Peter Murrell State Reserve and Conservation Area

Fire Management Plan 2006

Parks and Wildlife Service Tasmania

DEPARTMENT *of* TOURISM, ARTS *and the* ENVIRONMENT

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This fire management plan has been prepared as a recommendation from the PWS Peter Murrell Nature Reserve and Conservation Area Interim Management Strategy (1997).

A draft of this plan was released for public comment between 19 August 2006 and 23 September 2006. In total, eight submissions were received on the draft plan.
All submissions have been carefully considered and are reflected in the final plan where appropriate.

APPROVAL
This Peter Murrell State Reserve and Conservation Area Fire Management Plan 2006 was approved by the Southern Region Manager Parks and Wildlife, 6 September 2006.

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Contents

1. SUMMARY

The Peter Murrell Reserves are adjoined Reserves located between the suburbs of Kingston, Howden and Blackmans Bay. The Reserves represent an important area in terms of natural and cultural heritage, recreational activities and educational values.

The fire history of the Reserves is largely unknown, however a major fire in 1988 burnt part of the Tinderbox peninsula, including the now Peter Murrell Reserves. The major concern from a fire management perspective is the adjoining residential properties on the eastern and southern boundaries that back on to the Reserves, the loss of species and increased weed management issues due to inappropriate fire regimes and management.

A bushfire on days of high or above Fire Danger would be considered a major threat to the Reserve values, surrounding assets and community. The region is likely to experience about 20 days a year that reach a Fire Danger Index of high or above.

The overarching purpose of this plan is to recommend actions and works that mitigate the risk of bushfire to life, property and the environment. The vegetation types in the Reserves are adapted to fire and implementing an appropriate fire regime is critical to maintaining species diversity, fuel loads and managing weed problems.

A number of recommendations are made to address the risks involved with prevention and suppression of fire. Recommendations focus around maintaining the annual fire break and fire trail slashing program and maintaining a mosaic of vegetation ages by implementing a prescribed burning program. The actions and works recommended are not a panacea, but are considered appropriate for managing the risks associated with fire and other Reserve management objectives. An integral part of the fire management plan is the ongoing management of weed infestations in the Reserves.

The plan is intended to be current until 2016, any new natural or cultural heritage information that comes to light should be considered in the implementation of the management actions.

2. INTRODUCTION

Background

The Peter Murrell State Reserve and Conservation Area are adjoined areas located about 15km south of Hobart. The Interim Management Strategy (PWS, 1997) for the Reserves identified uncontrolled fire as the greatest threat to conservation values in the reserves. Further, a bushfire exiting the reserve has the potential to threaten surrounding properties. The preparation of a Fire Management Plan was identified as an action from the Strategy. This Fire Management Plan has been compiled to accommodate the need for a strategic approach to fire management in the Peter Murrell State Reserve and Peter Murrell Conservation Area.

In this plan the State Reserve (133ha), Conservation Area (135ha) and Public Reserve (9ha) are referred to as the Peter Murrell Reserves and both areas are considered as one land management unit of 277ha.

Statutory Responsibilities and Planning Framework

The Department for Tourism, Parks, Heritage and the Arts (DTPHA) is responsible for fire prevention and suppression on land reserved under the *Nature Conservation Act 2002*.

There are several pieces of legislation that guide the development of fire management plans, these include the *Threatened Species Protection Act 1995* and the *Fire Service Act 1979*. Further, the Tasmanian Reserves Code of Practice (2003) sets out guiding principles for reserve management. Under this code the primary objective of fire management is to protect human life and property from fire. Other objectives include the maintenance of natural diversity of species and communities through applying appropriate fire frequencies and the protection of conservation values from adverse impacts due to fire in so far as these are consistent with the primary objective.

Under the *Fire Service Act 1979* (Section 64) during the fire permit period land occupiers have a legal responsibility to take diligent steps to extinguish fires or prevent them from spreading from their property. The Inter-agency Protocol between PWS, Forestry Tasmania and the Tasmanian Fire Service (2002-2003) assists agencies meet their fire suppression responsibilities and states that "the most able fire fighting crew of any agency will respond immediately to a reported fire as a priority".

Objectives

Broad fire management objectives for the Reserves are stated in the Interim Management Strategy (PWS1997) as managing fire regimes to reduce the risk of fire to life and property and promote biodiversity, particularly for orchid, heath and invertebrate species.

The specific objectives of the plan contribute to those set out in the Interim Management Strategy and assist the Parks and Wildlife Service meet their nature conservation and property protection legislative requirements (Fire Service Act and Threatened Species Protection Act). Objectives include:

- Reduce the risk bushfire poses to human life and property (Including built assets and infrastructure) by identifying strategic control lines and fuel reduced areas that assist with bushfire suppression activities and reduce the risk of a bushfire exiting the Reserves.
- Manage fire regimes and practices that:
    - Promote and protect heathland and forest communities, in particular the orchid and invertebrate communities;
    - Enhance the long-term survival of flora and fauna communities and threatened species; and
    - Comply with the Peter Murrell Reserves Weed Management Strategy (2000-2005).
- Identify fire assets (water points, fire access, fire breaks etc) that can assist with bushfire suppression.

Plan Review & Currency

This plan was prepared in 2006 and is intended to be current for 10 years. The appropriateness of the works program will be reviewed every two years. The implementation of the works program will be documented and monitored in the Southern Region Business Plan.

Stakeholders and Public Consultation

This Draft Fire Management Plan was developed in consultation with the Channel Fire Management Area Committee (FMAC), the TFS North West Bay Group Officer and Southwest District Officer, Huntingfield Coffee Creek Landcare group and received other specialist advice from Hans and Annie Wapstra and Andrew Kirkley.

3. DESCRIPTION OF THE PLAN AREA

The Peter Murrell Reserves is an area with a high potential for bushfires. The components of the landscape contributing to the bushfire potential include terrain, slope and aspect, climate and weather, vegetation and land use. This section of the plan discusses the base information that impacts or is impacted on by fire.

Location

The Peter Murrell Reserves are located about 3km south of Kingston at the base of Tinderbox Peninsula (Map 1). The Reserves are a 'bush island' bounded by Burwood Drive, Brightwater Road, Howden Road, Algona Road and the Channel Highway. Residential housing occurs to the north and eastern boundaries, with larger properties to the southwest. Open pasture, a school and a golf course adjoins the western boundary of the reserves and a light industrial estate in the northwest. Most houses on the northeastern, eastern and southern boundaries back directly on the reserve. The Public Reserve on the northern boundary and the area north of the council pond are proposed to become part of the Conservation Area and are included in the area for this plan.

Land Tenure and Land Use

The Peter Murrell Reserves are made up of a State Reserve (133ha) and Conservation Area (135ha) were reserved under the *Nature Conservation Act* and are managed under the *National Parks and Reserves Management Act*.

The industrial estate, Tarremah school, golf course complex, a call centre and other land adjoin the western boundary.

Prior to gazetting, the Peter Murrell Reserves had been subject to dumping of household rubbish and waste and prone to a variety of high impact recreation pursuits. Trail bike riding and vehicles are now prohibited within the reserves.

The Peter Murrell Reserves has high visitation mainly by locals. The Reserves include specified zones for horse riding and there are designated tracks for walking, dog walking, fishing and cycling. The Huntingfield Pony Club lease 25ha of the Conservation Area, this includes both arena and trail riding areas.

Terrain

The Peter Murrell Reserves consists of gentle to moderate slopes. Three drainage lines run parallel east to west through the centre of the Reserves, two of which feed into Coffee Creek and all drain into North West Bay. Generally the land in the Reserves ascends from the southwest corner at sea level to the eastern boundary at about 100m elevation. South of the main drainage lines slopes are predominantly north facing.

Geology and Soils

The parent materials within the Reserves are sandstone, siltstone and mudstone (PWS Mapinfo data, July 2005). Soils are generally sandy and well drained on the slopes, with small areas of peat in the Buttongrass along the east/west creek lines. Outcropping rock, erosion and compression of soils on fire trails suggests that frequent use by vehicles may result in the degradation of fire trails.

