

LOWER GLENELG NATIONAL PARK

MANAGEMENT PLAN

Portland Region

and

**National Parks and
Public Land Division**

**DEPARTMENT OF CONSERVATION
AND ENVIRONMENT**

Victoria

May 1991

This Management Plan for Lower Glenelg National Park is approved for implementation. Its purpose is to direct all aspects of management in the Park until the Plan is reviewed.

A proposed plan for the Park was published in December 1988. A total of 40 submissions were received.

Copies of this plan can be obtained from:

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240 Victoria Parade
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Further information on this plan can be obtained from the Portland Region, DCE (055 233 232)

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COVER: Glenelg River looking upstream from Princess Margaret Rose Caves

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APPROVED MANAGEMENT PLAN

This approved Lower Glenelg National Park Management Plan contains a summary of Park resources, a review of present and future use, management objectives and detailed aims and actions.

A Proposed Plan for the Park was released for public comment in December 1988 and 40 submissions were received. These submissions, and other comments made in meetings and discussions with interested parties, have been carefully considered in preparing this approved Plan.

The approved Management Plan will now become the basis for all aspects of management of the Park.

D. S. Saunders
Director of National Parks and Public Land

D. Read
Regional Manager, Portland

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1 INTRODUCTION

Lower Glenelg National Park of 27 300 hectares encompasses the spectacular Glenelg River limestone gorge, and a wide range of forest, scrub and heathland communities. It is situated in southwestern Victoria, abutting the Victorian - South Australian border, about 420 km or five hours drive from Melbourne, and 500 km or six hours drive from Adelaide.

The Park has major conservation values. It has been included in the World List of National Parks and Equivalent Reserves compiled by the International Union for the Conservation of Nature and Natural Resources (IUCN 1985).

The conservation values derive from:

- the Park's locality within the largest open limestone (karst) province in south-eastern Australia, and the associated landforms and features in the Park (e.g. the Glenelg River gorge);
- the richness of plant species in the Park (e.g. more than 500 species of flowering plants and 30 ferns occur in the Kentbruck Heath and Moleside areas alone);
- a distinctive flora resulting from the Park's location at the interface of the vegetation provinces which encompass the tall forests of southeast Australia and the drier areas to the west and north; this results in several vegetation types and many species occurring at the edge of their range;
- a significant fauna including species considered rare and endangered or at the limits of their distribution (e.g. a rare bat named the Large-footed Myotis);
- the presence of significant landscape features found only in association with limestone terrains (e.g. limestone caves and dolines);
- the origin of considerable fossil material from which previously unknown species have been described.

Due to its natural features, the Park has significant potential for scientific research, interpretation and education.

1.1 PARK MANAGEMENT

The Park receives over 200 000 visits per year. Outstanding recreational opportunities in the Park are associated mostly with the Glenelg River and its environs. The Princess Margaret Rose Caves are an important tourist attraction close to the river. Recreational activities include sightseeing, fishing, pleasure boating, canoeing, water-skiing, picnicking, camping and bushwalking. Away from the river wildflower displays are a feature, and there are opportunities for bushwalking and sightseeing among the variety of vegetation types.

Much of the land now included in the Park had a history of exploitation when the Park was proclaimed in 1969, including timber harvesting and repeated fuel reduction burning to provide protection for nearby pine plantations and the Nelson township. Many scattered sites had been (and remain) severely disturbed by track construction and small quarries providing stone for local track construction. The Bulley Ranges block had been partly cleared for grazing and repeatedly burnt, but the vegetation is now regenerating.

Long before the Park was proclaimed, occupancies were established at many sites along the Glenelg River, monopolising almost all the prime riverbank recreation sites, and using some sites less suitable for recreational use. Many of the private huts, landings and outbuildings were strikingly out of place in the river landscape.

When the Park was declared in 1969 the site occupants were given a fifteen year phase out period in which to remove all structures. No action on removal of structures took place until the fourteenth year (1983), when notices for removal of all structures were issued. Occupancy structures along the river banks have since been removed progressively, and new facilities have been constructed for public use at many sites, greatly enhancing recreational opportunities. Some sites have been revegetated.

In the two decades of the Park, management has directed substantial resources to overcoming the most pressing issues, increasing staff, to improving visitor access and to conserving and protecting the vegetation and fauna. Operational infrastructure and visitor services have been greatly improved and expanded. In 1978 an Information Centre was constructed at the Nelson Park Headquarters and the operations base was expanded considerably, providing improved management facilities for the Park and adjacent public land. Accommodation cabins were constructed at the Princess Margaret Rose Caves in 1983, followed by the present Interpretation Centre in 1984.

The major challenges that confront the management of the Lower Glenelg National Park are:

- to conserve and protect the Park in its natural condition (including its biological, geomorphological, palaeontological, archaeological and historical features of interest), from threats such as introduced plants and animals, and the impact of visitor activities;
- to promote and encourage use and enjoyment of the Park;
- to protect the Park and its visitors from the threat of wildfire.

1.2 THE MANAGEMENT PLAN

The purposes of this Management Plan are, firstly, to provide broad strategic directions for the Park and, secondly, to provide a series of detailed management actions to address the problems that will require action in the next few years. It is designed to build upon and consolidate existing Park management.

The Plan is essentially a guide for park managers, setting out intentions for the Park and directions to staff responsible for its management. The Plan also informs the public about these intentions. The Plan has two parts:

- **Part A** outlines the basis of the Plan, and sets overall Park management directions to apply for the next decade;
- **Part B** establishes more detailed aims and actions for management, to apply in the five years to 1995, after which a review may be undertaken.

PART A

BASIS OF THE PLAN

2 BACKGROUND

This Management Plan is derived from a consideration of a range of legislation, Government Strategies, Departmental plans and policies, public comment, and of the regional and local settings of the Park, its resources and current conditions.

A summary of this information is provided in this Chapter. More detailed information on the natural resources of the Park is provided in the appendices. Specific information is also included in Part B of the Plan as necessary to assist in the understanding of particular issues. Further information is available in the references cited and from the Park Information Centre at Nelson, the Department of Conservation and Environment (DCE) Portland Regional Office and the DCE National Parks and Public Land Division Office in Melbourne.

2.1 REGIONAL SETTING

The Lower Glenelg National Park is situated within the economic region known as the 'Green Triangle', which encompasses higher rainfall areas in southwestern Victoria and southeastern South Australia. Portland, Warrnambool and Hamilton in Victoria and Mount Gambier in South Australia are the major population centres. The Glenelg River is the largest river in the region and the only river of any great length navigable by large pleasure craft.

The economy of the region is based on farming, mostly grazing, softwood plantation forestry, commercial fisheries, tourism and manufacturing, especially timber processing.

In recent years, activity related to the construction and operation of Stages 1 and 2 of the Portland aluminium smelter, and to the establishment of the live sheep export trade from Portland, has considerably strengthened the regional economy which had been stagnant through the 1970s, and has brought increased population to the region. The more buoyant economy, and the increased population are likely to result in increasing visitor numbers in the Park.

2.2 PRIOR LAND USE

Southwestern Victoria was first settled by William Dutton in 1829 and Edward Henty in 1834. Major Mitchell's journey of discovery followed in 1836, and included exploration of the Glenelg River from the present Dartmoor to Nelson.

The area was quickly settled and large pastoral runs dominated until the late 1940s. Localised closer settlement began in the 1870s and was revived at about the time of World War I. Many small settlements failed and were either absorbed into the larger pastoral runs or reverted to forest.

By the late 1800s the Glenelg River was already important to the local community for recreation, particularly angling. Many shacks were established along the river for this purpose, monopolising prime recreation sites and some that were less suitable. Following proclamation of the Park in 1969 and a 15 year phase out period, nearly all the river shacks were removed, and the sites have been developed for public use. In the early 1940s the Princess Margaret Rose Caves were also developed as a commercial visitor operation.

During the 1920s the first pine plantations were established in the area. Two substantial forestry companies established major pine plantations throughout southwest Victoria in the 1950s. Following World War II some native forests now in the Park were selectively logged, by individual tree selection. Little obvious evidence of the logging remains today.

2.3 CREATION OF THE PARK

During the 1960s it was intended to open up areas of the Kentbruck Heath for closer settlement by farmers. Pine plantations were also being planned and established along much of the land north and south of the Glenelg River. Following a long campaign by conservationists aiming to protect many of the significant areas from development, the Land Utilisation Advisory Council recommended the creation of a National Park. The Lower Glenelg National Park was declared in 1969 with an area of 9069 hectares. The Park included the block of heathland and bush north of Nelson, a section of the Glenelg River between the Victoria - South Australia border and Keegans Bend, and a separate block of forest and heathland encompassing most of the significant Moleside Creek catchment.

In 1975, in accordance with recommendations of the Land Conservation Council (LCC 1973; Appendix 1), the Park was expanded to include a further section of the river extending 60 km from the coast, together with large areas of forest and heathland to the north, south and east of the river, to give the present boundaries and a total area of 27 300 ha (Figure 1).

The Princess Margaret Rose Caves Reserve of 90 ha was also included in the Park at this time, but special provisions allowed for its management as Reserved Forest for a further five years. Operationally, it became part of the Park in 1981.

In 1983 the Land Conservation Council made two further recommendations (LCC 1983) relating to the Park:

- that the three hectares of public land south of Jones Lookout, now used by the Scout Association, be added to the Park;
- that the three hectares of public land adjoining the Park north of the Park Headquarters access road, which contain the Nelson rubbish tip and which are used partly for extraction of limestone, be added to the Park; also that the Nelson rubbish tip be relocated as soon as possible, that limestone extraction cease no later than 1993, and that the area be rehabilitated progressively.

The 1983 final recommendations have been accepted by Government, but have yet to be implemented.

Reference Areas. The Park contains three Reference Areas, declared in accordance with the LCC Recommendations mentioned above (LCC 1973). The Reference Areas occupy eight per cent of the total Park area (Figure 1). They are:

Keegans Bend Reference Area (970 ha)
Kentbruck Heath Reference Area (730 ha)
Cobboboonee Reference Area (384 ha).

Reference Areas are tracts of public land containing viable samples of one or more land types that are relatively undisturbed. They are reserved in perpetuity as a reference to be used by people concerned with studying land for particular comparative purposes, e.g. when attempting to solve problems arising from the use of land. As with other standards, all human interference should be kept to the essential minimum.

2.4 MANAGEMENT AUTHORITY

The Park is managed by the Portland Region of the Department of Conservation and Environment, under delegation from the Director of National Parks and Public Land.

The Portland Region encompasses nearly 2 million hectares of land, extending along the coast from Curdies Inlet to the South Australian border and northwards to the southern edges of the Grampians. The Park is an important management unit within the Region due to its large size, the variety of values to be protected, the many recreational sites and the substantial numbers of visitors.

The Park, together with most of the western part of the Discovery Bay Coastal Park and certain other public land, is managed from a Park Headquarters at Nelson. The Princess Margaret Rose Caves are operated by staff based at the Caves.

The Director-General, Department of Conservation and Environment has been appointed a local authority under the *Marine Act 1988* (Vic.) for the Glenelg River from the mouth to the junction with the Crawford River at Dartmoor. The Park Rangers are responsible for enforcing relevant controls on boating.

2.5 LEGISLATION, GOVERNMENT STRATEGIES AND POLICY

A broad range of legislation, Government strategies and policies, and DCE policies and plans control or influence park management.

Legislation

The principal determining legislation is the *National Parks Act 1975* (Vic.). This Act determines how National Parks are created and managed. Under the provisions of Section 17 of the Act, the Director of National Parks and Public Land must:

- ensure that each National Park is managed in a manner that will:
 - preserve and protect the park in its natural condition for the use, enjoyment and education of the public
 - preserve and protect indigenous flora and fauna in the park
 - exterminate or control exotic fauna in the park
 - eradicate or control exotic flora in the park
 - preserve and protect wilderness areas in the park and features in the park of scenic, archaeological, ecological, geological, historic or other scientific interest;
- ensure that appropriate and sufficient measures are taken to protect each National Park from injury by fire;
- promote and encourage the use and enjoyment of National Parks by the public and the understanding and recognition of the purpose and significance of National Parks;
- prepare a plan of management in respect of each National Park.

Reference Areas within the Park are also managed in accordance with the *Reference Areas Act 1978* (Vic.).

The major Government strategies

The Victorian Government has developed three major strategies - the Conservation Strategy, the Economic Strategy and the Social Justice Strategy - to help achieve the interrelated major goals of environmental conservation, economic development and social justice. Directly, and through a number of subsidiary strategies, they form an important policy basis for park management.

Conservation strategy. The five main objectives of the Strategy (Government of Victoria 1987b) are to:

- maintain essential ecological processes and life-support systems
- preserve genetic diversity
- ensure the sustainable use of renewable resources
- ensure the wise use of non-renewable resources
- protect natural areas and ecosystems for the non-material needs of society.

Consistent with these objectives is the recognition that the community should be able to sustain a high level of material well being.

Much of the State's outdoor recreation and tourism is based on the natural environment, and long-term viability is contingent on environment conservation and maintenance.

National Parks have a major role in implementing the Conservation Strategy, through protecting the diversity and long-term viability of natural environments used for recreation, and protecting special, scarce and particularly sensitive environments. Park management plans recognise that habitat maintenance is essential for conservation of most species and must be the primary focus of nature conservation.

Social Justice Strategy. This Strategy (Government of Victoria 1987a) has as its objectives, to provide:

- fair access to goods and services
- opportunities for participation
- for the protection of people's rights.

The strategy is relevant to many aspects of park management, including provision of equitable access to the experiences and facilities in the Park through design for disabled access, and direction of publicity, information and education services to a wide range of interest groups and individuals.

Economic strategy. First released in 1984 and republished in April 1987 as the document 'Victoria: The Next Decade' (Government of Victoria 1987c), this Strategy has as its main objective 'to ensure prosperity and a high standard of living for all sections of the community'. It pays specific attention to:

- allocation of resources to areas of competitive strength
- provision of Regionally balanced outcomes
- concentration on activities that provide support to the balance of trade.

The Tourism Strategy (Government of Victoria 1984) was released by the Government in 1984 as part of the State Economic Strategy. Its main objectives are to:

- identify Victoria's competitive advantages in tourism journeys and destinations
- enhance attractions
- promote more intensive use of assets
- identify opportunities for complementary tourism development.

Tourism is one of the broad industry sectors offering significant economic development and growth potential.

Lower Glenelg National Park is recognised by the Victorian Tourism Commission as being an important tourist destination within south-western Victoria and south-eastern South Australia. Appropriately resourced, the Park has the potential:

- to provide greater opportunities for all Victorians to enjoy an outstanding natural setting, including a magnificent limestone gorge and river;
- to attract increasing numbers of interstate visitors;
- to contribute, in so doing, to the development of the regional economy.

Policies and plans

The Plan is prepared in accordance with DCE policies for the management of Parks prepared by the National Parks and Public Land Division (NPWD 1988), and with other policies prepared by the Department for all public lands. It is part of a planned hierarchy of plans including the DCE Corporate Plan, and the DCE Portland Regional Profile and Area Plans, prepared by the Department to assist in implementing legislation, Government strategies and policies. The main legislation and policy documents relating to park management are listed in the Preamble to Part B of the Plan.

2.6 NATURAL RESOURCES

The Park contains a range of outstanding natural resources, including unusual plant communities, many vascular plant species, a number of animal species not well represented in other conservation reserves and a variety of biological and landscape features associated with the limestone terrain. Most notable of these are the biological features of the Kentbruck Heath and Moleside Creek catchment and the geological and landscape features of the limestone gorge of the Glenelg River. Some archaeological and historical sites are present, although they are not as well documented as the Park's biological values. Sites with significant natural features are shown in Figure 2.

Geology, geomorphology and soils

The Park is part of a coastal plain of limestone largely overlain by leached coastal sands. The basic formation is the Miocene Glenelg group limestones, a part of the broader Heytesbury Group (Port Campbell) limestones. East of Sapling Creek extensive areas of windblown sand overlie the limestones. Recent basalts cover the limestones in the northeastern part of the Park, and are themselves covered by sand.

The sands give rise to extensive areas of deep, leached acid sandy soils with low natural fertility and organic content. The sandy soils support the extensive heath communities in the Park. In places where the crests of the original limestone dunes are exposed shallow red and black sandy loam (terra rossa and rendzina) soils occur, with higher fertility.

The Glenelg River is the only major stream in the area, and drains most of the Park. The topography is mostly flat or undulating, with extensive flat swampy areas in the Kentbruck Heath. The Glenelg River gorge is a major landscape feature and exemplifies the limestone character of the area. During the last Ice Age the Glenelg River changed course many times as the sea level fell and rose, leaving behind several abandoned channels. The most impressive remains of these are three submarine valleys off-shore from Millicent, Nelson and Kentbruck. Dry Creek in South Australia is also an old channel of the Glenelg River.

Rain falling on the plains percolates down to an extensive aquifer system feeding the Glenelg River, slowly dissolving the limestone to form the series of caves and other unique landforms that are important characteristics of the Park. The limestone and associated features such as solution caves, dolines and solution pipes form what is defined as a karst landscape.

Caves and other karst features

The 61 identified caves and other karst features in the Park (Appendix 2) are part of the 67 karst features documented within Victoria in the Glenelg River karst region (the region extends into South Australia, where the majority of karst features occur).

In two major reports to the Department of Conservation, Forests and Lands, Davey and White (1986a; 1986b) have classified the karst features of Victoria according to their natural values and potential uses. The caves of the Glenelg River karst region form one of the major groups of caves in Victoria.

The caves are formed in the Tertiary limestones of the karst system. They are generally small and have entrances formed from joints or solution tubes enlarged by minor collapses. Most known caves in the Park are well explored and surveyed, and are identified by Australian Speleological Federation numbers (Appendix 2).

The cave systems are a major resource, with extensive implications for Park management and protection. Their significance arises from:

- a range of cave fauna dependent (partially or totally) on particular cave environments, most notably two species of cave dwelling bats;
- scientific values, including fossil materials. A small number of Park caves have played an important role in the study of modern and fossil animals, and in the analysis of past climatic and ecological conditions; several new species have been described from excavations conducted in the Park;
- the sizes, shapes, colours and 'feel' of the cave environment;
- recreational opportunities based on the challenge, sensation and aesthetic appreciation of the caves environment, which is in stark contrast to most other outdoor recreation pursuits.

The Princess Margaret Rose Caves contain excellent cave decorations and are one of the few show caves in Victoria. Entry is by guided parties only. Whilst equally spectacular caves occur at Naracoorte and Tantoola in south - eastern South Australia, the Princess Margaret Rose Caves are notable for their picturesque setting. Within the Park these caves are exceptional, as few caves contain any cave decorations and most have been vandalised.

Cave management involves protection of natural values, both biological and geological, and can involve public presentation or control of access to the caves. Graffiti, rubbish and vandalism of decorations are common in most of the larger accessible caves.

Plant and animal communities

Vegetation. The vegetation of the Lower Glenelg National Park is of considerable scientific interest. The main vegetation types in the Park are Brown Stringybark open forest and heathland communities (Figure 3), but the vegetation structure ranges from tall open forest to heathland. Tall open forests and associated swamp and wet heathland communities occur in the east of the Park on the Normanby Plateau, its escarpment, and on the abutting sections of coastal plain. Low open forests with associated dry closed scrub and heathlands dominate in the west of the Park.

The Park lies at a site where elements of the Australian flora extending west from the wetter parts of Victoria reach their westernmost limit of distribution, and elements of the flora of South Australia reach their easternmost limit (a so-called 'interchange zone'). Consequently more than 600 vascular plant species have been recorded in the Park. Of the vascular plant species to be found in the Park, 21 are rare or threatened in Victoria (Conservation, Forests and Lands 1990) and 61 reach their westernmost limit of distribution in the Park.

Two areas are of particular significance. The Lower Moleside and Little Moleside Creeks contain 33 mountain fern gully species characteristic of eastern Australia, but at the western limit of their

distribution. Kentbruck Heath is a large and floristically rich area containing 62 species not recorded elsewhere in the Park, of which 20 are at the western limit of their distribution.

Appendix 3 lists the rare, threatened and significant plant species that occur in the Park, and Figure 2 shows the general locality of some of these species. A complete list of plants recorded in the Park, based on lists prepared by Beaglehole (1968; 1984; 1989) is maintained at the Park.

Fauna. The Park contains a diverse fauna, including a number of threatened species. Of the 219 vertebrate species recorded 9 are considered threatened in Victoria and require special protection (Conservation, Forests and Lands 1989). Many other species require careful management to ensure their status does not decline in the future.

Appendices 4 to 8 list the significant fauna of the Park. Where appropriate, the locations of significant wildlife are shown in Figure 2. Thirty native mammal species have been recorded, indicating a mammal fauna richer than other large conservation areas in southern Victoria. No endemic species occur, but three are considered threatened (Appendix 4).

