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Gippsland Region Fire Protection Plan

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Purpose and scope of the fire protection plan

Fire in Victoria poses a serious threat to life and property while, paradoxically, playing an integral part in the maintenance of many native ecosystems. Addressing fire issues therefore forms a key part of land management. The Department of Natural Resources and Environment* (referred to as 'the Department' throughout this Fire Protection Plan) is responsible for the integrated management of Victoria's natural resource base including land identification and management, resource development and utilisation, and the protection, conservation and environmental management of natural resources. Within this scope the Department aims to protect public land assets and values from the adverse effects of fire, as well as providing for a diversity of goods and services within sustainable levels.

** Note: The Secretary of NRE is legally responsible for the provision of fire prevention and suppression works in national parks, State forests and on other protected public land in Victoria. Those responsibilities are given effect primarily by NRE's Chief Fire Officer who works closely with NRE's land management units (Parks, Flora and Fauna, Forest Management and Land Victoria) and with NRE's key Service Agencies (Parks Victoria, Commercial Forestry and NRE's Regional Services)*

The *Code of Practise for Fire Management on Public Land* (CNR 1995) provides a framework which promotes the efficient, effective and integrated management of fire and fire-related activities on public land in Victoria, for the purpose of protecting human life, property, assets and environmental values from the deleterious effects of wildfire or inappropriate fire regimes. The Plan is prepared within the context of the Code to ensure that wildfire prevention and suppression activities on public land are conducted in an effective, operationally safe, environmentally sensitive and cost-effective manner.

The Plan defines fire protection objectives and the strategies that are to be adopted in order to achieve

those objectives. It has four main strategies: **wildfire prevention, wildfire preparedness, wildfire suppression** and **wildfire recovery**. The fire protection strategies and practices to be adopted are those that best meet both the fire protection objectives and the principles of environmental care for public land within the Gippsland Region.

The purpose of this Plan is to ensure that proper and sufficient works for the prevention and suppression of wildfire on public land are undertaken within Gippsland. The plan is strategic in its approach, addressing fire protection at the regional level.

Details of the timing and the location of fire protection works and services programs in any specific year are covered in a separate Fire Operations Plan.

The Fire Operations Plan shows a three-year forward planning program comprising:

- a schedule and maps showing proposed fuel management / ecological burning proposals;
- any new prevention and preparedness programs planned for the immediate three-year budget period;
- details of planned fire prevention related education and enforcement programs; and
- a detailed schedule of prevention and preparedness programs planned for the immediate twelve-month budget period.

Both this Fire Protection Plan, and Fire Operations Plans are developed with advice from planning specialists involved in flora, fauna, parks, forestry, land and water protection. Both plans aim to complement the detailed land management strategies set out in park and forest land management plans. The three-year Fire Operations Plan is available for public inspection prior to spring each year.

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Chapter 1: Background

1.1 Fire in Victoria

The combination of topography, vegetation and climate result in south-eastern Australia being one of the most severe fire prone areas on earth. Nationally this century, it has been estimated that over two-thirds of all bushfire-related deaths and over half of all significant bushfire associated property losses have occurred in Victoria.

Extensive and devastating wildfires that occurred in 1939 and in 1944 led to legislation assigning responsibility for wildfire prevention and suppression on public land to the Secretary of the Department, with the remainder of rural Victoria assigned to the Country Fire Authority (CFA). Since that time NRE and

the CFA have developed increasingly sophisticated cooperative arrangements, particularly in relation to the suppression of wildfires occurring in the public/private land interface. Cross-State border arrangements also continue to evolve.

In February 1983, wildfires of similar potential to those of 1939 occurred and, notwithstanding modern technology, the threat of widespread wildfires continue today. Wildfire is an integral part of the rural environment in Victoria, where a range of ignition sources and fuel are available each and every summer.

Naturally-occurring fires have been significant in shaping the distribution and composition of much of Australia's native flora and fauna, and fires used by Aboriginal people are also said to have had an influence. Many of Victoria's native plants and animals possess characteristics proven to be effective survival strategies when exposed to natural stresses, such as fire and drought. A number of species require fire or similar disturbances to regenerate or renew their habitats, and many temporarily flourish in the post-fire environment. Conversely, there are species requiring long fire-free intervals to ensure their continued abundance. The management of fire (in all its variety of frequencies and intensities), and its exclusion, therefore has a number of consequences.

This Fire Protection Plan has been developed in close consultation with the managers of Victoria's national parks, State forests and other Crown lands. It draws heavily on their knowledge, databases and land management strategies. It also takes into account the relative risk of wildfire; and the role of fire in the maintenance of biological diversity, the responses of different ecosystems to fire and the natural patterns of succession. For example, as far as practicable the Plan integrates and balances the (sometimes competing) objectives of the range of applications of prescribed burning.

1.2 Public Land in Victoria

Around one-third of Victoria (or about 7.7 million hectares) is public land. This area includes a diverse range of parks, forests and other Crown land, some of which comprise the most rugged and remote parts of the State. They contain many nationally and internationally significant ecosystems, over 90% of the State's native timber resource and virtually all of the State's most significant natural tourist attractions.

The principal responsibility for fire management on public land in Victoria resides with the Department's Fire Management business. Land and natural resource management responsibility also resides within NRE and is carried out both by the Department and various service agencies; the most significant current one being Parks Victoria.

1.3 The Gippsland Region

The Gippsland Region* is managed from Traralgon. Table 1 below shows how the public land is distributed across ten Fire Districts for ease of management.

* The regional structure of the Department comprises six regions, of which Gippsland is one. Previous Fire Protection plans reflected a larger number of regions. These were reduced in 1993.

Table 1- Gippsland Region Fire Districts

District	Public Land (Ha)	%Public Land in District
Bairnsdale	202 502	55
Bendoc	167 794	80
Cann River	369 561	93
Erica	157 450	58
Heyfield	576 651	59
Noojee	88 112	39
Nowa Nowa	283 727	82
Orbost	258 970	87
Swifts Creek	354 096	72
Yarram	117 973	20
Total	2 576 835	62% (in Gippsland Region)

1.3.1 Environmental Context

The Gippsland Region covers the eastern coastal strip of Victoria from the New South Wales border to the southern tip of Wilsons Promontory and extends from the coast at Inverloch inland to Drouin, Noojee, Matlock, Dinner Plain and to Tom Groggin on the New South Wales border.

Riverine plains, foothills and mountains comprise the topography of the Region which is geomorphologically diverse and geologically complex.

Large variations in altitude and landform across the Region result in wide variations in climate. Average

annual rainfall varies from 600 mm in the rain shadow areas of Deddick to 1950 mm in the high elevation Ash forest on the southern slopes of Mt Baw Baw.

The highest point in the Region, Dinner Plain at 1626 m, can be covered by snow for several weeks during winter. Climatic conditions across the area are best described as 'Mediterranean', usually with a wet winter and a hot, dry summer.

1.3.2 Flora

The Region contains a wide variety of Ecological Vegetation Classes (EVCs) – approximately seventy, which include wet heathland, banksia woodland, lowland forest, shrubby dry forest, Gippsland plains, grassy woodland, riparian forest, warm and cool temperate rainforest, damp and wet forest, montane dry woodland and sub-alpine woodland. Several of these EVCs are fire-sensitive, such as rainforest, wet (mountain ash) forest and cypress-pine woodlands.

The bioregions (as defined in Victoria's Biodiversity Strategy) covering Gippsland are: East Gippsland Lowlands, East Gippsland Uplands, Wilsons Promontory, Gippsland Plain, Highlands – Northern Fall, Highlands – Southern Fall and Victorian Alps. These bioregions are becoming increasingly important in planning and reporting on biodiversity impacts and achievements.

Much of the original native vegetation of the area has been cleared from the more fertile and undulating country, and this has resulted in the vast majority of native flora now being within forests, on public land. Most private property is predominantly agricultural.

Each forest type presents a different fire protection problem. The wet sclerophyll forests, although normally less flammable in most years, are capable of generating fires of cataclysmic proportions such as those occurring in January 1939 at Erica, Noojee and Matlock. The lower elevation foothill mixed eucalypt species forests are generally dry and available as fuel for wildfire in most years. Since they often border private property they are at most risk from fire escaping from private property, especially during spring and summer.

The East Gippsland Heathland communities have a Fire Management Plan to suit their particular ecological requirements (Avis 1993).

Much of the Region's coastal vegetation is extremely volatile, and in many years will carry a wildfire for up to about nine months of the year. This characteristic poses real challenges considering the frequent proximity of high value assets, and the difficulty of protecting visitors at certain times of the year.

As the knowledge of the relationship between plants, ecosystems and various fire regimes continues to grow Action Statements (prepared in accordance with Victoria's Flora and Fauna Guarantee), and related management plans and prescriptions will also continue to evolve. Current Action Statements and associated Management Prescriptions relevant to fire planning in Gippsland are listed in Appendix 8.

Just as fire has an influence on the floristic composition and structure of vegetation, it also affects the habitat (and hence the faunal elements) that have adapted to it.

1.3.3 Fauna

Due primarily to the extensive range of habitat within the Gippsland Region a diverse fauna exists, containing a large proportion of species known to occur in Victoria. Some of the State's threatened species occur in the Region. As with flora, as the knowledge of the relationship between the Region's fauna, ecosystems and various fire regimes continues to grow, Action Statements and related management plans and prescriptions will continue to evolve. Current Action Statements and associated Management Prescriptions relevant to fire planning in Gippsland are listed in Appendix 8.

1.3.4 Land Use

Public land within the Plan area includes a significant area of State forest which is managed to achieve a range of objectives. Significant areas of this State forest are managed for sustainable timber production. Nearly two-thirds of Victoria's native forest-based timber volume production occurs in the Gippsland Region. This activity is based around the mixed species forests of East Gippsland and the Ash forests in the Central Highlands. Much of the regrowth to sustain this industry, and the many jobs created by it, need to be protected from the devastation of fire.

The other major category of public land in the Region is reserved as national park. These parks contain a diverse range of biological communities.

The Region's State forests and national parks also provide a wide range of recreational opportunities. Large numbers of campsites, walking tracks, day-use areas and four-wheel drive tracks are found across the Region

As well as the biodiversity conservation values of most public land, other significant uses include water catchment protection, bee-keeping, and localised grazing and mining.

1.3.5 Land Management Plans

A number of Land Management Plans and related documents are relevant to this plan. These are listed in [Appendix 9](#).

1.3.6 Social, Cultural and Economic Assets

A number of significant townships are located adjacent to public land within the Plan area, and pose particular challenges when considering fire protection issues. Where possible and appropriate, regular fuel reduction burning works are carried out adjacent to these townships to reduce the risk of damage by uncontrolled fire. Of some concern to the Department is the continuing subdivision of private land adjacent to public forests throughout the Plan area. At times these subdivisions result in housing development in high fire-risk areas. This (to some extent) is causing the Department to regularly re-assess its fuel management strategies and priorities.

A number of significant pine plantations are scattered throughout the Plan area, both on leased public land and on private property close to public land. Those on leased public land are managed by Hancock Victorian Plantations (formerly the Victorian Plantations Corporation), and are mainly in the Yarram and Noojee Fire Districts. Those on private property are mainly managed by Australian Paper Plantations and are located in the Heyfield and Yarram Fire Districts.

Due to the extent of the timber industry in the Plan area, a large and valuable timber regrowth resource exists throughout much of the State forest. This asset is of significant economic and ecological importance to the State, as are all other areas of State forest available for timber harvesting. The protection of these assets from the damaging effects of wildfire is critical.

Details of specific cultural and natural assets requiring protection from wildfire or inappropriate fire regimes are contained in NRE and Parks Victoria databases and are used in formulating both land and fire management strategies.

1.3.7 Significant Post-European Settlement Fire Events

Major fires occurred within the Plan area in the Ash Forests in 1939 (Black Friday) and 1983 (Ash Wednesday). During the 1939 fires, extensive areas within the Plan area were burnt with significant loss of life, especially in the Baw Baw area where timber communities in the bush were caught in the inferno. South-eastern Australia, and Gippsland in particular, is reputedly one of the most fire-prone environments in the world, due to the interactions of climatic conditions, topography, vegetation types and settlement patterns. In Gippsland, devastating wildfires have occurred in many years including 1851, 1908, 1926, 1939, 1952, 1965, 1977, 1983 and 1998. These wildfires have burnt vast areas of native vegetation and have often resulted in loss of life and property.

Typically, the annual 'fire season' extends from mid-October to mid-April, with a peak in January and February. The extent and severity of seasons varies enormously from year to year, depending mainly on weather patterns and significant variations from the 'norm' caused by events such as the 'El Nino' phenomenon.

In recent times, with a greater emphasis on fire prevention, preparedness and education, wildfires have not attained their earlier proportions, although that potential still certainly exists. On average, about 162 unplanned fires per fire season could be expected across the Region, burning an average area of 34 890 hectares. (These statistics are based on the twenty-year period from 1978–79 to 1997–98. During this period, some unusual seasons of low fire activity occurred, particularly the fire seasons of 1983–84, 1992–93, 1993–94 and 1995–96 which were unusually wet, and resulted in low fire activity. Refer to [Appendix 6](#) for full details.)

1.4 The Planning and Legal Context

Fire protection undertaken by the Department includes all activities designed to protect an area from damage by wildfire. It involves planning and implementing fire prevention activities and preparedness works, ensuring fire readiness, undertaking fire suppression operations, and planning and implementing post-fire recovery works.

