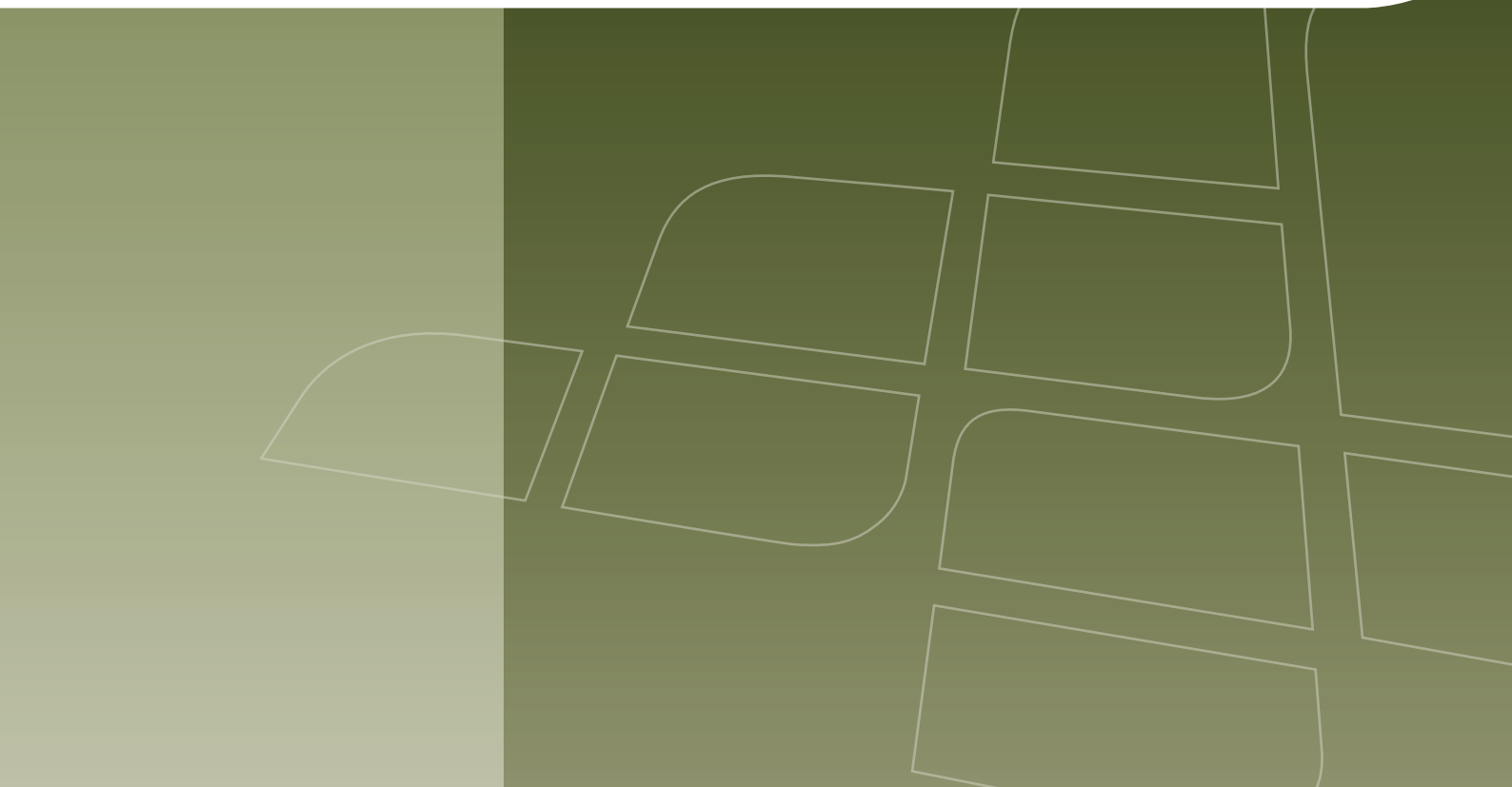


Bushfire Management Plan 2010 2011



Our Commitment to Safety

Western Power's Safety and Health vision is:

**'Conducting work in a manner where people
are free from injury and harm'**

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Section 1.

