Aurora ENERGY

ABN 85 082 464 622

MANAGEMENT PLAN 2011
BUSHFIRE MITIGATION
(GENERAL PROGRAMS)

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			Approved by	AD

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1. PURPOSE

The purpose of this Management Plan is to detail, for bushfire mitigation:

1. Aurora's approach to bushfire mitigation, as reflected through legislative and regulatory obligations, the Network Management Strategy and Bushfire Mitigation Management Strategy;
2. An outline of the Bushfire Mitigation Program for the period 2012/2013 – 2016/2017.

2. OBJECTIVES

The objectives of the Bushfire Mitigation Management Strategy are to:

1. Ensure compliance with regulatory requirements, in particular Chapter 8A of the TEC, ensuring the minimum standards and practices are delivered;
2. Ensure appropriate risk mitigation measures are in place to minimise the likelihood of distribution assets starting fires, including standards, reporting and rectification programs;
3. Deliver an annual bushfire mitigation program to identify and rectify any risks through each fire season, including working closely with our customers; and
4. Ensure activities undertaken by Aurora staff and contractors, and by the operation of the network, minimise the likelihood of distribution assets starting fires.

3. SCOPE

This management plan covers the following activities associated with bushfire mitigation:

1. Targeted vegetation auditing and fire cutting;
2. Requirements for Network Operations on total fire ban days;
3. Prudent practices for Aurora staff and contractors working on the Network; and
4. Reporting and management of vegetation issues and asset defects.

Asset inspection and defect management is covered in the Bushfire Mitigation (Asset Programs) Management Plan (reference 6).

4. BACKGROUND

Aurora Energy is Tasmania's largest electricity distributor and retailer. Aurora manages a network of more than 22,000 km of high and low voltage overhead powerlines, upon which Tasmanian's have a very high dependency for contemporary living, wellbeing and business.

Aurora's distribution network supplies electricity to over 277,000 customer installations across 68,000 square kilometres in Tasmania. Over 90% of the distribution network consists of bare overhead high voltage (HV) and low voltage (LV) conductor, which cross a variety of terrains varying from built up urban areas through to cultivated farm land and bush.

The distribution network has approximately 15,000 km of overhead high voltage powerlines, 5,000km of overhead low voltage powerlines, 30,000 ground and pole mounted substations and 220,000 poles (reference 2010 Aurora Energy Annual Report). There are also approximately 40,000 privately owned poles that Aurora has a duty of care to inspect.

Like all overhead electricity distribution networks in fire prone countries like Australia, Aurora's network assets have varying degrees of vulnerability to bushfires.

Most fires in Tasmania occur during relatively mild summer weather conditions. These fires burn slowly and are controlled by fire fighting crews. Historically however, extreme destructive bushfires have occurred in every Australian state and territory, burning through large tracts of forest and pasture, destroying homes and livestock. Bushfires have caused fatalities. These fires are typically fanned by strong hot and dry winds, which in Tasmania usually blow from the North West. A significant proportion of the fires that occur in Tasmania each year are bushfires.

Bushfires usually occur during the warmer months from November to March, with a peak in January and February. They are unusual during the winter months however, major fires have occurred as early as October and as late as April.

Almost every summer in Tasmania there are several days of very high or extreme fire danger. Fires burning on these days will be very difficult or impossible for fire crews to control. The 2006/2007 fire season is a perfect example of how several extremely windy days fanned major bushfires across the state.

Two key fire events in Tasmania's fire history are:

1. The 'Black Tuesday' fires impacting Hobart on 7 February 1967, and
2. The 2006/2007 season bushfires affecting eastern Tasmania

The Black Tuesday fires killed 62 people, injured 900, and rendered 7,000 people homeless. The 1966/1967 summer was preceded by an unusually wet spring (September and October rainfall was more than twice the long-term annual average for that period) resulting in prolific grass growth. Conditions then turned very dry, with November to February rainfall being little more than a third of the long-term average rainfall for that period. Grasslands cured and forest fuels dried out significantly. The occurrence of extreme fire weather on 7 February resulted in numerous fires moving into dry, heavy forest fuels, subsequently merging and forming an extreme forest fire event. This event is a case of a short-term drought contribution to a severe fire event.