The 136 bird species known for the Park are listed in a register maintained by Park staff. About 70 per cent are resident, with the remainder nomadic or migrant. Three species are considered threatened in Victoria (Appendix 5), and two of these (the Red-tailed Black-Cockatoo and the Rufous Bristlebird) require special management.

The 14 species of reptiles recorded in the Park are listed in Appendix 6. The Swamp Skink is considered threatened (Conservation, Forests and Lands 1989).

The 32 fish species recorded for the Glenelg River and its tributaries within the Park are listed in Appendix 7. The Glenelg River is regarded as the fourth best Victorian coastal sport fishing river, with the most sought after species being Black Bream and Mulloway. Two species of native freshwater fish found in the Park are considered rare or restricted in Victoria (Conservation, Forests and Lands 1989). The fauna of the river has yet to be investigated thoroughly and further species may be recorded in the future.

Research on the invertebrate fauna of the Park is very limited, and further information is required. Notable species are listed in Appendix 8.

Landscape and visual resources

Landscape protection is essential to maintenance of the Park as an important conservation area.

The Glenelg is the largest river in southwestern Victoria. Within the Park it flows through spectacular river gorge landscapes and scenery that are best viewed from boats or from the many river lookouts.

Broad vistas are available along the entire river, from parts of the Bulley Ranges (including the lookout tower which also has views to Discovery Bay), from the western edges of the Normanby Platform, and from isolated and relatively inaccessible dune crests in the Kentbruck Heath.

Elsewhere views are shorter, but predominantly natural. Notable landscapes occur in the gullies of the Moleside, Little Moleside and Gallows Creek systems and in heaths in the east of the Park and north of Nelson.

Aboriginal sites

The Lower Glenelg River was an important source of fish for nomadic groups of Aborigines that once roamed the area. The area was occupied by the Bunganditj tribe and consisted of two bands, the Mar-cur-rer and the Net-net-yune, which would each comprise from 16 to over 100 individuals.

Little archaeological evidence of Aboriginal activity has been found to date. The Victoria Archaeological Survey (VAS) has recorded and classified three sites in the Park. Brief examination of some river caves has not revealed significant Aboriginal occupation.

The main focus of Aboriginal activity in the area was the Discovery Bay coast, where large quantities of shellfish were seasonally available. A number of Aboriginal sites have been recorded there, including camp sites containing shell, flint, bone and egg remains.

Aboriginal sites in the Park are most likely to be situated close to the river where recreational activities and developments are concentrated. Hence it is important that any significant Aboriginal sites in the Park receive appropriate protection.

2.7 THREATS TO RESOURCES

A number of natural agencies including fire, introduced plants, plant diseases and introduced animals threaten the Park. They can have widespread and major impacts on Park values. Provision of adequate protection is an important component of park management.

Fire

In most years, days of extreme fire danger conditions occur during summer in the Lower Glenelg area. Fires may threaten life, property and natural values. Major fires occurred in 1942 (Moleside Creek area), 1959 (Palpara area), 1979 (north of Nelson) and 1986 (Kentbruck Heath). Most fires were swept into the Park by northwesterly winds under conditions of extreme fire danger.

The threat of fire is well recognised, and Regional Fire Protection Plans have been prepared by Victorian and South Australian agencies to counter the threat. The Portland Regional Fire Protection Plan is designed to protect life, property, assets and identified areas of natural and cultural value from fire. The Plan also aims to restrict the spread of, decrease the severity of and reduce the incidence of wildfire. In the area of the Park, special consideration is given to protecting pine plantations, Park values and the township of Nelson.

The Fire Protection Plan details areas within the Park in which fuel reduction burning should be undertaken and where strategic firebreaks should be constructed. These works are aimed at restricting the spread and severity of a wildfire within the Park, or the possibility of a wildfire entering or leaving the Park. The Fire Protection Plan also details works to be undertaken in adjacent public pine plantations and native forests. This reduces the chances of fires spreading into the Park from these areas.

The behaviour of fire in the Park is dependent on factors such as vegetation type, natural barriers to fire, occurrence of sea breezes and variation in seasonal conditions, as well as protective measures. Studies conducted in prescribed burnt areas in Brown Stringybark open forests of the Park indicate that fires may reduce fine fuel levels to below three tonnes per hectare (t/ha). Fuel accumulation is generally negligible for the ensuing three years, then increases at an average rate of one tonne per hectare per year. Above 12 t/ha, control of wildfires under severe fire weather conditions becomes increasingly difficult.

Because prescribed burning is conducted under mild weather conditions, it generally produces a mosaic of burnt and unburnt vegetation. This retains higher average fuel quantities than are found following wildfires. To maintain fine fuel levels below 12 t/ha in designated zones, given the rate of fuel accumulation, further prescribed burning may be necessary after eight years. Fine fuel accumulation rates in other vegetation types are likely to be lower than in the Brown Stringybark open forest, and the appropriate interval between prescribed burns should vary accordingly.

Fire suppression in the Park is hampered by the spotting potential of the Stringybarks, and in some instances by high fuel quantities. Protection of the large numbers of summer visitors to the Park is difficult, as visitors are scattered among numerous riverside sites and along extensive sections of walking track.

In past years fire management in the Park has been directed primarily at fire protection. An improved understanding of the biological requirements of many of the rare and endangered species present indicates the need to maintain burning regimes that favour (or do not destroy) habitat for these species, as set out in Chapter 4. However fire management for a single species must not be to the detriment of other species within a community. Fire management planning must balance the need to protect single species and whole communities with the broader fire protection issues mentioned above. All are critical to effective Park management.

Introduced plants and diseases

Some introduced plants, including Australian species not found naturally in the area, have the potential to spread throughout the Park, competing with and disturbing indigenous vegetation. The distribution of pest plants (weeds) has not been mapped in detail, but they are widespread and locally common, particularly near the Park boundary. Appendix 9 lists introduced plants found in the Park.

Introduced trees at a number of sites along the river have recreational value or historical significance. Some visitors to camping and picnic areas appreciate the shade and appearance of the shady trees (mainly Cypress and Monterey Pine), others are concerned to find introduced species in a National Park. Where necessary, and where spread is not possible, exotic grasses are used to protect soils from erosion in heavily used visitor areas.

A major threat to the Park is the spread of Monterey Pine (*Pinus radiata*) from the extensive adjacent plantations and former occupancy sites in the Park. Wind borne dispersal of pine seeds is assisted by Yellow-tailed Black-Cockatoos and other birds that bring cones and seeds considerable distances into the Park. As numerous trees within and surrounding the Park reach seed bearing age the problem is likely to increase. Pine seedlings are killed by fire, offering a potential means of control.

The presence of Cinnamon Fungus (*Phytophthora cinnamomi*) in some gravel pits in the eastern part of the Park and adjacent forest was indicated by tests carried out in 1979. Prior to this, gravel from pits in the area was used on the Inkpot, Harris and Heath Roads, on the Bulley Ranges Track, around staff houses in Nelson, and around various fireplaces and picnic areas along the river. Tests on the same gravel pits in 1981 gave negative results. Cinnamon fungus has been detected in the heathlands in the south - east of the Park. It is also suspected of causing vegetation dieback in other areas of the Park.

Introduced animals

The pest animal species in the Park are rabbits, foxes and feral cats. The many other introduced animals in the Park pose a lesser threat. They include mammals (Appendix 4), birds (e.g. blackbird) and insects (e.g. feral bees).

2.8 TOURISM AND RECREATION

Tourism and recreation are major activities in the 'Green Triangle', important to the economies of the region as a whole, including the cities of Warrnambool, Portland and Mt Gambier and certain small townships, such as Nelson and Dartmoor near the Park.

Visitors are attracted to the area by a range of features, mostly natural or historical. The natural features are mostly situated on public land, and a substantial proportion are situated in the Park and nearby areas.

The major tourism corridors through the region are the Princes Highway and the Portland - Mt Gambier Road. Most tourists stay overnight in the major population centres of Warrnambool, Port Fairy, Portland and Mt Gambier. In school holidays the proportion of visitors staying in local townships such as Nelson increases greatly.

Detailed studies on tourism and recreation in the Green Triangle as a whole are not available. However, some surveys commissioned by the Victorian Tourism Commission for the Southwest Region of Victoria provide useful information (Ebbs 1987). In addition, Howell and Mercer (1972), Alexander and Byrne (1982), Laslett (1981) and Regional staff have collected information specific to the Park.

Tourist attractions and recreational opportunities in the Region

The Green Triangle contains a diverse range of tourist attractions, including Lower Glenelg National Park. The most important attractions include:

- environs of tourist roads (including wayside stops and picnic areas) providing vistas of the coast and of broad landscapes in the hinterland
- general maritime history
- Flagstaff Hill Maritime Village; themes include the Loch Ard and Schomberg shipwreck relics
- Southern Right Whales at Warrnambool
- Port Fairy Short-tailed Shearwater colony
- Portland, Victoria's first permanent settlement
- historic townscapes at Port Fairy, Koroit, Robe, Beachport and Port MacDonnell
- Tower Hill State Game Reserve
- Lady Julia Percy Island
- Port of Portland
- Discovery Bay Coastal Park
- Lower Glenelg National Park
- Blue Lake and other attractions at Mt Gambier
- Tantanoola Caves Conservation Park
- Naracoorte Caves Conservation Park
- forestry activities.

A wide range of outdoor recreational activities can be undertaken in areas close to the main tourist corridors. Outdoor recreation takes place in environmental settings that range along a continuous scale from near primitive to near urban, highly modified, environments.

The area of near primitive and relatively unmodified settings has been drastically reduced by European settlement. An important function of National Parks is to preserve substantial primitive and relatively unmodified areas, maintaining them as recreational settings for future generations.

Lower Glenelg National Park is particularly important in this respect as it contains large, relatively unmodified areas including environmental settings either not found, or inaccessible, elsewhere in the Green Triangle. These settings include:

- the little modified but accessible river environment found downstream from Pannican Bend, featuring the spectacular Glenelg River gorge and the Princess Margaret Rose Caves; the setting is especially suited to activities such as sightseeing, boating, canoeing, picnicking, angling and camping;
- the relatively inaccessible and peaceful setting of the river upstream of Pannican Bend, providing opportunities for solitude, nature study and angling in a near primitive environment;
- the broad expanse of the Kentbruck Heath and other blocks north of the river, providing opportunities for nature study and bushwalking in a near primitive setting.

It is important that these environmental settings are preserved.

Tourism potential in the Region

The Victorian Tourism Commission considers the Southwest Region of Victoria to have unrealised tourism potential, and is moving to assist and encourage the tourism industry to develop this potential. Recognising that a new image is needed to attract visitors to the area, the Victorian Tourism Commission commenced preparation of a Southern Ocean Tourism Development Program (Victorian Tourism Commission 1989).

The objective of the Program is to identify projects that can be enhanced, developed and used to:

- attract new visitors to the area, particularly from interstate and overseas;
- encourage Victorians to visit and revisit the area;
- encourage visitors to lengthen their stay.

Increased recreational opportunities are being sought on public lands along the major tourist corridors. Activities that are compatible with nature and environment conservation, and that require a natural setting, could be accommodated in the National Parks provided they do not conflict with other more appropriate recreational activities.

The program will concentrate on those projects that can be implemented over the next few years, and is likely to include enhancement of the tourism potential of the coastal areas located between Portland and Nelson. Promotion is seen as a higher priority than the development of further facilities.

The program has highlighted the need for enhanced promotion of the Great South West Walk, a 250 km long distance walking loop linking most of the natural areas between Portland and Nelson. It will recognise the fundamental importance to the development program of ensuring that the natural features of the area are preserved and that related visitor facilities are maintained.

The program has considerable implications for the management of the Lower Glenelg National Park, which contains many of the outstanding natural features and visitor facilities located on the banks of the Glenelg River.

Promotional information will have a vital bearing on future tourism trends, tourist numbers and sites visited. In particular, information for visitors about the attractions of the Southwest Region should be improved.

Park visitor numbers

The importance of the Park to tourism and recreation is reflected in its visitor numbers, which have increased in most years since the Park was declared in 1969. Total visitor days recorded for 1988-89 were over 60 000, including 30 000 for the Princess Margaret Rose Caves. However as visitor monitoring is limited, it is estimated that there are at least 200 000 visitor days annually.

The most rapid increases have closely followed the major additions of land to the Park in 1975, and the substantial additions to facilities, such as improvements to the Park Information Centre in 1978 and at the Princess Margaret Rose Caves entrance in 1984. The Great South West Walk, and recreational facilities at old occupancy sites along the river, are attracting rapidly increasing numbers of visitors from further afield as they become better known.

Most visits to the Park are made in the warmer months of the year by anglers, campers and walkers. The Christmas and Easter school holidays are particularly busy periods. There has been a dramatic increase in recreational canoeing over the last three years, by schools, clubs and individuals. Canoeing is expected to be the fastest growing recreation activity in the Park over the next five years.

The current rapid increase in visitor numbers, and use of visitor facilities, must be addressed in park planning and future management.

Park visitor profile

About 70 per cent of visitors to the Park come from southwest Victoria and southeast South Australia, mostly from the major population centres of Mt Gambier and Portland. Most of the remainder are tourists from capital cities, especially Melbourne and Adelaide.

Most picnickers, campers and visitors to the Princess Margaret Rose Caves come to the Park as couples or family groups. Boating, angling and water-skiing groups are often adult, and may include the elderly. Large groups are not uncommon, and include school groups, naturalist clubs and excursion tours. School canoe groups are common.

Vehicular access to the Park

Visitors approaching the Park on the Princes Highway and on the Portland - Mt Gambier Road (Figure 1) can choose numerous entry points via roads and tracks servicing small freeholds, plantations and State Forests that surround the Park. The Nelson-Winnap Road, which links the major routes and dissects the Park, provides an important secondary access route. As the Glenelg River is a major obstacle to vehicle access, with no river crossings between Dartmoor and Nelson, visitors must choose which part they wish to visit before arriving at the Park.

Most visitors approach the Park in cars along the Portland-Mt Gambier Road and enter the Park at Nelson or, less commonly, by means of the Bulley Ranges Track.

Many residents of areas north and east of the Park enter the Park at Sandy Waterholes, along the Wanwin Road and Wilson Hall Track or from the Nelson-Winnap Road. A few visitors, mostly regional residents with a good knowledge of the Park or others with specific interests, use minor entry tracks including tracks through the Cobboboonee Forest east of the Park and tracks through pine plantations north of the river.

The extensive access network in the Park includes public roads of two wheel drive standard, and management and fire tracks mostly of four wheel drive standard. Some road and track sections are in good condition, but despite great improvements, many sections of track are not adequate for two wheel drive use, especially under adverse weather conditions.

The network of roads and tracks, and the numerous access points into the Park create many management problems. The ongoing maintenance of vehicle tracks, the provision of Park information, and general visitor management are more difficult in these circumstances.

River access

Many tourists enter the Park by boat on the river. Above Nelson the River enters South Australia for a short distance, before re-entering the Park. River access from Nelson to upstream of Dry Creek is via South Australia.

Boat users include visitors on river excursions from Nelson, residents of Nelson, and occupants at Donovans and other riverbank sites in South Australia. Boat launching facilities and landings are located outside the Park, (principally at Nelson and Donovans) and at a number of locations in the Park. Many visitors launch their boats within the Park. Boat operators entering South Australian waters require a South Australian boat operator's licence for this section.

Canoe landings are provided at a number of sites in the Park. As part of the Major Mitchell Trail project (a Bicentennial Commemorative Project), canoe landings have recently been completed at Dartmoor and Pines Landing, facilitating canoeing upstream of the Park. At present most canoe groups launch at Moleside, but the new canoe camps will increase the numbers of canoeists entering from upstream of the Park.

Park visitor activities and facilities

Visitor activities in the Park include motor boating, angling, camping, picnicking, water-skiing, swimming, canoeing, walking, nature study and scenic driving. Motor boating, skiing, angling, picnicking and camping are especially important among residents of the region. Many visitors are attracted from further afield by the quality of the recreational opportunities for some of these activities, especially for canoeing and angling.

Almost all recreational activity in the Park occurs in the area west of the Nelson-Winnap Road, mostly in the river zone. Most activities on the river in the Park occur in waters within easy reach of the more important boat launch facilities on the river, including those at Nelson, Donovans, Sandy Waterholes, Wilson Hall, Sapling Creek, Pritchards and Saunders (Figure 1). Boating on the river upstream of Wild Dog Bend is mostly limited to angling by residents of the Region who are familiar with the area, and to canoeists. Scenic driving, walking and nature study occur throughout the Park. Most of the bushwalking occurs on the sections of the Great South West Walk in the Park.

With few exceptions, developed recreation sites are located along the river west of the Nelson-Winnap Road. Most sites which had occupancies until the early 1980's now have new recreational facilities, including facilities for camping and, caravanning, picnicking, boating and canoeing. Facilities have been selected and designed as appropriate to the site, and clustered or separated to avoid conflict between activities such as water-skiing and angling.

Sections of the Great South West Walk were initially routed on existing vehicular tracks, but most have now been replaced by a specially designed walking track.

Camping and caravanning facilities are complemented by three cabins located at Princess Margaret Rose Caves to provide overnight and short term accommodation. All visitor facilities are now in relatively good condition.

A list of sites and the recreational activities for which they are managed is listed in Appendices 10 to 14.

Careful management of recreational activities and facilities is essential if the Park is to be adequately protected and the best use is to be made of the existing and potential recreational opportunities.

Park visitor information

Many visitors arriving at the Park have little knowledge of the opportunities it provides for recreation and appreciation of the natural environment. Most local residents are familiar with the opportunities for traditional activities such as angling, but many are not fully aware of other opportunities.

Visitors usually require detailed information on the track system and recreational facilities to find their way about the Park. Few tourists venture far along the complex network of roads and tracks without such information.

Information is readily available from the Park Headquarters at Nelson and at the Princess Margaret Rose Caves Interpretation Centre during their hours of opening. Information is also available in the form of brochures and leaflets.

Careful planning of information services is necessary to ensure that visitors are well informed about recreational opportunities, and at the same time understand what the Park management will require of them in the interests of protecting the Park.

Park visitor education

Visitor education can foster public understanding and appreciation of the Park's cultural, natural and recreational values, Park management practices, safety issues and National Park Regulations.

Many family and school groups are attracted to the Park in the expectation that they will be given opportunities to learn more about it and the Park system. In other visitors, the interest is latent, and such visitors can benefit substantially from appropriate interpretative services.

A number of features of the Park are suitable for interpretation to visitors, especially the geomorphological and biological values. Features that are readily accessible and can be protected from visitor pressures, such as the Princess Margaret Rose Caves and the flora and fauna of the Kentbruck Heath, are best interpreted on site, with the assistance of suitable publications and, in some cases, by means of guided tours. It may be necessary, for example where features are inaccessible or easily put at risk (as would be the case with river and cave fauna), to interpret by means of displays, film and other media.

Currently the education services provided in the Park include the information centres at the Park Headquarters and at the Princess Margaret Rose Caves, the summer programs, and group talks available by prior arrangement with the Ranger.

Park visitor attitudes and preferences

The impression gained by Rangers over the years is that most visitors enjoy their stay, but would like to see improvement in the standards of existing facilities, in the provisions made for visitor safety, and in the availability of information. The greatest need is for an improved map and brochure.

Most visitors seem happy with the existing level of development, and do not wish to see any substantial increase. However, the proportion of visitors seeking more comfortable facilities could increase with the implementation of the Southern Ocean Tourism Development Program.

2.9 OTHER USES OF THE PARK

Apiculture and extraction of road surfacing materials are the only productive activities to have occurred in the Park since its creation in 1969. Prior to the proclamation the area was occasionally used for apiculture, usually in times of drought in the northern regions of the State. In 1984 the Minister approved the location of 16 bee sites in the Park, but these sites have received limited use. The last beekeeping permit for the Park was issued in 1987.

Since its proclamation, surfacing materials for Park roads have been obtained from a number of sites, including gravel pits along Heath Road and Inkpot Roads, limestone pits in the Bulley Ranges, and the Nelson tip reserve. It would be preferable if roadmaking materials could be obtained from outside the Park.

Firewood collection is not permitted in the Park except for immediate use in Park facilities.

Certain public utilities are located in the Park, including underground telephone cables and a trigonometric station. They are considered in Section 7.3.

Currently several private commercial operations are permitted to operate within the Park:

- boat excursions on the Glenelg River from Nelson to the Princess Margaret Rose Caves and occasionally to sites such as McLennans Punt; these excursions run during most of the year on the 'Nelson Endeavour';
- guided canoe tours down the Glenelg River;
- sale of requisites to tourists from a small kiosk at the Princess Margaret Rose Caves.

These services are appreciated by many visitors. They can, however, conflict to some degree with expectation of other Park users. In particular, the 'Nelson Endeavour' on occasions stops for barbecues, and provision of an exclusive site would reduce competition for facilities with other Park users (Section 6.2.2).

