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Fire management



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This chapter deals with fire hazard reduction and fire management as tools for maintaining coastal vegetation communities, how to reduce impacts on coastal areas when fighting fires, and potential climate change issues.

Fire is a fundamental aspect of the Australian environment and many vegetation types require periodic fire to maintain ecological values. However, not all fires are desirable. They can threaten human life and property, cause ecological damage (if too frequent or too intense) and cause temporary reduction of air quality or disruptions to the public.

Coastal vegetation communities in Tasmania are fire prone and are generally well adapted to fire. However, fire is not desirable in all vegetation communities and fire regime requirements (the combination of season, intensity and frequency of burning) vary from one vegetation type to another. For example, in some vegetation types, fires occurring too frequently can bring about long-term changes in vegetation community structure, introduction of weeds and destabilisation of dunes.

Fire management is more than just controlled burning, it is how land managers and fire authorities respond to wildfires: manage fuel, ecology and community expectations; and facilitate recovery once a fire has passed.

There are three key fire management agencies in Tasmania, The Tasmania Fire Service (TFS), the Parks and Wildlife Service (PWS) and Forestry Tasmania (FT). These agencies work together under the Inter-Agency Fire Management Protocol and are responsible for responding to wildfires and undertaking year-round fire management.

*Tab photo: Managing fire on King Island.
© Parks and Wildlife Service.*



Local councils and private landholders are also responsible for managing fire hazards on their land.

The primary objective for fire management is to protect human life and property. Other important objectives include maintenance of natural diversity and protection of conservation values, but these can only be pursued in so far as they are consistent with the primary objective.

Climate change projections indicate that south-eastern Australia is likely to become hotter and drier. Tasmania may not feel the impact of this as strongly as the other south-eastern states but more frequent extreme-weather days are likely to occur, thus increasing the risk of wildfire.

This chapter deals with the special considerations required for fire management in coastal areas, particularly near the shoreline. It must only be used in conjunction with the suite of guidelines available from the TFS and in consultation with fire authorities and experts.

9.1 Bushfires

This section deals with minimising impacts of bushfire-fighting on the coastal environment. For comprehensive information on bushfires and wildfires, consult the TFS.

Uncontrolled bushfires can threaten lives, houses and other property, and put native vegetation and animals at risk. Landowners and land managers have a responsibility to reduce the threat of bushfire through careful planning and fire hazard reduction, and to minimise the environmental impacts of firefighting.

Fire can move very rapidly in dry coastal vegetation and residents need to be prepared for this. Leaving their home can be risky unless roads are clear. This is

especially true in long, narrow shoreline subdivisions with only one access road or a limited number of very narrow roads.

Beaches are not necessarily safe from fire, as coastal dune vegetation is highly flammable (e.g. marram grass and coast wattle). Even the dry seaweed on a beach can burn.

Being prepared for bushfire in coastal areas involves planning and obtaining specialist advice well before bushfires are expected. The local fire brigade can provide on-ground advice about fire permits, burning off and local vegetation.

Other land management activities may increase the risk of destructive fires, such as leaving piles of combustible materials on sites, allowing weeds to prevail, allowing fuel loads to build up and not providing or allowing for adequate access for firefighting equipment. **Refer to section 9.2 for information on fire hazard reduction.**

9.1.1 Guidelines to reduce impact on coastal areas when fighting fires

When fighting fires public safety and protection of infrastructure is paramount, but the following guidelines will help to minimise impact on fragile coastal areas.

- Minimise disturbance of vegetation and dune profiles – sand or very sandy soils in dunes and beaches are easily destabilised.
- Use existing roads and fire breaks as control lines wherever possible, to minimise construction of additional control lines.
- Rehabilitate any disturbance to dune and shoreline profiles, and damage to vegetation. If machinery must encroach onto these fragile areas, ensure that restoration of the dune profile and



rehabilitation of the vegetation are undertaken as soon as possible once the fire has passed, and as part of the rehabilitation works program. **Refer to Chapter 6 Coastal landscape management and Chapter 7 Vegetation management.**

- If possible, consult specialists and obtain information about natural and cultural values in the area.
- Avoid damage to Aboriginal cultural heritage values such as middens.
- Avoid damage to fragile penguin or shearwater rookeries.
- Keep vehicles off beaches known to host shorebird populations (breeding season, from September to March, coincides with bushfire season).
- Avoid introducing weeds and diseases on machinery and equipment. Ensure all equipment is maintained clean and mud-free, including personal equipment such as boots.
- Keep vehicles off saltmarsh areas. These highly fragile environments often support rare and threatened vegetation and are important for waterway health. Vehicles and machinery can have a severe impact on saltmarsh, which is difficult to rehabilitate.
- Minimise risk of fuel and chemical spills: secure chemicals securely during transport and service machinery away from waterways, wetlands and saltmarsh.
- Remove any rubbish as soon as practicable.
- Avoid leaving debris in penguin and shearwater rookeries, as it may obstruct birds' access to their nests.
- Work with local community groups such as Coastcare when planning rehabilitation of burnt-out areas. They can be a great source of knowledge and have a strong sense of ownership of their local patch.

