilst the corporate Risk Management Framework is documented the Business Asset Ranking Tool process is not. It is recommended that the Business Asset Ranking Tool process is formally documented.	Business Asset Ranking Tool process documentation prepared. Responsible Person: Geoff Barnett Responsible Branch: Network Performance	Dec 2008
3	EDL1 ETL2	It was stated that risk assessment training had been carried out for selected staff within Western Power although this had not been completed as a formal process. It is recommended that to ensure consistency of risk rating that all staff undertaking risk assessments are formally trained and that this training is noted on individual's training records.	A formal training program will be prepared and implemented. Responsible Person: David Nairn Responsible Branch: Network Investment	Dec 2008
4	EDL1 ETL2	For the work programmes for Access Arrangement 2, the IOPT will be used which will ensure that issues on the risk register are directly linked to the Works	Investment Optimisation Planning Tool went into production June 7th 2008. Access Arrangement 2 program will be prioritised using Investment Optimisation Planning Tool.	Nov 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		Programme. This should ensure that projects are only sanctioned when they are directly linked to addressing an issue on the risk register. It is recommended that the implementation of the IOPT is given priority.	Responsible Person: Geoff Barnett Responsible Branch: Network Performance	
5	EDL1 ETL2	It was noted that the Project Optimisation Procedure is still in draft format with no Document Management System reference. This procedure should be finalised, issued and implemented.	Drafts to be finalised, issued, implemented and referenced in Western Power's document management system. Responsible Person: Geoff Barnett Responsible Branch: Network Performance	Dec 2008
6	EDL1	It is recommended that the methodology for compiling the Distribution Asset Management Plan is amended to take account of asset mean time to failure information and to include accurate asset condition information.	1) The distribution asset Management Plan will incorporate the mean time to failure work recently completed on a small set of asset types. 2) The distribution asset Management Plan will include accurate asset condition information. Responsible Person: Johan Esterhuizen Responsible Branch: Network Performance	Jun 2009 Jun 2009
7	EDL1 ETL2	The e-BC process requires the business case to be circulated around the various recipients with e-mails being generated informing the recipient that action was required. There was however no guidelines given on time frames for each recipient to respond and therefore this could lead to delays. It is recommended that the e-BC process is streamlined and	Roll out of the new streamlined electronic business case to be completed (commenced on the 15th of September 2008). The roll out will include training for initiators and approvers, administrative support to correct blockages, detailed performance standards and recipient time frames. Responsible Person: David Nairn Responsible Branch: Network Investment	Dec 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		that required timeframes for response are documented.		
8	EDL1 ETL2	The compliance database includes an area for staff to enter in any concerns regarding possible breaches; however this system is fairly new and was little used at present probably due to a lack of knowledge of the system. Briefing sessions have begun and it is recommended that these briefing sessions are accelerated in order to raise awareness of the compliance database within the business. In addition Western Power General and Branch Managers should ensure that their staff is aware of the database and that it is used to report any breaches.	Compliance briefing sessions to branches that have been assigned significant legislative obligations (SLO) concluded in May 2008. Non-SLO branches will have compliance briefings delivered by the end of June 2009. New staff will be trained on an as needed basis at induction. Current staff will also be trained on an as needed basis. Responsible Person: Margaret Pyrchla Responsible Branch: Compliance Management	Jun 2009
9	EDL1 ETL2	Systems investigations are logged onto a database and it was noted that whilst timeliness of investigations is tracked and reported via Key Performance Indicator, there is no Key Performance Indicator reporting the progress of the recommendations from the investigations. It is recommended that the progress of recommendations is reported via the Key Performance Indicator process.	A Key Performance Indicator has been developed to measure the progress of incident investigation recommendation and will be reported monthly. Responsible Person: Mark Wilshusen Responsible Branch: Standards Policy and Data Quality	Completed 13 Jun 2008
10	EDL1	The process for establishing technical specifications was explained, but again	1) Work plans already exist for all transmission and distribution plant specifications. A work plan already exists	Completed Sep 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
	ETL2	due to resource constraints some of these specifications were overdue for review. It is recommended that all standards and specifications are reviewed on a regular basis to ensure that they remain valid.	for all distribution standards and one is under development for transmission standards. These plans will identify scheduled development dates. In addition, registers have been developed for both sets of standards, and these already capture scheduled review dates. Funding mechanism and resourcing model for ongoing development of standards established. 2) Obtain and allocate sufficient resources to implement the plans referenced in 1) above Responsible Person: Mark Wilshusen Responsible Branch: Standards Policy and Data Quality	Dec 2008
11	EDL1	A main contributor to the shortfall in achieving both capital expenditure and operational expenditure targets has been lack of manpower resource to undertake the works. This is, in part, being addressed by the formation of Alliances with key contractors however these are in their infancy and will take time to bed in. It is recommended that Western Power fully review their procurement process for letting of longer term contracts such that better manpower resource planning can be undertaken.	A delivery strategy encompassing all works for the next 4 years will be produced and approved. The implementation of the approved delivery strategy will be progressively implemented. The strategy will include the procurement process for the letting of longer term contracts. The first major contract strategy to be progressively implemented will be for Distribution, which is intended to be in place by March 2009. Responsible Person: Andre Winarto Responsible Branch: Group Commercial	Jun 2009
12	EDL1 ETL2	New processes have been introduced recently, e.g. change control process, however, due to the immaturity of these	Western Power will adopt the PAS55-1 framework which will require effective deployment of new processes. Information will be shared across all relevant divisions via	Aug 2009