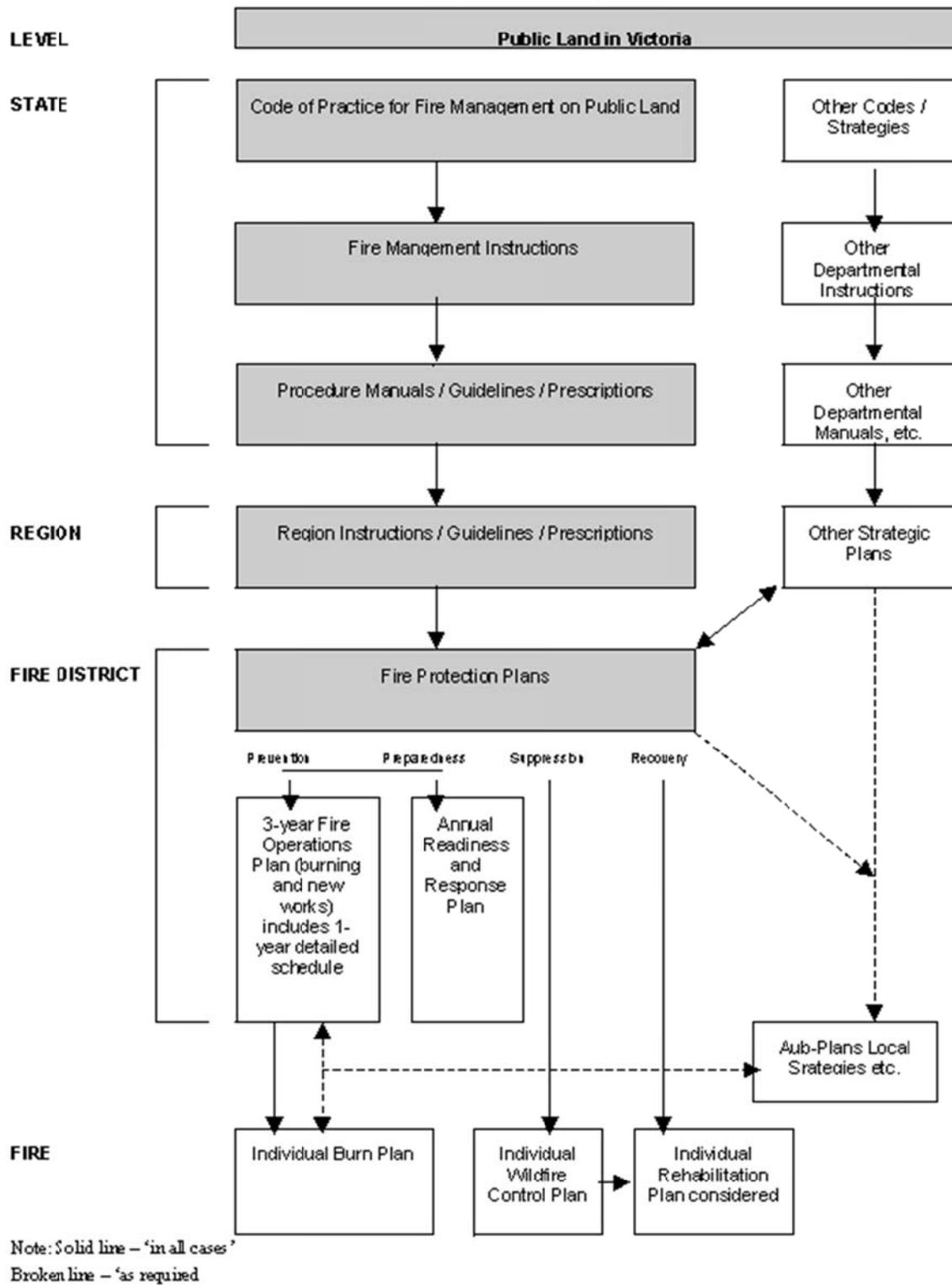
This Fire Protection Plan details wildfire prevention and wildfire preparedness strategies and activities as well as wildfire recovery strategies. Wildfire response strategies (fire suppression) are covered in this plan, but they are also detailed in a separate Readiness and Response Plan which is prepared annually for the Region. Prescribed burning operations are detailed in a separate Burn Plan for each operation. As outlined above, they are also listed in three-year Fire Operations Plans which contain details of a three-year forward program and a detailed schedule for the immediate twelve-month budget period. Rehabilitation Plans give specific operational details (other than routine post-fire rehabilitation) of recovery activities considered necessary at the completion of wildfire suppression operations.

This Plan complements the Municipal Fire Prevention Plans for the Shires of East Gippsland, Wellington, Latrobe, South Gippsland, Baw Baw and Bass Coast, and the Fire Protection Plans for the Departmental Regions of Port Phillip and North-east. The policy and planning framework for fire management on public land is shown in

Figure 1.

Figure 1

Order of control and planning for fire management on public land



1.4.1 Legislative Requirements

Section 62(2) of the Forests Act 1958 establishes the requirement for the Secretary of the Department 'to carry out proper and sufficient work for the prevention and suppression of fire in every State forest and national park and on all protected public land.' The National Parks Act 1975 requires the Director (National Parks) to ensure that appropriate measures are taken to protect each national park from injury by fire.

The Department has fire prevention responsibility for the Fire Protected Area, defined by the Forests Act as: 'any land (not being vested in or under the control of the Melbourne and Metropolitan Board of Works (now Melbourne Water)) which is -

- a) within any State forest (as defined in the Forest Act)
- b) within any national park
- c) (unless excised) within 1.5 kilometres of -
 - (i) any reserved forest or area of unoccupied Crown land proclaimed as a protected forest
 - (ii) national park
 - (iii) any protected public land
- d) within any protected land.

In addition the Forests Act stipulates that the Department has the responsibility for the suppression of wildfires in any State forest, national park or other protected public land. It should be noted that in conjunction with the sale of the State's plantation holdings in late 1998, responsibility for their fire protection moved to the Country Fire Authority.

The Flora and Fauna Guarantee Act 1988 requires the Secretary to 'administer the Act in such a way as to promote the flora and fauna conservation and management objectives'. These objectives are designed to ensure that Victoria's native flora and fauna can survive, flourish, and retain their potential for evolutionary development.

This Fire Protection Plan also complies with fire protection requirements under the Crown Land (Reserves) Act 1978, Lands Act 1958, and the Conservation, Forests and Lands Act 1987 and also complements plans prepared in accordance with the Country Fire Authority Act (1958) for the Country Area of Victoria.

1.4.2 National Strategies

This Plan is prepared in accordance with the Code of Practice for Fire Management on Public Land (CNR 1995) and therefore complements the following National Strategies:

- National Forest Policy Statement: A New Focus For Australia's Forests

- National Strategy for the Conservation of Australia's Biological Diversity.

1.4.3 Victorian State Codes of Practice and Other Related Strategies

The Plan conforms with the relevant requirements of State Government policies, including requirements of Victoria's Biodiversity Strategy, the Code of Practice for Fire Management on Public Land (CNR 1995), the Code of Forest Practices for Timber Production: Revision No. 2 (NRE 1996) and the Code of Practice for Safety in Forest Operations (DOL 1990).

The Code of Practice for Fire Management on Public Land (CNR 1995) was developed using a comprehensive process of consultation both within and outside the Department. The Code establishes the principles, standards and guidelines that apply to fire management on all public land in Victoria in order to ensure that, in an effective, efficient and safe manner:

- human life, property, and assets are protected, as far as practicable, from the deleterious consequences of wildfire
- environmental values including the vigour and diversity of the State's indigenous flora and fauna are protected, as far as practicable, from the deleterious effects of wildfire and inappropriate fire regimes
- water catchment, airshed and landscape values are conserved
- archaeological, historical and other cultural sites are conserved.

In particular, the Plan addresses the requirement of the Code that 'the Department must prepare, or have prepared, and maintain, Fire Protection Plans for all public land in Victoria that are consistent with this Code and conform with any other relevant Departmental policy, standard or guideline.' The Plan also complies with the relevant requirements in the Code of Forest Practices for Timber Production (NRE 1996). That Code provides the State-wide goals and guidelines to be followed and applied to timber production operations and it addresses some fire-related topics.

The Plan also complies with Victoria's Biodiversity Strategy which in turn, satisfies Victoria's obligation as a signatory in 1996 to the National Strategy for the Conservation of Australia's Biological Diversity.

1.5 Fire and the Conservation of Biodiversity

The Department is responsible for defining objectives for all aspects of the management of public land. This obviously includes the conservation of flora and fauna. Strategies for meeting this objective often involve the use of fire. All fires (including wildfire, fuel management burns, post timber harvesting slash burns, and specific-purpose ecological burns) have an ecological impact.

For a variety of reasons, the deliberate use of fire in ecosystem management has not been widespread in

Victorian parks and forests.

Public land managers are now, however, increasingly seeing the presence, frequency or absence of fire as a vital consideration in the maintenance of the health of many ecosystems. For example, fuel management programs can provide an opportunity to meet both ecological management and fire protection objectives.

Land managers and fire managers are continuing to undertake research and monitoring into the fire-related ecological requirements of species and of communities. Long-term research also continues into the environmental effects of various fire regimes on other environmental values, such as soils.

The objectives and detailed strategies to ensure that particular ecosystem outcomes are met are not detailed in this Plan, but they are mentioned where appropriate. If a particular management requirement is not related to fire protection but has had a significant influence on this Plan then it is also outlined. An example of this is the need to avoid burning in a particular location for the purposes of flora or fauna management.

For most areas of public land in Gippsland, specific land management plans exist for areas of park and State forest. These plans contain the detailed strategies being used to meet objectives such as those contained in Victoria's Biodiversity Strategy and the National Forest Policy Statement. (Australian Government 1992) These plans may also specify parameters for the conduct of prescribed burning operations and particular fire regimes to be applied to a local area. Examples of this are a section of national park, a particular vegetation community, or land managed to encourage the recovery of particular species. Land management plans and related documents relevant to Gippsland are listed in [Appendix 9](#).

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Chapter 2: Planning Process

In developing a Fire Protection Plan the Department aims to:

- meet State-wide standards
- meet the principles of environmental care.

The process involves:

- consulting with specialists in flora, fauna, parks, forestry, cultural/heritage values, land and water protection, and fire management
- consulting with the CFA, local municipalities, other agencies or stakeholders who have a major interest in fire protection and with the community.

In particular the process involves:

- presenting a draft Plan for discussion at meetings of the relevant Regional and Municipal Fire Prevention Committees, to ensure the Plan complements planning in the Country Area of Victoria
- making the draft Plan available for public comment for a minimum period of eight weeks at the Department's central office and the field office responsible for its preparation, and at other NRE and Parks Victoria offices as appropriate
- inviting public comment by placing advertisements in the State's major newspapers and local papers in the area covered by the Plan, and by sending letters to industry and community groups known to have interests in the area
- resolution of any issues raised in the comments received
- presenting the Plan to the senior Departmental managers having State-wide responsibility for fire, forests, parks, flora, fauna, fisheries, Crown land, catchment and land management, prior to its final approval
- reviewing the Plan, using the above process, within ten years of its approval date, with a further provision for revision after five years as well as periodic amendment as required by changes in legislation, policy or advances in knowledge. Amendments to this plan, unless otherwise authorised, must follow the process prescribed for the preparation of a new plan. The three-year Fire Operations Plan process provides significant scope to incorporate the implications of scientific research and operational experience between formal reviews of this Plan.

Chapter 3: Fire Protection Objectives

The objectives of the Department's fire protection activities are:

- to protect human life, property, public land assets and values, as far as practicable, from the deleterious consequences of wildfire
- to control all wildfires, on or threatening public land, in the shortest possible time in a manner which is fast, determined, safe and thorough, giving due regard to management objectives, environmental values and economy
- to minimise the incidence of preventable wildfires (wildfires of human origin)
- to ensure that environmental values, including the vigour and diversity of the State's indigenous flora and fauna, are protected, as far as practicable, from the deleterious effects of wildfire and inappropriate fire regimes (see [Appendix 4.1](#), [Appendix 4.2](#) and [Appendix 4.3](#))
- to ensure water catchment, airshed and landscape values are conserved
- to ensure archaeological, historical, and other cultural sites are conserved
- to achieve other specified land management objectives by the planned use of fire
- where appropriate, to complement works carried out on adjacent lands (those not managed by the Department) minimising the risk and spread of wildfire

- where practicable, to take measures to assist the recovery of firefighters and the restoration of the ecosystem from the adverse impacts of wildfire and fire suppression on public land.

These fire protection objectives will be achieved in the Gippsland Region by implementing the fire protection strategies detailed in the following section. Fire management strategies and activities will be planned and conducted in an environmentally sensitive manner in accordance with the environmental care principles of the *Code of Practice for Fire Management on Public Land* (CNR 1995)

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Chapter 4: Fire Protection Strategy

There are four components to the fire protection strategy: wildfire prevention, wildfire preparedness (referred to as 'fire pre-suppression' in previous plans), wildfire suppression and wildfire recovery. Each component is addressed in this section, in terms of the Department's policies and the specific characteristics of the Gippsland Region.