Vegetation

Kirkpatrick and McQuillan (1996) identified nine major vegetation units within the Reserves (Map 2). The dominant vegetation is black peppermint (*Eucalyptus. amygdalina)* coastal forest and woodland with a heath understorey (Table 1). A small area of Buttongrass exists along Buttongrass Creek.

Table 1. Vegetation types in Peter Murrell Reserves (Kirkpatrick & McQuillan 1996)

Vegetation Type	**Area (ha) in PM Reserves**	**% of Vegetation in PM Reserves**	**Conservation Status[1]**
Closed-heath	28	11%	Not listed
Eucalyptus amygdalina coastal forest/woodland, with heath understorey	170	68%	Not listed
Eucalyptus amygdalina forest on sandstone, with heath understorey	21	8%	Vulnerable
Eucalyptus amygdalina, E. viminalis, E. obliqua forest with shrub understorey	17	7%	Not listed
Eucalyptus ovata forest, with shrub understorey	1	<1%	Endangered
Grassland	1	<1%	Not listed
Impoundment (water body)	<1	1%	Not listed
Open heath	2	1%	Not listed
Quarry/Rehabilitated Areas	4	1%	Not listed
Sedgeland	6	2%	Not listed
Wetland	<1	<1%	Not listed
Total	250		

Rehabilitated Areas

Four rehabilitated areas exist within the Reserves, significant resources and effort has been put in to rehabilitating these areas and a number of old tracks and trails. Where possible these areas should be avoided and fire excluded (to best ability) until the vegetation has recovered.

Special Flora and Fauna Values

The Peter Murrell Reserves represent important habitat for a number of mammals, reptiles, amphibians and bird species (PWS 1997) and supports a high diversity of plant species. Thirty-seven orchid species, including five endemic species (including *Prasophyllum concinnum* trim leek-orchid and *Caladenia atrata* dark finger-orchid) have been recorded in the Reserves (PWS 1997). Two flora (and three fauna (Table 2) threatened species are formally recorded as occurring in the Reserves.

[1] Listed in the Supplement to Environment and Heritage Report Vol V of the Tasmania-Commonwealth Regional Forest Agreement 2003.

There are a number (12) of insect species listed in Kirkpatrick and McQuillan (1996) as rare or endemic, though not listed as threatened at a state or national level. It is important to recognise the significance of the species diversity within the Reserves and consider new information in development of management prescriptions.

Although the majority of the area has not been burnt since 1988 the Reserves are lacking old trees with suitable hollows for nesting fauna.

Orchids

The Peter Murrell Reserves are widely known and valued for its orchid diversity (Map 2). However information (pers comm Hans Wapstra 18/4/05) suggests that in recent times orchid diversity and abundance has declined. A number of mechanisms are thought to have contributed to this, including a change in location of the slashing program, infrequent burning events, lack of rain following the two prescribed burns, and slashing of firebreaks during the key flowering period (October to early December). Orchid specialist Hans Wapstra suggests that ideal conditions for orchid regeneration involves maintaining firebreak slashing outside of the growing and flowering period and burning to create a disturbance, significant rain events following these management actions are critical.

Table 2. Threatened Flora and Fauna recorded within the Reserves (MapInfo Base data July 2005).

Scientific Name	Common Name	Comments	State conservation Status	National conservation status
Lepidosperma tortuosum	twisting rapiersedge	Recorded on the northeastern boundary off Lady Penrhyn Drive	Rare	Not listed
Juncus amabilis	gentle rush	Has been identified near Penryhn Pond	Rare	Not listed
Pardalotus quadragintus	forty-spotted pardalote	Habitat occurs along Coffee Creek Requires *E. viminalis* for foraging and breed between Aug-Dec (Threatened Species Unit 2005).	Endangered	Endangered
Perameles gunnii gunnii	eastern barred bandicoot	Species is common in PM reserves especially near open grassy areas (PWS 1997). Breeds May-Dec (PWS 1997)	Not listed	Vulnerable
Antipodia chaostola	chaostola skipper	Foodplant is *Gahnia radula.* Burning should be undertaken outside of flying period (ie mid October – mid December). The species has been found in *G. radula* along Howden Fire Trail. *G. radula* also occurs in the southeast of the reserve.	Endangered	Not listed.

Cultural and Heritage Values

There are no known significant European historical sites located within the reserve.

Tasmanian Aboriginal people have had a strong association with the area. Prior to European settlement in the region, the Aboriginal people of the area lived, hunted and fished in the North West Bay area, still evident by the number of significant sites existing today. The country around the Reserves was primarily utilised by the Mouheneenner tribe who were the indigenous occupants of the land around NW Bay and west of the Derwent River. The area was also seasonally visited by the Mellukerdee, Lyluequonny and Pangherninghe tribes. The Mouheneenner utilised the natural resources of the area as can be identified in numerous midden sites, which contain a variety of shellfish deposits.

Aboriginal heritage sites are non-renewable cultural resources, which are important to the heritage of all Australians. They are protected under the *Aboriginal Relics Act 1975* and PWS has statutory obligations to protect and preserve Aboriginal sites.

A number of sites have been identified and recorded in the reserve, the locations of which are not made known to the public. However the reserve most likely contains as yet unknown sites, requiring caution if any new works or non-routine management is proposed.

Exotic Plants and Animals and Diseases

Spanish heath (*Erica lusitanica*), english broom (*Cytisus scoparius*), boneseed (*Chrysanthemoides monilifera*) and gorse (*Ulex europaeus*) are the main invasive exotic species (PWS 1997). The major areas of concern are a large patch of spanish heath in the southern horse riding zone and blackberry (*Rubus fructicosus*) and gorse along Coffee Creek. Considerable effort was put in to controlling the blue butterfly-bush (*Psoralea pinnata*) in the southeast of the park, after the 2003 prescribed burn promoted the species.

The Huntingfield Coffee Creek Landcare Group and PWS have collaborated to implement a weed control program and any future works particularly prescribed burning needs to be conducted in cooperation with the PWS Weed Management Strategy.

Part of the Conservation Area has been set aside for horse riding and being a residential area, pet animals would be expected to enter the Reserves. There are no known significant exotic animal issues that will impact on fire management.

Although *Phytophthora cinammomi* has not been formally recorded in the Reserves, localised dieback of the pink swampheath (*Sprengelia incarnata*) and other epacrids indicates it is widespread in the area (Kirkpatrick and Mcquillan 1996). The Reserves are considered highly vulnerable to the fungi due to the dry forest and heath vegetation type (Barker 1994).

4. THE FIRE ENVIRONMENT

The fire environment is determined by the potential for a fire to become established. After an ignition there are three environmental factors that contribute to a fire behavior, the arrangement and loading of fuels, weather conditions and terrain.

It is broadly understood that strong winds, high temperatures and low humidity will give rise to moderate to severe fire activity. Heath and dry forest fuels in the central areas of Peter Murrell Reserves provides an opportunity for an ignition in the northeast to move rapidly through the Reserves.

Ignition Sources

In the Peter Murrell Reserves ignition sources are most likely to be from human activity. Although no formal records exist, in the past there have been a high number of ignitions in the sandflats (north-west) area of the Reserves. Ignitions are likely to be from arson, illegal campfires and dumped cars. (V. Richardson pers comm 2/5/05).

Vegetation Fire Attributes

Pyrke and Marsden-Smedley (unpublished 2005) categorised vegetation communities according to their fire attributes (ie fire sensitivity and flammability). Vegetation communities within the Reserves are categorised as dry forest and heath assemblages (Table 4, Map 3). Both these categories contain highly flammable plants and fine fuels and are considered to respond well to a fire. A single bushfire may not be a threat to the long-term survival or continued presence of any plant or animal species or vegetation community. However, an inappropriate fire regime (either to frequent or not frequent enough) may lead to the reduction in abundance of some species or their complete extinction from within the Plan Area. A fire regime is defined by the frequency (ie the number of years between fire), the intensity (which depend on the weather conditions and fuel loading) and the season of burning which may influence the species that are maintained in any area.