Context and Background





1. Plan Purpose, Improvements and Approval

1.1 Plan Context

Western Power is the main distributor of electrical energy in Western Australia. Its network transmits and distributes electrical energy through its extensive South West Interconnected System (SWIS). Approximately 75% of the network consists of bare overhead conductor traversing bush land or vegetated areas.

Western Australia's long dry summer, with the hot weather typically extending into March, creates conditions that often lead to bushfires ['the Bushfire season'].

Lightning, acts of vandalism, carelessness and other phenomena, which create ignition in the proximity of dry vegetation, cause the majority of bushfires.

Western Power's network assets ignite bushfires each year, which may lead to public safety risks and damage of property. Bushfires also cause damage to Western Power's network infrastructure, which in turn can impact critical local community services such as water pumping and communication facilities which are essential in fighting fires and protecting communities generally.

1.1.1 Improvements in 2010/2011 Bushfire Management Plan

The 2010/2011 Bushfire Management Plan has a number of new initiatives aimed at improving bushfire mitigation. These initiatives, together with the fine-tuning of existing strategies, are part of Western Power's continuous improvement philosophy in relation to Bushfire Management. Western Power will also analyse the 2009 Victorian Bushfires Royal Commission recommendations to determine further improvements to its bushfire mitigation efforts. New initiatives for 2010/2011 include:

- Implementation of targeted programs in Extreme and High Fire Risk areas before bushfire season to reduce Priority 1 and Priority 2 conditions;
- Refinement of the End to End Wood Pole Management System initiative. The focus of this project is to review the standards, installation, maintenance and removal of wood poles to improve the safety and reliability of Western Powers wood poles. The goal is to align Western Power practices with good industry practice and

acquittal of all audit findings and orders from Energy Safety;

- Expansion of the Recloser Strategy to include bays located in Low and Moderate Fire risk areas (in addition to Extreme and High Fire Risk zones) on days of Very High Risk, in line with new Fire Danger Ratings;
- Increased auditing of Vegetation cutting in Bushfire Risk areas to achieve compliance with Energy Safety's Code of Practice for clearances between powerlines and vegetation;
- Updating of the Bushfire Threat Analysis (BTA) project that provides, on an annual basis, bushfire risk data for the whole of Western Australia. Western Power partners and funds this project with FESA and DEC;
- Enhanced inspection process of wood poles assessing pole serviceability based on pole strength and pole load;
- Enhanced pole top inspection process using digital technology;
- Implementation of the spacer cable covered conductor technology for use in Extreme and High Bushfire Risk areas;
- Trialing new techniques for undergrounding power to improve public safety and reliability; and
- A review of Western Powers Distribution Protection schemes.

1.2 Plan Purpose

The purpose of this plan is to establish a framework of policies, processes, strategies and accountabilities for proactively managing:

- the public safety risk;
- the personnel risk (Western Power staff, contractors and FESA personnel); and
- Western Power's business risk.

The Bushfire Management Plan contributes to a good practice approach for planning and operational aspects of the business and uses a qualitative risk assessment for BTA to mitigate the risk and impact of fires.

1. Plan Purpose, Improvements and Approval (cont'd)

The objectives are to:

- reduce the risk of injury;
- reduce the risk of damage to third party and network assets; and
- maintain compliance with relevant legislation.

1.3 Plan Scope

The Plan covers all aspects of bushfire management relating to network assets in Western Power's South West Interconnected System.

Management controls relevant to this plan include:

- Bushfire risk assessment;
- Risk reduction strategies for public safety;
- Management reporting;
- Insurance management;
- Public awareness management;
- Managing the impacts of legislation;
- Asset management;
- Maintenance management;
- Land and environment management;
- Investigations management; and
- Bushfire Management Plan audit.

1.4 Public Safety

The Bushfire Management Plan contributes to Western Power's overarching Public Safety Management Strategy. The purpose of a Public Safety Management Strategy is to establish a framework of standards, processes, strategies and accountabilities for managing the public safety risk posed by Western Power's business. It contributes to good industry practice for the management of Western Power's network, including planning, design, construction, maintenance and operation and is based on a qualitative risk assessment approach.

1.5 Plan Ownership and Preparation

Network Performance Branch (Networks Division) is responsible for preparing the Bushfire Management Plan and retains ownership of the plan.