The fire protection strategy is based on:

- the sources and location of fires, fire risk and the distribution of fire hazard throughout the Gippsland Region
- the range of wildfire suppression options required in designated zones to protect human life, property, public land assets and values
- consideration of the relevant policy statements, existing area management plans, environmental prescriptions, known ecological requirements for the maintenance of ecosystems, relevant scientific research and advice from specialists both within and outside the Department.

In support of the Gippsland fire protection strategy the Department has prepared planning maps and related documents presenting the following types of information:

- land use (current or intended statutory use and tenure) within, and adjacent to, the planning area boundary
- fire protected area
- fire history
- fire origins and causes
- topography
- fuels/vegetation types/ecological vegetation classes
- cultural and natural assets requiring protection from wildfire or inappropriate fire regimes, such as historic buildings, rare or threatened species' habitats, and regenerating forests

- scenic values which must be considered when locating and constructing fire lookouts, helipads and tracks
- significant areas of housing, or other private or community improvements on, or adjacent to, public land
- existing wildfire suppression infrastructure such as, airstrips, lookout towers and helipads; (see [Appendix 11](#))
- natural values, particularly those sensitive to soil or hydrological disturbance, which must be considered when planning the use of heavy machinery during firefighting operations
- known areas of soil-borne disease likely to be spread by machinery involved in firefighting operations
- existing road and track networks and travel times from major centres
- strategic fuel management zones (see [Appendix 11](#))
- where appropriate and practicable, an indication of the combined effects of the above factors, including fire risk, and/or levels of fire suppression response.

The information relevant to individual fire districts is generally available for inspection at the district offices listed in Chapter 1.3.

4.1 Wildfire Prevention

Fire prevention includes all activities concerned with minimising the incidence of wildfire, particularly those of human origin. Effective fire prevention minimises wildfire damage to life, property, public land assets and values, and minimises suppression costs. Wildfire prevention involves:

- determining the origin, cause and impact of wildfires so that there is an accurate basis for development of effective fire prevention programs
- influencing public attitudes and conduct with respect to the use of fire through education and enforcement of legislation
- maintaining records to assist fire prevention.

4.1.1 Wildfire Origin and Cause

Effective fire prevention depends on understanding fire causes. Understanding how, why, when, where and by what agency fires are ignited allows education and enforcement programs to be specifically targeted to address the major fire causes. An understanding of past fire ignition patterns also allows prediction of future patterns, which can then be used as a basis for initiating fire prevention action. Fire causes are grouped and analysed in terms of:

- reason for ignition
- locality of fire ignition
- time of ignition

- the local community's attitude to, and competency with, fire.

Summaries of the numbers, causes, fire season and fire size class of wildfire ignitions for the Gippsland Region are presented in [Appendix 6](#) (Tables 1 and 2) Lightning is by far the major cause of wildfires in the Gippsland Region, causing 43.5% of all fires in the last twenty years.

A further 11.3% of wildfires within the Region were caused by escapes from burning operations on private property (scrub and windrows).

These statistics also highlight another area of concern where 18.9% of wildfires within the Region had been deliberately lit. This emphasises the continuing role of public education and enforcement activity.

The following strategies will be implemented in order to improve the Department's understanding of fire ignitions (origin and cause) and to improve investigation processes within the Region over the period of this Plan

- fires will be investigated for origin and cause, preferably by a trained fire investigator
- where there is any cause to suspect arson or negligence with fire, firefighters will endeavour to protect the area of origin of a fire from intrusion by any person or equipment until a fire investigator arrives at the scene
- fire cause statistics and information will be analysed on a regular basis
- protocols will be maintained with local CFA and police to ensure a co-ordinated approach to all investigations.

4.1.2 Community Fire Education

Community fire education is a long-term process of creating a behavioural change through awareness, education and empowerment. This activity is actively pursued by the Department, and is often complementary to similar programs undertaken by the Country Fire Authority.

- The Department will conduct and participate in programs which maintain public awareness of the wildfire threat, promote the importance of self-protection, and encourage the responsible use of fire by the community.
- Community fire education includes:
 - communications (involving materials, face-to-face contact, Internet, media releases and media opportunities)
 - interpretations (displays, shows, guided walks, pantomimes and similar activities)
 - school activities
 - media advertising

- marketing (publicity promoting the Department as a source of information and advice)
- media campaigns (sustained as funding permits, and focused activities launching and promoting programs or products).
- The Department will conduct and participate in programs aimed at achieving behavioural change by people and communities known to cause, or suspected of causing, wildfires.

4.1.3 Legislation and Enforcement

Enforcing fire protection legislation must focus on direct contact with the community. Enforcement is also inextricably linked with community education, because the main aim is to change the future behaviour of the persons concerned.

The Department will ensure effective enforcement occurs by tailoring each approach to the particular situation.

- The Department, together with its Service Agencies (such as Parks Victoria), will regulate the use of fire by introducing seasonal restrictions (that is, the prohibited period) on its use (other than its legal use for cooking or warmth) in the fire protected area, not being public land, during times when there is a danger of the spread of fire. These restrictions are coordinated with the CFA to ensure that, as far as practicable, the introduction of these restrictions coincide with the CFA Fire Danger Period.
- The Department will, in conjunction with the Municipal Fire Prevention Officer, where appropriate and in accordance with legal requirements, direct the owner/occupier of land within 1.5 km of the boundary of any State forest, national park or protected public land to remove or modify fuels for fire prevention purposes, and the Department will monitor compliance with such directions.
- During the prohibited period, the Department will ensure that the use of fire (other than its legal use for cooking and warmth on days declared not to be Total Fire Ban) in the fire protected area, is in accordance with a written permit issued by the Department. The permit conditions are to include details such as acceptable weather conditions, control measures to be observed and the resources to be provided, to minimise the likelihood of fire escaping.
- The Department and its agents will undertake regular patrols in strategic areas (such as where barbecues and campfires are used and where burning off activities are being undertaken in proximity to public land) to provide advice and assistance regarding the wise and proper use of fire, and to ensure compliance with relevant legislation.
- Industries within the fire protected area, such as sawmills, will be inspected annually for compliance with fire legislation.
- The Department and its agents will, as necessary, declare the closure of particular areas of public land for particular periods under Section 64 of the Forests Act 1958, during which period the use of fire in the open air is prohibited and licences for harvesting of forest produce are suspended.

- Whenever the fire restrictions (the fire danger period) are not in force in the Country Area of Victoria, the provisions of the Summary Offences Act 1966 will be applied in circumstances where a fire originating on adjacent private land burns or threatens to burn public land.
- Where deliberate lighting is suspected to have occurred on, or adjacent to, public land the Department will take appropriate action to identify and, as appropriate, prosecute offenders.
- Where there is sufficient evidence to suggest that a person (or persons) is responsible for deliberately lighting or negligently causing such a fire, action may be taken in accordance with Departmental guidelines to recover the costs of suppression and/or damage caused by the fire.
- Where punitive action is not undertaken, the Department will take appropriate alternative action, aiming to reduce such ignitions by the individual concerned and by others within that community.
- Enforcement training for staff will be undertaken as deemed appropriate and incorporated into Community Education Training Programs.
- The Department will initiate and participate in programs and task force operations for arson, serial and negligently caused wildfires.
- Appropriate media publicity will be given to legal action undertaken in relation to arson, and other significant fire causes.

4.1.4 Records

- The Department will maintain records (in a format which is, as far as practicable, consistent with an Australian Standard endorsed by the Department) to assist fire prevention planning and assessment of the effectiveness of prevention activities. Such records will include details of:
 - wildfire origins (where and when they originated)
 - wildfire causes (their sources and causes, if known)
 - areas burnt (hectares)
 - annual Departmental cost of suppression
 - estimate of annual fire damage
 - other economic or ecological consequences
 - annual cost of the fire prevention program
 - appropriate prescriptions for protecting particular values
 - registrations of interest by individuals, organisations or agencies for specific areas, to help with consultations prior to scheduled operations.

The Region will annually enter fire history data into the corporate Geographic Information System (GIS) library. This data will include the mapped area burnt by all wildfires and prescribed fires.

4.2 Wildfire Preparedness

Fire preparedness includes all activities undertaken in advance of wildfire occurrence to decrease wildfire

area and severity and to ensure more effective fire suppression. Fire preparedness covers the following aspects:

- annually preparing a Readiness and Response Plan for the Gippsland Region
- identifying resources required for fire suppression (Standards of Cover)
- identifying resources available for fire suppression (outside the Department)
- ensuring competency and training of personnel meets required levels
- maintaining strategically located Incident Control Centres
- ensuring serviceability and strategic location of equipment
- organising effective inter-agency coordination strategies
- maintaining key roads and tracks
- maintaining strategically-located water points
- maintaining aircraft support facilities
- maintaining, where appropriate, fire refuges
- monitoring fire danger
- ensuring satisfactory wildfire detection
- developing and maintaining communications networks
- maintaining records
- conducting research programs
- conducting fuel reduction burning on strategic areas
- conducting fuel management in certain areas by means other than burning
- designating strategic areas as fuelbreaks
- ensuring community and interest group access to appropriate databases detailing matters such as flora and fauna values, fuel management implementation, research outcomes etc.

A map indicating key aspects of fire preparedness is appended (see [Appendix 11](#)). This strategy map shows zones for fuel management, and key fire-related infra-structure.

4.2.1 Readiness

Daily readiness is determined according to the level of the Forest Fire Danger Index (FFDI), to ensure that the crew numbers on standby at weekends, the degree of readiness during normal work days and the speed with which first attack can be mounted, are appropriate. These readiness strategies are as follows:

- firefighters and support staff are rostered on standby at weekends and on public holidays, ensuring that an adequate suppression force is available as shown in the readiness and response plans
- the setting of the daily minimum level of resources based on FFDI is maintained for fire suppression purposes
- the preparation of annual standby rosters

- information on available Departmental and Service Agency personnel, vehicles, fire equipment and local private fire suppression resources are entered into the appropriate database and updated at regular intervals
- preparedness guidelines for Departmental equipment and personnel are reviewed annually ensuring that they are appropriate and recorded in the annual Readiness and Response Plan.

4.2.2 Personnel Competence and Training

The Department relies on appropriately-trained employees with a variety of skill levels for effective fuel reduction burning operations and a fast, determined, safe and thorough response to wildfire. The Department will ensure that all its firefighters are adequately trained and have this competency recognised prior to their involvement in firefighting operations.

The Gippsland Region also has at least four Incident Management Teams which are capable of performing their role at a major fire of statewide significance. In addition, several staff are trained to perform highly specialised roles (such as with aircraft) outside the region.

On-going training programs in all appropriate aspects of fire management and suppression are essential and will continue to be given a high priority. Preparedness strategies for personnel competency and training are as follows:

- All new Departmental firefighters will be given basic fire training before being deployed to a fireline sector and accredited for firefighting operations with particular emphasis being given to fire behaviour, safety and survival, fire-fighting techniques, environmental care principles and the use of Departmental firefighting equipment.
- Skills of existing firefighters will be developed and maintained through field exercises, lectures and training alongside more experienced personnel in both wildfire suppression and Departmental burning operations. Particular emphasis is to be given to developing the skills of Operations Officers.
- Departmental and Service Agency employees will only be required to perform tasks within their level of accreditation, unless the employee is being trained under supervision for a higher level, or where exceptional circumstances exist.
- Suitable personnel will continue to be trained for specialist roles in the Incident Control System.
- A register of fire training programs attended by staff and their experience at wildfires will be maintained and used in developing annual training action plans.
- All training will be conducted, wherever possible and appropriate, using the National Fire Industry Competencies.
- Personnel competency level details will be recorded in the Readiness and Response Plan.

4.2.3 Fire Equipment

For effective wildfire suppression each District relies on a stock of firefighting equipment owned by the Department, as well as suitable equipment owned by private individuals or held by organisations such as Parks Victoria. This enables the Department to respond appropriately in the event of critical incidents.

- The Department has access to firefighting equipment including first attack bulldozers, fire tankers, slip-on firefighting units, mobile retardant mixers, pumps and hand tools. All of these resources and their locality will be detailed in the Readiness and Response Plan.
- A regular review of the establishment levels of fire equipment will be undertaken, old fire tankers and pumps will be progressively replaced, and new items of specialist equipment will be evaluated for purchase.
- Departmental offices identified as Incident Control Centres require a standby power supply in the event of mains power failure. Modification to allow this will occur as funding becomes available.
- The Readiness and Response Plan will indicate arrangements for obtaining additional firefighting equipment outside the available Departmental resources.
- Sawmill licensees and their harvesting contractors have for many years been required to assist in fire suppression as a condition of their licence and have, in many parts of the state, provided vital support to Departmental efforts. The Department will continue to develop this relationship.

4.2.4 Inter-agency and Intra-agency Coordination

An effective and coordinated approach to fire protection planning and wildfire suppression demands close liaison with other emergency services. The Department will continue to meet its obligations under the Emergency Response Plan and achieve effective liaison using the following strategies:

- departmental officers from each Fire District will regularly attend meetings of Shire Emergency Management Planning Committees
- departmental officers will regularly attend meetings of the Regional Fire Prevention Committees and meetings of the Municipal Fire Prevention Committees
- departmental officers will attend CFA Group and Brigade meetings on invitation, and maintain close working relationships in order to foster a spirit of cooperation between NRE and CFA
- departmental officers, in conjunction with CFA Regional officers, will organise and attend annual liaison and Group/Brigade liaison meetings before the fire season each year
- liaison with Departmental fire protection staff in the neighbouring Departmental Fire Regions of Port Phillip and North East will ensure a coordinated approach to the planning and conduct of fuel reduction burning operations, as well as mutual support arrangements for wildfire suppression
- the Department will meet with fire protection agencies in New South Wales at least annually, to discuss shared fire protection concerns, including reciprocal arrangements for fire detection and suppression,

and will document the outcomes of such meetings in the Readiness and Response Plan (see Appendix 7: Charter of State Border Fire Operations Committee)

- inter-agency coordination details will be included in the Readiness and Response Plan
- NRE and CFA will form joint Incident Control Teams, where both parties are involved with fire suppression responsibilities, either directly or potentially.