In northern and eastern Tasmania, 2006 was a very dry year. In Hobart, 2006 rainfall had been little more than half of the long-term annual average. This longer-term drought situation resulted in very dry forest fuels, including during the spring period. In October, severe fires burnt through areas of Hobart's eastern shore, and in December large intense forest fires burnt in north-eastern Tasmania, impacting Scamander among other places.

Whilst the high impact fire events referred to above are more common on the mainland, these two examples illustrate high consequence fires can and do

occur in Tasmania. When drought and severe fire weather combine, and fires start in areas with extensive eucalypt forest cover, fires with fire behaviour at the upper levels of possible severity can occur.

5. IDENTIFICATION OF FIRE DANGER AREAS

A major consideration for the undertaking any bushfire mitigation works is whether the geographic area where the project is situated is in a High or Very High fire danger area.

Aurora has defined Fire Danger Areas within Tasmania that were identified with the assistance of the Tasmania Fire Service (TFS). Figure 1 identifies High and Very High Fire Danger Areas:

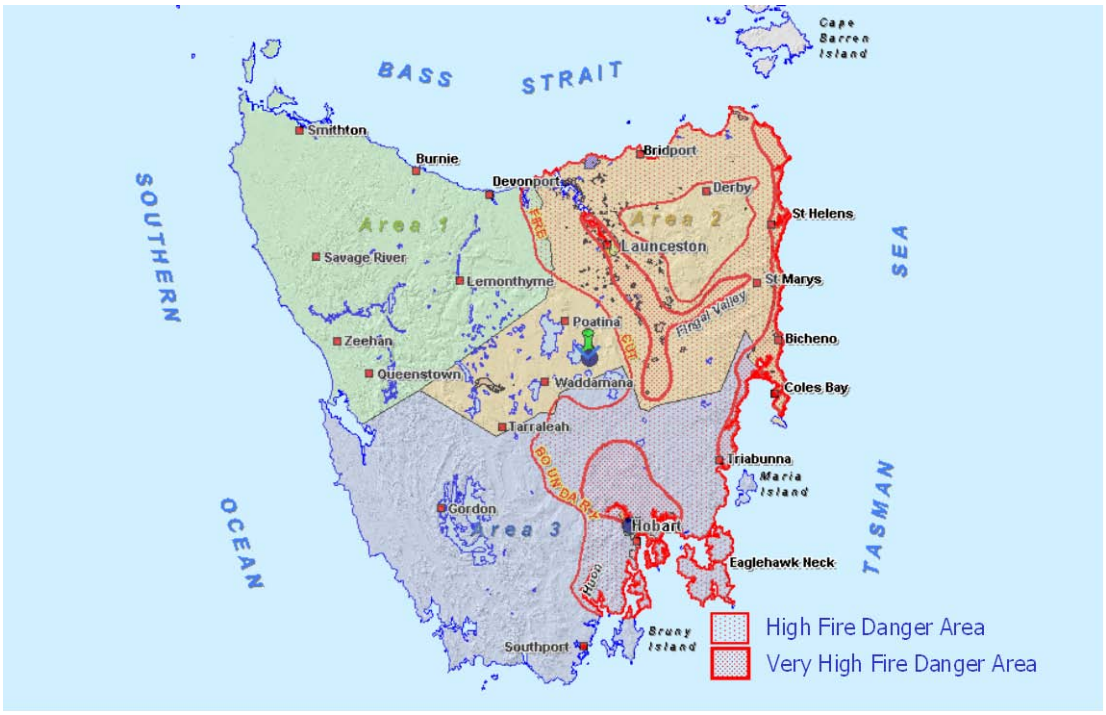

Figure 1: Fire Danger Areas

Aurora's Geospatial Information Systems (GIS) can overlay this information onto Aurora's geospatial distribution network data. This mapping enables Aurora to identify fire danger areas within Tasmania where the risk (likelihood and consequence) of starting a fire is higher.

To ensure that Aurora is continuously improving its knowledge of factors that influence fire danger and improve the accuracy of its fire danger area maps, Aurora regularly consults with external fire fighting parties within Tasmania such as the TFS and the Department of Parks and Wildlife Service (DPWS).

The methodology for identifying fire danger areas is reviewed periodically to ensure that it remains appropriate.