1.0 Plan Purpose, Improvements and Approval (cont'd)

1.6 Plan Governance

Approvals

Action	Date	Title	Signature
Authorisation		Managing Director Western Power	
Endorsement		General Manager Networks	
Recommendation		Manager Network Performance	

1.7 Documentary Changes

Changes made during the year shall be recorded in the table below and approved by the General Manager Networks.

Date	Issue	Document (DM) Ref	Summary of Changes	Authorisation



Section 2.

Bushfire Risk Management Strategies





2.0 Bushfire Risk

Western Australia experiences an extended period of dry weather in the summer period between December and March. Wind and dry, hot conditions, which support bushfires are not unusual in areas traversed by the network. These conditions must be assumed to always exist during this period.

Western Power has limited resources to mitigate against bushfire at every point of its extensive network. Therefore the risks to people, the community, Western Power's business and assets from bushfire need to be evaluated in order to implement strategies to effectively mitigate this risk. Safety, financial, community and business impacts are the drivers to be considered in the evaluation of risk.

2.1 Bushfire Risk Assessment

Western Power uses the Australian Standard for risk assessment methodology, (AS4360), as the basis for bushfire risk determination.

The bushfire risk methodology assesses bushfire risk in the areas traversed by the network using considerations of bushfire likelihood and consequence.

Western Power has also partnered and funded a Fire and Emergency Services Authority (FESA) and Department of Environment and Conservation (DEC) initiative to develop a detailed BTA across Western Australia. The BTA is updated on an annual basis and informs annual bushfire preparedness works.

2.2 Network Mapping

The Bushfire Risk Assessment uses the locations of all Network assets recorded in Western Power's Geographic Information Systems (Distribution Facilities Information System (DFIS), Mapinfo and Network Mapping System (NMS)). This is combined with layers of data provided by FESA and DEC of recent bushfire events and records of areas where controlled burning has been undertaken.

Other considerations used for evaluating bushfire consequence include infrastructure, habitation, land and business value in the vicinity, together with geographical contours. The mapping system uses the likelihood and consequence criteria to identify the fire risk zones for the use of maintenance and planning. Figure 2 on page 14 shows a map of Western Power's fire risk zones.

2.3 Risk Reduction Strategies for Public Safety

The risk reduction strategy flows from the Bushfire Area Risk Assessment. The primary public safety concern of these strategies is to reduce bushfire ignition caused by network assets, plant, equipment or employee/contractor action.

The secondary concern of these strategies is to minimise the impact of asset damage from bushfires, which may occur in the vicinity of network assets.

Short-term strategies are aimed at addressing high priority risks. Long-term strategies for revising standards for asset selection, design and planning provide root cause mitigation solutions.

2.3.1 Maintenance Strategy

The primary preventative maintenance strategy for line assets is based on a program of specified inspection and condition monitoring.

Asset inspection programs monitor the condition of these assets and record details of equipment condition in the Distribution Facilities Management System (DFMS). The required periods for asset inspection and asset replacement are contained in the Asset Missions.

Asset inspections include inspections for poles, as well as underground and overhead hardware integrity, which are undertaken in accordance with established plans, procedures and instructions.

Instructions include features to be observed in assessing asset condition and detailed descriptions of items that need to be identified for replacement or maintenance programs.

2.3.2 Wires Down Mitigation Strategy

When wires break and fall down, dry undergrowth may ignite and start bushfires. The strategy is to accelerate the replacement of rusted or corroded conductors in areas of extreme and high bushfire risk.