2.10 ADJACENT LAND USES

A wide variety of land uses surround and affect the Park. Most adjacent land has been altered considerably by economic activities, such as softwood plantation, hardwood selection forestry, grazing and tourism. However, some important remnants of natural communities remain in nearby Wildlife and Bushland reserves.

Adjacent land use can cause threats to the Park, such as fire, pest plant invasion and affects the coordination of conservation and recreation activities.

Most of the adjacent land is managed in large blocks by a diversity of public and private agencies. Details of management arrangements for major blocks, and management agencies on the Glenelg River are given in Appendix 15.

The Heywood Shire Planning Scheme applies to private land surrounding the Park. Under the scheme, the Shire as the Responsible Authority is required to include identified scientific and conservation values in its consideration of development applications. Under recent provisions associated with the *Planning and Environment Act 1987* (Vic.) the Shire is also required to refer development applications adjacent to the park to DCE for comment.

Adjacent public land

Public land close to the Park is shown on Figure 1. Recommendations of the LCC 1983 relating to the area are listed in Appendix 1. Conservation resources in nearby parks and reserves complement those in the Lower Glenelg National Park.

Discovery Bay Coastal Park. Extending eastward from the State border, this Park is noted for its spectacular dune formations and coastal heath communities. It is managed by DCE staff based at Nelson and Portland.

Nelson area. A number of parcels of land of varying reserve status (Appendix 1) connect the Park to Discovery Bay Coastal Park. The link is of strategic and conservation importance, and could ultimately form a linking piece of park land between the two Parks.

At present parts of the land link are used or reserved as a rubbish tip, a limestone pit (both operated by the Shire of Heywood), a Streamside Reserve and the adjacent Nelson Caravan Park (both under the one Committee of Management). However the largest part of the link is unreserved Crown land abutting the Park entrance road, managed by DCE, which carries native vegetation with conservation values.

The LCC has recommended that the rubbish tip and limestone pit be phased out, and the area added to the Park (Section 8.2). Other uses are recommended to continue.

Drik Drik School Reserve. Vested in the Ministry of Education. Part of this Reserve on the Nelson-Winnap Road 4 km north of the Park has been made available as a historical conservation area managed by DCE. The Reserve contains former school buildings and outbuildings and the former Drik Drik Post Office, which has been relocated to the site. These buildings, together with the Drik Drik Methodist and Presbyterian churches and cemetery (which remain in use), have considerable historical interest and value.

DCE staff from Nelson perform basic maintenance of the school buildings and Post Office. Possible future use as a historical site requires detailed consideration.

Cobboboonee State Forest. Abuts the eastern flank of the Park and extends east to within 4 km of Portland. It is the major hardwood production forest in the area, managed on a selective logging basis. Native plant and animal conservation supplements the Park, and recreation is an important secondary use.

Public pine plantations. Pine plantations at Rennick, Kentbruck and Glenaulin all abut the Park, and together they form the bulk of the public softwood plantations within the area.

Gravel pits. A portion of Crown Allotment 36A, which is part of a small block of public land situated north of the Park and west of Heinkes Road in the Parish of Wanwin, includes a site used for the supply of sand under the provisions of an extractive industries licence.

Public land in South Australia

Piccaninnie Ponds Conservation Park. Encompasses the strip of coastal dunes and swamps west of the State border, and is best known for its coastal wetland values. It is managed by the National Parks and Wildlife Service of South Australia. Conservation values complement those in Lower Glenelg National Park.

Caroline Forest Reserve. A relatively isolated section of this reserve is enclosed by the Victorian - South Australian border and bend of the Glenelg River. It forms a natural extension to the westernmost block of the Lower Glenelg National Park and contains similar conservation values.

Access to the area is by boat across the river from Donovans, with landing sites limited by near vertical cliffs, or through Victoria by means of the North Nelson Road and management tracks in the Park. The isolation of this part of the Reserve to some extent protects it from visitor pressures, but also creates difficulties for management. In particular, pine seedlings invading from adjacent plantations represent a threat both to this area of the Reserve and the adjacent Park.

The Reserve is administered by the Woods and Forests Department, and is gazetted as a Fauna Sanctuary under the South Australian *Fauna Conservation Act 1964* (SA). It has no formal management plan and no nearby management staff. The boundary shared with the Park is not well defined.

The area requires similar management to the western block of the Park, and Park planning should take this into account. The Park base at Nelson is the closest source of conservation management staff to the Reserve, and management by DCE under an agreement between the Victorian and South Australian Governments might offer the most effective means of management. The Victorian National Parks Act contains provisions facilitating such agreements.

Tourism and recreation

Tourism and recreation facilities near the Park are mostly located on or close to the banks of the Glenelg River, within the townships of Nelson and Donovans, and at Dartmoor and Dry Creek.

The range of boating, camping, caravanning and accommodation facilities close to the Park meets the requirements of many visitors for such facilities, and reduces the need to provide highly developed facilities in the Park. The caravanning and camping park located at the recreation reserve adjacent to the North Nelson Road (near the main Park entrance), is particularly well located for visitors wishing to spend time in the Park. Accommodation facilities are also located in Nelson itself, and on the Princes Highway near Dartmoor.

The Streamside Reserve within Nelson township is the base for some major boat landings and boat hire and charter services, which attract many visitors who travel up river into the Park. The LCC (1973) recommended that this area be reserved permanently for public purposes, and used primarily for open space recreation and to maintain the character and quality of the local landscape.

Streamside reserves along the Glenelg River in South Australia contain many private occupancies including shacks and houseboats. Most visitors to the occupancies spend their time on the river and in the Park, angling, pleasure boating and water-skiing in the ski zones. The occupancies are subject to a life tenure valid for the current occupier or their surviving spouse. The South Australian Government is setting up a review of all coastal shack sites, including those on the Glenelg River, to be carried out by an independent consultant. The outcome of this review will have substantial implications for future Park management.

Softwood production

Sections of the northern boundary of the Park abut public pine plantations at Rennick and Glenaulin and tracts of freehold land cleared for grazing. The irregular southern boundary abuts cleared freehold in the east, the public pine plantation at Kentbruck in the centre, and company owned plantations in the west.

Several of the softwood plantations are privately owned and managed. They are located partly on freehold land and partly on public land on long-term lease. These plantations are concentrated south of the Portland-Nelson Road, with large areas also west of the Bulley Ranges, in Hurdle Flats and north of Keegans Bend. Smaller private plantations also occur around the Park.

The large softwood plantations that flank the Park (Appendix 15) have a major bearing on fire control strategies adopted in the area, both in Victoria and South Australia. The plantations also present major problems with respect to the spread and control of Monterey Pine into the Park.

Grazing

Extensive cleared areas occur south of the Kentbruck Heath and north of the Park between Jones Ridge and Wanwin. The boundaries are generally well fenced. Pest plants are present on some properties. Periodically, graziers become concerned about increases in the numbers of Eastern Grey Kangaroo that shelter in the forests of the area and graze their pastures.

3 PRINCIPAL MANAGEMENT DIRECTIONS

The major challenges that confront the management of the Lower Glenelg National Park are:

- to conserve and protect the Park in its natural condition (including its biological, geomorphological, palaeontological, archaeological and historical features of interest), against threats such as introduced plants and animals, and impacts of visitor activities;
- to promote and encourage use and enjoyment of the Park;
- to protect the Park and its visitors from the threat of wildfire.

Priority is given to the preservation of natural ecosystems and the environment, especially features of conservation significance and features of particular interest to visitors. Ongoing surveys and investigations of significant environmental components (biological, geomorphological, palaeontological, archaeological and historical) will help to ensure that appropriate measures for their protection are implemented.

Threats to the Park (such as visitor traffic, inappropriate visitor activities, the spread of introduced plants and animals, and wildfire) will be controlled as far as possible, and the natural character of the Park restored.

The Plan assumes that visitor numbers will continue to increase over the next five years, as the Plan, the Major Mitchell Track and improvements to the Great Southwest Walk are completed.

Future development of the Park as a tourist destination is to proceed along lines that are consistent with the aim to conserve and protect the Park in its natural condition. Sightseeing, walking, canoeing and appropriate interpretation of Park features will be encouraged. Traditional recreation activities such as boating and angling will continue.

The river will continue to be the hub of recreation in the Park. Facilities along the river will be concentrated downstream of Wild Dog Bend. From Wild Dog Bend upstream to the Park boundary the river will be managed to preserve its tranquillity, and to encourage wildlife.

East of the Nelson-Winnap Road the Park will be managed to conserve outstanding natural features such as the Moleside Creek catchment and Kentbruck Heath, and to provide opportunities for scenic driving, walking and nature study.

The cave systems in the Park will be managed to achieve an appropriate balance between conservation and recreation use, recognising the importance of the caves.

Visitor facilities will be maintained or improved to a high standard in accordance with the following guidelines:

- as far as is practicable, to provide access for a range of groups, including international tourists, the elderly, visitors with disabilities, and low income earners;
- to avoid any increase in the level of development that could reduce opportunities to experience nature directly;
- to provide fresh, fulfilling and authentic experiences;
- to emphasise tasteful, attractive design and presentation;
- to recognise the heavy dependence of visitors on motorised transport, including cars and boats;
- to take into account the need to protect visitors from wildfire and other potential hazards.

Visitor attractions, facilities and programs are to be co-ordinated with those provided elsewhere in the region.

Increased emphasis is to be given to providing information to potential visitors about the full range of natural features and opportunities for outdoor recreation in the Park. This will be done through the travel industry in Adelaide, Sydney, Melbourne, and regionally, and through the DCE Statewide network of information outlets. Better maps and more detailed information about the Park will be provided at Park entrances and appropriate sites in the Park. This will include a code of visitor behaviour.

Non-destructive scientific research contributing to an understanding of the resources of the Park and their management will be encouraged, particularly where the research cannot be performed satisfactorily outside the Park.

Management will seek to incorporate into the Park certain abutting lands with recreation potential and conservation values, including the public land south of Jones Lookout, and part of the reserve that includes the Nelson rubbish tip.

Co-operation is sought with Vic Roads, the Shire of Portland, the Ministry of Planning and Urban Growth (PUG) and other public authorities, so that standards of conservation management continue to improve in the Lower Glenelg area, and activities and developments do not prejudice Park values.

The Plan will be implemented in accordance with the National Parks Act, the National Parks Regulations 1975, and the relevant DCE and National Parks and Public Land Division policies and policy directives as listed in the preamble to Part B.

3.1 PARK MANAGEMENT OBJECTIVES

The following management objectives are established for the Lower Glenelg National Park:

- to protect and conserve natural ecosystems, the natural environment, and natural landscape values;
- to give special protection from human interference to rare and unusual plant and animal species, to geomorphological, palaeontological, archaeological and historical features, and to features of special interest to visitors;
- to restore the natural character of disused sites disturbed by past land use or by exotic plants and animals;
- consistent with conservation objectives, to develop existing opportunities and provide additional opportunities for visitors to participate in recreational activities, particularly scenic viewing, canoeing and walking;
- consistent with conservation objectives, to retain existing facilities for traditional visitor activities, especially boating and angling;
- to promote the range of visitor attractions as a whole;
- to promote public awareness, appreciation and understanding of the natural environment, and of special natural, archaeological and karst features, through appropriate interpretative and education programs;
- to protect the Park, life and property from fire;

- to take adequate precautions for the safety of visitors;
- to provide appropriate opportunities for scientific research.

3.2 PARK MANAGEMENT ZONING

Park management zoning is a tool to assist management in achieving the Park management objectives.

Zoning indicates which management objectives are appropriate and which have priority in each part of the Park. It identifies the places where conservation is a critical requirement, and establishes broadly the intensity and types of use that are appropriate for different parts of the Park. Its purpose is to pre-empt conflicts between uses, and to provide a basis for assessing the suitability of management proposals for particular parts of the Park.

Zones are derived by overlaying maps of the natural and conservation values of the land, its capability and suitability to withstand use, the recreational opportunities it presents, and decisions relating to its previous use, particularly those arising from LCC recommendations. In this way, areas of conservation significance, recreational potential, and land use conflict are highlighted.

Three zones have been defined for the Park. Zone characteristics are tabulated in Table 1 and the zones are mapped in Figure 4. The contributions of the zones towards achieving Park management objectives are listed in Table 2.

In Zone 1 the highest practicable degree of attention will be paid to environmental preservation and protection. Intensive use or development is concentrated in Zone 3. Zone 2 is intermediate in character and acts as a buffer between the other zones. The high level of protection required by the National Parks Act applies to all three zones.

Not all small sites with important features (e.g. Aboriginal sites, and the sites of rare plant species) are contained in Zone 1, as this would produce a multitude of tiny zones. Adequate protection is provided by prescriptions specified in Part B of the Plan. A 500 m wide buffer has generally been allowed between Zone 1 land and any public road or track.

TABLE 1 MANAGEMENT ZONES

Features	Zone 1	Zone 2	Zone 3
Conservation	- Highly significant conservation area, or Reference Area.	- Includes ecological systems and vegetation types not well represented in the Park, and areas of landscape and archaeological significance	- Known conservation values not threatened or adequately protected
Recreation	- Essentially an unmodified natural environment - Frequency of contact very low - Facilities absent - no camp sites - no motor boat launching facilities - no canoe launching facilities	- Natural appearing settings - Frequency of contact moderate on roads, low to moderate elsewhere - Facilities simple and isolated: - up to 3 motor camp sites at each locality - launching facilities for trailer mounted motor boat - canoe launching facilities	- Natural appearing settings, but may have modifications that are easily noticed - Frequency of contact high to moderate - Facilities may be complex and cater for large numbers - caravans, camp sites and motor cabins - launching facilities for trailer mounted motor boats
Physical	- Minimum area 800 ha, width 2 km - Minimum 500 m from public roads and landing sites, pine plantations or private land - Management tracks rare, of minimum standard	- No size criteria - Low use roads acceptable	- No size criteria - Access by public roads
Managerial	- Primarily off-site controls	- Site controls subtle	- Controls obvious but in harmony with the environment
Prescribed	- For vegetation or habitat management only	- For protection within defined fire breaks ^a	- For protection within defined zones, and

Burning

- For vegetation or habitat management as required

other protection measures near visitor sites and main roads

- For vegetation or habitat management as required

^a Priority Burning Zones, Section 5.1.1

**TABLE 2 CONTRIBUTION MADE BY ZONES TOWARDS ACHIEVING PARK
MANAGEMENT OBJECTIVES**

Management Objectives	1	Zone 2	3
to protect and conserve the natural environment	***	**	*
to protect rare and unusual features	***	**	*
to restore the natural character of disturbed sites	***	***	***
to protect scenic values	***	**	**
to provide recreation opportunities	*	**	***
to provide for appropriate traditional visitor uses	*	*	***
to promote the range of visitor attractions	*	*	***
to promote understanding of environment	*	**	***
to take precautions for visitor safety	*	**	***
to protect Park, life and property from fire	**	**	***
to provide opportunities for research	***	***	***
to control introduced plants and animals	***	***	**
to minimise impact of all operations	***	***	**

-
- *** Zone maximises achievement of objective
 - ** Zone partially achieves objective
 - * Zone makes a contribution to achieving objective
 - Not appropriate in zone

PART B

MANAGEMENT AIMS AND ACTIONS

Chapters 4 to 8 set out in detail the issues involved in managing the Lower Glenelg National Park and define specific management aims for the resolution of groups of related issues. Management actions to achieve these aims are presented, defining how the aims will be achieved. A statement of relative priority accompanies each management action:

- | | |
|-----------|--|
| High | Proposed for action as soon as possible. |
| Medium | Proposed for action generally after high priority tasks have been completed. |
| Low | Less urgent but important actions. |
| Ongoing | An action that requires the continuing attention of Departmental staff including Park staff. |
| As needed | An action or issue to be addressed when the relevant situation arises. |

Chapter 9 sets out the managerial resources, such as staffing and equipment, that are required to implement the Plan.

This Plan will be implemented in conjunction with the following:

- National Parks Act and Regulations
- Reference Areas Act
- Parks Policy and Procedure Manual
- Portland Regional Profile, DCE
- Portland Regional Fire Protection Plan
- Natural Resource Systems Division, Pest Animals General Manual (Vermin Pac)
- other Departmental Policies and Procedures, as appropriate.

4 MANAGEMENT FOR RESOURCE CONSERVATION

This Chapter sets out aims and actions for those aspects of park management relating to the protection and conservation of the natural and cultural environment. Particular emphasis is placed on the protection and management of the rarer plant species and communities, the rare and threatened fauna in the Park, and the extensive system of limestone caves that lie below its surface.

4.1 VEGETATION MANAGEMENT

The vegetation of the Lower Glenelg National Park is of considerable scientific interest. The main vegetation types in the Park are Brown Stringybark open forest, and heath (Figure 3), but vegetation ranges from tall open forest to heath. Tall open forest occurs with associated swamp and wet heath communities on the Normanby Plateau and its escarpment, and on the abutting sections of the coastal plain in the east of the Park. Low open forest with associated dry closed scrub and heath dominates in the west of the Park.

The Park lies at a site where elements of the Australian flora extending west from the wetter parts of Victoria reach their westernmost limit of distribution, and elements of the flora of South Australia reach their easternmost limit (a so-called 'interchange zone'). Consequently more than 600 vascular plant species have been recorded in the Park, including 61 at the extremes of their distribution and 21 rare or threatened species.

Effective vegetation management involves attention to the overall management and protection of the Park's native vegetation, both in its own right and as animal habitat. However certain rare or fragile vegetation types and species require specific conservation management.

The zoning scheme adopted in the Park (Section 3.2) in part reflects vegetation and flora conservation requirements, but specific measures are required in a number of cases.

The Park is an ideal location in which to conduct applied botanical research. In particular the effects of different fire regimes (including the absence of fire) on different vegetation communities, and the conservation requirements of rare and threatened floral species should be determined. Local staff are able to conduct monitoring programs, but assistance will be required from other sources to develop suitable research programs. Research projects require approval of the Director of National Parks and Public Land.

4.1.1 Plant community management

The majority of vegetation types in the Park do not require specific management, and will be satisfactorily protected by the actions set out elsewhere in this Plan, particularly in relation to fire protection. However the vegetation in two particular locations has characteristics and values that require special management. The requirements for managing these areas are given below.

Lower Moleside and Little Moleside Creeks. This restricted site contains 33 mountain fern gully species characteristic of eastern Australia, but at the western extreme of their distribution. They are dependent on the moist environment for their survival. The creek gullies are very steep in part and contain soils prone to erosion. The vegetation is not a fire hazard.

Kentbruck Heath. This large and floristically rich area includes the Kentbruck Heath Reference Area and surrounding heath communities. It contains 62 species not recorded elsewhere in the Park and 20 species at the western extreme of their distribution.

TABLE 3 RARE AND THREATENED PLANT SPECIES - MANAGEMENT ACTIONS

Species	Ecology and requirements	Management actions	Priority
Lime Fern <i>Pneumatopteris pennigera</i>	Rare in Australia; vulnerable in Victoria. Has been recorded at several sites in the Park, including Moleside and Little Moleside Creeks and within the Curran's Creek catchment. Protection of the creek environment and a restriction to regular access is essential.	Undertake no further developments at the Moleside picnic area and other known sites of occurrence.	High
		Conduct a survey to determine the distribution within the Park.	High
		At Sandy Waterholes, close the track leading east to the River Fireline (approximately 1.0 km) to public vehicular access.	High
		Exclude earthworks from known population areas.	High
		Revegetate with local species the former occupancy site at the mouth of Curran's Creek.	Low
		Restrict access to populations affected by unknown pathogen or external agent.	High
		Monitor effectiveness of restricted access	High
Lax Twig-rush <i>Baumea laxa</i>	Extremely localised; rare in Victoria.	Avoid development and regular access on the northern bank and swampy areas along the Eaglehawk Bend.	High

TABLE 3 RARE AND THREATENED PLANT SPECIES - MANAGEMENT ACTIONS (CONTINUED)

Species	Ecology and requirements	Management actions	Priority
Metallic Sun-orchid <i>Thelymitra epipactoides</i>	Endangered in Australia and Victoria; found at scattered sites across southern Victoria. Lower Glenelg population consists of only a few individual plants; may become locally extinct.	Conduct surveys annually to monitor the population.	Medium
		Manage vegetation at known sites by rotational slashing or prescribed burning late February to March, at 6 to 7 year intervals.	High
Hairy Sheperd's Purse <i>Microlepidium pilosulum</i>	Rare in Australia and vulnerable in Victoria; known from only one location in the Park. May previously have been threatened by frequent prescribed burning.	Monitor the population annually and conduct surveys to locate other populations.	Medium
		Exclude earthworks and prescribed burning from the known population area until environmental requirements of the species are understood.	High
Coast Dandelion <i>Taraxacum cygnorum</i>	Endangered in Victoria; only four stands known; first found 1987. Three stands occur in open forests on terra-rossa soils in the south of the Park, the other in the nearby Bats Ridges Wildlife Reserve. Ecological requirements not known, but some protection is appropriate.	Protect all known sites from developments and disturbance such as earthworks.	High

Fires have been a feature of this area and the heath species have evolved a capacity to regenerate rapidly after fire. The presence of a range of fire age classes in a mosaic pattern provides the structural and floristic diversity necessary for the survival of dependent animals. The age class interval varies with factors such as vegetation type and seasonal factors.