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		new processes, little evidence was available of their effectiveness and therefore these should be examined at future audits. Western Power should also ensure that, when key processes are modified or updated, a comprehensive briefing programme is undertaken to ensure that all relevant staff are aware of the new process.	briefings, Intranet updates etc. Responsible Person: Geoff Barnett Responsible Branch: Network Performance	
13	EDL1 ETL2	It is recommended that all maintenance policies have a review period set (Western Power to determine reasonable timeframes).	All maintenance policies will have review periods set. Responsible Person: John Brisbane Responsible Branch: Network Performance	Dec 2008
14	EDL1 ETL2	It is evident that there have been problems in the planning and delivery of programs, and it is recognised that significant effort is being put into overcoming these problems. It is therefore recommended that the introduction of these new processes, e.g. the 'Enhance the Planning Process' (Project Playstation) are given priority so that adequate program and resource management can be undertaken.	Project 'Play Station' being deployed as a proof of concept to ensure improved end to end planning and delivery of programs. Responsible Person: Stu Grant Responsible Branch: Works Resource and Planning	Completed Jun 2008
15	EDL1	It was noted that, following line inspections, a condition report is available listing defects and that these are then generally repaired. However in	1) Western Power with its recent introduction of a 'Maintenance Zone' inspect and repair methodology when fully implemented will extend the life of maintenance zones. This extended lifetime will also be	Jun 2009

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		completing this work there is no expected extended life for that particular circuit and it may be that it has to be revisited year on year. This is a very reactive methodology and it may be preferable to undertake focussed line refurbishments following the condition assessment. These line refurbishments should be undertaken on a prioritised basis and, on completion, project reviews should be undertaken to measure the overall performance of the system so that any reduction in System Average Interruption Duration Index etc as a result on the work undertaken can be ascertained. It is recommended that Western Power consider either: 1) Continue with reactive condition repairs with a view to extending the overall life of the circuit. The extended lifetime should be defined. or 2) The introduction of focussed prioritised line refurbishments.	defined. 2) A cost benefit study of proactive prioritised line refurbishment will be undertaken. Responsible Person: Syd McDowell Responsible Branch: Network Performance	May 2009
16	EDL1 ETL2	It is recommended that Western Power introduce metrics for the measurement and timeliness of rejected as constructed drawings. In addition field staff should be targeted with supplying as constructed drawings in a timely fashion following	1) A Key Performance Indicator will be developed to measure the total number and timeliness of distribution jobs awaiting more information (on rejected as constructed drawings). 2) Data Management will engage with key staff from	Completed Aug 2008 Dec 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		energisation of the network not from project closedown or any other measurement point.	Service Delivery to best determine a method to capture the energisation date against distribution construction jobs. The solution is likely to be the development of an energisation event in Distribution Quotation Management (as opposed to the construction complete event which is currently being use in field to office timeliness Key Performance Indicators). Responsible Person: Mark Wilshusen Responsible Branch: Standards Policy and Data Quality	
17	EDL1 ETL2	It is recommended that review dates are made available on CURA. This will provide an audit trail that risks are being formally reviewed even if there is no update on actions etc.	A project to implement formal review of risk status in CURA will be completed. Responsible Person: Matt Mueller Responsible Branch: Risk Branch	Completed Aug 2008
18	EDL1 ETL2	It is recommended that Western Power ensure that regular real time tests are carried out in the both the System Operation Control Centre and Network Operation Control Centre back up control centres. This should include actual system control from the back up and verification that communications, e.g. operational phones, are working satisfactorily.	1) Transmission (System Operation Control Centre) back up control centre being relocated to head office and a regular real time testing program will be carried out including verification of communications Responsible Person: Murray Caston Responsible Branch: System Operation Control 2) Distribution (Network Operation Control Centre) back up control real time testing is conducted and results of the testing will be documented in Western Power's Document Management System.	Dec 2008 Dec 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
			Responsible Person: Shane Duryea Responsible Branch: Network Operations	
19	EDL1 ETL2	It is evident that there is a lack of understanding of key processes within Western Power. This has been evidenced in various areas such as issue of work programs, implementation of new requirement (e.g. bundled pole inspections) etc. Whilst it is recognised that work is ongoing to rectify this in some areas, priority should be given to mapping key processes. This mapping should include roles and responsibilities, inputs and outputs from the various stages of the process, reporting requirements etc. Whilst all processes will benefit from this mapping it is recommended that it should be undertaken on a priority basis with those processes which are key to delivering Western Power's requirements. These should include: • The development, handover, delivery and reporting of the Capital Expenditure works programme • The development, handover,	Detailed process mapping has been undertaken by the Operational Excellence - Enhance the Planning Process Team. In parallel, work is underway to prepare new policy and procedures to close gaps identified during this mapping. A new body of knowledge encompassing all policy, procedure and process is being developed for publication on Western Power's intranet to replace the existing Works Program Manual and covers Capital expenditure, Operational expenditure and Risk processes amongst other process. An intensive roll out is planned to point people to the new business resource. Responsible Person: David Nairn Responsible Branch: Network Investment	Dec 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		delivery and reporting of the Operational Expenditure works programme. • The change control process for both capital expenditure and Operational expenditure works programmes. • The risk management framework The mapping of these processes will also ensure that staff are aware of their responsibilities and that the new business structure is accurately detailed.		