2.0 Bushfire Risk (cont'd)

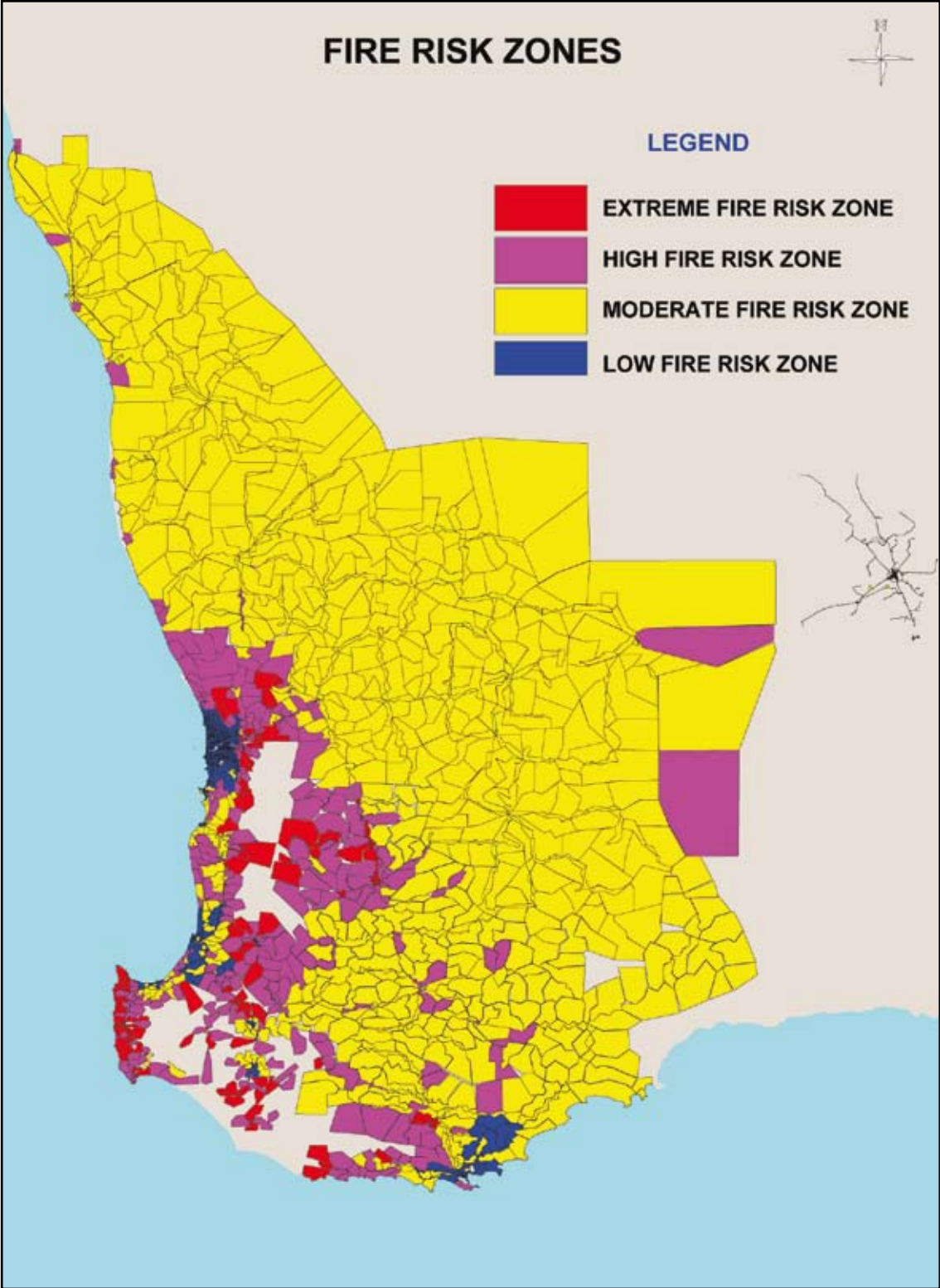


Figure 2 Fire Risk Zones.

2.0 Bushfire Risk (cont'd)

2.3.3 Pole Down Mitigation Strategy

Falling poles may result in a fire by bringing live electrical equipment into contact with vegetation. To mitigate this, a condition based inspection procedure determines if a pole is to be reinforced or replaced. This process has been enhanced by assessing pole serviceability based on pole strength versus pole load.

Western Power has also introduced a new initiative to refine its "End to End Wood Pole Management System". The focus of this initiative is to review the standards, installation, maintenance and removal of wood poles to improve safety and reliability of Western Powers wood poles.

2.3.4 Conductor Clashing Mitigation strategy

Conductor clashing causes sparks which have been known to cause bushfires. Strategies to mitigate clashing conductors form part of this plan. Specific strategies include a Low Voltage (LV) Spreader program and a High Voltage (HV) Long Bay program.