4.2.5 Road and Track Access

The Gippsland Region has a network of approximately 15 000 kilometres of roads and tracks which vary in standard and access from 'two-wheel drive, all-weather' to 'four-wheel drive, summer-only'. Approximately 5 540 kilometres of this network is required and maintained primarily for the purposes of fire protection*. (*Data from R.O.A.D.S. database). The network is a vital component of NRE's overall response strategy which aims to provide fast and safe access to wildfires. In addition to roads and tracks maintained by other businesses in the Department, strategies for roads and tracks necessary for fire protection will include:

- All roads and tracks will where possible, be signposted and maintained to summer four-wheel-drive standard. All roads and tracks identified as necessary for fire protection will have minor maintenance (track clearing) every year and major maintenance (drainage and scrubbing) as appropriate.
- Temporary tracks will be constructed to facilitate fire suppression and fuel reduction burning operations. The closure and rehabilitation of temporary tracks will be carried out when appropriate.
- Parts of the road network, identified as not of a high priority for fire protection, will not be maintained between periods of intensive use.
- Identification of bridges in need of repair or replacement, and a program to prioritise this work, will occur as appropriate.
- Information on the standard of roads and tracks required for fire protection purposes on public land will be recorded and maintained.
- The road and track network required for fire protection purposes on public land will be reviewed periodically.

4.2.6 Water Points

A large number of water points are distributed throughout the public land in the Gippsland Region. These provide an essential local water supply source for fire suppression and prescribed burning operations. They are located to ensure adequate coverage over the entire public land estate. Water points serve a primary purpose of supporting first attack.

Strategies for water points include:

- Existing water points will be maintained by deepening, improving access and signposting where necessary.
- New dams and water points will be constructed in those parts of the Region where access to water is currently inadequate. Suitable locations for new water points are to be investigated and will take into account the potential impact on wetland, riparian and aquatic communities.
- Where appropriate, a range of strategic water points will be upgraded for use by helitankers.
- Water point details are shown on individual District Maps.

4.2.7 Air Support Facilities

Aircraft are used for a variety of purposes in fire management operations. These include detection, reconnaissance, fire bombing, personnel transport and aerial ignition. Each summer the Department contracts a number of fixed-wing and rotary-wing aircraft to perform these tasks on both public and, in conjunction with the CFA, on private land. In addition, several local privately-owned aircraft within, or adjacent to, the Gippsland Region are hired on a casual basis to assist in fire detection, reconnaissance and crew transport.

Several landing strips for fixed-wing aircraft are strategically located throughout the Region. Some are privately owned and owners cooperate with the Department, allowing their use for fire suppression operations.

Fixed fire retardant bases are located strategically throughout Gippsland to ensure adequate coverage of all public and private land by contract fixed-wing and rotary-wing aircraft capable of fire bombing. In general, fixed fire retardant bases are located so that 90 % of public land is generally no further than a twenty-minute flight from the nearest fixed fire retardant base. In the Gippsland Region fixed fire retardant bases are located at airstrips at Delegate, Gelantipy, Bairnsdale, Benambra, Snowy Plains, Jessop and Yanakie. A mobile base is located at Marlo.

In addition to fixed fire retardant bases, a number of mobile retardant mixers are located throughout the State to supplement the fixed retardant network. Mobile mixers are based at Bairnsdale and Orbost, and can be quickly deployed and assembled to supplement fixed fire retardant bases or to operate independently to assist in fire bombing. These mobile mixers can be assembled at any suitable private airstrip with sufficient water supply. Deployment of mobile retardant bases allows flexibility in reducing aircraft turnaround times below that which the fixed network provides.

Other aircraft related strategies include:

- airstrips not owned by the Department but identified as being necessary for fire suppression operations will be inspected at least once every two years to ensure that appropriate departmental standards are met
- airstrips and helipads maintained by the Department will receive annual maintenance to ensure that they are safe for use during fire suppression operations
- strategic helipads and water points suitable for use by helitankers will be established and maintained in areas outside the area of effective coverage by fixed-wing aircraft
- sufficient stocks of equipment, foam concentrate and fire retardant will be held in each District to ensure that an aerial suppression operation can be mounted at short notice
- crew will continue to be trained to operate mobile retardant mixers
- aircraft support details will be shown in the annual Readiness and Response Plan and on the Regional and District Fire Maps (see [Appendix 11](#)).

4.2.8 Detection

Fire detection systems are based on a combination of fixed observation points (fire towers) and aerial observations. Fire towers are located at Delegate Hill, Jersey West, Mt Waldron, Mt Maramingo, Bemm Hill, Mt Raymond, Mt Buck, Mt Nowa Nowa, Mt McLeod, Seldom Seen, Mt Taylor, Mt Little Dick, Mt Sugarloaf, Mt Sam, Mt Nugong, Blackwarry, Mt Useful, Pinnacles, Mt Moornappa, Mt Matlock, Toorongo Hill and Mt Tanjil. Lookouts in adjacent Regions also give coverage to public land in the Region. Gippsland Region is adequately covered by the existing tower network.

Fire towers are categorised as either 'primary' or 'secondary' according to the assets visible from the tower and the tower's 'seen area' (the effective area capable of being seen from the tower with full visibility). At low to moderate FDI's ($6 < \text{FDI} < 19$), the primary tower network is capable of observing up to 80% of all public land in the plan area, and would expect to detect all going fires within six minutes of ignition. At moderate to extreme FDI's ($20 < \text{FDI} < 100$), all primary and secondary fire towers would be operational and capable of observing 95 % of all public land in the plan area. Under these conditions, all going fires should be detected within three minutes of ignition.

- Fire towers maintained by the Department will receive annual maintenance to ensure they are safe for use.
- During the fire season the District's fire towers will be staffed for varying periods of time as determined by the Forest Fire Danger Index (FFDI), the passage of lightning storms and the presence of going fires.
- The fixed network of fire towers will be supplemented by aerial reconnaissance when necessary and in particular following the passage of thunderstorms.
- Detection details will be shown in the annual Readiness and Response Plan, and on the Regional and District Fire Maps (see [Appendix 11](#)).

4.2.9 Communications

An effective and reliable communications network (consisting of radio, telephone, facsimile and Emergency Response line facilities) is essential for both fire preparedness and fire suppression activities.

- Each District has a 24-hour fire reporting number during the fire season, which will be diverted to the Regional Fire Duty Officer during periods of low fire danger.
- Designated offices for 'Level 3' incidents will be equipped with a minimum of four standard telephone lines, four Emergency Response lines, one facsimile machine, one computer connected to the Departmental network and radio facilities connected to both the Department and CFA networks to enable these offices to be utilised, if necessary, as Incident Control Centres.
- Radios equipped with CFA frequencies will be contained in all Department vehicles and at all designated joint Incident Control Centres.
- At least one aircraft communications kit will be maintained within each Fire District, for use in private fixed-wing aircraft.
- The Department now uses the Trunk Radio System for all day-to-day radio communications, and for all command communications during fire suppression operations. Telstra owns and maintains this radio system, which is also shared by a number of other Government and private bodies (including the CFA). Telstra and NRE will continue to develop the system in order to provide a better service for the fire fighting requirements of NRE, (particular current enhancements include the development of an incident control channel).
- Details of the communications network will be shown in the Readiness and Response Plan.
- A radio directory for individual Gippsland NRE and Parks Victoria radios will be updated on a regular basis.
- The Department will add satellite telephones to its emergency communications cache during the summer to provide voice, fax and data capability in remote areas and to circumvent otherwise congested telephone services.

4.2.10 Fuel Management

Fire severity depends on topography, weather and fuel conditions. Fuel is the only factor over which the land manager can exert some control. Fuel management burning is the only practical method of reducing fuel levels over large areas. The manipulation of fuel loads in strategic areas, by careful burning in periods of low fire danger, reduces the potential for spotting from an advancing wildfire, allows wildfire damage to be moderated and facilitates wildfire control activities.

The degree of effect of a fuel reduced area on a subsequent wildfire depends on:

- type, distribution and levels of fuels, which in turn depend on the fuel type, coverage and intensity of the burning operation and the time that has elapsed since the operation
- width of the fuel reduced area in relation to the direction of wildfire travel
- the severity of the wildfire.

Fuel management by burning is therefore a key part of the Regional fire preparedness strategy. A program that involves burning a high proportion of the public land or frequently burning many areas would be impractical and undesirable because of the need to avoid adverse environmental impacts and the limitations of suitable weather conditions, resource levels and funding. The Department's approach to burning is therefore selective and strategic.

Preparedness strategies for fuel management include:

- conducting fuel management burning on strategic areas in order to achieve annual targets; reducing fire hazards and related risks to life and property; dealing with hazards resulting from the harvesting of timber, road construction or other operations; and reducing the potential spread and intensity of any wildfire within, or burning into, these areas
- undertaking fuel management in certain areas (generally small areas) by means other than burning where fuel management burning is inappropriate or impracticable; including such methods as grazing, slashing, pruning, mulching or other operations (such as ploughing, herbicide application and rolling)
- maintaining strategic areas designated as fuelbreaks.

Planning for fuel management burning will be done in close consultation with park and forest managers and will take into consideration variations in the season, and the frequency and the intensity of the burning, in order to provide appropriate diversity in the fire regime within each vegetation class.

Burning for fuel management and for other management objectives will be, as far as is practical, fully integrated at the local planning level, to maximise possible mutual benefits. This includes integrating requirements of any area sub-plans. Each fuel management burning operation is the subject of an approved separate Burn Plan, and is listed on the three-year Fire Operations Plan.

A three-year Fire Operations Plan will indicate the priorities for burning following consideration of the role of each zone, fire histories and logistical considerations, such as suitable opportunities for burning and the availability of appropriate resources. A separate process which requires the endorsement by relevant specialists in park, forest, flora, fauna and other related disciplines will be followed each year in relation to these plans.

Fuel Management Zones for Gippsland are shown in [Appendix 11](#).

4.2.11 Specific Fuel Management Issues

Where this strategic Plan does not provide sufficient detail for a particular area, or where there are specific issues which need to be considered when planning fuel management, area sub-plans are to be prepared. These sub-plans address integrated fire management for specific areas, deal with related issues, and involve consultation with the appropriate stakeholders.

The sub-plans that have been prepared for the Gippsland Region are tabulated below in Table 2.

Table 2: Fire District sub-plans for specific fuel management issues

Sub-plan	Fire District	Issues
Blond Bay	Bairnsdale	Deer hunting, rare plants
Raymond Island	Bairnsdale	Township and private property protection
Lakes National Park	Heyfield	New Holland Mouse
Holey Plains State Park	Heyfield	Ecological burning regimes
Lake Glenmaggie	Heyfield	Fuel management of numerous crown land blocks
Sandy Point	Yarram	Ecological burning regimes
Foster	Yarram	Township protection
Waratah and Walkerville	Yarram	Ecological burning regimes
Point Smyth	Yarram	Ecological burning regimes
Lake Tyers	Nowa Nowa	Aboriginal settlement protection
Cape Conran	Orbost	Campground protection and heathland burning regimes
Bemm River	Orbost	Township protection
Mallacoota	Cann River	Township protection

4.2.12 Fuel Management Burn Plans

Every year, each Fire District will select areas for fuel management burning after considering the recent fire

history, the fuel hazards, and the priorities for fuel management as indicated by the zone targets in this Plan. Prescribed burns are to be conducted in accordance with approved Burn Plans.

A Burn Plan provides instructions, prescriptions and guidelines for the conduct of all burning operations on a specific burning unit. The Department will from time to time issue additional or updated directions, standards, prescriptions and/or guidelines for the planning and execution of prescribed burning operations.

To ensure all fuel management burning operations will be conducted in a responsible manner the following strategies will apply:

- each burning operation will be the subject of an approved Burn Plan
- each Burn Plan will comply with the planning requirements, operational standards and guidelines detailed in the Code of Practice for Fire Management on Public Land (CNR 1995)
- each burning operation will be planned so that the fire will be, as far as possible, contained within pre-defined control limits
- all burning operations will be planned and conducted in accordance with Fire Protection Instructions (DCE 1992), or its successor, and using the Department's Fire Information, Resources and Equipment computer system (FIRES) or its successor for support
- fuel hazard levels (see below) will be assessed prior to burning and will be monitored following burning
- the results of each burn will be mapped and where practicable, the actual areas within the burning unit that have been burnt will be recorded
- where appropriate significant environmental or other values identified in the burn planning process will be monitored by the relevant land manager following burning.