Figure 9.1 The immediate aftermath of a fire on King Island. © Parks and Wildlife Service





9.2 Fire hazard reduction

This section deals with maintaining vegetation in coastal areas to reduce the threat of bushfires. Fire management near the shore requires special care, especially in sand or very sandy soils, which are easily destabilised – it is important to minimise disturbance of the soil. In addition, changeable weather and sea breezes need to be taken into account.

Increased fire frequency due to arson and accidental fires can be detrimental for coastal areas. Some coastal plants, such as the Oyster Bay pine, are easily killed by fire.

Managing fuel loads through slashing, prescribed burns and constructing access tracks are often essential components of fire management. These works should be governed by a fire management plan that includes a risk assessment, prepared in consultation with specialists, to balance the impacts on all values in the area.

9.2.1 Legislation and approvals for fire hazard reduction

In addition to the legislation in **Appendices 1 and 2**, fire management activities must abide by the *Fire Service Act 1979* which states that all landowners/occupiers have a responsibility to maintain their properties to reduce fire hazard.

Permission from the landowner is required for any fuel hazard reduction work; in the case of prescribed burns the TFS should also be consulted. Approvals from Aboriginal Heritage Tasmania and other government agencies may also be required if the work has the potential to impact on other environmental and cultural values.

Depending on the location and vegetation type, there are a number of fire danger prescriptions that must be considered prior to burning. These are set out in the publication *Planned burning in Tasmania* –

Figure 9.2 Back burning on King Island. © Parks and Wildlife Service





operational guidelines and review of current knowledge (Marsden-Smedley 2009).

9.2.2 Methods and potential impacts of fire hazard reduction

Methods of fire hazard reduction include prescribed (planned) burns, slashing, mowing, grazing and mechanical removal of fuel. Prescribed burns should only be undertaken in consultation with fire management authorities.

Fire management works can cause environmental damage by:

- removing vegetation
- increasing erosion
- spreading weeds and diseases on equipment and vehicles
- harming native plants and animals
- harming Aboriginal heritage and historic heritage
- removing wildlife habitat (e.g. prickly bushes protecting penguin burrows).

A well-researched and balanced risk assessment will minimise any impacts of fire management on natural and cultural values on the coast. Generally, the impacts of carefully managed fire management works are far more beneficial than the consequences of high-intensity wildfire in areas where no works have been undertaken.

The use of fire as a vegetation management tool in coastal areas should only be undertaken by trained professionals in consultation with a fire ecologist. The use of fire in coastal areas by private landowners is not recommended.

9.2.3 Guidelines to minimise impact of fire hazard reduction on coastal areas

Environmental damage can be minimised when undertaking fire hazard reduction work, such as slashing vegetation and creating access and containment lines, by careful consideration of the values in the area and careful consultation and planning.

- Plan fire hazard reduction works and undertake a risk assessment, including consultation with specialists and fire experts. In particular, consult the Threatened Species Unit, and the Biodiversity Conservation Branch, DPIPW. E.
- Always obtain specialist advice from a fire ecologist before undertaking prescribed burns.
- Undertake a fuel hazard assessment prior to any prescribed burns, to target the specific fuel load/species and to enable measurement of success.
- Consult the local community care group to ensure that any hazard reduction work will not destroy their restoration and conservation efforts.
- Protect Aboriginal heritage values. Many coastal areas contain shell middens that are important Aboriginal heritage places. **Refer to Chapter 5 Cultural heritage management.** Fire should not be used in Aboriginal cultural heritage sites without consultation and permission. Contact Aboriginal Heritage Tasmania.
- Prevent the spread of weeds and diseases by machinery used to reduce fuel loads. Slashers and mowers are particularly notorious for trapping seeds and spreading them to new locations. It is essential to practise good weed hygiene to reduce the spread of weeds.



- Minimise disturbance of soil and ensure slashing, mowing and vegetation removal does not leave bare patches that can be invaded by weeds.
- Minimise disturbance of fragile dune systems, as they can be destabilised.
- Avoid damage to fragile penguin or shearwater rookeries.

Reduce the spread of weeds

- Plan fire hazard reduction works so that weed-free areas are dealt with first.
- Clean machinery, tools and even boots between sites.
- Only use contractors with a high standard of weed hygiene.
- Time slashing to discourage seed-setting of weed species and encourage seed-setting of native species. Sometimes this is achieved simply by moving activities by only a couple of weeks.