The LV Spreader program fits spreaders on conductors to separate them, especially in hot and windy conditions, when conductors can sag and be blown into adjacent conductors causing sparks.

The HV Long Bay program determines solutions to bays that exceed set criteria, including length and pole top configuration.

2.3.5 Vegetation Management Strategy

Western Power undertakes vegetation management near its power lines. These programs maintain clearances between vegetation and network assets and include fuse poles, switch poles and transformer pole vegetation clearing. Western Power's Strategic Vegetation Management Plan 2010-2012 specifies priorities for vegetation management. The vegetation management strategy is to undertake vegetation management based on the bushfire area risk assessment. All vegetation maintenance in Extreme and High Fire risk areas is to be completed by November 30 of each year. Vegetation maintenance in Moderate Fire Risk areas are on a two-year inspection cycle and Low Fire Risk areas are on a three-year inspection cycle.

This vegetation strategy will also minimise bushfire damage to Western Power assets by reducing fuel



loads in the vicinity of fuse pole bases and provide effective vegetation clearance from assets to help prevent heat damage from adjacent fires.

2.3.6 Pole Top Fire Mitigation Strategy

Pole top fires result in system faults and can cause bushfires by pole top equipment or sparks falling to the ground and igniting vegetation. The application of silicone coatings on pole top insulators is an established strategy for preventing pole top fires.

The application of silicone coatings in bushfire prone areas is the current strategy and this strategic program will be continued.

Also, when poles and/or cross-arms are replaced, steel cross-arms and polymer insulators are used.

2.3.7 Investigations strategy

Western Power monitors fault/fire incident statistics to determine trends and highlight network damage or faulty equipment in need of repair or replacement.

Bushfire-related incidents are investigated to recommend immediate and long-term bushfire mitigation action.

2.0 Bushfire Risk (cont'd)



2.3.8 Operations Strategy

A Bushfire Reporting Process, jointly developed by Western Power and FESA, has been implemented to improve safety for fire crews fighting fires in the vicinity of Western Power assets. The process streamlines communication between FESA and Western Power to enable the fire crews to work safely and efficiently with Western Power to fight bushfires.

Western Power also uses Bureau of Meteorology weather information that identifies high and extreme bushfire risk days. Operating procedures for high bushfire risk days are followed on days of high and extreme bushfire risk.

Days of total fire ban are declared in situations of extreme weather and other environmental conditions, which are conducive to the ignition and spread of bushfires. Procedures and work instructions for days of total fire ban incorporate arrangements for:

- Liaison between Western Power and FESA;
- Communication with the affected community;
- Communications with emergency groups;
- Response to emergency situations resulting from network damage or failure;
- Authorised actions where they result in the interruption of electricity supply to customers;
- Management of network fault energy on days of total fire ban; and
- Obtaining permits relevant to work activities on days of total fire ban.

2.3.9 Work Practices Strategy

Unsafe work practices by Western Power crews or its contractors may ignite surrounding vegetation and cause bushfires.

Western Power has documented instructions and provides training of work crews for working in bushfire-prone areas and during days of total fire ban.

This includes instructions for the use of motor vehicles and combustion engines and the fire fighting equipment to be carried.

2.3.10 Design and Equipment Standards Strategy

Western Power investigates long-term design improvements, equipment improvements and new technologies. Design and equipment standards are updated accordingly.

The strategy is to place a high weighting on designs and equipment that provide low likelihood of initiating fire and have high resistance to fire.

New technologies that reduce ignition likelihood and/or are fire resistant are assessed for effectiveness and value. Technologies assessed include:

- Alternate fuse devices;
- Alternative short-circuit protection systems; and
- Alternative conductor and construction types.

2.3.11 Planning strategy

Planning strategies adopted for avoiding fire starts and protecting assets from bushfires include:

- Re-routing lines away from bushfire risk areas;
- Under-grounding new or replacement lines; and
- Adopting fire resistant and fire safe overhead line designs, including supply lines critical to safety and community interests.

2.0 Bushfire Risk (cont'd)

2.3.12 Fire Response Strategy for Bushfire Protection

The fire response strategy relies on the fast response and attendance of Western Power fire fighting crews to protect network assets faced with the threat of bushfire damage.