Table 4. Fire regimes considered appropriate for maintaining communities within the Reserves, based on Pyrke & Marsden-Smedley (2005 unpublished)

Vegetation Type	Burning Interval	Intensity, other prescriptions
Heath	10-30 years, variable fire interval	Variable intensity and burning season
Dry forest	15-30 years, variable fire interval	Variable intensity and burning season

Heath Fire Attributes

The closed heath area that occurs in the centre of the Reserves is considered to have very high vegetation flammability. This vegetation will burn readily throughout the year even under mild weather conditions, except after recent rain ie less than 2-7 days or a soil dryness index (SDI) of less than about 5 (Pyrke and Marsden-Smedley unpublished 2005). The burning regime considered appropriate for this vegetation type is a fire interval of 10-30 years, varying in season and intensity.

Dry Forest Fire Attributes

The majority of the vegetation in the Reserves is dry eucalypt forest with a heath and shrub understorey. The dry forest fire attribute class with a heath understorey is generally adapted to a slightly lower fire frequency ie about 15-30 years (PWS 2004). This allows time for overstorey species and obligate seeders (such as *Leptospermum glaucescens* found on the Middle Fire Trail) to become established.

Vegetation within and surrounding the Reserves is considered to have a low sensitivity to fire (PWS MapInfo basedata April 2005). This means the vegetation is highly adapted to fire and a single fire will generally not impact adversely on biodiversity. Although repeated burning at short intervals (ie <10 years) or not burning often enough may cause long term changes. The low sensitivity of the vegetation to fire suggests that a prescribed burning program will be appropriate to meet fuel hazard reduction and ecological objectives.

Fire History and Prescribed Burns

No official records of bushfire exist for the Plan area, as it was only proclaimed as a State Reserve and Conservation Area in 1997. It is known that most of the Reserve was burnt in an intense fire in January 1988 (Table 5) and it is suspected that part of the Reserves burnt in 1984 and 1976 (Loofs-Samorzewski, 2003), however little is known about the extent of these fires. A number of smaller fires 1 to 2 hectares have occurred around the Sandflat Quarry area and in the northwestern corner near Algona Road and the Huntingfield industrial estate over the past 10 years (Pers comm V. Richardson 2/5/05).

Creating a mosaic of vegetation ages is considered to be important for biodiversity conservation in bush islands such as Peter Murrell Reserves (Kirkpatrick and McQuillan 1996). This breaks the Reserves into blocks of different fuel loads, which will burn at different intensities in a bushfire event. The intensity at which vegetation is burnt has implications to the recovery and regeneration of species. Further, a bushfire that burns the entire Reserve in one event (as occurred in 1988) is likely to lead to a decreased rate of recruitment and potentially loss of species.

The Parks and Wildlife Service have carried out two fuel reduction burns in 1998 and 2003, two other smaller burns were undertaken prior to that (Table 5 and Map 3).

Table 5. Fire History in the Peter Murrell Reserves

Date	Location	Approx. Area (ha)	Type/ purpose of fire	% of reserves burnt	Comments
Jan 1988	Entire reserve Some patchiness expected within burn area.	260ha	Bushfire	Estimated 80-100%	
Dec 1996	Middle Fire Trail	2.3ha	experimental	<1%	Burns were conducted as part of a PhD study on the impacts of edge effects and other disturbances (Loofs-Samorzewski, 2003).
May 1998	Near Coffee Creek	1.5ha	Weed mgt	<1	
May 1998	Middle of the eastern boundary	16ha	Fuel Reduction	6%	
May 2003	Southeastern corner	35ha	Fuel Reduction	14%	Resulted in Ploughshare wattle *(Acacia gunnii)* and blue butterfly bush (*Psoralea pinnata)* regeneration.

Fire Weather

Fire weather refers to the effects that both climate and weather conditions have on the chances of a fire starting, its behaviour and difficulty of suppression once started (NRE, 1999).

Climate Information - Temperature, Relative Humidity, Rainfall and wind

Kingston has an average annual rainfall of about 600-800mm. Rainfall is fairly consistent in this area with an average of about 40-60mm per month (Figure 2). However under high temperature and low relative humidity the vegetative fuels in this area are likely to dry out quickly.

During the fire danger season temperatures are likely to be in the high teens to low twenties with occasional hotter days (>30°c) (Figure 1). Relative humidity tends to range from 50-70%. Sea breezes can be expected on most days.

Figure 1. Monthly temperature information, recorded over the last 10 years at the Kingston weather station (data from BOM, March 2005)

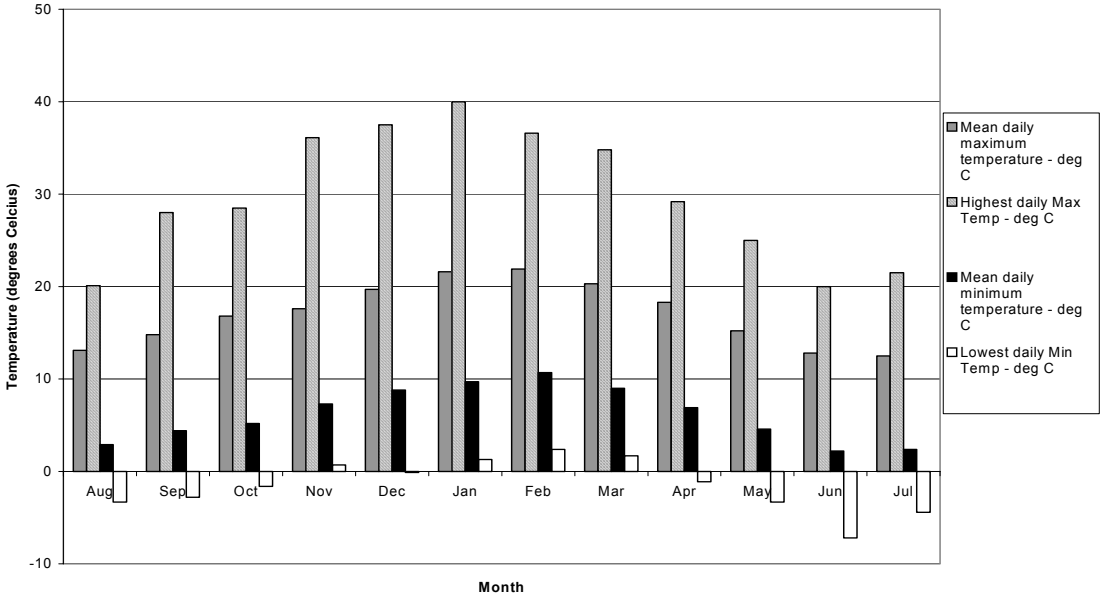
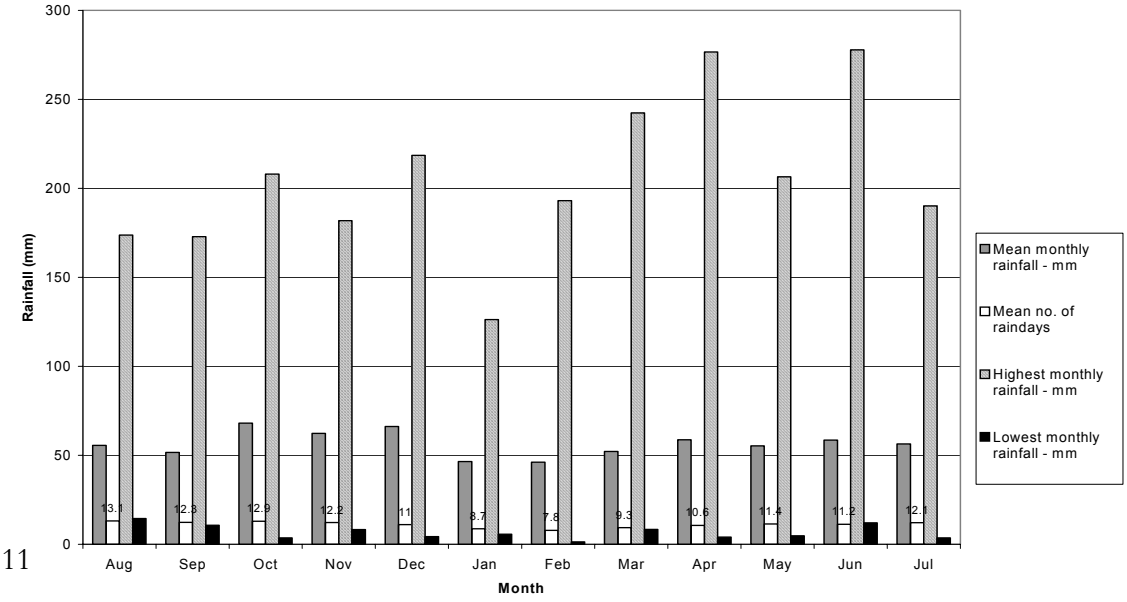