Table 9.1 Fire intervals for different coastal vegetation types for fire hazard reduction burns.

| Vegetation type | TASVEG code | Recommended prescribed fire regime |
|--|-------------|------------------------------------|
| Coastal heathland | SCH | 8-30 years |
| Saltmarsh | AUS | No planned burning |
| <i>Acacia longifolia</i> coastal scrub | SAC | Unknown |
| Coastal scrub | SSC | 10-30 years |
| Seabird rookery complex | SRC | Exclude fire |
| <i>Banksia serrata</i> woodland | NBS | 8-30 years |
| Coastal grass and herbfield | GHC | 5-20 years |
| Marram grassland | FMG | Exclude fire |
| <i>Eucalyptus amygdalina</i> coastal forest and woodland | DAC | 6-20 years |
| <i>Eucalyptus viminalis</i> – <i>Eucalyptus globulus</i> coastal forest and woodland | DVC | 6-30 years |
| <i>Callitris rhomboidea</i> forest (Oyster Bay pine) | NCR | No planned burning |
| <i>Acacia dealbata</i> forest | NAD | Unknown |
| <i>Allocasuarina verticillata</i> forest | NAV | Not necessary |

The fire regimes that best maintain a particular vegetation type vary with the condition of the vegetation. Please note that these are only recommended regimes that require ongoing monitoring. Adapted from *Tasmanian Bushcare Toolkit, Kit 2, Managing your bush* (Kirkpatrick et al. 1999).



9.2.4 Monitoring hazard reduction work

All hazard reduction works require regular ongoing monitoring and maintenance to make sure they are effective.

Inspection and maintenance should check:

- whether fuel hazards are still present
- whether rehabilitation is required (e.g. for soil erosion or vegetation, or weed invasions)
- the impacts on or response of natural and cultural values to the burn (ongoing monitoring)
- what further works are required and when.

Land managers should

- Identify and assess fire hazards and risks.
- Issue hazard abatement notices to landowners.
- Prepare fire management plans for larger vegetated coastal reserves and areas.
- Play a role in community education of bushfire response and hazard reduction in conjunction with the Tasmania Fire Service.
- Assess and monitor all coastal revegetation projects to ensure there is no unacceptable increase in the bushfire risk to public and private assets and that they do not compromise the effectiveness of firebreaks, fire trails and other fire abatement measures.

Local councils can:

- Use the local planning scheme to ensure developments have adequate bushfire protection and are excluded from areas where this cannot be provided.
- Ensure that developments enable creation of defensible space with minimal vegetation removal.
- Not permit new developments if fire protection requires clearing of adjoining coastal reserves.

9.3 Ecological burns

This section deals with fire as a useful management tool for maintaining the diversity of coastal vegetation communities where biodiversity is at risk of declining. For instance fire can help to preserve plant species diversity in coastal heathlands and some plants, such as many acacias and eucalypts, need fire for seeds to germinate.

An ecological burn is a specialised prescribed burn that targets a particular vegetation community or species in a particular area to achieve specified ecological objectives.

Ecological burns are a complex, specialised management tool that should only be used under the guidance of a fire ecologist and in consultation with the state fire authorities. Ecological burns should be part of a comprehensive community/species recovery plan, including a biodiversity monitoring system and the identification of an appropriate fire regime, based on the requirements for that particular community/species.

9.3.1 Planning for ecological burns

Planning for ecological burns involves identifying and monitoring a range of parameters, from fuel characteristics and weather, moisture and landscape qualities to ecological objectives, and requires consultation with a fire ecologist and other specialists.

Ecological burning has two aims:

- to increase and/or promote fire-dependent species or associations (e.g. the foraging habitat of orange-bellied parrots requires periodic burning)
- to reduce and/or remove unwanted species or associations (e.g. weeds).



9.3

These aims typically include:

- species regeneration (the frequency used will vary between different species)
- habitat manipulation to increase native animal food availability (e.g. New Holland mouse)
- development of mosaics of burnt and unburnt areas.

Ecological burning is used in coastal heathland in north east Tasmania to maintain habitat for the New Holland mouse.

The threatened New Holland mouse, *Pseudomys novaehollandiae*, lives in coastal heathland in north-east Tasmania and benefits from regular firing of its habitat. Numbers increase soon after fire, as this releases the seeds that are the mouse's main food source. However, if another fire occurs before the new plants can produce seed, then the mouse will be left with little food and the population will be at risk.