6. STRATEGY IMPLEMENTATION

6.1 Relationship to Other Management Plans

Bushfire Mitigation activities are undertaken across other threads within Aurora. The funding for these programs is identified at thread level as part of these threads, but the work is managed as part of the vegetation program.

6.2 Asset Programs

The knowledge surrounding fire starts caused by network assets is well understood, and encompassed within the Management Plan 2011: Bushfire Mitigation (Asset Programs) (reference 6).

This plan outlines the failure models of various assets and possible ignition sources and what actions, responsibilities, resources and timeframes are required to implement it.

6.3 Vegetation Programs

In addition to the normal program vegetation cut running throughout the year, the necessity for a pre-fire season special inspection and cut in High and Very High Fire Danger Areas is considered each year.

Each year Aurora undertakes a pre-fire season program that includes a combined inspection carried out by Aurora and its contractors and subsequent vegetation clearing works resulting from these inspections.

Planned inspections will total approximately 6500 kilometres of high and low voltage power lines being inspected and identified issues actioned.

Focus areas are generally feeders that fall inside ‘High’ and ‘Very High’ Fire Danger Areas that were cut greater than 12 months ago.

Consideration is also given to the requirement for inspection and cutting in ‘Low’ and ‘Moderate’ fire danger areas. However, generally minimal pre-season works are carried-out in these areas unless Aurora has fire data that would warrant otherwise.

Audits of pre-season inspections are undertaken prior to and during the fire season.

6.4 Mechanisms of Fire Ignition and Their Causes

Knowledge of the causes, incidence and environment associated with serious fires enables programs of awareness, inspection and prevention to be established and targets/rules to be set that reflect a proper focus on the causes of fire ignition that are judged to be the greatest risk to the public and the business.

A considerable amount of investigation has been undertaken by the industry to determine the causes to enable Electricity Utilities to determine preventative actions to be taken.

Aurora’s works programs to address asset related issues are covered in detail within Aurora’s Management Plan 2011:Bushfire Mitigation (Asset Programs) (reference 6).

6.5 Network Design Standards

A major part of prevention is to ensure that the Distribution Network is initially built to a design standard that will minimise the risk of Aurora's distribution assets starting fires.

The Distribution Overhead Line Design and Construction Standard (DS D OH 1) outlines alternative line design options for Aurora's designers to consider when designing the network in fire danger areas.

Aurora's Distribution Overhead Line Design and Construction Standard is the standard to be used for the design and construction of all new overhead distribution assets.

6.6 Work Practices

In addition to the assets themselves starting fires, the activities associated with the building, operating and maintaining these assets may contribute to fire starts.

Aurora's Service Providers (both internal and external) have procedures and work practices in place and adequate training for staff that cover items such as:

- Standard fire fighting equipment held on site at resource centres and carried in vehicles;
- Testing, maintenance and servicing frequency of fire fighting equipment;
- Permits and processes for working in and outside fire danger areas and on total fire ban days.

6.7 System Operation - Days of Total Fire Ban

Many faults in overhead systems are transient in nature. A transient fault is a fault that is no longer present if the power is disconnected for a short time. Causes of transient faults include momentary vegetation contact, windborne materials such as bark, bird or animal contact, conductors clashing due to high winds and lightning strikes.

Auto-reclosers are combined protection and circuit breaker devices that are designed to attempt to restore power in the event of a transient fault.

Auto-reclose operation of protection systems are disabled during total fire ban periods.

This helps to prevent the start of a bushfire as each reclose may cause:

- Sparking from permanently faulty equipment or powerlines;
- Molten metal splatter to fall to the ground as a result of high fault currents (from permanently faulted equipment) causing conductors to clash on sections of line upstream from the fault; and
- Increased likelihood of vegetation ignition where bark or branches may have come into contact with the line due to the current flowing through the vegetation.

Aurora's Network Operations are covered in more detail in Networks Procedure NP R NO 16 – 'Auto Reclose Suppression in Total Fire Ban Periods'.

6.8 Annual Program Planning

Each year prior to the fire season, two specific project plans are developed to address the asset and vegetation related issues of Bushfire Mitigation.