4.2.13 Fuel Management Zones

A major feature of this Plan is the classification of all the public land within each District into five fuel management zones. These zones have been determined, in conjunction with the relevant park and forest managers, following the consideration of:

- the strategic importance of the area to fire protection
- the appropriateness of burning (and the alternatives) as a means of fuel management
- the natural and developed values on the area being considered
- other management objectives for the area
- suppression methods most appropriate to the area
- the principles of environmental care
- information contained in the Department's databases and, in particular, the land status, vegetation types, assets to be protected and fire history

- weather (especially temperature, relative humidity, drought factor, and wind speed) for the District, which provides a fire danger rating and the number of suitable burning days per year
- overall fuel hazards
- fire spotting distance, flame height and rates of spread under various FFDIs
- experience obtained in implementing previous preparedness strategies
- physical constraints, such as resources available and logical burning units.

The five zones are designated as follows:

Zone 1: Asset protection (includes lives, buildings, fences, stock, regenerating forest, flora and fauna values)

Zone 2: Strategic fuel reduced corridors.

Zone 3: Broad-area fuel reduced mosaic.

Zone 4: Specific flora and fauna management.

Zone 5: Exclusion of prescribed burning.

The fuel management zones are delineated in [Appendix 11](#).

4.2.13.1 Parameters for Fuel Management Zones

The parameters determining the fuel management zones are based on an assessment of the assets or values to be protected and the likely fire behaviour expected in the vicinity under adverse conditions. Parameters within these zones are directly related to the ability to suppress wildfire within each zone. The McArthur Forest Fire Danger Rating System generates a numerical 100-point Forest Fire Danger Index (FFDI) and a five-class descriptive rating of fire danger, from a number of climatic variables. The FFDI, together with specific information on fuel weight and ground slope, allows predictions of fire behaviour to be made.

Such predictions include rate of spread, flame height (and scorch) and spotting distance.

Overall fuel hazard is defined as the sum of the influences of bark hazard, elevated fuel hazard and surface fuel hazard. This definition of fuel hazard represents a shift in the philosophy of assessing fuel factors affecting fire behaviour. In the past, only surface fine fuel loads (in tonnes/hectare) were considered. Now, the entire fuel complex, (including bark and elevated fuels) are considered, as they are the fuel elements principally responsible for first attack failure and fire suppression difficulty in Victorian forests, woodlands, deserts, heathlands and shrublands.

The 'Overall Fuel Hazard Guide' (McCarthy et al, 1999) assists planners and supervisors of fire control

operations and prescribed burns in assessing the hazard posed by the total forest fuel complex. Use of this guide assists with:

- defining, in a consistent way, fuel management objectives, i.e. ensuring that there is statewide consistency in achieving appropriate Overall Fuel Hazard levels for Fuel Management Zones
- identifying fuel hazards during fire suppression operations, from first attack through to the conduct of complex fire suppression strategies, in particular backburning
- identifying fuel hazards to conduct prescribed burning or back burning in the most effective way, i.e. effectively reducing fuel hazards to ensure that control lines are not breached
- increasing the safety of fireline personnel, by recognising fuel hazards which may give rise to uncontrollable fire behaviour
- identifying fuel hazards in forested areas which may pose a significant threat to adjoining houses or other assets.

The guide describes five categories of Overall Fuel Hazard from low to extreme (for definitions, refer to McCarthy et al, 1999). These categories are based on the ability of suppression forces to control a fire in these fuels.

The Overall Fuel Hazard has implications for the probability of first attack success and, consequently, the protection requirements of the fuel management zones that are used by NRE.

Fuel management zoning allows determination of priorities for fuel reduction, based on all values at risk, risk potential and the range of wildfire suppression options desired under most weather conditions. Issues considered include economic and cultural values, the known preferred range of fire frequency and intensity for each vegetation type and the known recent fire history of each vegetation type. The zones (see Appendix 11) are subject to review, variation and update when required, or within the specified review period. Any variations would occur in close consultation with park and forest managers and would reflect, for example, changes in forest structure (such as additional regrowth requiring protection); settlement expansion; or variations to the conservation priorities.

4.2.13.2 Zone 1: Asset Protection

Table 1: Characteristics of Zone 1: Asset protection

Purpose	To provide the highest level of strategic protection to human life, property and highly-valued assets and values.
Management intensity	Fuel management is to be intensive, i.e. to treat up to 90% of each fire protection unit in each burning operation.

Defined limits for nominated range of fuel conditions	<p>Each fuel component should be at or below the following maximum levels:</p> <ul style="list-style-type: none"> • surface fine fuels Moderate (litter bed height 15-25mm) • bark fuels High (unless surface fine fuels are Low) • elevated fuels High. Note: The trigger level for scheduling a burn in this zone is when the Overall Fuel Hazard reaches Moderate.
Impact	<p>Such intensive fuel management may have significant impact on a range of environmental and economic values. Where there is incompatibility between fuel management and the management of rare or threatened flora or fauna, modifications of fuel management techniques to assist management of these values have been implemented where appropriate. Timber harvesting by clear falling techniques will generally not occur in this zone. Utilisation of minor forest produce will be permitted.</p>
Location	<p>Zone 1 will typically abut private land to the north and west, or surround areas where there is a threat to human life and property in human communities or to other areas which have specific high-values assets. Where this zone abuts land not managed by the Department, the purpose of the zone is to complement works undertaken on adjacent land to reduce overall fuel hazard carried out on adjacent land. The Department will participate in the development of cooperative arrangements with the owners, occupiers or managers of the adjacent land, or with appropriate community groups, to integrate fuel management activities across the public/private land interface. The Department will only carry out fuel management works adjacent to private property where this can be achieved safely.</p>
Likely burn frequency	<p>Depending on the Overall Fuel Hazard it could vary between four and six years.</p>

4.2.13.3 Zone 2: Strategic Fuel Reduced Corridors

Table 2: Characteristics of Zone 2: Strategic fuel reduced corridors

Purpose	<p>To provide strategic corridors of sufficient width and continuity to achieve a substantial barrier to the spread of wildfire by reducing its speed, intensity and the potential for spot fire development; to reduce damage caused by the wildfire; and to create areas to assist in making fire suppression safer and more effective.</p>
Management	<p>Fuel management is to be strategic and regular and aims to maintain a nominated</p>

intensity	range of fuel characteristics that are generally broader than those for Zone 1, i.e. to treat up to 80 % of each fire protection unit in each burning operation.
Defined limits for nominated range of fuel conditions	Each fuel component should be at or below the following maximum levels: <ul style="list-style-type: none"> • surface fine fuels High (litter bed height 25–35 mm) • bark fuels High (unless surface fine fuels are Low) • elevated Fuels High. Note: The trigger level for scheduling a burn in this zone is when the Overall Fuel Hazard reaches High.
Impact	The level of fuel management may have significant impact on sensitive environmental and economic values. The potential incompatibility between fuel management and these values has been resolved by careful placement and delineation of the zone. The area scheduled for harvesting in any one year should not exceed 1 % of the total area of the zone, averaged over a five year period. Harvesting coupes will be designed and scheduled to facilitate the objectives of the zone.
Location	Zone 2 corridors will run both north-south and east-west, with adequate linkages to complement Zone 1 areas particularly around settlements and adjacent to areas where there would be a high potential for economic or cultural loss if they were subject to wildfire. They are strategically located and spaced to minimise the area burnt under strong northerly and south-westerly winds.
Likely burn frequency	Depending on the Overall Fuel Hazard it could vary between eight and twelve years.

4.2.13.4 Zone 3: Broad Area Fuel Reduced Mosaic

Table 3: Characteristics of Zone 3: Broad area fuel reduced mosaic

Purpose	To provide an irregular mosaic of areas of fuel reduction complementing works in Zones 1 and 2 in reducing the severity of wildfires.
Management intensity	Fuel management aims to provide a mosaic of fire frequencies and intensities without large contiguous areas of non-managed fuel, complementing the intensive and strategic fuel management undertaken in Zones 1 and 2. Opportunistic burning may also occur in this zone to link areas burnt by wildfire to other strategic fuel

	management areas It is aimed to treat approximately 50 % of each burning unit in any burning operation.
Defined limits for nominated range of fuel conditions	<p>Each fuel component should be at or below the following maximum levels:</p> <ul style="list-style-type: none"> • surface fine fuels High (litter bed height 25–35 mm) on 50 % of the zone • bark fuels High on 50 % of the zone (unless surface fine fuels are Low) • elevated fuels High on 50 % of the zone Note: The trigger level for scheduling a burn in this zone is when the Overall Fuel Hazard reaches High on 50 % of the zone.
Impacts	Fuel management in this zone provides a mosaic of fire frequencies and intensities without burning large contiguous areas. Fuel management will be consistent with appropriate fire regimes for particular vegetation communities. Advice from flora and fauna biologists will be sought when necessary to ensure that appropriate fire frequency and intensity is within a preferred range for achieving broad-based ecological management objectives.
Location	Zone 3 areas strengthen protection for Zones 1 and 2 and comprise areas where the frequency and intensity of burning is compatible with ecological processes. There are no specific high value assets at risk. Fire is not required to be excluded (Zone 5) and specific burning regimes for active management of flora and/or fauna (Zone 4) are not required.
Likely burn frequency	Depending on the Overall Fuel Hazard it could vary between ten and thirty years.

4.2.13.5 Zone 4: Specific Flora and Fauna Management

Table 4: Characteristics of Zone 4: Specific flora and fauna management

Purpose	To provide for the use of prescribed burning in the active management of specific flora and/or fauna, particularly for species and/or communities which have critical fire regime requirements not adequately catered for by the broadly-defined fuel or ecological management objectives.
Management intensity	Fire regimes for this Zone will be addressed in management plans (other than the Fire Protection Plan), which will specify preferred or required fire frequency, intensity, seasonality and patchiness. Plans may prescribe a variety of fire regimes including

	the possible application of high intensity fire in some areas. Preferred regimes for particular species will be integrated with the requirements of other sensitive species in the same area.
Impact	Burning may provide fire protection benefits and is to be fully integrated at the local planning level with fuel reduction burning in other zones to maximise possible mutual benefits.
Location	As specified in land management plans or associated documents.
Likely burn frequency	As directed due to ecological values.

4.2.13.6 Zone 5: Exclusion of Prescribed Burning

Table 5: Characteristics of Zone 5: Exclusion of prescribed burning

Purpose	To provide for the exclusion of prescribed burning (other than post-harvest regeneration burns), for at least the period of the Plan, from areas of vegetation in which there would be a high potential for economic, ecological or cultural loss if they were subject to prescribed burning.
Location	Many of these have been identified as assets during fire protection planning and may be the subject of special protection measures (including fuel reduction burning in nearby areas) to reduce the probability of damage by wildfire. This zone includes areas likely to present difficult containment problems.

4.2.13.7 Summary of Annually Proposed Fuel Management (see also Appendix 10)

Table 6: Summary of annually proposed fuel management program

Burning Zone	Total Area (Ha)	% of Region in Zone	Likely Burning Cycle (years)	% of Region Treated Annually	Average Annual Target (Ha)
1	89 344	3.47	5	0.69	17 879
2	408 437	15.85	10	1.58	40 783
3	115 830	43.30	20	2.16	55 713

4	468 593	18.19	as required	0.2	5 152
5	494 630	19.19	never	-	-
Total	2 576 835	100.00	-	4.63	119 527

4.2.14 Monitoring the Effects of Fuel Reduction Burning

The Department will fund relevant research and monitoring into the effects of burning on fuel levels, flora, fauna and other values. The areas chosen for monitoring flora and fauna will target:

- species and/or vegetation types that have ecological characteristics likely to be particularly sensitive to prescribed burning regimes; and
- species and/or vegetation types for which burning for fuel and other management purposes is planned over most of their distribution.

Furthermore:

- Research and monitoring will be coordinated at a State level to ensure efficiency, and will attempt to take account of similar activities conducted outside the Department.
- Where the Department determines that ongoing monitoring of the outcomes of a particular burn will be undertaken, appropriate pre-burn survey and survey-completion data must be specified and carried out by the relevant park or forest manager.

4.2.15 Fuel Management Other Than Burning

Although burning is often the cheapest means of fuel modification over a large area, there are cases where other means of fuel management will be used to complement the burning program for reasons such as safety, economy, environmental sensitivity or aesthetics.

4.2.15.1 Fuelbreaks

A network of fuelbreaks will be maintained along power easements, roads in public land and (in some areas) along the public land boundary. The width of these breaks is normally equivalent to adjoining tree height, which normally accounts for the majority of short-distance spotting for fires at low and moderate FFDI's.

Fuelbreaks are maintained by slashing, grazing, ploughing, grading, bulldozing and use of selective herbicides. Additional fuelbreaks will be constructed where necessary. Fuelbreaks may act as a control

lines for low-intensity fires, and assist with safer access and egress for high-intensity fires, as well as providing for a defence line for backburning. They are often located adjacent to Fuel Management Zone 1 or 2 areas.

4.2.15.2 Slashing

Slashing will to be used to reduce the fire hazard around picnic areas, fuelbreaks and on vacant Crown land within townships. Planning of slashing operations will consider impacts on the environment, particularly soil, water, flora and habitat for fauna. Timing will accommodate requirements of flora or fauna on slashed areas provided fire protection objectives are still satisfied, and where possible will be coordinated to run concurrently with other statutory department fire prevention work.

- Slashed areas will be maintained in a condition which satisfies fire suppression objectives and firefighter safety considerations.