Figure 9.3 New Holland mouse. © Billie Lazenby





9.3.2 Fire as a weed management tool

Fire can be used as a weed management tool but it requires careful organisation and must be integrated with other techniques to ensure weed regeneration is not stimulated by fire.

To protect other natural values, fire should only be used for weed management under the direction of a fire ecologist and in consultation with fire authorities.

In Tasmania, the main species for which fire is used for weed management are gorse (*Ulex europaeus*) and, to a lesser extent, broom (*Cytisus* spp. and *Genista* sp.), Spanish heath (*Erica lusitanica*) and blackberry (*Rubus fruticosus*) (Marsden-Smedley 2009).

Weeds should be treated by mechanical or chemical means prior to burning. The increased fire intensity caused by piles of slashed weed can be beneficial in killing shallowly buried seeds and can enhance seedling germination of more deeply buried seeds, to enable follow-up treatment (Marsden-Smedley, 2009).

Fire will result in extensive areas of bare ground, requiring revegetation to reduce the subsequent reinvasion by weeds. The costs associated with this type of intensive weed management are such that it will probably only be justified in areas adjacent to, or within high value ecological or natural assets (Marsden-Smedley, 2009).

9.3.3 Monitoring of ecological burns in coastal areas

After a fire, monitoring is important to see whether the ecological burning objectives were achieved, and to check for any damage to ecosystems. A comprehensive monitoring plan should be developed in consultation with specialists. In addition to the monitoring requirements prescribed in the plan, inspection and maintenance should also check:

- progress of natural regeneration
- damage such as weed invasions or soil erosion
- dune erosion and destabilisation - look for ripples on the sand surface, which are reliable indicators of erosion.

9.4 Climate change and fire

Anecdotally, there have been increased dry lightning storms igniting more wildfires; however, these are generally not in coastal management zones. The biggest fire risk in coastal areas continues to be human activity – both arson and accidental fires.

There is a broad increased risk of larger areas being burnt by wildfire as the number of extreme weather days increases. Predicted increasing numbers of drought years will also affect the ability of species to recover after fire.

There are concerns that drier summers are more likely for western Tasmania, which will increase the length of the fire season and the number of vegetation types dry enough to burn – including fire-sensitive vegetation.

There is potential for shorter intervals between fires, with more summer burning, especially in fire-adapted



vegetation communities such as coastal heath. Some species may not have time to replenish their seedbank, or even set seed before the next fire (if intervals are less than five years). This will result in changes to habitat structure and flow-on impacts for the whole ecosystem.

Changes in vegetation response to fire may mean that fire management strategies and protocols that were designed for existing fire regimes will become less applicable.

Community perception of increased fire risk could readily lead to higher demand for hazard-reduction activities on public land. Poorly planned mechanical fire breaks may cause erosion and weed management issues. Increases in fuel hazard reduction and fire abatement activities, such as frequent prescribed burns, could lead to worse ecological impacts than those created by the natural changes associated with climate change (Dunlop & Brown 2008).

9.5 Tools and resources

Complete details of all printed publications listed here are provided in a reference list at the end of the Manual. Other tools and resources including websites are collated in *Appendix 5*.

Bushfires

Bureau of Meteorology

Up-to-date weather forecasts and some climate change predictions

<http://www.bom.gov.au/tas/>

Emergency Services

Phone 000

Tasmania Fire Service (TFS)

Local advice and permits

Includes bushfire information and publications about hazard reduction and planned burning.

Phone 1800 000 699

www.fire.tas.gov.au

Guidelines for development in bushfire prone areas of Tasmania. Living with fire in Tasmania (Bushfire Planning Group, Tasmania Fire Service, 2005)



Fire hazard reduction

Aboriginal Heritage Tasmania

Desktop searches for Aboriginal heritage sites

www.aboriginalheritage.tas.gov.au

Overall fuel hazard guide for South Australia

(Department for Environment and Heritage, SA 2008)

Fuel hazard assessment standards

Planned burning in Tasmania: Operational guidelines and review of current knowledge. (Marsden-Smedley 2009)

This document must be consulted if planning a controlled burn.

Tasmanian reserve management code of practice

(Parks and Wildlife Service et al. 2003)

The broad principles for fire management set out in the Tasmanian reserve management code of practice are appropriate guidelines for all vegetation types including coastal vegetation.

Ecological burns

In addition to the resources listed above the following are useful if considering ecological burns.

Flammable Australia: The fire regimes and biodiversity of a continent (Bradstock et al. 2002)

Tasmanian Bushcare Toolkit, Kit 2, Managing your bush (Kirkpatrick et al. 1999)

Bush information and management

<http://www.dpipwe.tas.gov.au> Go to Home > Managing Our Natural Resources > Bush Information and Management > Tasmanian Bushcare Toolkit