The scenic drive along Heath and Inkpot Roads is a well known tourist attraction due to its spring wildflower display. It is also a strategic fire break (Figure 5). Suitable fire frequencies required to maintain the species diversity and to enhance the floral displays also provide effective fire protection benefits. Prescribed burning in early autumn is preferred, as it minimises disturbance to the majority of heath species during spring flowering, and promotes regeneration from stored seed and root stocks.

Bulldozed or graded fire lines should be avoided, as regeneration is extremely poor if the soil is disturbed. However, slashed lines do not deleteriously affect heathland vegetation. Thus, slashed breaks could be used to contain management burns or to act as fire protection measures. If possible, rubber-tired tractors, preferably with a 'non-aggressive tread', should be used for slashing.

Phoschek and other phosphorous-based fire-retardants should be avoided where possible on heathlands.

Pest plants, invasion by the Cinnamon Fungus *Phytophthora cinnamomi* and unauthorised vehicle access are threats to the vegetation community. Controls on earthworks and vehicle access are appropriate in this area.

Aims and actions

To maintain and protect a diversity of natural plant communities in the Park.

To protect plant communities that are threatened or of special significance.

To protect significant vegetation in the Lower Moleside and Little Moleside Creeks, and on Kentbruck Heath.

To ensure that ecological processes are allowed to continue.

To promote applied ecological research, particularly to assist future Park management.

Ongoing	Exclude earthworks and prescribed burning from the Lower Moleside and Little Moleside Creeks.
Ongoing	Kentbruck Heath. Wherever possible use fire suppression methods creating minimal site disturbance. Avoid where possible the use of Phoschek or other phosphorous-based fire-retardants during fire suppression operations. Where practical, allow or assist wildfires to burn out to permanent roads and tracks.
As needed	Undertake prescribed burning in autumn along Heath Road (south of Baggate Road) and Inkpot Road on a rotational basis in accordance with Section 5.2.2. Design and arrange burning blocks in this area to minimise loss of visual quality.
Medium	Encourage external research on: <ul style="list-style-type: none">- heath community development under various fire regimes- vegetation succession in the Bulley Ranges.
Medium	Conduct a detailed vegetation survey of the Currans Creek area.

4.1.2 Significant plants

Of the 600 indigenous plant species in the Park, six rare or threatened species have been identified as requiring specific management actions to protect existing populations (Appendix 3). The 15 other rare or threatened species do not require active management at this stage. The 16 species listed in Appendix 3 as having disjunct distributions or being at the extremes of their ranges do not, on the basis of present knowledge, require specific management.

It may become necessary to manage populations of these species if potential threats to their survival are identified. Further research into the distribution and abundance of many of these species is essential if potentially threatening processes are to be identified.

Aims and actions

To protect rare and threatened plant species.

As shown	Protect and manage identified species in accordance with Table 3.
As needed	Develop appropriate management actions for any further species identified, through further survey or taxonomic revision, as rare and threatened.
High	Train Park staff to undertake the monitoring programs outlined in Table 3.
High	Conduct surveys to determine the distribution and abundance of rare or threatened species within the Park.
High	Prepare improved management prescriptions based on detailed ecological study for rare or threatened plant species.

4.2 FAUNA MANAGEMENT

The Park contains a wide range of habitats and consequently the dependent fauna is diverse, including a number of species that are restricted or at the limits of their distribution. Annotations to Appendices 4 to 8 list significant species that are threatened or relatively insecure in Victoria. Where appropriate their occurrence in the Park is shown in Figure 2.

Generally fauna is managed by maintaining the overall quality of the Park as faunal habitat. Effective management also requires detailed information on the breeding, refuge, dietary requirements and distribution of all species in the Park.

Some threatened species require no specific action other than the general protection of a diversity of natural communities and the continuation of ecological processes. These include the Rufous Bristlebird, Great Pipistrelle and the Southern Purple-spotted Gudgeon. However a number of species require specific management actions, as listed in Table 4.

Aims and action

To protect and maintain the diverse assemblage of native fauna by maintaining suitable habitat.

To actively manage threatened or significant species.

To undertake continuing research and resource surveys of native fauna.

As shown	Manage rare and endangered fauna in accordance with Table 4.
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TABLE 4 RARE AND NOTABLE FAUNA - MANAGEMENT ACTIONS

Species	Ecology and requirements	Management actions	Priority
Large-footed Myotis <i>Myotis adversus</i>	The most sensitive to disturbance of Victorian cave dwelling bats; recorded from several Victorian locations, sparsely distributed throughout its Australian range, dependent on open water. Within LGNP recorded from a small number of caves which are used for breeding, overwintering and roosting. Disturbance to these few caves may result in serious damage to the population. Public access to them must be restricted to ensure the survival of the Park colonies. Little is known about its requirements, and detailed research is required to refine management strategies.	Restrict public access to: Pirates Cave (G1) ^a Ampitheatre Cave (G2) Kates Slide Cave (G9) McLennan's Punt Cave (G14)	High
		Allow access : - to holders of relevant research permits issued by the Director of National Parks and Wildlife - only from March to May, as far as possible.	High
		Where appropriate, erect signs or implement security measures to deter unauthorized entry to the above caves. Security measures to be designed to meet the requirements of the Large-footed Myotis and other relevant cave dwelling fauna.	High
Common Bent-wing Bat <i>Miniopterus schreibersii</i>	Dependant on suitable cave environments for much of its life cycle; susceptible to disturbance and mortality resulting from human visitation. Breeding not recorded in the Park, but a number of caves are used for overwintering when insect foods are scarce.	Maintain discrete signs near the entrances to caves G3 and GX-107 to deter access from May to October, and to limit the duration and impact of visits.	Ongoing
Common Wombat <i>Vombatus ursinus</i>	Only a few isolated populations in western Victoria. Seen in the Park between the SA border and Curran's Creek in recent years, but it is not known whether breeding occurs.	Generally restrict public access to known habitat areas, in particular small caves in the Curran's Creek area (eg. G25 and G26).	Ongoing

a. See Appendix 2 for references to cave numbers, see also Section 4.5.

Species	Ecology and requirements	Management actions	Priority
Heath Mouse <i>Pseudomys shortridgei</i>	<p>Extant populations in Victoria known only from the Portland Region including the Park, and in the Grampians National Park. Important factors for conservation are:</p> <ul style="list-style-type: none"> - only present in heaths of high floristic and structural diversity, maintained by periodic fire or by exposure on sand ridge heaths; - the presence of particular winter and early spring flowering plants which supplement the diet prior to breeding; - the presence of subterranean fungi during autumn and winter. <p>The Heath Mouse has been trapped in the areas shown in Figure 2. Its conservation in these areas is dependant on the presence of suitable habitat. Habitat in exposed sand ridge heaths is self-sustaining, but vegetation succession renders other habitats unsuitable if fire is absent for periods exceeding approximately 5 years.</p>	<p>Avoid regular winter burning of known Heath Mouse habitat; where necessary (Section 5.1.3) burn in autumn to produce a random mosaic of small patches of the appropriate fire age classes.</p> <p>Prepare a detailed Heath Mouse habitat management plan for the five blocks shown in Figure 5. Use rotational burning to optimize the area and age of post fire vegetation, while retaining some areas unburnt for longer periods, to meet the needs of other species.</p> <p>Continue current population monitoring program to better define the fire frequency requirements of the Heath Mouse within the Park.</p>	<p>High</p> <p>High</p> <p>Ongoing</p>
Red-tailed Black-Cockatoo <i>Calyptorhynchus magnificus</i>	<p>Threatened in Victoria; restricted to remaining mature Brown Stringybark open forests in southwest Victoria. Burning should be avoided when Eucalypt capsules provide a food source.</p>	<p>Identify suitable Brown Stringybark Forest to be managed primarily as Red-tailed Black-Cockatoo habitat. Avoid disturbance to known and potential breeding and feeding sites, especially between September and January.</p>	<p>High</p>
Peregrine Falcon <i>Falco peregrinus</i>	<p>Breeds in the Park only along the river gorge; requires protection from disturbance during breeding.</p>	<p>Avoid construction of walking tracks and other facilities near known eyries.</p>	<p>Medium</p>
Swamp Skink <i>Egernia coventryi</i>	<p>The most notable reptile in the Park; restricted to swampy habitats.</p>	<p>Avoid earthworks that affect drainage of minor swamps or other habitat disturbance.</p>	<p>High</p>
Native Fish <i>Galaxias brevipinnis</i> and <i>G. truttaceus</i>	<p>Particularly susceptible to streamside vegetation clearing and siltation. Properly designed road culverts will allow the free passage of fish through shallow water to swamps and minor streams.</p>	<p>Prevent sedimentation and alteration to drainage patterns when upgrading roads and constructing firelines.</p> <p>Design culverts to allow free passage of small fish.</p>	<p>Ongoing</p> <p>As needed</p>

High	Conduct fauna surveys throughout the Park, in particular to determine the distribution and habitat requirements of Large-footed Myotis, Common Bent-wing Bat, Red-tailed Black-Cockatoo, Heath Mouse, and the Rufous Bristlebird.
High	Train Park staff and other groups to undertake monitoring and fauna surveys. Seek assistance from voluntary groups whenever possible.
High	Monitor regularly the known habitats of threatened species.
Ongoing	Encourage research into the biology and habitat requirements of Park fauna, particularly the Heath Mouse.
Low	Encourage systematic surveys of invertebrates and frogs in the Park.

4.3 PRESCRIBED BURNING FOR ECOLOGICAL MANAGEMENT

Many aspects of prescribed burning for vegetation and habitat management were discussed in Sections 4.1 and 4.2. Maintenance of habitat for the Heath Mouse (*Pseudomys shortridgei*) has the highest priority among the various species and communities to be promoted.

Reference Areas in the Park contain heath vegetation, where prescribed burning may be required to maintain communities in the long-term. This issue may need to be addressed in future revisions of the Reference Area Plans. Fuel reduction burning for protection purposes is not appropriate in the Reference Areas, and burning for habitat management is not required in the short or medium terms.

Naturally, some areas of vegetation will remain unburnt in the long-term (they are protected by natural firebreaks), maintaining diversity and providing sites where the effects of aging and successional change in those vegetation types can be studied.

Some wetter forest vegetation types may be adversely affected by fire (Section 4.1) and prescribed burning should be excluded from them.

Aims and actions

To use prescribed burning to achieve ecological objectives.

To maintain a diversity of ages of vegetation in the Park, including some unburnt areas.

To promote the habitats of rare and endangered flora and fauna, particularly the Heath Mouse.

Ongoing	Avoid prescribed burning for fire protection in Reference Areas. Undertake prescribed burning for vegetation and habitat management only in accordance with Reference Area Plans.
Ongoing	Exclude prescribed burning from the Lower Moleside and Little Moleside Creek Areas.
High	Prepare and implement detailed habitat management program for maintenance of Heath Mouse habitat within the Kentbruck Heath (Table 4).
Medium	Prepare and implement detailed habitat management programs for other species with particular fire regime requirements (season, frequency and intensity), as set out in Tables 3 and 4, integrating them with general fire management planning where possible.
As needed	Consider prescribed burning for the management of the Metallic Sun-orchid (Table 3).

4.4 REFERENCE AREA MANAGEMENT

The Park contains three Reference Areas (Figure 1). All are managed in accordance with separate management plans (National Parks Service 1982; 1985a; 1985b).

In summary, Reference Areas are managed by:

- restricting all forms of access;
- carrying out fire suppression operations on adjacent land wherever possible rather than in Reference Areas themselves;
- restoring land damaged by fire suppression operations when necessary;
- removing *Pinus radiata*, *Salix* sp. and other introduced plants;
- managing bordering land in order to avoid interference with the Reference Areas;
- requiring the approval of the Director of National Parks and Public Land for the conduct of all research in Reference Areas.

Further details can be obtained from the Reference Area management plans.

4.5 CAVE AND KARST MANAGEMENT

The caves and other karst features within the Park form part of a broader karst landscape covering parts of south-western Victoria and south-eastern South Australia. Extensive caves and karst features are also found at Naracoorte and Tantanoola in South Australia, and at Bats' Ridge in Victoria. Caves of volcanic origin occur at Mt Napier and Mt Eccles, whilst several sea caves are located at Cape Bridgewater.

The 61 significant karst features (caves, dolines and springs) recorded in the Park (Section 2.6; Appendix 2) represent an important scientific, aesthetic, recreational and educational resource.

Management of the caves will be based on the system of classification established by Davey and White (1986b). Classifications for the known Lower Glenelg caves are listed in Appendix 2. The classification system highlights the overall significance of each cave and indicates broad directions for management, based on current knowledge.

The number of park visitors using various caves for recreational purposes will also affect cave management. At present there are four main groups using caves:

- Members of speleological groups; interested in caves for both recreational and scientific reasons and possessing a number of skills associated with caving.
- Tourists; use the fully guided tours and interpretation centre available at Princess Margaret Rose Caves.
- School groups; use Princess Margaret Rose Caves for educational purposes. They also make use of interpretative facilities, often with the assistance of ranger staff.
- General recreationists; may visit any of the well known and accessible caves in the Park, including Princess Margaret Rose Caves, as an adjunct to other activities.

The Victorian Speleological Association, other cave exploration groups and Park staff have located and surveyed most of the known caves in the Park. This work provides the basis for management, but additional information on the location and biospeleology of caves is required, and appropriate research is encouraged.

In one case (Currans Creek Cave, G4) the Davey and White classification is not adopted. This was classified as an 'adventure cave', implying active management and promotion to encourage recreation. However further development and regular access to the area surrounding this cave is

considered inappropriate, because of the important flora in the Currans Creek catchment surrounding the cave mouth (Section 4.1.1). However it remains desirable to identify and publicly present an alternative adventure cave within the south-west Victorian or south-east South Australian region.

The Princess Margaret Rose Caves (G6) are managed as a show cave for guided parties. A well developed and staffed interpretation centre for caves and their related features is located above the mouth of the cave. Regulation 551 of the National Parks Regulations 1975 specifically controls public activity in the Caves and surrounding areas.

A previously unknown cave was first explored in 1987 following earlier discovery by Park staff. Now named '1987 Cave' but not yet numbered by the Australian Speleological Federation, it consists of two solution tube entrances connected by a horizontal chamber. It contains substantial fossil material and cave decorations. Unfortunately in its short known history some material has been removed and decorations have been damaged. A 'special natural' classification is proposed for this cave, as access restrictions and management controls are required to protect its special values, for future scientific research. A fund has been set up by the Museum of Victoria to promote the research of 1987 Cave.

The six caves of greatest natural significance within the Park have been classified as 'special natural sites' (Appendix 2). Some contain known or suspected colonies of the Large-footed Myotis and Common Bent-winged Bat, as set out in Table 5. As these species are vulnerable cave management to maintain wildlife habitat becomes essential (Section 4.2). Specific protection is required and a formal system of authority for access is proposed.

Of these, three caves (McEacherns G5 and Fern Cave KB1 and 1987 Cave) have been designated as 'special natural' on the basis of their palaeontological significance. Ongoing excavations in McEacherns Cave require effective restriction of human and animal access to prevent interference and damage to exposed fossil deposits. Fern Cave has also been excavated and potential for further research remains. It is located in an area with important flora conservation values. Access and disturbance should be effectively restricted to protect these values.

Regulation 552 of the National Parks Regulations 1975 specifically prohibits access to any cave in the Park set aside for the protection of fauna and flora, but allows for authorisation of specific cave visitors. It is proposed that this regulation would be used to protect cave values from damage if alternative measures are unsuccessful and the need for regulation becomes urgent. Other caves receive a general level of protection by way of the National Parks Act and Regulations and the Reference Areas Act.

Aims and actions

To protect and maintain the natural, aesthetic, scientific and cultural values of the cave and karst system.

To allow responsible cave recreation, survey and monitoring consistent with protection of the special values of the caves, other karst features and surrounding areas.

To provide public education in the responsible use and interpretation of caves.

General cave management

- | | |
|-----------|--|
| Ongoing | Manage all caves other than Currans Creek (G4) generally in accordance with recommendations of Davey and White (1986b). |
| Ongoing | Encourage speleological activity within the Park. Such activity to be subject to the written permission of the Regional Manager. |
| As needed | Make all cave access approvals subject to adherence to the Code of Practice of the Australian Speleological Federation. |

High	Develop a log book system to monitor the number of visitors to each of the caves listed in Table 5.
As needed	Place signs at the cave entrances detailed in Table 4 highlighting the cave's significance and asking that people refrain from entering so as to minimise cave degradation.
As needed	Implement appropriately designed security measures where required, for the caves listed in Table 4 to control human access while allowing the free movement of cave fauna.
High	Survey cave fauna to update knowledge, particularly of the occurrence and habitat requirements of Large-footed Myotis and Common Bent-wing Bat.
High	Record in detail for management purposes the location and extent of all caves.
High	Collect further information by encouraging speleological and other groups to undertake cave studies. Encourage all cave visitors to report their observations to the Ranger staff.
As needed	Ensure any newly discovered caves are properly surveyed and catalogued to enable an appropriate management classification to be assigned.
As needed	Consult with the DCE Caves Advisory Committee on issues relevant to cave management.
High	Seek to establish a Regional Caves Advisory Committee to cover the management of caves on both public and private land in south-west Victoria and south-east South Australia.

Show caves

Ongoing	Continue to operate Princess Margaret Rose Caves as a 'show cave', with further developments as set out in Section 6.3.
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Adventure caves

High	Investigate the provision of an 'adventure cave' within the recognised cave areas of south-west Victoria and south-east South Australia. At present there does not appear to be a suitable cave within the Park.
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Reference caves

Low	Investigate the purpose and desirability of establishing a Reference Cave within the Park in consultation with the Caves Advisory Committee and the Regional Caves Advisory Committee.
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Special natural caves

High	Manage Pirates Cave (G1), Amphitheatre Cave (G2), Kates Slide Cave (G9) and McLennans Punt Cave (G14) to protect wildlife habitat in accordance with the requirements of Table 4.
High	Manage McEacherns Cave (G5) to maintain its integrity for further scientific research. Prepare a detailed cave management plan and place appropriate signs within the cave highlighting its significance.

High	Manage 1987 Cave as a 'special natural' cave. Prepare a detailed cave management plan and place appropriate signs within the cave highlighting its significance.
High	Develop specific management prescriptions for Amphitheatre (G2), Currans Creek Cave (G4) and Fern Cave (KB1), taking into account the significance and vulnerability of each cave and its surroundings.
Ongoing	Monitor the effectiveness of signs and security measures in minimising the degradation of cave values.
As needed	Formally set aside the caves listed in Table 5 for the protection of flora or fauna, or any natural or scientific feature, pursuant to Regulation 552 of the National Parks Regulations 1975.
As needed	Entry to any caves set aside under Regulation 552 of the National Parks Regulations 1975 will require the written permission of the Director of National Parks and Public Land. Authorities will be issued in accordance with the requirements of Table 4 and other relevant requirements.

TABLE 5 MAJOR CAVES REQUIRING PROTECTION AND AUTHORITY FOR ACCESS

ASF Number	Cave Name	Reasons for Protection
G1	Pirates	Large-footed Myotis maternity colony.
G2	Amphitheatre	Large-footed Myotis and Common Bent-wing Bat sites. Palaeontological values. Potential archaeological site.
G4	Currans Creek	Lime Fern populations near entrance.
G5	McEacherns	Ongoing palaeontological excavations in progress.
G9	Kates Slide	Potential palaeontological site. Large-footed Myotis site.
G14	McLennans Punt	Suspected Large-footed Myotis maternity site. Regular Common Bent-wing Bat roost. Terrestrial molluscs near entrance.
KB1	Fern	Palaeontological site.
-	1987 Cave	Relatively undisturbed by people. Potential palaeontological site.

4.6 ABORIGINAL SITES

Little archaeological evidence of Aboriginal activity has been found in the Park, and the Victoria Archaeological Survey (VAS) has recorded and classified only three sites to date. Brief examination of some river caves has revealed very limited evidence of possible Aboriginal occupation.

Aims and actions

To protect all sites of prehistoric significance

To encourage investigation into the prehistory of the Lower Glenelg area.

High Protect known aboriginal sites by restricting access to and information on the location of these sites.

High Avoid earthworks in the areas of known archaeological interest. Assist VAS to investigate any proposals that may affect such sites

As needed Notify VAS of any Aboriginal sites discovered in the Park.

4.7 LANDSCAPE AND VISUAL RESOURCES

The high landscape values of the Park (Section 2.6) are evident from casual observation.