Figure 2. Monthly rainfall information recorded over the last 10 years at the Kingston weather station (data from BOM, March 2005).



Conditions Associated with Bushfires

On high or above fire danger days hot northwesterly winds will result in high temperature and low humidity. These may be moderated to some extent in the afternoon with southerly sea breezes, however the associated change in wind direction needs to be considered.

Fire danger index (FDI) records for the past 7 fire seasons (see Table 6) suggests that Hobart can expect to experience an average of 20 days each fire season where the FDI reaches high or above. Due to the highly flammable fuels present in the Reserves any bushfires that occur on days with a FDI of high or above would be difficult to control.

Table 6. Forest fire danger rating records for Hobart, based on 7 fire seasons (Forestry Tasmania Draft Tactical Fire Management Plan)

Fire Danger Rating	**Average number of days/fire season**
Extreme (>=50)	<1
Very High (24-49)	2
High (12-24)	17
Moderate (5-11)	82
Low (1-4)	64
Nill (0)	19

5. OPERATIONAL INFORMATION

This section deals with information that will assist with making informed decisions about operations during fire suppression and prescribed burning.

Reserves Assets

The Reserves are well known for their natural assets and values and have built assets within the Conservation Area and power, water and sewer infrastructure passing through the Reserves.

Natural Assets

Natural assets within the Reserves include:

- *E. ovata* vegetation community
- Forty-spotted Pardalote habitat (*E. viminalis*) along Coffee Creek
- Eastern Barred Bandicoot habitat (no specific location) but could be expected throughout the Reserves
- Orchids

  See "Vegetation" section, orchids are expected to respond favourably to fire due to their underground tuber. Long term survival of orchid populations depends on frequent disturbances.
- *Chaostola skipper* habitat (*Gahnia radula*), particularly along the northern end of Howden Fire Trail and in the square bordered by Burwood Drive and Brightwater Road.
- Rehabilitation Areas
- Creeks and ponds

  During bushfire suppression and prescribed burning operations the creeks and ponds may be used as water points. Exposed soils and loose ash following a fire event may lead to an increase in soil erosion and deterioration of water quality in the creeks and ponds particularly on the western boundary of the park.

The general appearance and amenity of the landscape is an important feature of the Reserves due to its close proximity to residential areas. Any fire event will cause scorching and death of some individual species, however this effect is generally short-term and populations and communities are expected to recover in time.

Cultural and Heritage Assets

There are no known significant European historical sites located within the reserve.

It is known that Aboriginal groups did frequent the area and there is information which suggests that sites exist within the Reserves. Fire itself is unlikely to impact directly on the sites however any soil disturbance from suppression operations and/or fire trail construction may have an impact upon such sites.

Built Assets and Facilities

The Huntingfield Pony and Riding Club lease 25 hectares of land on the southwestern edge of the conservation area. This leased area contains several sheds, horse jumps, a wood-chip horse arena and associated equipment. Whilst the Pony Clubs grounds form part of the reserve, under the lease the Club is responsible for fire control measures, this means the club is responsible for the protection of its assets and safety of its visitors. PWS manages the vegetation within the lease in consideration of the rest of the reserve.

In general fuels around the assets have been modified and will reduce direct flame contact and radiant heat exposure to assets. Annual maintenance is required to maintain the fuels to an appropriate level, however the nature of the assets still puts them at risk from spark and ember attack.

Infrastructure

The Kingborough Council has a pump station building and several smaller pump units for sewerage and water mains. Sewer, water and stormwater reticulation services exist underground in the north of the park and Hobart Water maintain water mains along Coffee Creek Fire Trail. None of these assets are particularly threatened by fire, however any personnel or contractor using earth-moving equipment needs to be aware of the location of these underground services.

Aurora Energy maintains two sets of overhead power lines that dissect the reserve along Howden Fire Trail and down Scarborough Fire Trail, the northern end of Coffee Creek Fire Trail and across the western end of the horse riding zone. Both sets of lines may be impacted on from any bushfire event and must be considered during prescribed burning operations.

Fire Trails and Access

Numerous tracks and trails exist throughout the Reserves, the "Access Control and Track Management Strategy" (PWS 1998) identified that all tracks and trails be closed to vehicles for rehabilitation, with the exception of designated fire trails (FT).

Within the Reserves there is good vehicle access to Reserve boundaries and fire trails fall in the class 4 road category (Tasmanian Reserves Code of Practice 2003). The fire trails provide good access to internal parts of the Reserves (see Map 1) and all designated fire trails are "through roads". All boundary access tracks have gates to prevent public vehicular use and gate keys have been issued to all emergency service agencies. There are sixteen vehicular exits from the Reserves through gates. The Access Control and Track Management Strategy determined that designated fire trails are also multi-use trails including walking, dog walking and cycling and some areas for horse riding. The fire trails within the Reserves are generally in good condition and well maintained, however there are some areas of encroaching vegetation and erosion of soil. Table 8 contains a generic assessment of fire trails within the Reserves

Note: Tracks and trails other than those identified as Fire Trails should not be used during fire suppression without an appropriate assessment and approval from the Incident Controller.

Note: All vehicle exits from the Reserves are through gates. Tracks and trails without gates should be considered as dead-ends for vehicles.

Table 8. Fire Trails Assessment. Conducted by Hafwen Pearce May-June 2005

Fire Trail	Orientation	Comments
Coffee Creek	North/south	Surface is generally sandy, with a solid base, some rocky areas and exposed roots. Single vehicle track, some verge works at points. Two vehicles could pass in some areas. 3 point turnout at track intersections. This is the only access down the western boundary and requires verge works in areas.
Scarborough	East-west	Surface is generally sandy, with a solid base. Single vehicle track, two vehicles could pass in most areas. 3 point turn out at track intersections.
Sandflats	South/west-north/east	Surface is generally solid. Single vehicle track, two vehicles could pass in some areas. 3 point turn out at track intersections. Access to the western firebreak requires the Coffee Creek crossing to be upgraded and there is a locked gate to the horse riding zone.
Lady Penrhyn	North/west-south/east	Gravel access from Lady Penryhn Drive to the council pump station and on to Lady Penrhyn Drive.
Middle	East-west	Sand surface. Single vehicle track, but fire break allows for two-way traffic. 3 point turnout along entire fire trail, except east from Eastern Fire Trail where vegetation encroaches on track.
Penny	North-south	Sand surface, with solid base. Single vehicle track.
Eastern	North-south	Sand surface with solid base. Single vehicle track without verge works. Two vehicles could pass in some areas.
Link	North/west-south/east	Sand surface. Some root exposure. Single vehicle track that connects Howden FT to Coffee Creek FT.
Howden	East-west	Surface varies from sand at the eastern end through gravel, becoming quite rocky and sandy again at the Coffee Creek end. Single vehicle track, but firebreak allows for two-way traffic. 3 point turnout along the entire trail.
McVilly	North-south	Surface is mostly sandy. Vegetation has grown over the trail south of the rehab site and the middle section is quite steep. Single vehicle trail follows the edge of the rehabilitation area down a steep slope. 3 point turnout below rehab area and the track direction becomes unclear.