Protective dousing or clearing action can be taken before the bushfire reaches the network asset or even after the bushfire has passed through.

This strategy has safety implications for Western Power personnel and must be co-ordinated with FESA.

The strategy requires:

- Established co-operative working relationships with FESA and DEC and agreed protocols of Western Power behaviour at bushfire events;
- Effective communication links with other authorities (e.g. FESA and DEC) on the location and likely movement of bushfires; and
- Fire fighting and fire equipment training of field repair crews.



2.3.13 Accreditation and Training Strategy for Bushfire Protection

This strategy covers regular training and refresher training programs with the requisite accreditation's needed to undertake effective asset inspection. This is required for both Western Power and contract employees.

The training and accreditation strategy enables the use of approved plant and equipment and the management and monitoring of contracts for effective maintenance and vegetation control.

2.3.14 Public Awareness Strategy for Bushfire Protection

The public need to be regularly reminded of the consequences of bushfire from unrestricted vegetation near private electric lines and their responsibilities for the management of private vegetation close to Western Power's lines.

Western Power is committed to enhance public awareness of the consequences of all forms of network-related risk as part of its commitment to safety. Western Power has developed a comprehensive Public Safety Management Strategy and complementary Public Safety Awareness Plan to assist with this objective. The initiatives in this section align with both of these over-arching documents.

A key aspect of the Public Safety Awareness Plan is to enhance public awareness of the consequences of bushfire risk and to enlist public support to report hazardous situations likely to cause bushfires.

A number of strategic initiatives, including media campaigns, and notes on electricity accounts and the Western Power website, are used to inform the public of:

- The potential fire risks associated with all aerial electric power lines;
- The obligations of householders or landowners to prevent cultivated or tended natural vegetation from coming into contact with power lines;
- The benefits of vegetation management at the start of the bushfire season;
- The risks of planting inappropriate vegetation near electrical lines;
- Vegetation species suitable for planting near and below power lines; and
- Potential hazards of fire fighting activities near power lines and transmission lines.



Section 3.

Bushfire Management Plan Performance Reporting





3.0 Management Reporting

Management reporting informs management of the performance of the network and Western Power's preparedness for the fire season.

The reporting system records all incidences of fire ignition caused by electricity assets through the Trouble Call System (TCS), Electricity Supply Emergency Notification (ESEN) and Risk Management claims.

3.1 Bushfire Season Preparedness Indicator

Western Power has established a Bushfire Season Preparedness Indicator to determine bushfire readiness each year.

3.1.1 Bushfire Season Preparedness Index

This is a lead indicator that provides a pre-bushfire season risk indicator on the following areas:

- Vegetation in Extreme and High Bushfire Risk areas to be cut by November 30 of each year;
- Fuse pole clearing in Extreme and High Bushfire Risk areas completed by November 30 of each year; and
- Priority One maintenance conditions in Extreme and High Bushfire Risk areas that are directly bushfire related completed by November 30 of each year.



Section 4.

Bushfire Related Management Functions





4.0 Bushfire Related Management Functions

The following management functions have been identified as key requirements that need to be addressed for effective management of bushfire mitigation activities.

4.1 Insurance Management

Insurance management is an ongoing essential management function linked to the mitigation of bushfire risk. Western Power insurance representatives attend Bushfire Management meetings and are consulted regularly so that mitigation strategies are communicated to Insurers.

4.2 Public Awareness Management

The dissemination of information relating to bushfires has to be managed. New initiatives are developed and proven strategies updated and reinforced to cover:

- Public awareness of Western Power's activities to mitigate against bushfire;
- Public awareness of the risks and consequences of vegetation near power lines and community obligations for vegetation management within their properties;
- Public awareness of Western Power initiatives to support fire fighting agencies; and
- The management of information to the media subsequent to significant bushfire incidents (Fire Communication Protocol).

4.3 Managing the Impacts of Legislation

Western Power's liability under common law for damage or injury arising from bushfires initiated by its assets has to be managed. The extent of this liability will depend on the circumstances in each case.

Other relevant legislation which must be considered includes the Energy Operators (Powers) Act 1979, The Electricity Act 1945, Bush Fires Act 1954 and the Electricity (Supply Standards and System Safety) Regulations 2001.