A formal landscape analysis (Leonard and Hammond 1984) was prepared for the Park in 1979, and forms the basis for landscape management. The aesthetic value of the landscape can be reduced by inappropriately sited management activities such as roadworks and recreation development.

Landscape protection in the Park involves the appropriate siting of all developments, such as walking tracks, recreation sites and structures, and the sensitive design of essential field operations such as prescribed burning.

Aims

To protect and preserve landscapes in areas of greatest scenic quality and viewer interest.

To minimise the visual impact of management activities in all landscapes.

Visual management guidelines

- Site and design facilities in sympathy with the visual environment, borrowing forms, lines, colours and textures from the natural surroundings. All developments should blend in with the environment with a minimum of artificiality or site modification.
- Generally adopt the Recreation Facilities Manual (Conservation, Forests and Lands 1987b) as a standard for design work.
- Consider long views as well as short views in the design of all projects.
- Keep river vistas free of further fabricated structures wherever possible.
- Minimise the visual intrusion of all developments, particularly as seen from the river, primarily by appropriate siting.
- Consult expert landscape design personnel during the design of all Park developments.
- Prepare detailed site plans well in advance of construction.

- Design and program prescribed burning operations, particularly those abutting public roads, to minimise impacts on scenic quality.

4.8 VOLUNTARY ASSISTANCE

Supporters of National Parks and volunteers make valuable contributions of finances and labour towards protection, conservation, maintenance and development of parks, assisting projects for which funds are not available and which would not otherwise be achieved. Lower Glenelg National Park receives valuable assistance with the sections of the Great South West Walk that lie within the Park.

Many other parks have 'Friends Groups' organised under the auspices of the Victorian National Parks Association.

Aims and actions

To encourage participation of volunteers in projects to protect, conserve, maintain and develop the Park which would not otherwise be achieved.

To seek and encourage financial contributions to assist major developments in the Park.

High	Encourage and give support to any suitable proposal for the formation of a Friends of Lower Glenelg National Park Group.
Ongoing	Determine suitable volunteer projects in accordance with Departmental Guidelines for Friends Groups (Conservation, Forests and Lands n.d.).
Ongoing	Assist work teams of volunteers and maintain close links with co-ordinators of volunteer groups.
Ongoing	Give due recognition through the media, Departmental publications and presentations to the contributions of volunteer groups and supporting organisations.

5 MANAGEMENT FOR PARK PROTECTION

This Chapter sets out aims and actions for those aspects of management relating to the protection of conservation values in the Park from the impact of wildfire, and of introduced plant and animal species. The impact of recreation and other authorised uses are discussed in Chapters 6 and 7.

5.1 FIRE MANAGEMENT

Fire management includes both fire protection and the prescribed use of fire for ecological purposes. Fire protection involves minimising the chance of a fire occurring, the maintenance of pre-suppression facilities such as access tracks and firebreaks, and the suppression of wildfires. Burning for ecological purposes includes habitat management using prescribed fire regimes for individual species and communities.

The Department has statutory duties to 'carry out proper and sufficient work for the prevention and suppression of fire in every ... national park, and on all protected public land' Section 62, *Forests Act 1958* (Vic.), and (as agent of the Director of National Parks and Public Land), 'to ensure that proper and sufficient measures are taken to protect the park ... from injury by fire' (Section 17, National Parks Act). Strategic protection requirements are identified in the Department's Portland Region Fire Protection Plan (CFL Portland 1987).

The objectives of fire management in the Park are:

- To control wildfires by means which cause the least damage to Park values and which confine the wildfires to the minimum area as rapidly as is possible;
- To protect Park facilities and the life and property of visitors;
- To maintain the natural influence of fires on ecological processes within the Park;
- To minimise the adverse effects of fires on important natural features, especially rare and restricted plant and animal species;
- To protect neighbouring land, particularly Nelson township, adjacent pine plantations and grazing properties from fires originating in the Park in accordance with the Portland Region Fire Protection Plan.

Prescribed burning is the deliberate use of fire to achieve specific management objectives, such as the reduction of fuel for protection purposes, and the maintenance of particular wildlife habitat or successional stages of vegetation. It is an effective technique if planned and applied cautiously using adequate scientific and technical knowledge. The frequent application of prescribed burning can significantly alter the natural ecosystem and should therefore be avoided.

Roads and tracks are an essential component in fire management. They provide vehicle access for fire suppression, and perimeter control lines for prescribed burning.

Liaison with the Country Fire Authority and Softwood Plantations Limited has in the past been of great assistance to fire management in the Park.

5.2 FIRE PROTECTION

The Portland Region Fire Protection Plan aims to combine fire prevention, fire pre-suppression and fire suppression to protect life, property, assets, and natural and cultural values within the Region.

5.2.1 Fire prevention

Fire prevention includes all activities concerned with minimising the incidence of wildfire such as public education and enforcement.

Aims and actions

To implement fire prevention strategies for the Park consistent with the requirements of Government legislation, the Park, the Region.

- Ongoing Incorporate information on fire regulations and the role of fire in the Park into Park brochures, guides, display boards and interpretation programs.
- Ongoing Conduct regular patrols of camp sites and other visitor facilities to ensure adherence to fire regulations, particularly on days of high fire danger during holiday periods when an increased level of patrolling may be required.

5.2.2 Fire pre-suppression

Fire pre-suppression includes all activities undertaken in advance of possible wildfire occurrence to decrease wildfire severity and ensure more effective fire suppression.

Fire pre-suppression also involves liaison with other suppression organisations, maintenance of a detection system, training and equipping a fire suppression force, maintenance of roads, tracks and water points, fuel reduction burning, establishing and maintaining firebreaks and reducing fire hazards adjacent to visitor areas.

Aims and actions

To implement and review fire pre-suppression strategies and activities for controlling wildfire in the Park, consistent with both the requirements of the Park and the Regional Fire Protection Strategy.

To maintain all current pre-suppression facilities within the Park.

To liaise with relevant organisations for the common purpose of fire management within the Park.

- Ongoing Implement the following strategies contained in the Portland Region Fire Protection Plan relating to the Park.
- Maintain the Priority 1 Burning Zones in Figure 5 by periodic prescribed burning, to provide the highest level of protection for Nelson and adjoining pine plantations. Aim to maintain fine ground fuels below 8 t/ha in this zone. The burning rotation will be determined by the rate of fuel accumulation and Park management objectives.
 - Maintain the Priority 2 Burning Zones in Figure 5 by periodic prescribed burning, to provide substantial barriers to the spread of wildfires and to reduce the chance of a single fire burning through the length of the Park. Aim to maintain fine ground fuels below 12 t/ha. Determine burning rotation by the rate of fuel accumulation and Park management objectives.

The minimum width required as an effective low fuel (burnt) barrier in this zone is 400 m. As the zone is up to 2.5 km wide in places, parallel sections 400 m or more in width will be burnt on a mobile fire-break principle, thereby increasing the length of the burning rotation in those parts of the zone. This particularly applies to the area north from Nelson to the River, and along Heath Road south of Inkpot Road.

- Maintain the Priority 3 Burning Zones in Figure 5 to prevent destruction of natural and cultural values and to complement higher priority works. Fuel loads will be selectively reduced at strategic locations when required. Fuel load accumulation and Park management objectives will determine the period of burning rotation.
- Maintain the Priority 4 Burning Zones in Figure 5 to protect and conserve natural and cultural values, supplement higher priority works, and achieve other management and biological objectives. The frequency of burning will depend upon the rate of fuel accumulation, appropriate ecological parameters, seasonal factors and resource availability.
- Use existing tracks as margins to prescribed burns, whenever possible.
- Maintain roads, vehicle tracks, signposts and water points to facilitate rapid fire suppression.
- Maintain appropriate measures, such as slashed breaks around picnic areas, to protect visitors at locations where they congregate.
- Provide appropriate measures (tracks, fire breaks, fuel reduced areas etc.) in the forests surrounding the Park, to reduce the chance of fire entering or leaving the Park.

High	Ensure that the aims and actions of this Plan are included in Annual Fire Protection Works Plans relevant to the Park.
High	Reduce excessive flammable material (slash) pushed up along roadsides during maintenance or upgrade.
Medium	Reduce fuel quantities along primary public access roads by slashing a strip two metres wide along the roadside. Include this work in annual operations plans.
Ongoing	Ensure that staff are adequately trained and equipped and that standby staff are available.
Ongoing	Ensure that an adequate communications network is established and maintained including towers.
Ongoing	Encourage the continuing co-operation of the Country Fire Authority and Softwood Plantations Limited at the local level.
High	Prepare a Fire Emergency Plan as a basis for managing visitor safety during major fires, which also considers procedures for the safety of Park visitors using the Great South West Walk.
High	Pursue initiation of pre-suppression works in adjacent areas where necessary to protect park values.

5.2.3 Fire suppression

Fire suppression refers to the control of unplanned fires as they actually occur; ie. wildfires. Although fires are essential for the perpetuation of certain plant and animal communities, the rapid detection and control of all wildfires on public land is a critical objective of fire management.

Aims and actions

To implement wildfire control strategies for the Park consistent with the requirements both of the Park and of the Region.

As needed Control all wildfires within natural or artificial control lines determined by the officer in charge of suppression operations in order to restrict wildfires to a minimum reasonable area, with a minimum of disturbance and with due regard to economy, as rapidly as possible following detection.

Fire control strategies must take into account the need to:

- protect the Nelson township;
- protect private property close to the Park;
- avoid earthmoving and other suppression operations in Reference Areas (Section 4.3) and sensitive areas (such as sites shown on Figure 2, sites of species mentioned in Tables 3 and 4, major recreation sites listed in Appendices 10 - 14) or exercise extreme care to minimise environmental disturbance if operations in such areas are essential;
- avoid where possible use of Phoschek or other phosphorous-based fire-retardants in heathlands during fire suppression operations;
- protect assets, including visitor facilities, important fire sensitive natural features in the Park, adjacent plantation areas and private property;
- protect adjacent public pine plantations.

Ongoing Conduct fire suppression activities in a manner which will not lead to the spread of Cinnamon fungus into previously uninfected areas where possible.

High Rehabilitate areas of the Park disturbed by control lines and other fire control activities. In particular:

- prevent vehicular use of new control lines;
- restore the natural surface configuration and drainage, provided this does not cause additional long-term damage.

5.3 WEEDS, INTRODUCED PLANTS AND PLANT DISEASES

The Department has obligations under the *Vermin and Noxious Weeds Act 1958* (Vic.) and the National Parks Act to eradicate or control introduced plants in the Park.

The major plant threat to the Park is the spread of Monterey Pine (*Pinus radiata*) from the extensive surrounding plantations and former occupancy sites in the Park. Wind borne seed dispersal over considerable distances is assisted by the Yellow-tailed Black-Cockatoo and other birds. As numerous trees within the Park and significant areas of surrounding plantations approach seed bearing maturity, the problem is likely to increase.

Earthworks and vegetation disturbance may provide suitable conditions for the establishment of introduced species in the Park, or for the spread of introduced species already present (Appendix 9).

In addition, plants and their seeds can be in gravel and soil, or on machinery brought into or traversing the Park.

Cinnamon Fungus has previously been identified in the Park, and is now known to occur in the heathlands in the south-east of the Park. Several other areas of vegetation dieback are suspected to be caused by Cinnamon Fungus. It has the potential to cause serious damage to vegetation communities throughout the Park if it spreads from infected areas. Heathland communities are particularly susceptible to infection and damage by Cinnamon fungus.

A number of introduced plants are spreading along the upper reaches of the Glenelg River and although not currently found in the Park, may be expected to arrive in the future (Appendix 9).

Aims and actions

To monitor, control and as far as possible eradicate weeds, introduced plants and plant diseases, unless they perform useful functions or are of historical significance.

To monitor, control and (where possible) eradicate Monterey Pine in the Park.

To minimise further establishment of introduced plants and plant diseases.

To minimise the spread of weeds and introduced plants into and throughout the Park.

To locate and isolate any Cinnamon Fungus occurrence in the Park.

High	Locate all major occurrences of introduced plants in the Park.
High	Devise and implement plans for the control or eradication of all introduced plants, in accordance with National Park management policies.
High	Incorporate these plans in the Regional pest plant control plans.
Medium	Train Park staff to identify introduced plant species, and to monitor and record populations and the effectiveness of control methods, with emphasis on the species listed in Appendix 9.
Ongoing	Monitor the introduction of new pest plants to the Park and control them rapidly, before spread can commence.
Medium	Allow existing introduced trees which contribute to the landscape value and amenity of recreational sites in Zone 3 to remain until they die or become unsafe. Remove other introduced trees.
Medium	Replace all plants removed with species found naturally in the Park, established from local stock of the same genetic makeup (provenance).
High	Determine the distribution of Monterey Pine in the Park.
High	Identify a cost effective method for controlling Monterey Pine in the Park and implement an eradication program.
Ongoing	Continue the current manual Monterey Pine removal program, with emphasis on control within Reference Areas and their buffers, and in the areas adjacent to plantations.
High	Map the distribution of Cinnamon Fungus and monitor any change in extent.
High	Test for Cinnamon Fungus all gravel pits used to supply road making materials to the Park, and any sites displaying visual dieback symptoms.

High Prepare appropriate measures to control the spread of Cinnamon Fungus from areas within the Park known to be infected. Procedures for washing down and disinfecting machinery before it leaves infected areas should be implemented.

5.4 VERMIN AND INTRODUCED ANIMALS

Several pest animal species occur in the Park and require appropriate control measures. Foxes and feral cats are widespread. Rabbits are occasionally seen in grassy clearings, but their numbers in the Park are usually low.

Introduced animals threaten the populations and habitat of small native mammals. The Department has obligations under the Vermin and Noxious Weeds Act and the National Parks Act to exterminate or control introduced animals in the Park.

Dogs, horses and honey bees are permitted in the Park under strict limitations and at specific sites.

Aims and actions

To monitor, eradicate or establish effective control of introduced animals, especially those declared as vermin.

To cooperate with adjoining landowners in the control of vermin and other introduced animals.

To control domestic pets in the Park.

- | | |
|---------|---|
| Ongoing | Control Foxes and Cats, especially in areas with significant wildlife, using methods such as shooting and cage trapping. |
| Ongoing | Control rabbits, using methods such as myxomatosis, warren destruction and fumigation. |
| Ongoing | Avoid the use of 1080 poison for rabbit control; use requires approval of the Director of the National Parks and Public Land. |
| Ongoing | Destroy feral bee colonies. |
| Ongoing | Prohibit dogs and other domestic pets in the Park except for dogs in the Princess Margaret Rose Caves car park, where they must be leashed and under the control of an adult. |
| Ongoing | Prohibit horse riding in the Park except on designated routes (Section 6.1.4). |
| Ongoing | Permit apiaries at designated sites (Section 7.1). |

6 MANAGEMENT OF VISITOR USE

A brief description of tourist and visitor use of Lower Glenelg National Park was given in Chapter 2. This Chapter sets out aims and actions for the many aspects of management that relate to the activities of visitors throughout the Park.

Generally, the goals of visitor management are to pre-empt conflicts between visitor use and natural park values, and between various visitor uses. The Chapter firstly treats the broad question of tourist and visitor access, then specific recreation activities and facilities, followed by information, education and safety requirements.

6.1 ACCESS

Access within the Park is by means of land vehicle tracks, boats and canoes along the river, and walking tracks. Each type of access requires specific management, as discussed below. The objectives of an access system within the Park are:

- to provide public vehicle access to appropriate recreation sites and natural features (particularly the river) where this is compatible with other uses and Park zoning;
- to provide boat and canoe landing and launching facilities at appropriate sites along the river;
- to maintain access along the Great South West Walk and other walking trails;
- to provide access for people with disabilities.

6.1.1 Land vehicle access

The network of roads and tracks in the Park originated from the large number of former logging, river access and fire tracks constructed prior to the declaration of the Park. The tracks were not constructed with park management in mind, but many are required for management and fire protection purposes.

The provision of public vehicle access is important in providing opportunities to use and enjoy the Park. Since recreation activities are concentrated along the river, it is appropriate that vehicle access be provided to suitable sections of the river, consistent with overall management objectives.

The access network in the Park is planned on the following principles:

- maximising the use of sealed or surfaced roads outside the Park;
- developing primary east-west roads on both sides of the river ;
- developing primary access to the Princess Margaret Rose Caves, and on suitable routes for nature drives and general recreation access;
- developing primary roads to the larger motor boat launching ramps in Zone 3;
- developing secondary spur roads from the primary roads to other riverside recreation sites.

The principal east-west routes on the northern and southern sides of the river provide reasonably easy access to vehicles towing boats and trailers to river launching sites. Wanwin Road is the primary route north of the River. At present the two major roads south of the River (Forest Road and River Road) duplicate one another, requiring excessive maintenance. A single upgraded road (to be renamed Glenelg Drive) is being developed using sections of both roads, retaining redundant sections for management and walker access only.

Easy tourist access is required to the Princess Margaret Rose Caves. The main road from Nelson to the Caves passes through South Australia, and is entirely outside the Park. Some sections of the road are poorly constructed and require realignment and upgrading. On public roads this work is the responsibility of the District Council of Port MacDonnell (in South Australia) and the Shire of Heywood (in Victoria) as the relevant management authorities. On public land in Victoria it is the responsibility of DCE.

Good quality access is also required on suitable routes for nature drives and general recreation access. Secondary access is provided to many other recreation sites.

The network of public roads and tracks to be developed and maintained is shown in Figure 6. It is based on the following road classification.

Primary	access to major recreation and motor boat launching sites; surfaced (limestone or gravel) all weather access, suitable for passing trailers, minimum width six metres.
Secondary	access to smaller recreation sites (particularly those in Zone 2) and general park access; narrower surfaced or unsurfaced 2 wheel drive access, trailers pass with difficulty; may be temporarily closed when untrafficable
Management	closed to public vehicular access; available to walkers and management vehicles; narrow 2 and 4 wheel drive tracks maintained at low standard.

Aim and actions

To provide a network of vehicular roads and tracks to recreation sites in the Park consistent with other Park values.

Ongoing	Maintain the public road access system in Figure 6.
High	Implement road improvements (Figure 6), in the following priority order: <ul style="list-style-type: none"> - upgrade an east-west access route south of the river along sections of Forest and River Roads to primary road standard; - upgrade to primary road standard tracks from this route to riverside recreation sites at <ul style="list-style-type: none"> Sapling Creek Forest Camp South Battersbys; - upgrade Wanwin Road and the Wilson Hall Track to primary road standard; - upgrade the road linking Bonds Road and Sandy Waterholes to primary road standard.
High	Seek the co-operation of the District Council of Port MacDonnell (South Australia) and to upgrade the road from Nelson to Princess Margaret Rose Caves, to primary road standard.
Medium	Maintain those sections of the existing east-west access duplicated by the above works as management and fire tracks, and make them available to walkers.
As needed	Close roads temporarily if road conditions necessitate such closure.
Ongoing	Restrict public vehicular access to canoe campsites (except Moleside) as shown in Appendix 10.
As needed	Authorise canoe support groups to use closed management tracks to reach canoe campsites in emergency situations (Ranger to authorise).

6.1.2 Boat access

The Glenelg River in the Park is very popular for boat based recreation. The major activities are angling, canoeing, water-skiing, cruising, picnicking and camping. Launching and landing is possible at many sites along the river downstream of Moleside.

A gradual increase in motor boat based activities such as angling, boat cruising, picnicking, camping and water-skiing is expected, and is consistent with park management objectives. It is important to maintain controls to avoid conflict between competing activities. Boat users have caused various management problems, e.g. conflicts between canoeists and motor boat users in the upper reaches of the river and conflicts between boat users and vehicle based visitors at boat landings and picnic areas.

Water-skiing is an important activity on the Glenelg River. Water-skiing has been restricted to defined zones and times, to accommodate the needs of other river users. At present, water-skiing is restricted to:

December - February	8 am to 8 pm	Summer Time
November	9 am to 7 pm	Summer Time
March	9 am to 7 pm	Summer Time (when this applies)
	8 am to 6 pm	Eastern Standard Time
April, November	8 am to 6 pm	Eastern Standard Time
May, August - October	9 am to 6 pm	Eastern Standard Time
June, July	9 am to 5 pm	Eastern Standard Time

During the peak holiday period between Christmas and Easter, the water-skiing zone at Taylor's Straight can become busy. As local authority the Department of Conservation and Environment will need to monitor the zone to ensure that overcrowding does not occur.

Upstream of Wild Dog Bend and adjacent to the Keegans Bend Reference Area it is important to preserve tranquillity and to encourage wildlife to use the river. Noise from fast-running motor boats can disturb both other users enjoying the quiet of the area, and wildlife. Speed restrictions are required to minimise these problems, and to allow safe use of canoes in this narrow river section.

The provision of a new boat launching area between Pritchard's and Sapling Creek was investigated, but no suitable sites were identified. At most localities the river banks are inaccessible to vehicles, or existing facilities would be displaced by the construction of a boat ramp and car park.