4.2.15.3 Bulldozing and Grading

Bulldozing and grading will be used in constructing some fuelbreaks and in removing specific fire hazards. Bulldozer or grader lines will be constructed as control lines around the perimeter of the majority of fuel reduction burns and wildfires, and also provide appropriate vehicle access for firefighters.

- As far as practicable, bulldozer or grader lines will be located to minimise impacts on the environment, particularly soil, water, flora and habitat for fauna. Lines not required at the completion of fuel reduction burning or after wildfires will be rehabilitated in accordance with prescriptions for rehabilitation of temporary roads and snig tracks as detailed in the Code of Forest Practices for Timber Production (NRE 1996) and the associated prescriptions.

4.2.15.4 Grazing

Grazing will be considered as a localised fuel management option where it is consistent with the management objectives of the area concerned.

- The location, type, level and period of grazing will be determined in consultation with land managers and Departmental specialists in forestry, flora and fauna, any other relevant specialist, and the authorised grazier.
- The Department will monitor the progress of grazing and may suspend it when fuel management objectives have been achieved.

4.2.15.5 Pruning, Mulching and Other Operations

Pruning, mulching and other operations such as ploughing, herbicide application or rolling will be used in specified areas to reduce the flammability of fuels.

- The lower branches of trees may be pruned in plantations thus reducing the likelihood of crown fires and increasing visibility in the pruned area.
- The Department may approve and use mulching to reduce fuel flammability where prescribed burning is inappropriate or impracticable.
- After considering the impacts on the environment, particularly soil, water, flora and habitat for fauna, other operations such as ploughing, herbicide application or rolling may be used to reduce fuel flammability where prescribed burning is inappropriate or impracticable.

4.2.16 Future Improvements

Subject to available funding, works to upgrade infra-structure, enhance ecological research and monitoring, and improve general communications, will be implemented during the life of this Plan.

4.3 Wildfire Suppression

Upon detection of a wildfire, control action will be fast, determined, safe and thorough, with the primary objective of controlling the fire in the shortest possible time, with due regard being given to management objectives, environmental values and economy.

Wildfire suppression strategies are based on the following general principles:

1. Suppression of wildfires on or threatening State forests, national parks, or protected public land is to be given priority over all normal departmental activities.
2. The command structure and corresponding build-up of resources for fire suppression will follow the Australian Inter-service Incident Management System-Incident Control System (or its successor as adopted by the Department).

Fire suppression strategies will be carried out in accordance with a Wildfire Incident Plan prepared following consideration of issues relating to:

- firefighter safety
- current and predicted fire behaviour
- values at risk from the wildfire or suppression activities
- management objectives for the area
- available resources
- access

- suppression methods most appropriate to the area
- economy
- likelihood of success of alternative suppression methods.

The fire is also reported, at the earliest opportunity, to the Department's Emergency Coordination Centre in Melbourne to ensure appropriate statewide resource co-ordination and to facilitate the monitoring of the statewide fire situation.

In formulating a Wildfire Incident Plan, the Incident Controller needs to rapidly assess a range of issues. Clearly, the existing fire danger, fire behaviour and the likely ramifications for public and firefighter safety will be key considerations. Incident Controllers are also required to consider the possible long-term environmental impacts of the suppression tactics used. The preferred suppression tactics for environmentally sensitive areas are summarised in [Appendix 4.2](#).

4.4 Wildfire Recovery

Measures will be taken, where practicable, to assist the recovery of both firefighters and the ecosystem from the adverse impacts of wildfire and fire suppression on public land. These include measures addressing:

- the rehabilitation of environmental disturbance resulting from firefighting operations
- the amelioration of deleterious environmental and economic impacts of the wildfire
- the improvement of fire suppression performance
- fire-related occupational health and safety issues.

4.4.1 Rehabilitation of Fire Suppression Disturbance

The Department considers in a preliminary way, during the latter stages of a wildfire, and in detail, after a wildfire is declared safe, rehabilitation of disturbance from firefighting operations. Rehabilitation activities involve:

- giving particular attention, as soon as practicable, to soil disturbance or exposure caused by the construction of temporary fire access tracks and control lines
- closing temporary fire access tracks, no longer required for fire or other management purposes, once a fire is declared safe and rehabilitation works are completed
- draining temporary fire access tracks and constructed control lines in accordance with prescriptions for the rehabilitation of temporary roads and snig tracks prepared for the purposes of the Code of Forest Practices for Timber Production (NRE 1996), unless otherwise authorised by the Regional Manager, Fire

- removing soil and vegetation deposited in streams or wetlands where this is operationally practicable, and can be achieved without a resultant increase in environmental disturbance
- assessing the need for a formal rehabilitation plan to be prepared following each wildfire.

4.4.2 Rehabilitation Plan

The Department will consider the impact of the wildfire and consequent firefighting operations on the recognised values of the fire area in determining if a rehabilitation plan is required.

In determining the need for a rehabilitation plan, the Department will take into account:

- advice from the Incident Management Team who will alert the Department to any specific additional rehabilitation needs noted during fire suppression
- advice from appropriate Departmental and Service Agency specialists in flora, fauna, fisheries, park management, forestry, land protection, freshwater ecology, catchment, pest plant and pest animal management
- potential erosion
- water quality, particularly in domestic water supply catchments
- potential forest pathogen activity
- potential invasion by pest plant and animals
- animal welfare issues
- impact on flora and fauna, particularly rare or threatened species or communities
- damage to bridges, roads, installations, and other public land assets
- damage to timber-growing stock and the need for the salvage of timber from the fire area
- landscape and wilderness values.

Where it is deemed necessary after considering the above factors, the Department will prepare a rehabilitation plan in accordance with the principles outlined in the Code of Practice for Fire Management on Public Land (CNR 1995) and the Code of Forest Practices for Timber Production (NRE 1996), (see also NRE 1998a).

4.4.3 Debriefing

Debriefing after a fire suppression event is undertaken by the Department to review firefighting and recovery operations, to identify where improvement is possible.

- Each fire suppression event undertaken by the Department will be the subject of a debriefing.

- The Department will conduct a formal debriefing and prepare a formal written report with recommendations where substantial resources were engaged, wildfire damage to assets or values was significant, safety was compromised or significant recovery issues have been raised.

4.4.4 Health and Safety

- To the extent practicable during firefighting operations, firefighters are to be given sufficient time to rest in order to relieve fatigue and stress arising from their involvement in these operations.
- When firefighting has been prolonged, or there were associated traumatic experiences (such as 'near misses', injury or death), an opportunity for critical incident stress debriefing will be provided.
- Health and safety issues identified at wildfire debriefings will be addressed.

4.4.5 Records

- Records of rehabilitation work assist future fire suppression and recovery activities.
- The Department will record rehabilitation works undertaken in each District.
- Records of revegetation works will include details of species and, where known, seed provenance.

4.5 Research

The Department undertakes research programs on an on-going basis into topics such as fire ecology, fuel assessment and management, fire behaviour, fire threat analysis, firefighter safety, fire suppression strategies and airshed management. The Department will also continue to participate in relevant external fire-related research programs as appropriate. Research reports and other products from this on-going research (such as the 'Overall Fuel Hazard Guide') will continue to be made publicly available.

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Chapter 5: Plan Implementation and Reporting

It shall be the responsibility of the Regional Manager (Gippsland) in conjunction with the Manager, Fire (Gippsland) to implement this Plan.

The Manager, Fire (Gippsland) will report annually to the Executive Director, Forests Service on the implementation of this Plan. Effective implementation will be measured by both quantitative and qualitative assessment of whether proposed actions have been undertaken.

The Department is also embarking on a formal auditing process as part of a wider performance improvement program in relation to its fire management activities. In time it is envisaged that the results of these audits will be made publicly available.

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Appendix 2: Glossary of Technical Terms

Aerial ignition: Ignition of fuels on the ground by dropping incendiary materials from aircraft.

Air attack: The direct use of aircraft to suppress wildfires.

Area Management Plan: Management plan prepared by the Department for specific areas such as national parks, State parks, State forests, regional parks and other areas of public land.

Assets and values: Recognised features of public land managed by the Department. Includes buildings, infrastructures, (roads, bridges, etc.), regenerating forests, forest produce (sawlogs, pulpwood, firewood, honey, etc.) conservation values (vegetation types, flora, fauna habitat, recreational, cultural, historical, archaeological, landscape, water quality, soil conditions, etc).

Authorised Officer: Any person appointed in accordance with Part 9 of the Conservation, Forests and Lands Act 1987.

Available fuel: The portion of total fuel that would actually burn under various specified weather conditions.

Backburning: A fire ignited along the inner edge of a control line to consume fuel in the path of wildfire.

Burn Plan: The plan which, in the required Departmental format, is approved for the conduct of prescribed burning and contains a map identifying the area to be burned and incorporates the specifications and conditions under which the operation is to be conducted.

Burning program: All the prescribed burns scheduled for a designated area over a nominated period of time.

Burning-out: Setting fire so as to consume unburnt fuel between the control line and the wildfire.

Burning unit: A specific land area for which prescribed burning is planned.

Control line: see fire control line.

CFA: The abbreviation used for the Country Fire Authority.

Clear-felling: A silvicultural system whereby all merchantable trees, apart from those to be retained for wildlife habitat, are removed.

Country Area of Victoria: As defined by Section 3 of the Country Fire Authority Act 1958 and includes all that part of the State outside the Metropolitan Fire District which is not public land.

Country Fire Authority (CFA): The agency responsible for fire prevention and suppression in the Country Area of Victoria.

Department of Natural Resources and Environment (NRE): The agency responsible for fire prevention and suppression on State forest, national parks and protected public lands in Victoria.

DISPLAN: The short title of the State Emergency Response Plan of the Emergency Management Manual Victoria. The process authorised by Part 3 of the Emergency Management Act 1986 which aims to ensure a coordinated, cooperative response by Government, semi-Government Agencies, Local Government and other relevant groups in time of major disasters such as wildfires.

District: see Fire District.

Ecological burning: Treatment of vegetation in nominated areas by use of fire to achieve specified ecological objectives.

Ecological Vegetation Class (EVC): A classification system developed by NRE (Woodgate et. al. 1994) to identify the variety of ecosystems which occur naturally throughout Victoria.

Fire access track: A track constructed and/or maintained expressly for fire management purposes.

Fire behaviour: The manner in which a fire reacts to variations in fuel, weather and topography. Common measures of fire behaviour are 'rate of spread', 'flame height', 'fire spotting distance' and 'intensity'.

Fire control: see fire suppression.

Fire control line: A natural or constructed barrier, or treated fire edge, used in fire suppression and prescribed burning to limit the spread of fire.

Fire danger: The resultant of all factors which determine whether fires start, spread, and do damage and whether and to what extent they can be controlled.

Fire Danger Index: A relative number denoting an evaluation of rate of spread, or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed. In general the Mk 5 McArthur Forest Fire Danger Index (FFDI) is used to calculate the fire danger index in forest areas.

Fire Danger Period: In respect of the Country Area of Victoria or any part thereof means the period declared pursuant to Section 4 (CFA Act 1958) to be the fire danger period in respect of the said country area or any part thereof (as the case may be).

Fire District: An Administrative Unit within an NRE Region which coordinates and implements the works program for fire management and suppression.

Fire Hazard (compare to Fire Risk): A fuel complex defined by volume, type, condition, arrangement and location that determines both the ease of ignition and of fire suppression difficulty.

Fire investigator: A person accredited by the Department for the purpose of investigating the cause and origin of wildfire.

Fire management: All activities associated with the management of fire-prone public land values, including the use of fire to meet land management goals and objectives.

Fire Management Unit: A unit of land upon which a specific fire management strategy is planned. Each unit will usually be defined by distinct topography and vegetation characteristics and will therefore allow for accurate and meaningful recording of fire history and other environmental data.

Fire Operations Plan: A plan prepared by NRE each year in each Region. The plan contains a schedule, and maps for fuel reduction and for ecological burns planned over the following three years. It also contains details of proposed new preparedness works, and education and enforcement priorities.

Fire Organisation (Incident Control System): A command structure for fire suppression that follows the Australian Inter-service Incident Management System-Incident Control System.

Fire preparedness: Activities undertaken in advance of wildfire occurrence to ensure effective fire suppression.

Fire prevention: All activities concerned with minimising the incidence of wildfire, particularly those of human origin.

Fire protected area: As defined in Section 3 of the Forests Act 1958, viz: 'any land (not being vested in or under the control of the Melbourne and Metropolitan Board of Works (now Melbourne Water)) which is:

a) within any State forest (as also defined in the Forests Act 1958);

- b) within any national park;
- c) (unless excised ...) within 1.5 kilometres of -
 - (i) any reserved forest or area of unoccupied Crown land proclaimed as a protected forest ...;
 - (ii) national park;
 - (iii) any protected public land;
- d) within any protected public land.'

Fire protection: All activities designed to protect an area (including human life, property, assets and values) from damage by wildfire.

Fire Protection Plan: A plan prepared by the Department for the purpose of planning proper and sufficient works for the prevention and suppression of wildfire on public land. The plan is strategic in its approach, addressing fire protection at a regional (geographic) level.

Fire regime: The season, intensity and frequency of fire in a given area over a period of time.

Fire retardant: Any substance (except water or foam) that by chemical or physical action reduces the flammability of fuels or slows their rate of combustion. It may be applied aurally or by ground forces.

Fire risk: The probability of a fire starting.