Firebreaks

A perimeter firebreak is maintained from Lady Penrhyn Drive, down the eastern boundary and along the southern boundary (Map1). Middle Fire Trail and Howden Fire Trail are also maintained as strategic firebreaks (Map 1), as they provide important control lines should a fire start in the northeast of the Reserves.

The two Coffee Creek crossings off Sandflats FT and north of Penryhn Pond should be maintained as fire trails with 1m horizontal and 2m vertical clearance of fine fuels. This will assist with providing egress to the western firebreak and a western exit point. The fuel reduced areas will also assist with fire control areas should a bushfire burn through the Coffee Creek strip.

The firebreaks provide a defendable space between the Reserves and the adjoining properties and an area to conduct back-burning and prescribed operations from.

Note: Firebreaks and fuel reduction works are not a panacea. Under high or above fire weather conditions a fire has the potential to carry through any fuel reduced area.

Water Points

There is a permanent standpipe at the Kingborough Municipal depot at the junction of Spring Farm Road and Channel Highway. Many other standpipes exist at various locations on Lady Penrhyn Drive and Burwood Drive. There is good track access to a large permanent water source (Heron Pond) located on the western boundary, although its difficult to pump directly into a fire unit.

Heavy Machinery

Heavy machinery use in the Reserves should be avoided if possible to minimise impaction on soils (as is evident on the current fire trails). However, if no other alternatives are feasible the Senior Ranger PWS may grant permission for use. Underground assets (sewer and water reticulation) exist on Lady Penrhyn, Scarborough and Coffee Creek Fire Trails.

6. WORKS RECOMMENDATIONS

Water Points

There are a number of reticulated water points on the streets surrounding the Reserves. Two large ponds (Heron and Penryhn Pond) exist on the western boundary.

It is recommended that an area be cleared at Heron Pond to allow for light tanker turn around and a portable pump to be set up for filling light tankers.

Fire Trails and Access

The plan area consists of a complex of fire trails and access points. Table 9 lists areas of particular note for fire management operations and suggests works where necessary to maintain safe access and egress. Although some trails may be trafficable by 2WD vehicles it is recommended that all vehicles involved with fire operations be 4WD.

Table 9. Fire Trail Works Program

Location	Works Required
Western end of Sandflats FT, between Coffee Creek FT and boundary.	Fine fuel removal (incl. Gorse). Clear fuels to 1m either side of FT
Sandflats FT – Coffee Creek Crossing	Upgrade crossing to allow safe egress of Light Tanker.
All fire trails.	Fine fuels to be cleared to a minimum of 1m horizontal and below 10cm vertically on either side of a vehicle on a fire trail. Except for areas of *Gahnia radula* to be maintained to <30cm. To be maintained to a class 4 road as per Tasmanian Reserves Management Code of Practice(PWS *et al* 2003) All fire trails should be checked annually to ensure trafficable for light tankers.

Firebreaks

A perimeter firebreak is currently maintained around the majority of the boundary. The firebreak should be maintained to <8t/ha of fine fuels or below 10cm in grassland (NSW Rural Fire Service 2001). Table 10 lists actions and works required for ongoing maintenance.

Table 10. Firebreak Works Program

Location	Works Required
Reserves boundary firebreak – eastern, southern and western boundaries	Annually maintain current perimeter slashing program to below 10cm. The firebreak around the perimeter of the Orchid Area will continue to be slashed at the same time as the rest of the Reserve boundary. However, area should be slashed as late as possible prior to the fire season, without compromising the protection provided by the break. Slashing of the perimeter fire break will vary with seasonal growth patterns. The combination of slashing and burning is a careful balance attempting to maintain orchid communities and fuel loads. Critical to the success of this strategy is annual review and the flexibility to increase or decrease the time between burns in the Special Orchid Area. The Perimeter fire break should continue to be maintained to 30m from the eastern and southern edges of the Reserves and to 10m on the western edge. Fire breaks on Howden and Middle fire trails will continue to be maintained to 5m either side of the fire trail.
Howden FT, Scarborough FT and the northern end of Coffee Creek FT	The general clearing of the vegetative material from underneath and in the vicinity of the power lines will need to be continued by Aurora Energy or their agents. This will reduce the risk of the power lines initiating any fires during windstorm events and being damaged from bushfires burning within the reserves. All machinery used within Reserves must use minimal impact techniques and apply appropriate disease and weed hygiene procedures.

7. PRESCRIBED BURNING RECOMMENDATIONS

A prescribed burning program has been developed to achieve ecological, fuel reduction and weed management objectives. The main part of the program is based on the fire attributes of the vegetation types in the Reserves, i.e. to maintain species diversity the equivalent area (but not total area) should be burnt between 10-30 years for heath vegetation and 15-30 years for dry forest. Generally burning about 16-24ha every two years would achieve the burning intervals, this is in line with recommendations from the Kirkpatrick and McQuillan report (1996). Four small burns have been identified in Coffee Creek riparian zone to reduce fuels and to manage weeds.

It is proposed to burn about 110ha in total over the life of this plan (10 years) (Figure 3). Small burns (<1ha) for weed management and pile burns will be carried out to meet objectives of the Peter Murrell Weed Management Strategy (PWS 2000). Other areas within the Reserves should be considered for burning within the appropriate fire regime on review of this plan. Figure 4 compares the vegetation age diversity between applying a prescribed burning program and no further burning.

Figure 3. Indicative area of Dry Forest and Heath vegetation, burnt by 2016. Most of the Reserve was burnt in the 1988 bushfire although the exact extent is unknown. The ECO1 is included in the total area for 2006 and 2010.