6.8.1 Project Plan – Fire Mitigation Strategies for Overhead Powerlines in High Fire Risk Areas (NA R AM 01)

This project plan outlines the annual program for identification and review of actions and standards that are to be followed by Aurora to mitigate fire risks associated with overhead distribution powerlines and assets in specified high fire risk areas.

The project plan aligns to the Management Strategy: Bushfire Mitigation (reference 4) and Management Plan 2011: Bushfire Mitigation (Asset Programs) (reference 6), and applies the elements identified into a structured work program.

In detail, the project plan covers:

- The pre-fire season audit program - Includes both asset and vegetation assessment, which generate a defect list to be assessed and auctioned.
- Audit defects and management – determines priorities and actions associated with the line defects found through cyclic pole line inspections.
- Recording of alterations to the distribution network – ensuring accurate information and system diagrams.
- Private Powerlines – due to Aurora's duty of care, the audit includes private powerlines, however the customer is responsible for corrective actions in accordance with Network Procedures:
  - Inspection and defect Management of Private Powerlines (NP R EC 23)
  - Upgrading of Private Low Voltage Overhead Powerlines (NP R AM 31)
- Reference to the pre-fire season vegetation fire cut as detailed in the Project Plan – Vegetation Fire Mitigation Plan (NA R EC 04) (refer Section 6.8.2).

6.8.2 Project Plan – Vegetation Fire Mitigation Plan (NA R EC 04)

This project plan outlines the annual program for vegetation audits for overhead powerlines within high fire risk areas to mitigate fire risks and ensure code compliance.

In detail, the project plan covers:

- The pre-fire season audit program as for per Section 6.8.1 (NA R AM 01).
- Reporting requirements for vegetation defects identified – records the location, scope and work required.
- Resource allocation – ensures consideration for alignment of resources across the state, and their current work priorities in managing the identified vegetation defects.

In undertaking the vegetation clearing, a fire cut is applied. The fire cut applies only in high bushfire risk areas, and is minimal trimming required to keep vegetation out of the regulated clearance space for the duration of the on-coming fire season.

6.9 Public Awareness Campaign

It is essential that the community be aware of the potential fire hazards that can arise from the poor maintenance of Private Electric Lines and the selection of inappropriate vegetation species for planting near powerlines.

To address this, a comprehensive communication program focusing on the following issues will be maintained:

The potential of the Distribution Network to be a cause of fire ignition

1. Trees and powerlines do not mix; and
2. Reminders to Private Electric Line owners of their responsibilities.

Advertising campaigns will be undertaken utilising a combination of the following media:

Visually descriptive television awareness campaigns

1. Newspaper advertisements in various newspapers
2. Articles and advertisements in various journals and magazines
3. Radio commercials communicating fire awareness messages; and
4. Other medium as the opportunity arises.

Free brochures and information pamphlets regarding how the community can assist in reducing the risk of fire will be made available at all Aurora offices.

Defects reported by the public are managed by Network Procedure NP R AM 03 “Identification and Management of Overhead Line Component Defects’.

Aurora will also actively participate in Electricity Industry forums relating to bushfire mitigation management with the aim of reducing the risk of bushfires to the business.

7. MONITORING, REPORTING AND AUDITING

7.1 Liaison with External Parties

Aurora works closely with the Tasmania Fire Service, Department of Parks and Wildlife Services, State Emergency Services, local government and other appropriate organisations and government departments about bushfire related matters to monitor events leading into each fire season and to improve its bushfire mitigation management capability.

Aurora actively:

- Provides representation on local and regional bushfire committees;
- Participates in local and regional emergency planning preparation and any operational exercises to test the plans; and
- Provides bushfire liaison officers for Fire Control Centres as a direct communications link between the fire control centre and Aurora’s Operational Control Room.

7.2 Fire Start Reporting

A rigorous field-reporting regime is in place to ensure all instances of fires started by Aurora assets are recorded and categorised into appropriate fields. This data enables Aurora to develop and tailor specific fire mitigation activities relative to the risks.

AuroraSafe Standard: Managing Incidents governs the reporting of all incidents and includes the reporting of environmental incidents such as fires.

The data collected in this system is then be used to:

1. Identify the cause of fire starts and trends;
2. Identify sections of the distribution network that may pose a higher fire start risk; and
3. Measure the effectiveness of bushfire mitigation management programs.