Fire suppression: The activities connected with restricting the spread of wildfire following its detection and making it safe. (see Response.)

Fire suppression event: All activities associated with the suppression of an individual wildfire.

Firefighter: Any employee or agent of the Department who occupies or is designated to occupy a position in the Australian Inter-service Incident Management System – Incident Control System (or its successors) for the purpose of fire suppression.

Firefighting operations: Any work or activity associated directly with the control of wildfire.

Fireline sector: A defined section of the fire control line being constructed and /or used to contain or control a wildfire, or being constructed as a backup to other lines being used to control a wildfire.

Forest closure: An action that may be taken by the Regional Manager on any fire protected area when acute fire danger exists. It is declared under Section 64 of the Forests Act 1958, and prohibits the use of fire in the open and suspends licences for harvesting forest produce within defined area.

Forest or Park Management Plan: A management plan prepared for a Forest or Park Management Area.

Fuel Hazard: Combustible material. In the context of this Plan, the following categories of fuel are distinguished:

Fuel hazard – bark: The fuel present on the trunks of forest trees that is often responsible for short and long range spotting, and can also be responsible for acting as a link between ground and crown/elevated fuels.

Fuel hazard – elevated: Combustible material erect or suspended above the ground surface, and often comprises shrub, heath and suspended material.

Fuel hazard – fine: The fuel that burns to produce the flame front. This fuel is defined to be less than 6 mm thickness. It is typically dead leaves, twigs and grass.

Fuel hazard – ground: The fuel (such as peat) below the ground surface that once ignited may smoulder for very long periods and re-ignite surface fires.

Fuel hazard – heavy: The fuel that burns after the fire front passes. This fuel is typically larger sticks, branches and fallen logs.

Fuel hazard – surface: Combustible material lying on the ground surface.

Fuelbreak: A strip of land (not including areas subject to broad area fuel reduction burning) where vegetation has been removed or modified to reduce the risk of fires starting and/or to reduce the rate of spread and intensity of any fire that may occur in or enter the treated area.

Fuel load or fuel quantity: The oven dry weight of fine fuel per unit land area—commonly expressed in units of tonnes per hectare (t/ha).

Fuel management: Manipulation of the amount, distribution and composition of combustible material by various means including mechanical, chemical, biological and fire.

Fuel moisture content: Water content of fuel expressed as a percentage of the oven dry weight of the fuel, i.e.: $FMC = (\text{actual weight of fuel}) \times 100\% / (\text{oven dry weight of fuel})$

Fuel reduction burning: The planned use of fire to reduce fuel loads in a specified area.

Fuel type: An identifiable association of fuel elements (e.g., vegetation height, density and species) that features a distinctive type of fire behaviour under specified weather conditions. Examples of common fuel types are grassland, heathland, low forest, tall forest.

Habitat management: Manipulation of critical elements of the habitat of a species of flora or fauna to

achieve a particular objective.

Heathland: A continuous cover of low (less than 2 m height) shrubby vegetation.

Helipad: Clearing designed as a landing area for helicopters.

Helitanker: Large helicopter carrying a belly tank or suspended bucket capable of self-filling from water points at the hover and dropping water onto wildfires.

Incident Controller: The person having overall management of the fire in accordance with the Australian Inter-service Incident Management System-Incident Control System (or its successors).

Land use: Current or intended statutory use and tenure of public land.

Management burning: see Prescribed burning.

Mineral earth: When used in the context of fire control, refers to a non-flammable surface (either natural or prepared) which provides a break in understorey, litter and humus fuels and hence a barrier (of varied effectiveness depending, amongst other things, on its width and the intensity of the approaching fire) to fire travelling on or near the ground surface.

Multi-stage burning: The conduct of a sequence of prescribed burns on a specific area. For example, the perimeter may be burnt in one year and the centre the next.

Municipal Fire Prevention Committee: A Committee convened by the Municipal Fire Prevention Officer (appointed in accordance with Section 54 of the Country Fire Authority Act 1958) for the purpose of coordinating fire planning within a Municipality. The Committee comprises representatives of the local fire brigades and where fire protected area occurs, an officer of the Department.

Municipal Fire Prevention Plan: The Fire Prevention Plan for a municipality prepared in accordance with Section 55 of the Country Fire Authority Act 1958.

Municipal Fire Prevention Officer: Any person appointed in accordance with section 96A of the Country Fire Authority Act 1958 for the purposes of the Act, including the issuing of directions to owners or occupiers to remove hazards or clear fire-breaks.

National park: Land proclaimed and managed in accordance with the National Parks Act 1975.

NRE: The abbreviation used for the name of the Department of Natural Resources and Environment.

Parks Victoria: Created in 1997, Parks Victoria combined the former National Parks Service and the former Melbourne Parks and Waterways. As NRE's principal service provider, Parks Victoria is responsible for Melbourne's regional open space network and for the statewide park system. National and other parks constitute around 50% of Victoria's public land. In partnership with NRE, Parks Victoria plays a major role in fire management by providing trained and accredited staff, equipment and other infra-structure that contributes to all aspects of fire prevention, suppression and recovery.

Planning area: The area defined by the Department for an individual Fire Protection Plan.

Plantation: As defined in the Code of Forest Practices for Timber Production 'a forest stand established by the planting of trees of either native or exotic species selected for their wood producing properties and managed intensively for timber' or as amended.

Preparedness: All activities undertaken in advance of wildfire occurrence to decrease wildfire area and severity and to ensure more effective fire suppression.

Prescribed burning: The controlled application of fire under specified environmental conditions to a predetermined area and, at the time, intensity and rate of spread required to attain planned resource management objectives.

Prohibited period: The period during which a permit is required to light, kindle or maintain fires in the fire protected area. This applies for the whole year on public land, and for a period as declared for those areas within 1.5 km of public land as defined in Section 3 of the Forests Act 1958. (Note: Prohibited period applies to the fire protected area; fire danger period applies to the Country Area of Victoria).

Protected public land: Public land, other than State forest or national park declared to be protected public land under the Forests Act 1958.

Protection burning: see Fuel reduction burning.

Pruning: Removal of lower limbs from the trunks of trees in a plantation.

Public land: All State forest, national park and protected public land as defined by Section 3 of the Forests Act 1958 except that which is managed by Hancocks Victorian Plantations (or its successor in law).

Rare or threatened: When used in the context of species or communities of flora or fauna, refers to those

indigenous species or communities which are listed under schedule 2 of the Flora and Fauna Guarantee Act 1988 and/or on other lists maintained by the Department, including lists of vulnerable or endangered species.

Rate of spread: Forward rate of spread of head fire, i.e., fastest moving section of the fire.

Readiness and Response Plan: A plan outlining desirable levels of readiness of personnel, systems and equipment and their locations and availability for the detection and control of wildfire.

Recovery: The post-fire phase where damaged assets are salvaged, repaired or replaced; sites disturbed by fire control operations are rehabilitated; the natural response of the ecosystem is monitored, and managed if necessary; health and safety issues arising from the fire control operation are addressed; and lessons learned from the incident are incorporated into planning for future wildfire events.

Region: The Departmental administrative unit in which the delivery of services is directed by a Regional Manager.

Regional Fire Prevention Committee: A committee convened in accordance with section 52 of the Country Fire Authority Act 1958 for the purpose of coordinating fire prevention planning for the municipalities within a Country Fire Authority Region.

Rehabilitation Plan: A plan which details the activities (other than routine post-fire rehabilitation of temporary fire access tracks and constructed control lines) which are considered necessary to assist the recovery of infrastructure, other assets and environmental values from the impact of wildfire and fire suppression.

Response: The term used in disaster management to describe the processes, procedures and actions taken/not taken to combat the disaster.

Safe: The stage of wildfire suppression or prescribed burning when it is considered that no further suppression action or patrols are necessary.

Selection system: A silvicultural system whereby selected trees are harvested at relatively short intervals to maintain an uneven-aged stand.

Silviculture: The science and art of growing forests to achieve clearly defined forest management objectives.

Slashing: Mowing a fuelbreak.

State forest: Land proclaimed and managed in accordance with the Forests Act 1958.

Threatened: see rare.

Water point: Any natural or artificial source of water that can be used for firefighting operations.

Wildfire: An unplanned grass, scrub or forest fire.

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Appendix 3: Description of Data Maps and Other Relevant Sources of Information

In conjunction with its responsibilities for Victoria's public land and natural resources, the Department maintains a range of data maps and other sources of information. Their uses include the development of fuel management zones and fire operations plans. They are also used by Incident Management Teams involved in the suppression of wildfire. As well as topographical maps use is made of the following layers of data maps and associated information:

1. Land tenure/fire protected area

This information identifies the land use categories proclaimed by the Governor-in-Council or proposed by the former Land Conservation Council. It also locates public land boundaries and the marginal 1.5 kilometres, where that margin has legislative relevance.

2. Ecological vegetation communities/vegetation fuel types

This information shows the distribution of the component EVC and vegetation types, particularly significant flora, fauna or habitat and areas with significantly different fuel types.

3. Travel time/Road and aircraft infrastructure

This information indicates the time taken to travel from work centres to various localities in the District, and the condition of roads and tracks, and operational issues relevant to helipads and airstrips.

4. Fire origins

This information pinpoints the location of the origin of fires occurring each year and groups the causes into

nine categories (see [Appendix 6](#)).

5. Fire history

This information shows the area burnt by fires in previous years and indicates whether the fire was a wildfire, regeneration burn or fuel reduction burn. It also indicates the area burnt.

6. Social, cultural and economic assets.

This information shows settlements, buildings, towers, picnic areas, helipads, and sawmills and other possible ignition sources close to the public land boundary. It also locates public land values such as high quality native timber, regrowth areas, historical and cultural sites, heritage rivers and streams, scientific reference areas and visitor congregation areas.

7. Land Management Zoning System

This information shows the management zoning system of land according to the Park and Forest Management Plans, Heritage River designations, and relevant commitments flowing from Regional Forest Agreements.

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Appendix 4: Guidelines for Environmentally Sensitive Areas

4.1 Fire Preparedness Works

1. Fire Management Officers will have access to GIS maps which identify areas with special flora, fauna, soil, catchments, cultural and historical values. These databases play an integral role in the preparation of Fire Operations Plans.
2. In relation to proposals in areas designated by park and forest managers, discussion will take place with relevant specialists to determine if the fire prevention work is compatible with the particular values.
3. The subsequently derived prescriptions will be closely supervised to minimise the disturbance.
4. Follow-up work will rehabilitate the area where necessary and appropriate.
5. Monitoring of the impact of fire prevention work on identified values will be conducted where possible.
6. Information obtained will be added to existing fire response databases.

4.2 Preferred Fire Suppression Tactics in Sensitive Areas

Land Classification	Line Construction	Backburning	Air Attack
--------------------------------	--------------------------	--------------------	-------------------

.	Hand Trail	Rolling Slashing	Dozer Trail	..	Fire Bombing	New Helipad
STATE FOREST*****	.	.	.	.	.	.
General Management Zone	A	B	B	A	A	B
Special Management Zone	A	B	B	A	A	B
Special Protection Zone	A	B	B	A	A	B
NATIONAL PARKS and RESERVES*****	.	.	.	.	.	.
General	A	B	B	A	A	B
Wilderness Area	A	B	D	A	A	C
Special Protection Zone/Area	A	C	D	A	A	D
Conservation or Conservation A Zone	A	C	D	A	A	B
ALL PUBLIC LAND	.	.	.	..	.	.
Reference Area	A	C	D	A	A	D
Remote and	A	B	C/D*	A	A	D

Natural Area						
Scenic Reserve	A	B	B	A	A	B
Rainforest	A	B	C	A	A	C
Site of Significance	A	B	C	A	A	C
VROTS site	A	B	C	A	A	C
Heathland	A	B	C	A	A/C#	C
Water Supply	A	B	C	A	B	B
Research Trial	A	B	C	A	B	D

A Preferred method.

Consultation with local Land Manager (eg. Controller consults with Ranger in Charge or Forester in Charge)

Approved by Fire Controller.

B Acceptable method, but must be used sensitively

Consultation with local Land Manager (eg. Controller consults with Chief Ranger or Senior Forester)

Approved by Fire Controller.

C Avoid this method if possible

Consultation with Land Manager at Regional level (eg. RFC or RM consults with Parks Vic RM)

Approved by Level 3 Fire Controller or RFC.

D To be used in extreme circumstances

Consultation with CFO and NRE Regional Manager or Parks Victoria Regional Manager

Approved by Fire Controller or RFC

NOTES

* Seek technical advice

*** See Management Zone Maps in Individual Park/Forest Management Plans

Avoid using Phosphorous based retardant in heathland.

As a general principle, when the FDI is very high (eg. FDI>20) or forecast to be very high in the next 48 hours, the most effective combination of tactics will overrule the most preferred combination.

The interpretation and implementation of the above can be greatly enhanced by ensuring that the Incident Control Team includes a person who has expert local knowledge of the land concerned and its associated management policies.

4.3 Preferred Fire Regimes for Various Vegetation Types

Currently over seventy ecological vegetation classes have been identified in the Gippsland Region. Their ecological attributes and their relationship to fire remain the subject of ongoing research. This research which will continue to form the basis of detailed land management decisions that will be made with input from flora, fauna and fire specialists. However the following guidelines provide the examples for some EVCs:

Vegetation types that should not be burnt

- Rainforest and the vegetation within 100 m of rainforest
- Riparian Forest within 40 metres of a stream
- Snow Gum Woodlands
- Alpine Grassland and Shrublands

Vegetation types that require burning every 3–4 years

- Grasslands should be burnt in late summer or late winter. Never burn in spring or early summer. Grazing may be better than burning in some instances.