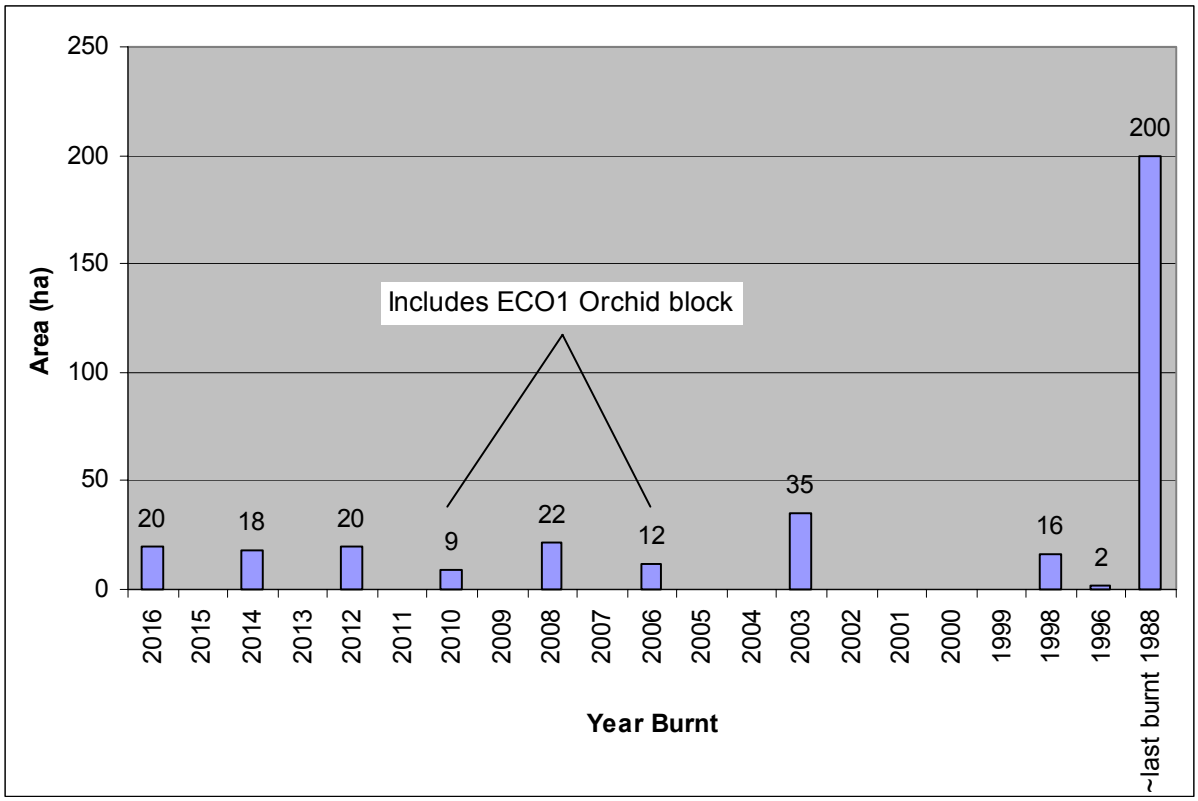
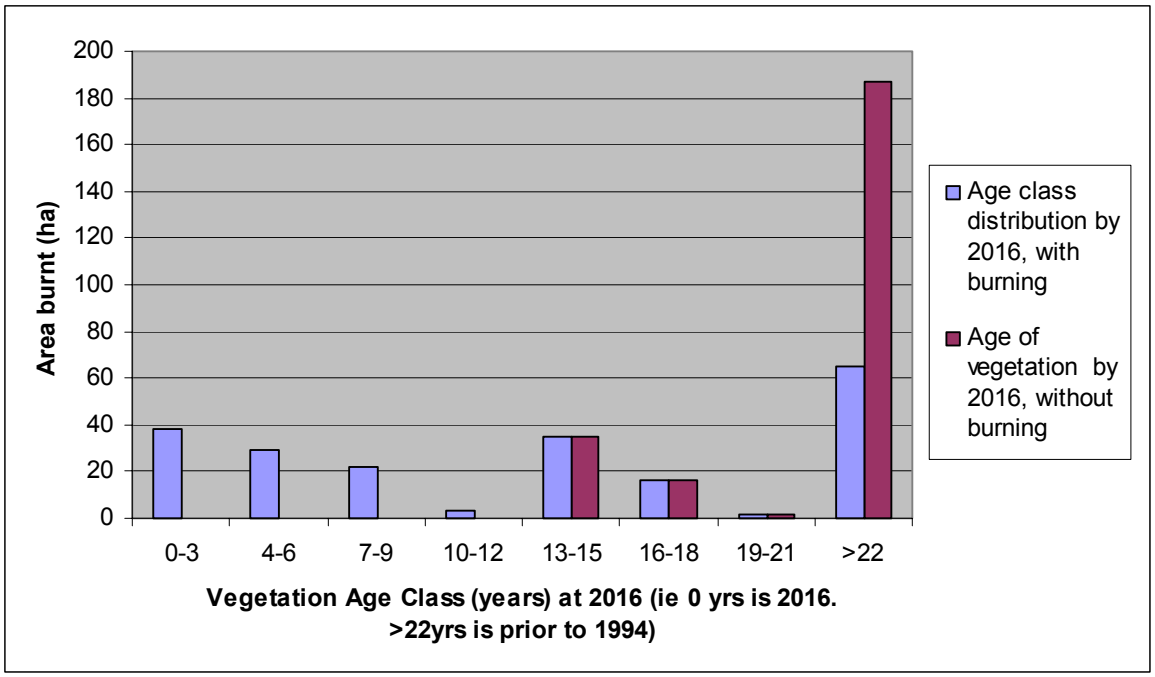


Figure 4. Vegetation age class distribution by 2016, with burning program. Note ECO1 is only counted once, in the 4-6 year age class.



Burning Objectives

The prescribed burns have been classed as either fuel reduction (FRB) or ecological (ECO). Generally, the objectives for a fuel reduction burn are to reduce fuels by 70% over 70% of the area, with less then 10% total crown scorch (Prescribed Burning Low Intensity Manual January 2005). Crown scorch will be difficult to minimise in areas where the canopy is low and fuels are continuous into the canopy.

Objectives for ecological burning are more specific and are aimed at enhancement and regeneration of species, communities and habitat. Weed management burns have been classed as ecological due to the objective of stimulating growth of weed species and following-up with spraying as part of the weed management strategy.

Timing

Blocks should be burnt in a timing mosaic of both autumn and spring, with the exception of the Orchid Trial block (ECO1) and Buttongrass block (FRB2). This is due to the particular ecological requirements of each block, i.e. orchid growing and flowering period and chaostola flying period. Further the smaller FRB blocks along Coffee Creek must be burnt in autumn to avoid the Forty-spotted Pardalote breeding season.

Planning

Operational prescribed burn plans shall be completed for each burn as required.

Burning blocks should be reviewed if they are burnt or partly burnt in a bushfire or if new biological or Aboriginal heritage information comes to light. The schedule for burning is a guide only and blocks may be burnt in a later year to fit with other priorities within the Region, or if suitable weather and/or fuel conditions are not available in the scheduled year.

Many hours and funds have been put into managing the weeds in the Peter Murrell Reserves, it is critical to the values of the Reserves to use fire in conjunction with the Weed Management Strategy to minimize adverse effects of weeds that respond favorably to fire. The Weed Management Strategy must be consulted in the operational planning stage of the burn and the required weed control actions should be documented in the burn plan and followed-up post burn.

Fuel Reduction Burning

Due to the proximity to residential areas and the long unburnt nature of the vegetation in the Reserves, a mosaic of fuel reduction burning blocks have been identified (Figure 3, Map 3). This will assist in slowing down a main fire front, reduce spark and ember attack, provide more manageable areas to conduct backburning operations, provide refugia for flora and fauna and assist with fauna and flora recolonisation and regeneration after a bushfire.

In total 8 fuel reduction blocks have been identified to reduce fuels and regenerate vegetation over the broader area of the Reserves.

The north/south orientation of the vegetation strip (along coffee creek) may allow the creek to become a wick for bushfire to move through. However adjacent fire trails (ie Coffee Creek Fire Trail exit, Sandflats Fire Trail and the horse riding zone) and fire breaks, combined with the prescribed burning program will allow greater suppression opportunity of a fire in the Coffee Creek area.

Two small fuel reduction burns have been identified in the riparian zone adjacent to the Sandflats Fire Trail. FRB7 is to remove the gorse fuel hazard adjoining the fire trail and FRB8 is to provide a buffer along the fire trail for a fire moving south through the creek line.

Ecological Burning

Ecological burning is the use of fire to stimulate a response of the vegetation that maintains or enhances biodiversity.

Four blocks have been identified for burning for ecological purposes. ECO1 has been identified to promote the orchid species within that area and ECO2-ECO4 have been identified as part of a weed management program.

Ecological Burning - Weed Management

PWS in conjunction with the Huntingfield Coffee Creek Landcare Group have undertaken extensive weed control within the Peter Murrell Reserves, particularly along the Coffee Creek riparian zone and on the southern boundary. Four blocks (Map 3) have been identified that may require burning as part of the weed control program. Due to resource constraints weed control burns will be conducted when triggered by the weed management program and when appropriate resources and funding are available for follow-up weed control.

The objective for these burn blocks is to assist weed control by causing the seed stock to germinate allowing follow-up weed control.

The requirement, timing and priority for burning in these blocks will be triggered by the weed control program. Weed management burns shall only be conducted when follow-up weed control is planned and budgeted for.

If small (<1ha) weed management burns or pile burns are conducted in the Coffee Creek riparian zone the following issues shall be addressed in the burn plan:

- Impact of smoke on Forty-spotted pardalotes, i.e. burning along Coffee Creek should not be conducted during the pardalotes breeding season;
- Impact of temporary loss of vegetation on erosion in creek line;
- Follow-up weed control.

Fire Exclusion Areas

It is recommended that fire be excluded (as far as practicable) from four areas that are currently being rehabilitated (see map 2). The vegetation types in these areas are considered to be fire tolerant and once the vegetation recovers and fuels become less patchy, burning for fuel reduction purposes should be considered at a later stage.