4.4 Asset Management (Refurbishment/Replacement)

Asset Management Plans are produced annually to refurbish or replace equipment known to present a high ignition risk or identified as being vulnerable to significant damage.

4.5 Land and Environmental Management

This plan aligns management actions arising from the plan with environmental procedures and policies of Western Power, including the environmental policies and procedures related to planned and unplanned maintenance.

4.6 Investigations Management

All fires, which have been attributed to network assets, are investigated. Detailed investigations are also conducted in response to a claim and may also be undertaken to verify asset performance.

Investigations are also conducted so that statutory notification and legal privilege requirements are enforced where applicable.

Investigation management includes the tracking and follow-up of agreed preventative actions recommended in the investigation.

4.7 Bushfire Management Plan Audit

Internal Audit carries out annual audits of the Bushfire Management Plan and the Bushfire Management Implementation Plan to verify the accuracy and effectiveness of the plans.



Section 5.

References, Definitions and Acronyms





5.0 Definitions and Acronyms

Definitions and Acronyms

Definitions	
Asset Mission	The purpose of an asset, its performance measures and a maintenance and renewal strategy for the particular asset class
Bushfire	This is a general term, uniquely used by Australians, and includes grass fires [including paddock fires], forest fires and scrub fires, i.e. any fire outside the built up urban environment. Also sometimes known as a wildfire (Environmental Protection Authority 2004)
Bushfire Threat Analysis	Bushfire Threat Analysis is a structured approach used to analyse the bushfire threat for a particular area or nominated set of values and calculate a response or determine priorities for funding or action (Environmental Protection Authority 2004)
Fire safe	Equipment that is deemed to be in a state that presents a low risk of bushfire ignition potential
Bushfire Season Preparedness Indicator	A lead indicator that allows Western Power to assess its preparedness for the upcoming bushfire season
Bushfire Season	The period from 1 December to 31 March annually

Acronyms	
BRI	Bushfire Risk Indicator
DEC	Department of Environment and Conservation
DM	Document Management
DFIS	Distributed Facilities Information System
DFMS	Distributed Facilities Management System
DOCEP	Department of Consumer and Employment Protection
ESEN	Electricity Supply Emergency Notification
ESA	Environmentally Sensitive Area
FESA	Fire and Emergency Services Authority
HV	High Voltage
LV	Low Voltage
NMS	Networks Mapping System
SWIS	South West Interconnected System
TCS	Trouble Call System
TFB	Total Fire Ban
WA	Western Australia

5.1 References

Legislation

- Bush Fires Act 1954
- Conservation and Land Management Act 1984
- Fire and Emergency Services Authority of Western Australia Act 1998
- Fire Brigades Act 1942
- Forest Products Act 2000
- Occupational Safety, Health and Welfare Act 1996
- Environmental Protection Act 1986
- Energy Operators (Powers) Act 1979
- The Electricity Act 1945
- Electricity (Supply Standards and System Safety) Regulations 2001

Appendix 1

Western Power Policies, Plans and Procedures

Corporate Policies, Plans and Procedures
Media Policy
Document Management Policy and Procedures
Environmental Policy
Safety and Health Policy
Safety and Health Emergency Response Guideline
Crisis Management Plan
Network Service Standards
Public Safety Management Strategy
Public Safety Implementation Plan
Public Safety Awareness Plan
Network Policies, Plans and Procedures
Transmission Substations Maintenance Policy
Transmission Lines Maintenance Policy
Transmission Planning Criteria
Distribution Planning Criteria
Distribution Planning for SWIS Networks in Bushfire Risk Areas
Transmission Planning for SWIS Networks in Bushfire Risk Areas
Directory of Environmental Policies and Procedures
Wood Pole Inspection Procedure
Bushfire Risk Assessment Methodology
Strategic Vegetation Management Plan 2010 – 2012
Network Operating Plans, Manuals and Instructions
Transmission Emergency Management Plan
Distribution Emergency Management Plan Manuals
Vegetation Manual 2009 (Contractors Version)
Pole Inspection Manual
Wood Pole Inspection Field Handbook
Switching Operators Manual