A few houseboats have entered the Park in the past and a number are moored on the river in South Australia. An increase in the number of moorings there could occur with the phasing out of river shack sites in South Australia. The entry of houseboats to the Park has been regarded as undesirable due to on-shore waste disposal problems and potential overcrowding of the narrow waterway. Recent amendments to the Marine Act prohibit operation and mooring of houseboats from Victorian sections of the Glenelg River from the mouth of the river to the junction with the Crawford River at Dartmoor. For the purposes of this plan a houseboat means any boat, vessel or pontoon having a fixed or retractable house above the deck with accommodation which may be used by persons residing on board for an overnight period or longer.

Currently the 'Nelson Endeavour' moors at Nelson and operates commercially as a river cruise boat under licence from the Director of National Parks and Public Land. In 1986-87 15 000 visitors used this service, mainly during the summer holiday period. The 'Nelson Endeavour' usually operates between Nelson and the Princess Margaret Rose Caves, where a landing allows passengers to disembark with minimum disruption to other landing users.

Occasional tours operate to sites further upstream using landings at Sandy Waterhole and McLennans Punt. Competition for these sites between the large numbers of 'Nelson Endeavour' passengers, and day visitors or campers, is a potential problem.

Until recently motor boating on the Glenelg River was controlled under the *Motor Boating Act 1961* (Vic.). In 1976 the Director of National Parks and Public Land was appointed an authority under the Motor Boating Act in respect of the section of the River from its mouth to the upstream boundary of the Park; park rangers were made authorised officers to enforce the regulations. The specific regulations were repealed in July 1988 under the Government's 'sunset' provisions for old regulations.

Parliament passed the new Marine Act in 1988 which, among other measures, repealed and replaced the Motor Boating Act. In October 1989 the Director-General of the former Department of Conservation, Forests and Lands (now the Department of Conservation and Environment) was appointed under the Marine Act as the local authority to manage the Glenelg River from its mouth upstream to Dartmoor.

Aims and actions

To provide for boat access to and boat based activity within the Park in accordance with conservation objectives.

To minimise conflict between river users.

High	Update existing signs to display the regulations under the Marine Act.
Ongoing	Allow motor boats to moor and camp at canoe camps. Camping by permit only.
Ongoing	Monitor the numbers of motor boats using canoe camps. If this activity is having an adverse impact, then restrictions may be applied if needed.
Ongoing	Do not develop further launching ramps upstream of Saunders.
As needed	Introduce a permit system for motor boats upstream of Wild Dog Bend if the tranquillity of the area is threatened by a sustained increase in the number of motor boats, or if safety conflicts between motor boats and canoes become a problem.
Ongoing	Licence appropriate commercial tour vessels.
Medium	Plan and develop if demand is demonstrated a boat landing site and picnic area suitable for large groups. Give consideration to a development site approximately 300 metres upstream of the Princess Margaret Rose Caves landing. Assess environmental impacts of such a development and the suitability of the site. Indicate by signs that large tour groups may arrive to use the site.

6.1.3 Walking access

A part of the 250 km Great South West Walk is located in the Park. It provides for bushwalks of several days duration as well as for shorter day walks. The network of management and fire tracks provides additional routes for short strolls or for longer walks throughout much of the Park.

As with roads, walking tracks require careful maintenance. New tracks must be designed to be visually pleasing, and should provide an interesting route through a diversity of environments, while not impacting on significant environmental features.

This Plan does not propose a program of new walking track construction, but rather proposes to upgrade and realign sections of the Great South West Walk, and to maintain other walking tracks.

Aims and actions

To provide appropriate access for walkers in the Park.

- Ongoing Use existing management and fire tracks for walker access in preference to building new tracks, wherever possible.
- As needed Assess proposed walking track realignments and upgrades for environmental impact (e.g. on landscape, erosion, significant flora and fauna) prior to approval of works commencing.

6.1.4 Horse riding access

Horse riding is primarily a local activity, with riders coming from Nelson, Mount Gambier and areas surrounding the Park. Riding is permitted on some surfaced roads and boundary tracks in parts of the Park, but is excluded from most sandy tracks to prevent track damage and the introduction of weeds.

Good opportunities are currently available for horse riding outside of the Park, particularly in Discovery Bay Coastal Park. Studies on the impact of horse riding on sandy soils are currently in progress.

Aims and action

To restrict horse riding to designated routes in the Park.

- High Permit horse riding on designated routes shown in Figure 6.
- As needed Consider the extension of horse riding trails only after the results of studies of the long-term effects of horse riding in Discovery Bay Coastal Park are known.

6.2 RECREATION ACTIVITIES

Numerous forms of recreation are undertaken in the Park, including picnicking, fishing, canoeing, water-skiing, camping and walking. Recreation is a primary activity in the Park, but must be consistent with the conservation and protection of the Park.

Recreation opportunities range from primitive in the eastern section of the Park, to well developed in the camping precincts such as Pritchards and Wilson Hall. Use and development must be properly planned to avoid reducing opportunities for recreation in the more natural settings. To preserve these opportunities, and for protection and conservation reasons, substantial areas have been zoned to exclude or minimise developments (Section 3.2).

This Section deals with the management of recreation activities. Control and development of the facilities that form the physical basis for the activities is discussed in the next section. The objectives relating to recreation management throughout the Park are:

- to provide a wide range of recreational opportunities appropriate to the Park, particularly those that are limited outside of the Park;
- to minimise the impact of recreation activities on other Park values;
- to permit formal and commercial recreation use of the Park consistent with other management objectives;
- to monitor recreation activities in the Park.

6.2.1 Control of recreation activities

Some recreation activities may conflict with one another, or may be in conflict with other aspects of the Park. These conflicts can largely be reduced through zoning, but where conflicts still occur within a zone, activities have been separated or further restrictions are introduced in that zone. In particular, motor based (car and motor boat) activities have where practical been separated from walking and canoeing, and day visitors from campers.

The recreation activities permitted in each zone and any applicable restrictions are shown in Table 6. The boundaries of zones are shown in Figure 4.

Aims and actions

To manage recreation use to prevent conflicts between uses and users, and to protect the Park environment.

Ongoing Allow recreation activities in zones (Figure 4) in accordance with Table 6 and the Recreation Use Guidelines set out below.

Ongoing Monitor and investigate the need for restrictions on water-skiing at Taylor's Straight. Introduce a permit system at peak times if required.

TABLE 6 RECREATION ACTIVITIES IN ZONES

Recreation Activity	Zone		
	1	2	3
Abseiling	No	No	No
Angling	-	Yes	Yes
Bushwalking	Cond.	Yes	Yes
Camping	No	Yes	Yes
Canoeing	-	Yes	Yes
Car rallying	No	No	No
Caving	Cond.	Cond.	Cond.
Hang gliding	No	No	No
Horse riding ^a	No	Cond.	Cond.
Houseboats	-	No	No
Motor boating	-	Cond.	Cond.
Nature study	Cond.	Yes	Yes
Orienteering	No	No	No
Picnicking	Cond.	Yes	Yes
Pleasure driving ^a	No	Yes	Yes
Trail bike riding ^a	No	Yes	Yes
Water-skiing	-	Cond.	Cond.

^a only on defined roads open to public vehicles

No Not permitted

Yes Permitted under standard conditions (National Parks Act and Regulations)

Cond. Permitted under additional conditions

- Not available or not applicable

Recreation use guidelines

The following specific guidelines apply to each activity listed in Table 6.

Abseiling. Not permitted in Park, except where necessary to gain access to solution tube caves.

Angling. Permitted throughout the Park (there is no justification, from the fish resource viewpoint, for placing any constraints on recreational angling). See Section 6.2.2 regarding competitive events.

Bushwalking. Permitted on made tracks throughout the Park, except as specified in separate Reference Area management plans.

Camping - canoe. Permitted only in designated canoe camping areas (Section 6.3, Appendix 10). Permit system applies to prevent overcrowding. Charges apply.

Camping - motor boats. Permitted at canoe camps (subject to prior arrangement with the Rangers) and vehicle camps subject to the relevant restrictions listed (see **Camping - canoe** and **Camping - vehicular**, this section).

Camping - vehicular. Permitted only in designated motor camping areas (Appendix 12; Section 6.3). Permit system applies to prevent overcrowding. Up to six persons may be accommodated at each motor camping site. Caravans and campervans permitted at designated sites at the Princess Margaret Rose Caves and Pritchards camping areas. Charges apply. Use of generators not permitted; use of chain saws to collect firewood not permitted.

Camping - walkers. At designated sites (Appendix 11). Permits and fees not required (this activity is largely self regulating and few facilities are provided).

Car rallying. Not permitted in the Park.

Canoeing. Permitted along the length of the Glenelg River. Transit lanes are provided through the water-ski zones (Figure 7). Landing not permitted in Keegans Bend Reference Area.

Caving. Permitted in most caves in accordance with Section 4.4. Access to caves in Reference Areas also restricted in accordance with Reference Area Management Plans.

Firewood collection. Firewood may only be collected for immediate use in the fireplaces provided within the Park. Only dead wood may be collected and no standing timber is to be felled.

Hang gliding. Not permitted in the Park.

Horse riding. Permitted only on routes shown in Figure 6. Off-road riding and camping with horses not permitted. Groups with more than 10 horses must obtain the approval of a Ranger (Section 6.2.2).

House boating. Will be prohibited in Victorian waters under the Marine Act on the Glenelg River between the mouth and Dartmoor (Section 6.1.2).

Motor boating. Permitted on Glenelg River in the Park in accordance with the Marine Act. The speed limits shown in Figure 7 and restricted speeds upstream of Wild Dog Bend have been proclaimed under the Marine Act (Section 6.1.2). Launching sites as listed in Appendix 13; landing sites as listed in Appendices 10 and 13.

Nature study. Permitted throughout the Park except in Reference Areas. Nature walk brochures are available and nature drive brochures are to be prepared.

Orienteering. Not permitted in the Park.

Picnicking. Permitted at designated picnic and camping areas in Zones 2 and 3 (Appendix 14). Fires permitted only in constructed fireplaces. Dispersed picnicking permitted in Zone 1 except in Reference Areas, subject to adherence to the Forests (Part 1 - Fire Protection) Regulations 1978.

Pleasure driving. Permitted on all open public roads.

Trail bike riding. Registered trail bikes permitted on roads in the Park open to the public. Not permitted off-road or on closed roads.

Water-skiing. Permitted in defined river zones (Figure 7) at the times set out in Section 6.1.2.

FIGURE 7 WATER-SKI ZONES AND SPEED LIMITS

6.2.2 Organised events and commercial recreation operations

Organised events are allowed in the Park only by permit. Such events include fun runs, fishing competitions, large group activities involving more than 20 people, horse rides involving more than ten horses.

Commercial recreation operations (concessions) may only occur in the Park under permit or licence in accordance with the National Parks Act. Relevant activities are generally those where a fee is paid to private individuals for instruction, leadership or use of facilities or services, including horses.

Tour boat operations on the Glenelg River were discussed in Section 6.1.2. At the Princess Margaret Rose Caves a small kiosk is adjacent to the car park provides a limited service to day visitors, campers and motor cabin users.

Aims and actions

To manage organised events and commercial recreation activities to minimise impacts on other users and the Park environment.

- | | |
|-----------|--|
| As needed | Assess applications for organised recreation events on the basis of possible conflicts with other park users and the Park environment. Rangers to issue permits with appropriate conditions. |
| As needed | Assess applications for commercial recreation operations on the basis of possible conflicts with other park users and the Park environment. Regional Manager to issue permits with appropriate conditions, with approval as required by the Director of National Parks and Public Land or the Minister for Conservation and Environment. |
| Ongoing | Continue to license a kiosk at the Princess Margaret Rose Caves under conditions similar to those currently applying. |

6.2.3 Monitoring visitor use

In order to properly manage and plan further for recreation and conservation in the Park it is essential to know the type, level and pattern of visitor use, and to monitor the impact of recreational activities.

The numerous entry points into the Park make the accurate monitoring of visitor numbers and activities difficult.

Aims and actions

To monitor patterns of visitor use and the impact of recreation activities in the Park.

- | | |
|---------|---|
| High | Develop a log book system to monitor the number of visitors to each of the caves listed in Table 5. |
| Medium | Maintain traffic counters and other devices at strategic locations to determine the spatial pattern of visitor use. |
| Medium | Conduct periodic visitor surveys, and use them to construct a visitor profile and to determine the degree to which recreation objectives are being achieved. |
| Ongoing | Maintain annual statistics of: <ul style="list-style-type: none">- information centre visitors- motorised camping permits- canoe camping permits- overnight camping at walker camps- commercial river cruise use- Princess Margaret Rose Caves tours- other authorisations and permits. |
| Medium | Monitor the effectiveness of restrictions and regulations in minimising visitor impact on Park values. If a visitor activity is identified as having an adverse impact, then additional restrictions may be applied if needed. |

6.3 VISITOR FACILITIES

A wide range of recreation sites and facilities are present in the Park (Appendices 10 to 14; see also Section 6.2). The recreational opportunities available are defined by the setting in which activities take place, the quantity and quality of access, and the number and type of facilities provided at recreation sites.

The gradual development of further recreation facilities is warranted, but must harmonise with the site environment and accord with the protection and conservation objectives and other uses of the Park.

Many of the Park's facilities are aging and will require extensive maintenance or replacement within the next few years to provide for continued visitor demand.

A small number of shacks have been available for rental at Wacks for a number of years. There has been no use of this service and considerable maintenance and security problems occur, as the site is remote from staff centres.

Signs are an important element of visitor facilities, providing guidance, advice and information on park features and controls on activities. Careful attention to accuracy of signs is required, and signs must be designed and sited to harmonise with the natural appearance of the Park.

The revegetation of campsites following the summer period is done using rye grass and appropriate weed control to prevent its spread. The use of indigenous grasses for this purpose should be investigated.

Aims and actions

To provide and maintain visitor facilities in the Park to:

- **increase recreational opportunities available to visitors**
- **increase the enjoyment of Park visitors**
- **minimise the impact of recreation activities on Park values.**

To maintain in the long-term the current spectrum of developed and undeveloped recreational opportunities available in the Park.

Ongoing	Maintain and service regularly all the sites and facilities listed in Appendices 10 to 14.
Ongoing	Implement the proposed recreation facilities detailed in Table 7. Detailed site planning is required.
High	Investigate leasing the Princess Margaret Rose Caves area under Section 19(2) of the National Parks Act.
Medium	Provide facilities for disabled visitors (e.g. nature trails, landings, toilets and tables) at suitable sites.
As needed	Close or remove any facility that becomes unsafe, prior to repair or replacement.
High	Remove the shacks at Wacks, and treat introduced plants in accordance with Section 5.2.
High	Prepare and maintain a Signs Plan for the Park. All signs erected within the Park will: <ul style="list-style-type: none">- conform to the Departmental Signs Manual;- be the minimum in number, size and wording required to serve the intended function without loss of readability;

- be designed and located to minimise the impact on Park values and to blend in aesthetically with the landscape;
- include internationally accepted symbols where appropriate.

Ongoing Investigate the use of indigenous grass species for campsite revegetation. Continue to use rye grass until a suitable indigenous species is found.

TABLE 7 RECREATION SITE IMPROVEMENTS

Site	Development	Priority
Princess Margaret Rose Caves	- Construct a self-guided karst interpretation walk in the vicinity of the Caves, explaining the geology and geomorphology of the area.	High
	- Improve cave lighting system	Low
	- Enlarge existing toilets and include additional facilities for disabled at the picnic area.	Low
Pritchards	- Construct a self-guiding nature trail explaining ecological processes and natural features in the area.	High
Georges Rest	- Provide a water supply.	High
Chitticks	- Construct a large group camp site, including normal facilities and a shelter for up to 60 people. No mooring to be included.	High
Pannican Bend	- Remove introduced vegetation and restore site to a natural condition, using local native species.	High
Forest Camp North	- Upgrade toilets.	High
	- Provide a water supply.	High
Pattersons Canoe Camp	- Restore historic features, continuing use of the site as a canoe camp.	Medium
Littles and Triggs Park Visitor Centre	- Construct simple picnic facilities and protect river banks. No mooring to be provided.	High
	- Construct new toilets.	Medium
Sandy Waterholes	- investigate redevelopment of parking area to improve access without increasing the parking capacity.	High
To be determined	- Identify and develop an adventure cave (Section 4.5 if an appropriate cave is present in the park).	Medium

To be
determined

-
site (Section 6.1.2).

Develop a tour landing

Medium

High Upgrade Pritchards launching facilities to include parking facilities for up to 17 cars and trailers and separate the access from the camping area to minimise conflict between campers and non-camping boat uses.

6.4 INFORMATION, INTERPRETATION AND EDUCATION

Any visit to a Park is improved by having an understanding of the features and values of the area being visited. Lower Glenelg National Park contains a variety of fascinating natural features that surround the visitor, but they are subtle and might not be appreciated at first glance. Provision of information is an important aspect of park management, valued by visitors and easing problems created by lack of awareness of the required behaviour in the Park, and of its features and hazards.

The informing process has three parts:

Information. Provision of details of facilities, activities, regulations, etc., both prior to the visit and on-site

Interpretation. Explanation of natural and cultural features and interrelationships in the Park

Education. Provision of detailed materials and programs designed to assist education groups at all levels.

A variety of information services are provided in relation to the Park, but as yet there is no overall information and interpretation plan. In developing services there is a need to determine the needs, activities and expectations of visitors to the Park, taking into account seasonal patterns. In particular, improved information about regional and local tourist opportunities is required.

Direct contact and active participation are generally accepted as the most effective ways of communicating and of changing attitudes and behaviour. This personal approach is preferred as the basis for interpretation, information and education programs in the Park.

The following themes would form the basis for information and interpretative activities in the Park:

- the native flora and fauna, and its conservation values;
- geology and geomorphology of the karst system;
- the effects of past and present land uses on the environment and management of the Park;
- the role of national parks in preserving ecological systems, natural landscapes and cultural history;
- appropriate use of the Park.

Information. Services provided include signs (Section 6.3), publications, displays, self-guided walks or drives and educational materials. They have the advantages of low cost per visitor and relative ease of maintenance (e.g. reprinting of publications or minor replacement of display items). Disadvantages can include the inflexible nature of the material presented and the need for visitors to make an effort to assimilate the information provided. Often the visitors most likely to damage the Park are those least likely to make an effort to learn about it from publications or displays.

Publications. A range of leaflets, maps and other publications is available (Table 8). Promotional colour brochures of tourist features, including the Park, are needed for the 'Discovery Coast' of south-western Victoria; funding from local tourist associations, operators and the Victorian Tourism Commission would be sought to meet this cost. Care must be taken to avoid duplication of effort by other organisations.

Displays. Includes tourist promotion and information displays located outside the Park, and information centres and shelters in the Park. They are an important means of informing visitors of Park features, facilities and regulations.

Self-guided activities. A successful way of helping visitors learn about the Park at their own time and pace. They make minimum demands upon staff time. The self-guided drive based on a vegetation theme and provided along parts of River Road is no longer appropriate, due to changes in the vegetation composition.

Signs. Give directions or warnings, or point out features (Section 6.3).

Interpretation and education. Major personal services provided in the Park are:

Informal staff contact. Casual discussions between park staff and visitors are an important means of fostering understanding of and support for management practices.

Ranger-guided activities. Organised activities such as ranger-guided walks, spotlighting, Junior Ranger activities, environmental games and campfire nights are effective ways of increasing visitor appreciation of the Park.

Ranger talks. Talks to user groups such as campers, walkers, and schools are a useful way of communicating a personalised message to a relatively large number of visitors. For educational talks to be effective the Ranger must know the group's educational program and course objectives. The Ranger can then provide a program which fulfils the specific needs of the group. Teachers and group leaders should be encouraged to provide these details to the Ranger at least four weeks in advance.

An impressive interpretations centre, equipped with audio-visual equipment, exists at the Princess Margaret Rose Caves. A small interpretations area is available at the Park Headquarters, but it is inadequate for large groups.

Aims and actions

To provide (particularly through tourist outlets) general information to visitors about the facilities and features available in the Park.

To provide park visitors with information and knowledge to enable them to discover and appreciate the natural and cultural features of the Park.

To promote interpretation, information and education programs in the Park through personal contact and participation.

To provide educational opportunities for schools, tertiary institutions and community groups visiting the Park.

To determine the information, interpretation and education needs of Park visitors, and the seasonal variation of such needs.

Planning and promotion

High	Prepare an Interpretation Plan for the Park, based on this Section and improved information on visitor requirements, with the emphasis on school groups.
Medium	Co-operate in preparing a tourist brochure for south-western Victoria and south-eastern South Australia in conjunction with a variety of organisations.
High	Assist local tourist organisations in preparing a Discovery Coast tourist brochure.
High	Promote the cabins in the Park (three at Princess Margaret Rose Caves), to increase occupancy rates.
Ongoing	Continue to conduct surveys throughout the year to determine visitor needs.