7.3 Performance Reporting

Aurora communicates its annual bushfire program to the Aurora Executive Team and Board prior to each bushfire season and a review of the effectiveness of the program and areas for improvement takes place at the end of each bushfire season.

The requirements of the management reporting is detailed within Network Procedure NP R AM 23 ‘Fire Mitigation Management’.

7.4 Auditing

Pre Summer BFM audits are conducted annually and are designed to ensure all levels of Aurora Management have the opportunity for involvement in Compliance Audits.

Whilst Senior Management participation is not mandatory, they are strongly supported by Senior Aurora Executives and the Aurora Network Management Team (Ref: Clause 6.6.4 NP R AM 23):

The audits provide Senior Managers with an opportunity to be actively involved in managing one of Aurora's major business risks. Involvement by senior managers in these audits also provides added commitment to the process and helps manage the perception of others throughout the business.

7.5 Business Rules and Targets

Aurora has a number of business rules that sets time frames for completion for the individual items. These business rules enable Aurora to measure performance of the program delivery. The rules are clearly identified within the relevant procedures and project plans, and details inspection, auditing, defect remediation and program milestones.

7.6 Annual Program of Activities

Aurora completes an annual program with milestone dates to deliver its strategy the each fire season. This program is detailed in the Network Procedure – Fire Mitigation Management (NP R AM 23) and the subsequent project plans.

8. BUSHFIRE MITIGATION PROGRAM DEVELOPMENT

8.1 Annual Program Forecast

Aurora's long-term strategy for the bushfire mitigation program is that over time, the work volume will reduce due to:

1. Improved effectiveness of the cyclic vegetation program in maintaining effective clearances.
2. Improved asset management programs, reducing the likelihood of known asset and system issues,
3. Improved systems and processes to monitor and manage defects, customer concerns and stakeholders.

8.2 Program Building Blocks

Aurora completes the requirements of Network Procedure – Fire Mitigation Management (NP R AM 23) to determine the annual program, outlined in the form of project plans.

The resultant project plans – NA R AM 01 (Asset Programs) and NA R EC 04 (Vegetation) are then planned and executed to achieve the strategy.

8.3 Calculations of Work Volumes

The work volumes will be determined as an outcome of the project plan development.

There are a number of considerations that may alter the work volumes on a year by year basis, including growth rates during spring, and how recent the normal cyclic clearing was performed within the defined high and very high fire risk areas. Where a feeder in a high to very high fire risk area has had a recent cyclic clearing performed there will be significantly less work required for the program.

8.4 Pricing Methodology

The program for Bushfire Mitigation is funded as a component of the Vegetation Management program, as detailed in the NW-#3015991 Management Plan – Vegetation Management.

9. RESPONSIBILITES

Maintenance and implementation of this management plan is the responsibility of the Bushfire Mitigation Manager.

Approval of this management plan is the responsibility of the Group Manager – Asset Performance and Information.

10. REFERENCES

1. Tasmanian Electricity Code (Chapter 8A)
2. NW-#10247841– Policy - Vegetation Management Near Powerlines NN R EC 04
3. NW-#30165740 - Vegetation Management Strategy
4. NW-#30146570 - Management Strategy: Bushfire Mitigation
5. NW-#30165991 - Management Plan 2011: Vegetation
6. NW-#30043347 - Management Plan 2011: Bushfire Mitigation (Asset Programs)
7. NW-#30011791 – Procedure Fire Mitigation Management NP R AM 23
8. NW-#10264880 - Project Plan - Fire Prevention Strategies For Overhead Powerlines In High Risk Areas 09/10 - NA R AM 01
9. NW-#10247107 - Project Plan – Vegetation Fire Mitigation Plan - NA R EC 04.
10. NW-#10266664 - Procedure - Fire Mitigation Data Analysis NP R AM 19
11. NW-#174491 Procedure - Auto Reclose Suppression in Total Fire Ban Periods NP R NO 16
12. NW-#10149822 - Procedure - Inspection And Defect Rectification Of Privately Owned Powerlines NP R EC 23
13. NW-#10277265 – Manual - Distribution Overhead Line Design and Construction Standard DS D OH 1