Vegetation types that require burning every 6–7 years

- Grassy Woodlands. This includes Forest Redgum Woodlands.

Vegetation types that require burning every 10–20 years

- Coastal Heathland
- Dry Forest Types - Burning more frequently than this will encourage Bracken and Burgan.
- Spring burns will also favour Bracken.

Vegetation types that tolerate burning every 15–25 years

- Banksia Woodland - Burning more frequently than this will encourage Bracken. Spring burns will also favour Bracken.
- Manna Gum Woodlands
- Heathy Woodlands

Vegetation types that tolerate burning every 15–40 years

- Damp Forests - this includes damp gully vegetation

Vegetation types that tolerate burning every 40–100+ years

- Wet Forests
- Subalpine Forests

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Appendix 5: Status of Public Land

DISTRICT	National	State	Total Parks	Freehold Forest	Total all Land	Comments
Bairnsdale	20 382	182 120	202 502	163 270	365 772	.
Bendoc	114 257	53 537	167 794	42 085	209 879	.
Cann River	130 836	238 725	369 561	29 080	398 641	.
Erica	21 616	113 532	135 148	111 730	246 878	*includes 30 000 softwood plantation
Heyfield	263 911	335 041	598 952	379 446	978 398	*includes 25 000 softwood plantation
Noojee	4 849	83 263	88 112	136 935	225 047	*includes 35 000 softwood plantation
Nowa Nowa	112 195	171 532	283 727	61 287	345 014	.
Orbost	21 152	237 818	258 970	38 645	297 615	.

Swifts Creek	114 797	239 299	354 096	138 860	492 956	.
Yarram	65 390	52 583	117 973	476 839	594 812	* includes 75000 softwood plantation
Total	869 385	1 707 450	2 576 835	1 578 177	4 155 012	.

Notes: 1. All figures in hectares

2. 'Total public land' figures (*) include softwood plantations which, since the sale of the former Victorian Plantations Corporation, are now the fire protection responsibility of the Country Fire Authority.

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Appendix 6: Wildfire Statistics

6.1 Number of Fires by Source and Season (Gippsland Region 1978/79 to 1997/98)

Source	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Se
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98		
Lightning	67	105	73	53	114	11	64	41	59	171	76	27	73	18	19	31	93	18	32	242		
Exhaust, Chainsaw	0	2	1	0	2	0	0	2	1	0	0	0	0	2	0	0	0	0	0	1		
Exhaust, Other	0	2	0	0	3	1	0	1	1	0	0	2	2	0	0	0	0	1	2	1		
Burning Vehicle, Machinery	1	4	0	1	3	3	3	0	0	5	1	1	4	0	1	2	6	1	1	3		
Pipe, Cigarette, Match	4	3	13	9	5	3	6	5	3	7	3	3	6	9	1	8	6	0	3	1		
Campfire,	6	21	7	15	9	3	7	8	6	9	4	8	5	12	3	1	14	3	12	9		

Barbeque																				
Burning Off (Departmental)	2	13	7	0	2	1	0	0	0	0	0	10	4	1	1	0	1	1	3	0
Burning Off, Railway	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Burning Off, Scrub	2	6	32	6	13	5	7	9	19	18	15	10	9	23	3	8	23	8	11	4
Burning Off, Windrow	8	10	14	2	8	2	6	2	6	9	11	6	3	10	1	7	8	3	12	2
Deliberate lighting	14	49	85	20	40	7	6	17	38	39	28	29	49	38	19	18	33	16	31	26
Waste Disposal, Domestic	1	6	0	1	2	1	2	2	2	5	0	2	1	2	0	1	2	0	2	1
Waste Disposal, Industrial	2	4	3	3	8	1	4	6	4	11	3	2	4	2	0	1	4	0	1	3
Power Transmission	4	2	0	4	3	0	2	2	0	0	0	1	1	1	0	0	1	1	1	0
Burning House, Stove	1	4	1	3	0	1	1	1	0	0	3	1	0	0	0	0	0	1	2	1
Burning Building	0	2	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Fireworks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1
Relight, Wildfire	0	0	7	1	6	0	0	0	0	2	0	1	0	0	0	0	0	0	0	1
Relight, Prescribed Burn	2	10	7	3	2	1	0	1	0	1	1	1	0	0	0	0	3	2	0	0

Relight, Burning Off	2	9	17	8	11	2	1	2	8	6	4	1	1	2	0	0	2	0	1	3
Other	6	2	2	2	5	1	1	5	0	4	3	2	1	2	0	1	3	2	6	6
Unknown	8	12	9	4	2	0	1	2	7	3	6	6	4	12	3	3	11	6	15	10
All Sources	130	266	279	135	238	43	111	238	154	290	158	114	169	135	52	81	210	64	135	315

6.3 Number of Fires by Area Class and Season (Gippsland Region– 1978/79 to 1997/98)

Fire Season	0 to <1 ha	1 to <4 ha	to <10 ha	10 to <100 ha	100 to <500 ha	>=500 ha	All Sizes	Total Area Burnt (ha)
78/79	71	23	12	13	2	5	126	33916
79/80	133	47	20	40	20	7	267	13335
80/81	94	44	17	77	34	18	284	144378
81/82	79	10	14	23	3	1	130	2151
82/83	118	47	14	33	13	9	234	312613
83/84	30	6	5	7	0	0	48	196
84/85	60	17	6	18	7	4	112	76698
85/86	52	21	10	15	7	2	107	12659
86/87	79	36	5	20	9	2	151	4442
87/88	176	69	13	25	8	3	294	17191
88/89	72	43	18	17	4	2	156	8045
89/90	52	25	10	20	9	0	116	2718
90/91	79	41	26	17	5	1	169	12497
91/92	57	33	11	27	6	2	136	3693
92/93	36	11	1	6	1	0	55	536

93/94	50	12	6	10	2	0	80	641
94/95	98	67	15	28	6	1	215	3275
95/96	34	16	6	9	0	0	65	341
96/97	81	20	10	14	3	4	132	8564
97/98	223	67	30	39	4	2	365	39927
All Seasons	3242	697 815

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Appendix 7: Charter of State Border Fire Operations Committee

7.1 Role

To meet annually by the end of October to ensure the maintenance of close liaison, awareness of policies and procedures established by the Border Fire Policy Coordinating Committee, and to discuss matters of mutual interest.

7.2 Composition

To comprise field planning and operations staff of agencies having fire protection or fire suppression responsibilities on land within 15 km of the State border, viz.

- Natural Resources and Environment, Victoria
- State Forests, New South Wales
- National Parks and Wildlife Service, New South Wales
- New South Wales Rural Fire Service
- Country Fire Authority, Victoria
- Other agencies by invitation

7.3 Functions of the Committees

- a. To provide the forum for personal contact and exchange of information on fire protection planning and programs, and to foster awareness of fire suppression organisation, contacts and major resources available for deployment in the border zone.
- b. To familiarise members with present fuel conditions, access, assets and special hazards in the border zone.
- c. To ensure that fire prevention works in the border zone are coordinated where possible.
- d. To arrange inspections of fire related areas of mutual interest.

e. To discuss fire related issues, and where appropriate, recommend policy changes to the Border Fire Policy Coordinating Committee.

f. Develop and implement training exercises involving relevant border agencies. All training activities should develop a clear understanding of each participating agency's legislative and land management.

7.4 Exchange of Information

Information to be exchanged or presented at the Border Fire Operations Committee will include:

a. maps showing significant areas of wildfires and effective fuel reduction burning which took place during the previous twelve months within five kilometres of the border;

b. maps showing roads and tracks in appropriate categories, particularly those established within the previous twelve months, in sufficient depth to indicate outlets to major roads;

c. maps showing fire sensitive areas within each state close to the border, particularly those areas where constraints apply to fire suppression technique without the prior approval of the managing authority;

d. proposals for fuel reduction burning and other fire protection works in the border zone for the ensuing year.

7.5 Agreed Operational Guidelines

Operational guidelines applying to land within fifteen kilometres of the state border, have been detailed for contact arrangements, communication procedures, initial attack, fire control operations, management of aircraft, suppression costs and legal aspects.

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Appendix 8: Relevant Flora and Fauna Action Statements and Associated Management Prescriptions

Flora:

Austral Toad Flax	<i>Thesium australe</i>
Buff Hazelwood	<i>Symplocos thwaitesii</i>
Dwarf Kerrawang	<i>Rulingia prostrata</i>
Gaping Leek- orchid	<i>Prasophyllum correctum</i>
Hairy Anchor	<i>Discaria pubescens</i>

Plant	
Leafy Greenhood	<i>Pterostylis cucullata</i>
Maiden's Wattle	<i>Acacia maidenii</i>
Marble Daisy- Bush	<i>Olearia astroloba</i>
Rough Eyebright	<i>Euphrasia scabra</i>
Slender Myoporum	<i>Myoporum floribundum</i>
Yellow Hyacinth Orchid	<i>Dipodium hamiltonianum</i>

Fauna:

Diamond Python	<i>Morelia spilota spilota</i>
Glossy Black Cockatoo	<i>Calyptorhynchus lathami</i>
Baw Baw Frog	<i>Phyllorhina frosti</i>
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>
Eastern Bristlebird	<i>Dasyornis brachypterus</i>
Giant Burrowing Frog	<i>Heleioporus australiacus</i>

Hemiphlebia Damsel fly	<i>Hemiphlebia mirabilis</i>
Leadbeater's Possum	<i>Gymnobelideus leadbeateri</i>
Long-footed Potoroo	<i>Potorous longipes</i>
Mountain Pygmy- possum	<i>Burramys parvus</i>
New Holland Mouse	<i>Pseudomys novaehollandiae</i>
Orange- bellied Parrot	<i>Neophema chrysogaster</i>
Powerful Owl	<i>Ninox strenua</i>
Regent Honeyeater	<i>Xanthomyza phrygia</i>
Spot-tailed Quoll	<i>Dasyurus maculatus</i>
Spotted Tree frog	<i>Litoria spenceri</i>
White-bellied Sea-eagle	<i>Halieetus leucogaster</i>
Sooty Owl	<i>Tyto tenibricosa</i>
Masked Owl	<i>Tyto novaehollandiae</i>
Butterflies requiring hilltop or other breeding areas	
Diurnal raptor nesting sites	
Threatened birds and bats that are colonial nesting and roosting.	

Appendix 9: Land Management Plans and Related Documents Relevant to this Plan

Regional Forest Agreements

- Central Highlands
- East Gippsland
- Mid Gippsland (in preparation)

Forest Management Plans

- Central Highlands
- East Gippsland
- Mid Gippsland (in preparation)

National Park Management Plans

- Alfred Lind
- Alpine
 - Cobberas–Tingaringy
 - Dartmouth
 - Bogong
 - Wonnangatta–Moroka
- Baw Baw
- Croajingalong
- Coopracambra
- Errinundra
- Lakes National Park and Gippsland Lakes
- Coastal Park
- Mitchell River
- Snowy River
- Tara Bulga
- Wilsons Promontory

Other Management Plans

- Anderson Inlet
- Bunurong Marine and Coastal Park
- Corner Inlet and Nooramunga Marine and Coastal Park
- Holey Plains State Park

- Inverloch Foreshore Reserve
- Jack Smith State Game Reserve
- Moondara State Park and Tyers Park
- Mt Worth State Park
- Shallow Inlet Coastal Park
- Tidal River Master Plan

Recommendations of the Land Conservation Council

- East Gippsland
- Alpine
- South Gippsland 1 and 2
- Melbourne
- Gippsland Lakes Hinterland Area
- Wilderness Special Investigation
- Heritage Rivers Special Investigation
- Stradbroke Special Investigation
- Gellions Run Special Investigation
- Latrobe Valley Special Investigation

Environmental Conservation Council Strategies

- Rivers and streams
- Wilderness

Catchment Management Authority Strategies

- East Gippsland
- West Gippsland

Various Reference Area Plans

The Regional Vegetation Plan

The Gippsland Lakes Wetlands Plan

Action Statements for most species listed in Appendix 8.

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Appendix 10: Fuel Management Zone Areas in Each Fire District

Fire District	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Private	Total
Bairnsdale	12965	38769	125069	11211	14488	163270	365772
Bendoc	809	24233	76948	20915	44889	42085	209879
Cann River	4598	53712	221291	58359	31601	29080	398641
Erica	13270	21864	73180	211	26623	111730	246878
Heyfield	36917	85078	152662	205804	118491	379 446	978 398
Noojee	3861	10083	33756	1678	38734	136 935	225 047
Nowa Nowa	98892	55748	132216	28357	57514	61 287	345 014
Orbost	5242	38300	151011	44988	19429	38 645	297 615
Swifts Creek	1616	72839	132392	21479	125770	138 860	492 956
Yarram	175	7811	17305	75591	17091	476 839	594 812
Gippsland	89345	408437	1115830	468593	494630	1 578 177	4 155 012

Note: All figures in hectares

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Appendix 11: Map

The maps are available for inspection at District headquarters or at the Gippsland Regional Office in Traralgon, 71 Hotham Street, Traralgon, Victoria.

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