Medium	Consult with regional tourist information associations and operators when planning information and education services, particularly holiday activities and non-personal services.
Medium	Distribute published information about the Park through local, regional and State tourist outlets.
Low	Provide information for regional tourist displays at Portland, Hamilton, Mt. Gambier, Port Fairy, Warnambool and Dunkeld.
As needed	Provide West Coast Tourism and its member committees with display material for promotions, where practicable.
Medium	Distribute information to South Australian tourist cave operators about the Princess Margaret Rose Caves.

Information services

Ongoing	Provide publications, updating where necessary, and introduce new publications in accordance with Table 8.
Medium	Install and maintain information shelters at Princess Margaret Rose Caves, Park Headquarters, Pritchards, Wilson Hall, and at boat and canoe launching areas, in accordance with the Interpretation Plan.
High	Provide appropriate directional, warning and feature signs, in accordance with the DCE Signs Manual.

Interpretative and education services

High	Construct a self-guided nature walk at Pritchards (Table 7).
High	Construct a self-guided karst interpretation walk at the Princess Margaret Rose Caves (Table 7).
High	Provide an updated self-guided drive in the area east of Park Headquarters.
Ongoing	Make staff available to talk to visitors to enhance their appreciation of Park values.
High	Conduct Ranger talks in and near the Park, usually in conjunction with other interpretative activities.
Medium	Provide a range of interpretative activities from December to February and during Easter, using the expertise of DCE Community Education and Information Branch staff, and employing additional staff and volunteers.
Ongoing	Operate guided cave tours at the Princess Margaret Rose Caves at the following times: 10, 11 and 12 a.m. and 1.30, 2.30, 3.30 and 4.30 p.m. (Victorian time) daily except Good Friday and Christmas Day.
Low	Update the format and content of the guided tours at the Princess Margaret Rose Caves.
Low	Consider, in preparing the Interpretations Plan, the extension and improvement of group interpretative facilities at the Park Headquarters, including audio-visual equipment and public toilets.

TABLE 8 PUBLICATIONS

Publication	Availability	Action	Priority
Regional tourism brochure	to be prepared	publish ^a	Medium
'Discovery coast' local tourism brochure	to be prepared	publish ^a	High
Park brochure	available	update	High
Princess Margaret Rose Caves brochure	available	maintain	Ongoing
Princess Margaret Rose Caves Cabin Accommodation guide	available	maintain	Ongoing
Boating guide	available	update	High
Canoeing guide	available	maintain	Ongoing
Camping guide	available	update	High
River View Nature Walk brochure	available	maintain	Ongoing
Great South West Walk brochure	available	maintain	Ongoing
Short Walks - Great South West Walk brochure	available	maintain	Ongoing
Short Walks - Park	available	update	Medium
Self-guided Nature Drive	to be prepared	publish	As needed
Posters	for sale	maintain	Ongoing
Nature and activity books	for sale	maintain	Ongoing
Plant and animal checklists	to be prepared	publish for sale	Medium
Emergency procedures	to be prepared	publish	High

^a in conjunction with the VTC, local tourist associations and operators

6.5 PUBLIC SAFETY

Visitor safety is an important element of park management. The Park must be maintained and presented in a way that does not create artificial or hidden hazards that would affect the visitor who is undertaking activities that are usually regarded as safe.

However the Park's natural hazards present opportunities often desired by active outdoor recreationists. These hazards must be identified and reasonable warning provided to those who seek the challenges involved.

Local knowledge is an important requirement for the efficient operation of any search or rescue. In this context the Police and State Emergency Service personnel will benefit from the assistance of DCE staff, who are often best equipped to assist in the organisation and conduct of such operations, especially in the more remote areas of the Park.

Aims and actions

To protect Park visitors from hazards and injury.

To promote and encourage safe practices among visitors concerning the use of the Park and other natural areas.

To provide sufficient information on natural hazards in the Park.

High	Formulate (and review regularly) search and rescue operational procedures in consultation with all interested parties. This should include fire safety and cave rescue plans.
Ongoing	Maintain an Emergency Plan for the Park (Section 5.1).
Ongoing	Train Park staff in search and rescue techniques, and in first aid.
Ongoing	Ensure that Park staff are at all times prepared for emergencies, with the necessary equipment maintained and on hand.
High	Provide information about the correct use of motor boats and canoes at all launching ramps and canoe camps (Section 6.4).

7 MANAGEMENT OF AUTHORISED USES

A small number of occupancies, utilities and commercial uses have been permitted in the Park for many years. These uses must be leased or licenced under the National Parks Act, and are referred to as 'authorised uses.'

Some activities that would occur irregularly in the Park, such as seismic surveys (which can damage cave decorations), are dealt with under relevant legislation and Departmental policy, should they arise. Commercially based recreation activities and services were addressed in Section 6.2.2.

Generally authorised uses are managed to minimise disturbance to the park environment and inconvenience to visitors.

7.1 APICULTURE

Sixteen apiary sites have been available in the Park for a number of years, but permit records indicate that only one of these has been used during the past six years. The LCC (1973; 1983) made no recommendation in regard to continued apiculture in the Park.

Over recent years there has been a marked increase in recreation in the Park. The maintenance of apiary sites close to recognised visitor sites is undesirable, as bees may pose a hazard and inconvenience to visitors.

In addition evidence from studies in other States (Mathews 1982) suggests that introduced honey bees may have damaging effects on some native plants and animals. For this reason apiary sites should not be permitted within two kilometres of declared Reference Areas.

Under Section 21 of the National Parks Act, the Director may grant a permit to keep an apiary in a park for a period not exceeding six months, at a site designated by the Minister. Sixteen sites have been so designated, but it is now proposed to reduce this to one site, removing sites relatively close to important conservation and recreation areas and sites that have not been used in the last six years. If demand increases alternative sites on other public land may be identified.

Aims and actions

To control apiculture in the Park.

- | | |
|-----------|--|
| As needed | Restrict apiary permits to the one site shown in Figure 5, and licence in accordance with National Parks policy (this requires a permit to be issued for a maximum period of six months, at the discretion of the Regional Manager). |
| Ongoing | Monitor the use of the apiary site, and re-evaluate the need to continue providing sites when this Plan is reviewed. |
| Ongoing | Prohibit apiarists from camping at their sites for harvesting; and ensure that apiarists adhere to National Park Regulations. |
| As needed | Where appropriate, authorise holders of apiary permits to use tracks closed to private vehicles to gain access to apiary sites (Rangers to authorise). |

7.2 ROAD MAKING MATERIALS

The term 'road making materials' covers the coarse ironstone gravel available in the east of the Park, and limestone occurring on the Follet Plains in the west of the Park.

Road making materials are readily available in the area surrounding the Park. Many of the existing pits in the Park are small and have not been used for many years.

For work within the Park supplies may be required from outside the Park (e.g. Kentbruck or Rennick Plantations, and Cobboboonee State Forest) to augment internal supplies and reduce internal transport costs.

Aims and actions

To minimise the extraction of road making materials from the Park.

To rehabilitate disused gravel pits.

- | | |
|-----------|---|
| Ongoing | Use road making materials from the Park only on roads within the Park. |
| Ongoing | Minimise the use of gravel resources in the Park; open new pits in the Park only with the approval of the Director of National Parks and Public Land. |
| Medium. | Rehabilitate those pits no longer required, ie. those located: <ul style="list-style-type: none">- southeast of Inkpot Road and Heath Road junction- on the Park boundary west of Harris Road- adjacent to River Road near Forest Camp. |
| As needed | Continue to use the Bulley Ranges pit as required, but manage to restrict its visibility from the Bulley Ranges Lookout i.e. <ul style="list-style-type: none">- open small sections only (less than 0.3 hectares) at any one time- rehabilitate disused sections immediately. |
| Ongoing | Test all pits supplying road building materials for use on Park roads for Cinnamon Fungus, and adopt appropriate control measures (Section 5.2). |

7.3 PUBLIC UTILITIES

A small number of structures and facilities occur within the Park managed by Commonwealth and State Authorities.

The Department of Property and Services maintains a trigonometrical station at the Bulley Ranges and a number of marker pegs at other locations within the Park.

Telecom Australia has an underground telephone cable traversing the Park to the north of Hedditchs Hill.

Aims and actions

To allow maintenance of existing public utilities in the Park, minimising degradation of Park values, disturbance and inconvenience to park visitors.

- | | |
|-----------|--|
| Ongoing | Maintain the existing standard of access to the Bulley Ranges trigonometrical station as part of the track network in the Park. |
| As needed | Allow authorised personnel from the Department of Property and Services to have access to appropriate management and fire tracks. |
| Ongoing | Allow Telecom to maintain the existing standard of access to its sites, and allow authorised Telecom personnel to have vehicular access. |

8 PARK BOUNDARIES AND ADJACENT LAND

This Chapter addresses problems related to boundaries and use of adjacent land that occur in relation to the Park.

8.1 GENERAL

Because the boundaries of the Park reflect land use history in the area, not all boundaries are well located. This does not represent a major management problem, but any opportunities to overcome deficiencies should be taken, when and where appropriate. Many management agencies are responsible for land surrounding the Park (Appendix 15).

Aims and actions

To manage Park boundaries to protect Park values.

To rationalise Park boundaries when possible and appropriate.

Low	Implement the 1983 LCC recommendation to add 3 hectares of public land south of Jones Lookout to the Park (Section 2.3).
High	Pursue the inclusion of the adjacent freehold sections of Curran's Creek into the Park.
High	Request the Shire of Heywood to refer all applications for planning permits, including subdivision proposals, in close proximity to the Park, to the Region for comment prior to approval.
As needed	Where freehold land adjoining the Park is offered for sale by owners, investigate its suitability (whether such land increases the protection of significant values or assists management of the Park) before making a recommendation for negotiated purchase.
As needed	Investigate boundary encroachment into the Park and take appropriate action to recover public land.
Low	Investigate areas where pine plantations have been included within Park boundaries. Remove pines when they mature.

8.2 NELSON TIP SITE

This three hectare site located on adjacent public land outside the Park is used as the Nelson tip under annual licence issued to the Shire of Heywood.

Considerable amounts of limestone are available from pits on the site, which is strategically located for economic supply to surrounding areas. The upgrading of a number of roads in the Park (Section 6.1.1) will require large quantities of road making material.

The LCC (1983) recommended that the tip be relocated as soon as possible, that limestone extraction from the site cease no later than 1993, and that the area be added to the Park.

Aims and actions

To add the Nelson tip site to the Park in accordance with LCC recommendations.

- | | |
|--------|---|
| High | Prepare guidelines in conjunction with the Shire of Heywood for the continued use of the site as a tip. |
| High | Prepare and implement a tip rehabilitation plan by the end of 1991. |
| High | Seek an alternative source of limestone gravel so that extraction of limestone ceases at the earliest possible date before the end of 1993. |
| Medium | Relocate the Nelson tip so that the dumping of refuse and final contouring of the site is completed by the end of 2000. |
| Medium | Seek to have the area added to the Park when other uses have ceased. |

8.3 DRIK DRIK SCHOOL RESERVE

Part of this Reserve, on the Nelson-Winnap Road 4 km north of the Park, has been made available as a historical conservation area managed by DCE. The Reserve, vested in the Ministry of Education, contains former school and outbuildings and the former Drik Drik Post Office, which has been relocated to the site. These buildings, together with the Drik Drik Methodist and Presbyterian churches and cemetery (which remain in use), have considerable historical interest and value.

Aims and actions

To maintain the Reserve and buildings thereon.

To plan, in the longer term, for future use of the site.

- | | |
|---------|--|
| Ongoing | Maintain the Reserve and buildings, to retain their historic integrity and options for a range of future uses. |
| Low | Investigate possible uses of the site, in consultation with interested local groups. |

8.4 INTERSTATE CO-OPERATION

The Park abuts the Victorian - South Australian border, and many aspects of its conservation value and use relate strongly to South Australia. In particular a loop of the Glenelg River passes into South Australia, then re-enters Victoria.

In these circumstances many aspects of park management will benefit through co-operation between Victorian and South Australian agencies. These have been mentioned in earlier chapters, and are consolidated here for ease of reference.

Particular aspects where interstate co-operation would be of benefit to management are:

- management of Forest Reserve east of the bend in the Glenelg River (pine seedling invasion is a problem; Section 2.10);
- fire protection and management, both at the planning and operational levels (Section 5.1);
- provision of access to Princess Margaret Rose Caves (Section 6.1.1);
- management of boating on the Glenelg River (Section 6.1.2);
- tourist promotion (Section 6.4).

Section 19D of the National Parks Act allows the Minister for Conservation and Environment to do anything required to ensure co-operation with the Governments of other States for the purposes of the Act, including entering into agreements for the management of land.

Aims and actions

To cooperate with land management, municipal and tourist promotion agencies in South Australia, to enhance management of the Park.

- | | |
|---------|--|
| High | Seek to enter into an agreement with the South Australian Department of Woods and Forests to manage the area enclosed by the bend of the Glenelg River and the South Australian border. |
| High | Seek appropriate arrangements for fire protection and management, at the planning and operational levels, with the South Australian Department of Woods and Forests and the Country Fire Service of South Australia. |
| High | Seek co-operation of the District Council of Port MacDonnell to improve the road to the Princess Margaret Rose Caves to primary access standard. |
| Ongoing | Continue cooperating with the relevant South Australian agencies to manage boating on the Glenelg River. |
| Medium | Seek the assistance of Government regional and local tourist authorities in South Australia (particularly the City of Mt Gambier) to promote the Park. |

9 MANAGEMENT RESOURCE REQUIREMENTS

In this Chapter resource requirements for effective management of the Park according to this Plan are established and, where appropriate, are contrasted with existing resources.

Resources available for Park management include staff, buildings, facilities and equipment. The Park is reasonably well established, with an effective and competent ranger staff matching in level the workload in the Park. Buildings for visitor and management use are also well established and satisfactory.

9.1 STAFF

DCE staff working in the Park include some specifically employed as Rangers or employees in the Park, while others perform a variety of tasks across the Region (e.g. construction and maintenance employees or specialist planning staff).

The Lower Glenelg National Park is the largest national park in the Department's Portland Region, with a high visitor use and diverse management requirements.

The objective of staffing the Park is to ensure that sufficient appropriately trained personnel are deployed to enable the implementation of this management Plan.

9.1.1 Existing staff

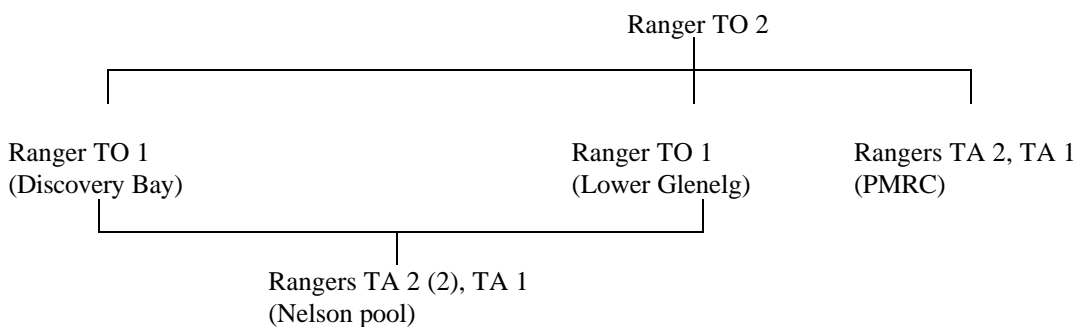
The existing Park staff and their locations are given in Table 9.

TABLE 9 EXISTING PARK STAFF

Title	Location	Comments
Ranger TO 2	Lower Glenelg National Park and Discovery Bay Coastal Park	Full time
Ranger TO 1	Lower Glenelg National Park	" "
Ranger TO 1	Discovery Bay	" "
Rangers TA 2, TA 1	Princess Margaret Rose Caves	" "
Rangers TA 2 (2), TA 1	Nelson based pool	" "
Interpretation Ranger	Nelson	Seasonal
Clerical Officer	Nelson	Part-time
Mechanical Equipment Operator	Nelson	Regional Crew
Carpenter	Nelson	" "
Construction and Maintenance Workers (3)	Nelson	" "

The Lower Glenelg National Park is managed in conjunction with the nearby Discovery Bay Coastal Park from a park Headquarters at Nelson. A Ranger (TO 2) supervises operations in both Parks.

The staff structure is:



9.1.2 Staff requirements

In addition to the existing staffing levels outlined in 9.1.1, the following additional staff are required for the implementation of this Plan and the effective operation of the Park.

Additional temporary workers will continue to be required during the summer months to act in an initial fire attack capacity and to assist in Park works.

Construction and maintenance workers from neighbouring work centres in the Region's Heywood Operations Area (e.g. machinery operators, pest plant control staff and carpenters) will continue to be required to assist Park based staff.

Interpretation rangers will continue to be required during the summer period to enable the current interpretation activities to continue (Section 6.4).

Clerical assistance should be increased from the current part-time basis during busy visitor periods, in order to staff the Park Headquarters information centre.

Specialist staff (e.g. scientific and technical staff, and landscape design personnel) will be required on a continuing basis for the implementation of this plan, and to resolve specific issues which may arise and have not been addressed in this Plan.

9.1.3 Staff training and authorisation

In addition to the Department's general training program for park staff and on-the-job training acquired in the normal management of the Park, staff should receive formal training in:

- basic search and rescue, including caving techniques
- fire techniques
- first aid
- education and interpretation
- monitoring techniques for rare and threatened plant and fauna species (Tables 3 and 4) and fauna survey (Section 4.2)
- identifying and monitoring introduced plant species (Section 5.2).

Ranger staff and other selected Departmental staff will also be expected to undertake the necessary training to be authorised as officers under the National Parks Act, the *Wildlife Act 1975* (Vic.), the *Fisheries Act 1968* (Vic.), the Marine Act (re motor boating), the Forests Act, the *Land Act 1958* (Vic.) and the *Archaeological and Aboriginal Relics Preservation Act 1972* (Vic.).

9.2 BUILDINGS

The Information Centre at the Park Headquarters at Nelson will be maintained as the main information and interpretation centre for both Lower Glenelg National Park and Discovery Bay Coastal Park.

Upgrading of existing visitor facilities at the Park Headquarters is planned (Section 6.4). The depot and workshop at the Park Headquarters will be maintained as the base and depot for the day-to-day operations of the two Parks.

The Princess Margaret Rose Caves Information Centre will be maintained as a centre for the interpretation of the caves and the natural history of the area.

Existing staff accommodation at Nelson (four houses) and Princess Margaret Rose Caves (one house) will be maintained as residences for the existing Park staff.

Numerous other buildings (e.g. motor cabins and toilets) and other visitor facilities (e.g. landings and Park furniture) are located in, or planned for, the Park (Chapter 6).

APPENDIX 1 LAND CONSERVATION COUNCIL RECOMMENDATIONS

Rec'n Number	Year	Recommendation	Area ha	Progress on Implementation
Lower Glenelg National Park				
A1	1973	Lower Glenelg National Park	25239	Completed
B1	1973	Keegans Bend Reference Area	970	Completed
B2	1973	Kentbruck Heath Reference Area	729	Completed
A6	1983	Area near Jones Lookout	3	Accepted by Government
A7	1983	Area near Nelson	3	Accepted by Government
Adjacent public land				
A5	1983	Discovery Bay Coastal Park	8350	Completed
A7, S1	1983	Nelson area public land	1201	Incomplete
E1, E9	1983	Cobboboonee State Forest	26700	Completed
F1	1983	Glenaulin plantation	534	Completed
F1	1983	Kentbruck plantation	5500	Completed
F1	1983	Rennick plantation	6700	Completed
J1, J3	1983	Drik Drik public land water frontage and streamside reserves	200 ^a	Completed
J3	1983	Nelson Streamside Reserve	60 ^a	Completed
H14	1983	Hedditch Hill Bushland Reserve	24	Completed
N1	1983	Hedditch Hill Lookout Reserve	8	Completed
S1	1983	Wanwin public land	50 ^a	Completed
-	1983	Park Headquarters, Nelson	3	No recommendation
-	1983	Drik Drik School Reserve	0.3	No recommendation

^a Approximate area only

Sources: LCC (1973; 1983).