Note: The Peter Murrell Weed Management Strategy must be consulted during the operational planning stage of each burn block to obtain the latest information on weed infestations and the management required prior to burning and post burning.

Table 11. Prescribed Burn Blocks

Block Name	Block ID	Area (ha)	Scheduled	Weed Issues	Comments and Important Notes
Pump Station	FRB1	3	2006	Consult the Weed Management Strategy prior to burning.	Bounded by fire trail and firebreak, no boundary works required.
Buttongrass	FRB2	20	2008	No major weed problems in this block at this stage (PWS 1999).	Bounded by fire trails, no boundary works required. The rehabilitation area on western boundary will need to be assessed for burning & probably burnt around. The nature trail falls within the block and assets (foot-bridge and signs) must be considered in the burn plan. This block has secondary objectives of maintaining the Buttongrass along Buttongrass Creek.
Scarborough	FRB3	17	2010	Consult the Weed Management Strategy prior to burning.	The boundaries are fire trails, road and walking track, hose-lays will be required off the walking track. Illegal access by vehicles to reserve in eastern part of block may be an issue post burn. May consider burning only western half if illegal access by vehicles is considered to be a bigger issue then fire hazard at the time of burn.

Block Name	Block ID	Area (ha)	Scheduled	Weed Issues	Comments and Important Notes
Middle -West	FRB4	20	2012	Spanish heath occurs on the Middle Fire Trail on the edge of the block and scattered infestations throughout the block. The Spanish heath must be sprayed prior to and post burning. There is potential for blackberry, gorse and Montpellier broom to become established in the wetter areas. This must be monitored through the weed strategy.	This block has a small area of Leptospermum glaucescens along the Middle FT. L. glaucescens is an obligate seeder and a fire regime of >1 fire every 10 years may result in a decline in the population. Implementing a weed management strategy is critical with this burn. A slashed break (1 tractor width or brushcut 2m) is required to separate this block from Middle-East block. Northern boundary may require slashing to strengthen break.
Middle - East	FRB5	18	2014	Spanish heath occurs on the Middle Fire Trail on the edge of the block and scattered infestations throughout the block. The Spanish heath must be sprayed prior to and post burning.	Northern boundary may require slashing to strengthen break.
Howden	FRB6	20	2016	Patches of Spanish heath occur in the north west of the block Blackberry & spear thistle – western end of Middle FT	The boundaries are fire trails and the nature trail continues through this block. Weed issues to be monitored.

Block Name	Block ID	Area (ha)	Scheduled	Weed Issues	Comments and Important Notes
Gorse heaps	FRB7	1	When follow-up weed control funds available	Gorse must be sprayed prior to and post burning. Gorse needs to be heaped and burnt with minimal gorse vegetation leaving the infested site (to minimize seed dispersal).	This is a small burn designed to remove the fuel hazard created by the dead gorse. Due to the flammable nature of gorse, the gorse should be heaped and flattened then burnt. Autumn burn only.
Fire Trail buffer	FRB8	1	When follow-up weed control funds available	Gorse must be sprayed prior to and post burning.	The objective is to provide a fuel reduced strip adjacent to the fire trail.

Block Name	Block ID	Area (ha)	Scheduled	Weed Issues	Comments and Important Notes
Orchid	ECO1	9	2006 2010 (subject to review)	No major weed issues in this block at the time of writing.	The special orchid area on the eastern boundary (see Map 3) has been set aside specifically to manage for orchid species. A more frequent fire regime is proposed for this area, this fire regime in conjunction with a change in the slashing program will assist in meeting fuel reduction objectives. It is recognized that other species may not benefit from a more frequent fire regime. A basic plant response monitoring system will be put in place to assess if the objective is achieved. ECO1 – Orchid Trial block is bounded by fire trails. Objective: To increase the abundance and diversity of orchid species. Two trial burns are proposed in 2006 & 2010 to promote orchid species. An adaptive management approach will be used to manipulate burning years as required. Burns to be conducted from late December to late June, outside of orchid growing and flowering time. During burn operations, fire should be allowed to trickle into the firebreak to reduce grass fuels. This will need to be monitored closely by crews.

Block Name	Block ID	Area (ha)	Scheduled	Weed Issues	Comments and Important Notes
Spanish Heath	ECO2	3	Not yet scheduled	This burn will be conducted as required as part of the weed control program in the reserve.	Spanish heath is a problem throughout the Reserves, on the southern boundary a large (~3ha) infestation occurs. The Weed Management Strategy (PWS 2000) identifies this area as appropriate for a spraying and burning regime. Spanish heath will both resprout from the root stock and set seed after a fire, therefore spraying the plants (to kill the root stock and prevent resprouting) prior to and post burning is critical. The burn will result in a flush of spanish heath seedlings which will require spraying again prior to setting seed. The burns should be at a high intensity to get maximum kills of the Spanish heath. plants
Coffee Creek	ECO3 ECO4	<1ha each	Not yet scheduled	This burn will be conducted as required as part of the weed control program in the reserve.	These blocks have been identified in the Coffee Creek riparian zone to allow for any burning that is required for weed management. These burns shall not be undertaken without appropriate resources and budget to implement follow-up weed control.
Pony Club	Block 6		Not yet scheduled	All blocks to be managed for weeds.	The burning program within this is to be developed with the Pony Club. The Pony Club block will be divided into about half a dozen smaller burning blocks to be burnt on a rotational basis to reduce fuels within the lease. The location of the blocks within the lease area is dependant on the location of horse trails outlined in the Pony Club Site Plan, which is under preparation and as such the specific blocks have not been included in this plan. The aesthetic values need to be considered when preparing the burning regime within the Pony Club lease.

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ATTACHMENT 1. FIRE TRAIL INSPECTION AND MAINTENANCE

(Adapted from AVK Environmental Management 2000)

Objective

To ensure that all designated fire trails in the Peter Murrell Reserves are trafficable by PWS and TFS vehicles at all times during the bushfire danger period, and pose a minimal risk to the
environment through erosion and sedimentation.

Application

a) This inspection form can be used for all designated fire trails in the Peter Murrell Reserves.
b) This inspection form is not intended for trails that are open to unrestricted use by the public, or are likely to receive frequent usage.

Guidelines

INSPECTION TRIGGERS

All fire trails should be inspected:

- at the beginning of the bushfire danger period (September)
- as soon as possible after heavy rainfall sufficient to cause substantial runoff
- as soon as possible after wind storms likely to have blown over trees, or brought down large branches.

A particular fire trail should be inspected and any necessary maintenance carried out following a
complaint, or notification of damage, from a member of the public.

INSPECTION ITEMS

The following seven items should be checked during each fire trail inspection:

1) Surface: wherever possible high and medium priority trails should have a smooth surface free from loose stones and rough exposed rock (except for cross banks for erosion control, and rock lined fords). It should be noted that a smooth surface may not be achievable on all sections of all trails without importing substantial amounts of surfacing materials.

2) Erosion: trails should be free of rilling or gullying caused by water flowing across or along the trail.

3) Water on trail: where water has been running along the trail, adequate arrangements must be made for it to be turned off the trail.

4) Drainage: all table drains, cross banks, fords, culverts and bridges should be functioning and free of erosion damage or blockages.

5) Trees or branches across the trail: fallen trees or branches should not be allowed to block trails, even where it is possible to manoeuvre a vehicle around them. They should be moved well back from the edge of the trail. Where there are heavy accumulations of fuels adjacent to trails, fallen trees and branches should be removed completely.

6) Shrubs and bushes on the sides of the trail: there should be no shrubs, bushes or small trees within 1 m of either side of the trail. The clearing width can be reduced in areas where fuel loads are naturally relatively low, or where threatened plant species occur along the side of the trail.

7) Gates and locks: gates should be intact and able to be opened and closed easily, locks must be easy to open.