20	EDL1 ETL2	Following the recent changes many documents refer to the previous three divisional structures and in some cases the structure prior to desegregation. It is recommended that these documents should be reviewed and updated to the new structure but again this should be done on a prioritised basis with those documents associated with the key processes being reviewed first.	Western Power will produce a prioritised list of documents and update all key documents to reflect the new structure. 1) Produce a list of key asset management related documents from across the business referenced in a document register which includes the priority, area of responsibility and update status of each document. 2) Engage with key stakeholders from across the business to initiate the document review process and ascertain timelines for the updating of high priority documents. 3) Complete update of high priority asset management related documentation. 4) Finalise Review ensuring all high priority documentation is	 Dec 2008 Mar 2009 Sep 2009 Oct 2009

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
			updated. Responsible Person: Geoff Barnett Responsible Branch: Network Performance	
21	EDL1	Asset lives, in some cases, have been extended due to increased knowledge of the system indicating that assets are capable of lasting longer than theoretical mean time to failure. This methodology has the potential to cause resource/funding problems in the future as many assets will reach the extended end of life together. However it is likely that some assets will fail before this extended end of life as failures will generally occur around the mean time to failure. This could substantially increase Operational expenditure. Therefore, especially for Distribution assets, it is important that good condition information is also available to complement the age profile data such that more informed decisions can be made for feeding into the capital expenditure budgeting process. This will inevitably mean, to maintain an acceptable level of system reliability, an increase in capital expenditure budget will	1) A State of the network report stating the condition of network assets will be produced for both Transmission and Distribution. 2) Capital expenditure increases commensurate with labour/materials resource availability and network outage availability is being requested as apart of the Access Arrangement 2 submission to the ERA. Responsible Person: John Brisbane Responsible Branch: Network Performance	Dec 2008 Nov 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
		be required. Western Power should ensure that accurate condition information is being collected on its assets.		
22	EDL1 ETL2	For the period of the audit, risk management processes are not evident in the prioritisation of maintenance tasks. Western Power has stated that maintenance tasks will be included in the risk management process for the 08/09 work programme. Western Power should ensure that the prioritisation of maintenance tasks is included in the risk management process as soon as possible.	Investment Optimisation Planning Tool (IOPT) will be used for the prioritisation the 08/09 maintenance program. Responsible Person: John Brisbane Responsible Branch: Network Performance	Nov 2008
23	EDL1 ETL2	The Asset Management System should be reviewed and updated as required regularly.	As part of PAS55-1 methodology the Asset Management System will be formally reviewed annually and updated as required. Responsible Person: Syd McDowell Responsible Branch: Network Performance	Aug 2009
24	EDL1 ETL2	Backlog, specifically maintenance and pole inspections, associated with the last two years needs to be managed.	1) A Backlog Management Plan will be created to identify the backlog of asset conditions and the strategy to optimally reduce the backlog. Responsible Person: Johan Esterhuizen Responsible Branch: Network Performance 2) Backlog of work will be incorporated into the Access Arrangement 2 ensuring it is given the appropriate level of consideration.	Oct 2008 Oct 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
			Responsible Person: Johan Esterhuizen Responsible Branch: Network Performance 3) Appropriate resourcing strategies will be developed and selected which optimise available funding and resources. Responsible Person: G Rowe Responsible Branch: Works and Resource Planning 4) Subject to funding approval by ERA, the backlog reduction will be included in the routine 'Maintenance Zone' 4 yearly cycle so that over 4 years the highest priority backlog is progressively eliminated. Responsible Person: Johan Esterhuizen Responsible Branch: Network Performance	Jul 2009 Jul 2013
25	EDL1 ETL2	The CURA database contains 12 corporate risks derived from the various divisional risk registers. Western Power should consider if this methodology of reporting only the top 12 risks is appropriate or whether all Extreme rated risks irrespective of number are included.	Review the current corporate risk reporting methodology and consider reporting all risks rated as extreme. Responsible Person: Matt Mueller Responsible Branch: Risk Branch	Completed Jun 2008
26	EDL1	It is recommended that Western Power introduce metrics to measure the progress of information gathering and investigations into bay length problems.	Introduction of a metric to measure the progress of investigations into bay length problems and compare to a target value. This will include the implementation of processes to measure and record this metric.	Nov 2008

Finding No.	Applicable Licence	Finding	Management Actions	Date for Completion
			Responsible Person: John Brisbane Responsible Branch: Network Performance	