MAINTENANCE

Note that the use of fire trails when they are wet and soft must be minimised to reduce damage
and subsequent maintenance costs.

1) Where the trail surface has been damaged by water running down the trail, excessive usage etc., regrade the trail with a 4WD tractor with a rear mounted blade, or other suitable equipment. Blade gravel in from the side of the trail to fill in holes and ruts. Back blade to ensure the trail has a smooth surface and sufficient cross-fall (preferably outfall) to shed water. If there is insufficient material available on the sides of the trail for repairs, import suitable material. In weed infested areas ensure that blading is done into, not out of, weed infestations.
2) Material used for trail maintenance must be from areas free of weeds, and any material imported into the area for trail maintenance must be sourced from a confirmed *Phytophthora cinnamomi* free source.
3) Where excessive erosion has occurred, or it is not possible to provide adequate cross-fall drainage, install additional cross banks to direct water to the side of the trail.
4) Remove any accumulated sediment, leaves, branches or other litter that is blocking table drains or culverts.
5) Repair cross banks that have been overtopped, blocked up with sediment, or are badly rutted.
6) Where trails have been eroded by runoff flowing across the trail, construct a concrete or rock lined ford, or divert runoff along a table drain to a culvert or a stable ford.
7) Remove shrubs, bushes and saplings as required to maintain a minimum 1 m clearance on each side of fire trails. Plant species listed in the Threatened Species Protection Act, 1995, should not be removed without a permit. Cut vegetation should not be left on the side of the trail but removed from the site, or stockpiled and burnt in a clear open area.
8) Cut up and remove any trees that have fallen across fire trails. Larger branches and stumps should not be left on the side of the trail but dragged into the bush on the side of the trail, or removed from the area. Small branches should be removed from the site, or stockpiled in a clear open area and burnt. Make sure that fallen trees and branches are cut back at least 2 m from the edge of the trail.
9) Ensure that gates on fire trails are intact and locked, and that locks on gates are working smoothly.
10) Replace any trail identification signs or markers that have been damaged or removed.

DOCUMENTATION

Fire trail inspections should be recorded on the following form, and passed on to the relevant
agency for action:

FIRE TRAIL INSPECTION FORM

Date: _____ Trail name/number: _____

Inspected by: _____

Reason for Inspection: _____

- Pre-bushfire season check on: _____
- Notification from: _____ Received by: _____ On: ____
- Heavy rainfall on: _____
- Wind storm on: _____

CHECKLIST

ITEM	CONDITION	GRID REF	RECOMMENDED ACTION	COMPLETED ON	BY (signed)
Trail Surface	□ Good □ Poor at				
Trail Erosion	□ Good □ Poor at				
Trail drainage	□ Good □ Poor at				
Trees and branches across trail	□ No □ Yes at				
Trail Overgrown	□ No □ Yes at				

ATTACHMENT 2. PRESCRIBED BURNING PRESCRIPTIONS

Burning prescriptions for all planned burns are given in Table 7.

The coastal position of the Reserves means the potential for sea breezes is a significant component in the planning and conducting of prescribed burns (NRE 1999).

Table 7. Prescriptions for prescribed burning in the Plan Area (based on prescriptions from the Prescribed Burning - Low Intensity course manual January 2005)

Parameter	**Prescription**
Soil dryness index (SDI)	25-100, if >50 then 15mm of rain is required within past 10 days. Peat in drainage lines should be moist to wet.
Litter on ground	mostly dry, soil surface damp in morning
Wind speed (at 10m)	Light air to gentle wind (Beaufort Scale) < 15 km/h
Relative Humidity	40-70%
Temperature	10-23°C
Fire Danger Rating FDR outlook	Forest FDR Low 1 - Moderate 6 < Moderate 10 for next 24 hours
Flame height	generally < 2 m
Head fire rate of spread	0.2-2.0 m/min
Percentage of unit burnt	70% of fuel over 70% of area

ATTACHMENT 3. FIRE SUPPRESSION INFORMATION

The following recommendations have been made to guide fire suppression activities. The recommendations will be superseded by relevant Policy and Procedure developed by the Fire Management Branch, PWS.

- Where possible fire should be excluded from the rehabilitation areas and along Coffee Creek. With the exception of burning gorse heaps (see above recommendation).
- All vehicles entering the Reserves should be free of soil from other areas, to minimise the risk of spreading Phytophthora and other plant pathogens in to the Reserves. Vehicles should be washed down after exiting the Reserves.
- Machinery used in suppression operations may cause more long-term damage to nature conservation values than the actual wildfire. Where it will not compromise overall wildfire control objectives and where practical, existing fire breaks or access tracks should be used as control lines with an indirect attack strategy in preference to creating new fire trails and breaks with machinery within the reserves

  Heavy machinery should not be used in the Reserves without the permission of the Derwent Senior Ranger or delegate. The Senior Ranger or delegate must contact the Aboriginal Heritage Office for access to the Tasmanian Aboriginal Site Index and best practice advice, prior to approving use of heavy machinery. If permission is granted from the Senior Ranger the operator shall be briefed on the underground infrastructure, Aboriginal heritage values and minimal disturbance techniques shall be used. Post bushfire rehabilitation must be undertaken. If any Aboriginal Heritage is accidentally impacted during the course of operations, a permit must be granted under the *Aboriginal Relics Act 1975* prior to any rehabilitation being undertaken within the area containing the identified Aboriginal heritage.
- Although some trails may be trafficable by 2WD vehicles it is recommended that all vehicles involved with fire operations be 4WD.

ATTACHMENT 4. SUMMARY OF ACTIONS AND RECOMMENDATIONS

It is the responsibility of the PWS Derwent Field Centre to ensure that actions/recommendations from 1 to 9 are implemented. Action 10 to be developed by the Pony Club.

Action number	Action/Recommendation	Location	Timeframe	Comments
1	Upgrade Coffee Creek crossing to a standard that allows safe egress by a heavy tanker.	Western end of Sandflats FT	Prior to 2006/07 fire season	Until the upgrade is complete, the crossing needs to be checked prior to each fire season and after any prolonged use or high rainfall events, to ensure trafficable & that warning signs are in place.
2	Remove fine fuels to 1m horizontal and 10cm vertical along fire trails. Overhanging branches to be removed.	All fire trails	Prior to 2006/07 fire season	Areas of *Gahnia radula* on Howden Fire Trail to be maintained to 30cm. Entire tree removal is not necessary if fine fuels can be cleared to 2m height.
3	Ensure all Fire Trail egress is well defined	All fire trails	Prior to each fire season	Particularly McVilly Fire Trail.
4	Check fire trails and firebreaks are trafficable	All fire trails	Prior to each fire season	As per Management Procedure 2 (Attachment 1) from Wellington Park Fire Management Strategy
5	Maintain current slashing program	Perimeter firebreak, Howden FT and Middle FT	Prior to each fire season	Slash orchid area outside of growing season.
6	Implement prescribed burning program.		ongoing	To schedule recommended in Section 7. Liaise with DPIWE prior to burning regarding any new biological information.
7	Remove dead gorse along Coffee Creek (FRB7)	Coffee Creek	Prior to 2006/07 fire season	Recommended that the gorse is heaped and burnt and any gorse regeneration is sprayed.
8	Monitor Orchid diversity and abundance	Orchid Trial Block	annual	PWS to implement basic monitoring of plant response. Liaise with DPIWE.
9	Maintain access to water point at Heron Pond	Heron Pond	Prior to 2007 fire season	Light fire units need to be able to pass and turn around, possibly require area for portable pump to be used during prescribed burning activities.

Action number	Action/Recommendation	Location	Timeframe	Comments
10	Maintain fuel reduced area around Pony Club assets. Develop Pony Club visitor safety plan. Develop small scale prescribed burning program within lease.	Pony Club lease		Fuels around assets within lease to be maintained to guidelines outlined in the TFS *Guidelines for Development in Bushfire Prone Areas of Tasmania2005*. Pony Club to develop a plan for visitor (to the club) safety should a fire start in the Reserve during an event.