APPENDIX 2 RECORDED CAVES AND THEIR MANAGEMENT CLASSIFICATIONS

ASF ^a Number	Cave Name	Location	Management Category	Known Grounds of Significance
G1	Pirates	Glenelg River	Special Natural	<i>Myotis</i> maternity site
G2	Amphitheatre	Glenelg River	Special Natural	<i>Myotis</i> site
G3	-	Glenelg River	Wild	<i>Miniopterus</i> site
G4	Curran's Creek		Adventure ^b	Snails, flora
G5	McEachern's	Glenelg River	Special Natural	Palaeontological research
G6	Princess Margaret Rose	Glenelg River	Show	Guided tours
G7	1886		Glenelg River	Wild
G9	Kate's Slide	Glenelg River	Special Natural	<i>Myotis</i> site
G14	McLennans Punt	Glenelg River	Special Natural	<i>Myotis</i> , <i>Miniopterus</i> site
G15	-	Glenelg River	Wild	
G16	-		Wild	
G17	-		Wild	
G21	-		Wild	
G23	-		Wild	
G25	-		Wild	Wombats
G26	-		Wild	Wombats
G27	-		Wild	
G30	-		Wild	
G31	-		Wild	
G33	-		Wild	
G34	-		Wild	
G35	-		Wild	
G36	-		Wild	
G37	-		Wild	
G38	-		Wild	
G39	-		Wild	
G40	-		Wild	
G41	-		Wild	
G42	-		Wild	
G-X100	-		Wild	
G-X101R	-		Wild	
G-X102D	-		Wild	
G-X103D	-		Wild	
G-X104R	-		Wild	
G-X105	Mossy		Wild	
G-X106	Big Spring		Wild	<i>Miniopterus</i> site
G-X107	-		Wild	
G-X108	-		Wild	
G-X109	-		Wild	
G-X110	-		Wild	
G-X111	-		Wild	
G-X112	-		Wild	
G-X113	Runaway Waterhole	Wild		
G-X114	-		Wild	
G-X115	-		Wild	
G-X201	-		Wild	
G-X202	-		Wild	
G-X203	-		Wild	
G-X204	-		Wild	

APPENDIX 2 CONTINUED

ASF ^a Number	Cave Name	Location	Management Category	Known Grounds of Significance
G-X205	-		Wild	
G-X206	-		Wild	
G-X207	-		Wild	
G-X208	-		Wild	
G-X209	-		Wild	
G-X210	-		Wild	
G-X211	-		Wild	
G-X212	-		Wild	
KB-1	Fern	Kentbruck Heath	Special Natural	Palaeontological site, flora
KB-2	Inkpot	Inkpot Road	Wild	
KB-X4	-		Wild	
-	1987		Special Natural (proposed)	Palaeontological site, decorations, location not publicly known

^a Australian Speleological Federation Inc.

^b Not accepted in this Plan.

Sources: 1. Davey and White (1986a)
2. Mackereth (1988) pers. comm.

APPENDIX 3 RARE AND SIGNIFICANT PLANT SPECIES

Rare or threatened species requiring specific management actions

Lax Twig-rush	<i>Baumea laxa</i>
Melblom's Spider-orchid	<i>Caladenia hastata</i>
Hairy Sheperd's Purse	<i>Microlepidium pilosulum</i>
Lime Fern	<i>Pneumatopteris pennigera</i>
Metallic Sun-orchid	<i>Thelymitra epipactoides</i>
Coast Dandelion	<i>Taraxacum cygnorum</i>

Rare or threatened species

Coast Ground-berry	<i>Acrotriche cordata</i>
Common Spleenwort	<i>Asplenium trichomanes</i>
Lizard Orchid	<i>Burnettia cuneata</i>
Veined Spider Orchid	<i>Caladenia reticulata</i>
Curly Sedge	<i>Carex tasmanica</i>
Bog Gum	<i>Eucalyptus kitsoniana</i>
Clover Glycine	<i>Glycine latrobeana</i>
Square Raspwort	<i>Haloragis exalata</i>
Prickly Raspwort	<i>H. myriocarpa</i>
Silver Everlasting	<i>Helichrysum dealbatum</i>
Everlasting	<i>H. sp. aff. acuminatum</i>
Oval-leaf Logania	<i>Logania ovata</i>
Broad-lip Leek Orchid	<i>Prasophyllum patens</i>
Showy Pratia	<i>Pratia sp. aff. purpurascens</i>
Wiry Bog-rush	<i>Schoenus carsei</i>

Species with disjunct distributions or at the limits of their range

Misty Bent	<i>Agrostis venusta</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Lance Water-fern	<i>Blechnum chambersii</i>
Marsh Club-sedge	<i>Bolboschoenus medianus</i>
Wiry Bossiaea	<i>Bossiaea cordigera</i>
Sedge	<i>Carex brownii</i>
Bergalia tussock	<i>C. longibrachiata</i>
Slender Tick-trefoil	<i>Desmodium varians</i>
Earth Cress	<i>Geococcus pusillus</i>
Shield Pennywort	<i>Hydrocotyle verticillata</i>
Matted Nertera	<i>Nertera granadensis</i>
Curly Pondweed	<i>Potamogeton crispus</i>
Perfoliate Pondweed	<i>P. perfoliatus</i>
Wiry Bush-pea	<i>Pultenaea subumbellata</i>
Prickly Spear-grass	<i>Stipa stipoides</i>
Long Fork-fern	<i>Tmesipteris billardieri</i>

- Sources:
1. Beaglehole (1968)
 2. Beaglehole (1984)
 3. Conservation, Forests and Lands (1990)
 4. Scarlett (1984)
 5. Willis (1970)

APPENDIX 4 MAMMAL SPECIES

Native Species (confirmed records)

Short-beaked Echidna	<i>Tachyglossus aculeatus</i>
Platypus	<i>Ornithorhynchus anatinus</i>
Yellow-footed Antechinus	<i>Antechinus flavipes</i>
Swamp Antechinus	<i>Antechinus minimus</i>
Brown Antechinus	<i>Antechinus stuartii</i>
Dusky Antechinus	<i>Antechinus swainsonii</i>
White-footed Dunnart	<i>Sminthopsis leucopus</i>
Southern Brown Bandicoot	<i>Isodon obesulus</i>
Common Brushtail Possum	<i>Trichosurus vulpecula</i>
Eastern Pygmy-possum	<i>Cercartetus nanus</i>
Yellow-bellied Glider	<i>Petaurus australis</i>
Sugar Glider	<i>Petaurus breviceps</i>
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>
Eastern Grey Kangaroo	<i>Macropus giganteus</i>
Red-necked Wallaby	<i>Macropus rufogriseus</i>
Long-nosed Potoroo	<i>Potorous tridactylus</i>
Koala	<i>Phascolarctos cinereus</i>
Common Wombat	<i>Vombatus ursinus</i>
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>
Chocolate Wattled Bat	<i>Chalinolobus morio</i>
Large Forest Eptesicus	<i>Eptesicus darlingtoni</i>
Little Forest Eptesicus	<i>Eptesicus vulturinus</i>
T Common Bent-wing Bat	<i>Miniopterus schreibersii</i>
T Large-footed Myotis	<i>Myotis adversus</i>
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>
Great Pipistrelle	<i>Pipistrellus tasmaniensis</i>
Water-rat	<i>Hydromys chrysogaster</i>
T Heath Mouse	<i>Pseudomys shortridgei</i>
Bush Rat	<i>Rattus fuscipes</i>
Swamp Rat	<i>Rattus lutreolus</i>

Introduced Species

House Mouse	<i>Mus musculus</i>
Black Rat	<i>Rattus rattus</i>
Dog	<i>Canis familiaris</i>
Fox	<i>Vulpes vulpes</i>
Cat	<i>Felis catus</i>
Brown Hare	<i>Lepus capensis</i>
European Rabbit	<i>Oryctolagus cuniculus</i>

T Species considered threatened in Victoria.

- Sources:
1. Arthur Rylah Institute for Environmental Research (in preparation)
 2. Conservation, Forests and Lands (1987a)
 3. Conservation, Forests and Lands (1989)

APPENDIX 5 SIGNIFICANT BIRD SPECIES

Considered Threatened in Victoria

T	Red-tailed Black-Cockatoo	<i>Calyptorhynchus magnificus</i>
T	Rufous Bristlebird	<i>Dasyornis broadbenti</i>
T	Powerful Owl	<i>Ninox strenua</i>

Species approaching their western limit of distribution

Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>
Azure Kingfisher	<i>Ceyx azurea</i>
Rose Robin	<i>Petroica rosea</i>
Pink Robin	<i>Petroica rodinogaster</i>
Eastern Yellow Robin	<i>Eopsaltria australis</i>
Olive Whistler	<i>Pachycephala olivacea</i>
Satin Flycatcher	<i>Myiagra cyanoleuca</i>
Rufous Fantail	<i>Rhipidura rufifrons</i>
White-throated Gerygone	<i>Gerygone olivacea</i>
Pied Currawong	<i>Strepera graculina</i>
Forest Raven	<i>Corvus tasmanicus</i>

- Sources:
1. Emison (1987)
 2. Conservation, Forests and Lands (1987a)
 3. Conservation, Forests and Lands (1989)

APPENDIX 6 REPTILE SPECIES

	Long-necked Tortoise	<i>Chelodina longicollis</i>
	Eastern Bearded Dragon	<i>Pogona barbatus</i>
	Jacky Lizard	<i>Amphibolurus muricatus</i>
	McCoy's Skink	<i>Nannoscinius maccoyi</i>
T	Swamp Skink	<i>Egernia coventryi</i>
	White's Skink	<i>E. whitei</i>
	Grass Skink	<i>Leiopisma entrecasteauxii</i>
	Eastern Three-lined Skink	<i>L. duperreyi</i>
	Southern Water Skink	<i>Sphenomorphus tympanum</i>
	Blotched Blue-tongued Lizard	<i>Tiliqua nigrolutea</i>
	Common Blue-tongued Lizard	<i>T. scincoides</i>
	Stumpy-tailed Lizard	<i>Trachydosaurus rugosus</i>
	Lowland Copperhead	<i>Austrelaps superbus</i>
	Eastern Tiger Snake	<i>Notechis scutatus</i>

T Species considered threatened in Victoria.

- Sources:
1. Menkhorst and Beardsell (1980)
 2. Conservation, Forests and Lands (1987a)
 3. Westhorpe (1988) pers. comm.
 4. Conservation, Forests and Lands (1989)

APPENDIX 7 FISH SPECIES

	Estuary Perch	<i>Macquaria colonorum</i>
	Black Bream	<i>Acanthopagrus butcheri</i>
	Mulloway	<i>Argyrosomus hololepidotus</i>
	Tailor	<i>Pomatomus saltator</i>
	Yellow-eye Mullet	<i>Aldrichetta forsteri</i>
	Sea Mullet	<i>Mugil cephalus</i>
	Luderick	<i>Girella tricuspidata</i>
	Tommy Rough	<i>Arrips georgianus</i>
	Australian Salmon	<i>Arripis</i> sp.
	Long-snouted Flounder	<i>Ammotretis rostratus</i>
	Smooth Toadfish	<i>Torguigener glaber</i>
	Southern Anchovy	<i>Engraulis australis</i>
	Freshwater Hardyhead	<i>Craterocephalus stercusmuscarum</i>
	Red Gurnard	<i>Chelidonichthys kumu</i>
	Southern Rock Cod	<i>Pseudophycis barbata</i>
	Southern Sea Garfish	<i>Hyporhamphus melanochir</i>
	King George Whiting	<i>Sillaginodes punctatus</i>
	Silver Morwong	<i>Nemadactylus douglasii</i>
	Dusky Morwong	<i>Dactylophora nigricans</i>
	Marine Hardyhead	<i>Pranesus ogilbyi</i>
	Tamar Goby	<i>Favonigobius tamarensis</i>
	Bridled Goby	<i>Arenigobius bifrenatus</i>
	Flat-headed Gudgeon	<i>Philypnodon grandiceps</i>
	Western Carp Gudgeon	<i>Hypseleotris kluzingeri</i>
	Tooth-brush Leatherjacket	<i>Penicipelta vittiger</i>
T	Broad-finned Galaxias	<i>Galaxias brevipinnis</i>
	Common Galaxias	<i>Galaxias maculatus</i>
T	Spotted Galaxias	<i>Galaxias truttaceus</i>
	Tupong	<i>Pseudaphritis urvilli</i>
	Rainbow Trout	<i>Salmo gairdneri</i>
	Southern Pygmy Perch	<i>Nannoperca australis</i>

T Species considered threatened in Victoria.

Various marine and freshwater fish species frequent the estuarine section of the river that are not necessarily mentioned in the above list.

- Sources:
1. Cadwallander et al. (1984)
 2. Jackson (1986) pers. comm.
 3. Cooper (1986) pers. comm.
 4. McCarraher (1986)
 5. Conservation, Forests and Lands (1987a)
 6. Conservation, Forests and Lands (1989)

APPENDIX 8 NOTABLE INVERTEBRATES

Glenelg Freshwater Mussel ^a (1)	<i>Hydridella (Protohydridella)</i>
Native Slug (1)	<i>Cystopelta</i> spp. aff. <i>petterdi</i>
Carnivorous terrestrial snails (2)	species unknown (Currans Creek McLennan's Punt Caves)
Guano-pile invertebrates (2)	species unknown (bat caves)
Glenelg River Crayfish (3)	<i>Euastacus bispinosus</i>

- ^a This species has been recorded only in the Glenelg-Wannon River system. Although not recorded in the Park, the numerous freshwater tributaries of the Glenelg are likely to be important habitats.

- Sources:
1. Smith (1986) pers. comm.
 2. Aslin (1986) pers. comm.
 3. Cooper (1986) pers. comm.
 4. Conservation, Forests and Lands (1989)

APPENDIX 9 WEEDS AND PROBLEM PLANTS

Known within the Park

Blackberry	<i>Rubus fruticosus</i> spp. agg.	Sandy-Waterhole, The Fence, Pritchards, Chapmans, Lanes Creek, Moleside picnic area
Montpellier Broom	<i>Genista monspessulana</i>	Battersbys, Sandy Waterholes
Cumbungi	<i>Typha</i> sp.	Along river and tributaries
Flat-sedges	<i>Cyperus</i> spp.	Recreation sites on river
Horehound	<i>Marrubium vulgare</i>	Track 1, Woody Flat
Kikuyu	<i>Pennisetum clandestinum</i>	Spreading from former occupancies
Myrtle-leaf Milkwort	<i>Polygala myrtifolia</i>	Near border west of river
Phalaris	<i>Phalaris</i> spp.	Widely distributed
Radiata pine	<i>Pinus radiata</i>	Widespread, particularly along boundaries adjacent to plantations.
Cypress	<i>Cupressus</i> spp	Confined to former occupancies.
Bridal Creeper	<i>Myrsiphyllum asparagoides</i>	Isolated occurrences along the river
Sweet Pittosporum	<i>Pittosporum undulatum</i>	Scattered occurrences in Park.
Coast Wattle	<i>Acacia sophorae</i>	Potential to spread Serious environmental weed. Occurs along many tracks and is widespread in southern areas of the Park
Willows	<i>Salix</i> spp.	References Areas (Section 4.3)
Blue Periwinkle	<i>Vinca major</i>	Isolated occurrences along the river
Buffalo Grass	<i>Stenotaphrum secundatum</i>	Occurs at former occupancies along the river
Scotch Thistle	<i>Onopordum acanthium</i>	Present at most camp and picnic sites
Coast Tea-tree	<i>Leptospermum laevigatum</i>	Scattered along tracks north of Nelson

Known to occur in upper reaches of river outside of Park

African Feather Grass	<i>Pennisetum macronurum</i>
Bathurst Burr	<i>Xanthium spinosum</i>
Spiny Rush	<i>Juncus acutus</i>

- Sources:
1. Webb (1986; 1990) pers. comm.
 2. Mackereth (1986; 1989) pers. comm.

APPENDIX 10 CANOE CAMP SITES

Site	Remarks
Fort O'Hare	outside Park, located on Glenelg River at Dartmoor at start of the canoe section of the historic Major Mitchell Trail, vehicle access, 30+ campers
Pines Landing	outside park, no developed vehicle access, 20 campers maximum
Moleside	vehicle access, 20 campers maximum
Skipworth Springs	no vehicle access, 20 campers maximum
Georges Rest	no water, no vehicle access, 20 campers maximum
Forest Camp North	no water, no vehicle access, 30 campers maximum
Wilson Hall	no vehicle access, 20 campers maximum
Bowds	no vehicle access, 20 campers maximum
Patterson Canoe Camp	no vehicle access, 20 campers maximum
Lasletts	no vehicle access, 20 campers maximum

Each canoe camp site contains toilets, fireplaces, litter bins, canoe ramps and water, unless otherwise indicated.

APPENDIX 11 WALKER CAMP SITES

Site	Remarks
Moleside	shared with canoe campers, vehicle access, rubbish bins
Post and Rail	no vehicle access
Murrells	no vehicle access
Patersons	no vehicle access, rubbish bins
Simpsons	no vehicle access

Sites contain toilets, fireplaces and water.

APPENDIX 12 VEHICULAR ACCESS CAMP SITES

Sites	Facilities	Remarks
Battersbys	2 sites, landing, facilities for the disabled	
Forest Camp South	4 sites, landing	
Hutchessons	2 sites, landing	
Little Moleside Creek	no facilities	occasional permits may be issued to naturalist groups by a Ranger; user to provide suitable toilet and rubbish facilities
McLennans Punt	3 sites, landing	
Princess Margaret Rose Caves	11 sites, landing, 3 motor cabins	includes 3 caravan sites
Pritchards	20 sites, landing	includes 4 caravan sites
Red Gum	2 sites, landing	dry weather vehicle access only; no picnic tables
Wild Dog Bend	2 sites, landing	
Wilson Hall	12 sites, landing	

Each vehicle access camp contains toilets, picnic tables, fireplaces, litter bins and water unless otherwise indicated.

APPENDIX 13 MOTOR BOAT LAUNCHING AND LANDING SITES

Sites	Facilities	Remarks
Nelson	boat launching ramp, landing	outside Park
Simpsons Landing	boat launching ramp, landing	outside Park, waterskiing zone
Chapmans	landing	in South Australia
Donovans	boat launching ramp, landing	in South Australia
Princess Margaret Rose Caves	landing	suitable for excursion boat
Sandy Waterholes	boat launching ramp, landing	water skiing zone, suitable for excursion boat
Hutchessons	landing	suitable for excursion boat
McLennans Punt	landing	suitable for excursion boat
Sapling Creek	boat launching ramp, landing	
Wilson Hall	boat launching ramp, landing	
Forest Camp South	landing	
Red Gum	landing	
Elliot and Gulpins	landing	
Battersbys	landing	
Pritchards	boat launching ramp, landing	
Saunders	boat launching ramp, landing	suitable for small craft only
Wild Dog Bend	landing	
Moleside	landing	
Pines Landing	landing, boat launching ramp	suitable only for small craft that can be lifted manually

APPENDIX 14 PICNIC AREAS AND OTHER FACILITIES FOR DAY VISITORS

Site	Existing Facilities	Remarks
Battersbys	standard picnic ^a , landing, facilities for the disabled	
Bulley Ranges Picnic Area	standard picnic, lookout tower	vehicle access only
Chapmans	landing	
Elliot & Gulpins	landing, simple picnic ^b , no toilet, no litterbins	
Forest Camp South	standard picnic	vehicle access only
Hutchessons	standard picnic, landing	
Inkpot	simple picnic	vehicle access only
Lasletts	standard picnic	river access only in water-ski zone
Littles	no facilities	
McLennans Punt	standard picnic, landing	
Moleside Picnic Area	standard picnic, landing	
Park Headquarters	interpretations centre, Park information, camp site bookings	staffed most times
Pines Landing	standard picnic, landing	no developed vehicle access
Princess Margaret Rose Caves	standard picnic, landing, interpretations centre, guided cave tour, nature walk and lookout, (suitable for the disabled), kiosk	staffed most times
Pritchards	standard picnic, landing	
Sandy Waterholes	standard picnic, landing	in water-ski zone
Sapling Creek	standard picnic, landing	
Saunders	standard picnic, landing	
Wilson Hall	standard picnic, landing	

^a Standard picnic facilities include toilets, picnic tables, fireplaces and litterbins.

^b Simple picnic facilities include fireplaces and litter bins

APPENDIX 15 MANAGEMENT AGENCIES FOR SURROUNDING LAND

Area	Manager
Victorian public land	
Discovery Bay Coastal Park	DCE ^a
Jones Lookout (former scout camp)	DCE
Nelson area public land	Shire of Heywood
Cobboboonee State Forest	DCE
Glenaulin plantation	DCE
Kentbruck plantation	DCE
Rennick plantation	DCE
Drik Drik public land water and streamside reserves	DCE
Nelson Streamside Reserve	C of M ^b
Hedditch Hill Bushland Reserve	DCE
Hedditch Hill Scenic Reserve	DCE
Wanwin public land	DCE
Park Headquarters, Nelson	DCE
Drik Drik School Reserve Site	Ministry for Education, DCE
Victorian private land^c	
Hurdle Flats plantation	Softwood Holdings Ltd.
Kentbruck Tree Farm	Softwood Holdings Ltd.
Various grazing properties	
South Australian Public Land	
Piccaninnie Conservation Park	National Parks and Wildlife Service
Forest Reserve	Woods and Forests Department
Streamside Reserves	Department of Lands ^d
South Australian private land	
Various grazing properties ^d	

^a Department of Conservation and Environment

^b Committee of Management

^c The Country Fire Authority also has a significant fire protection role

^d The Country Fire Service also has a significant protection role.

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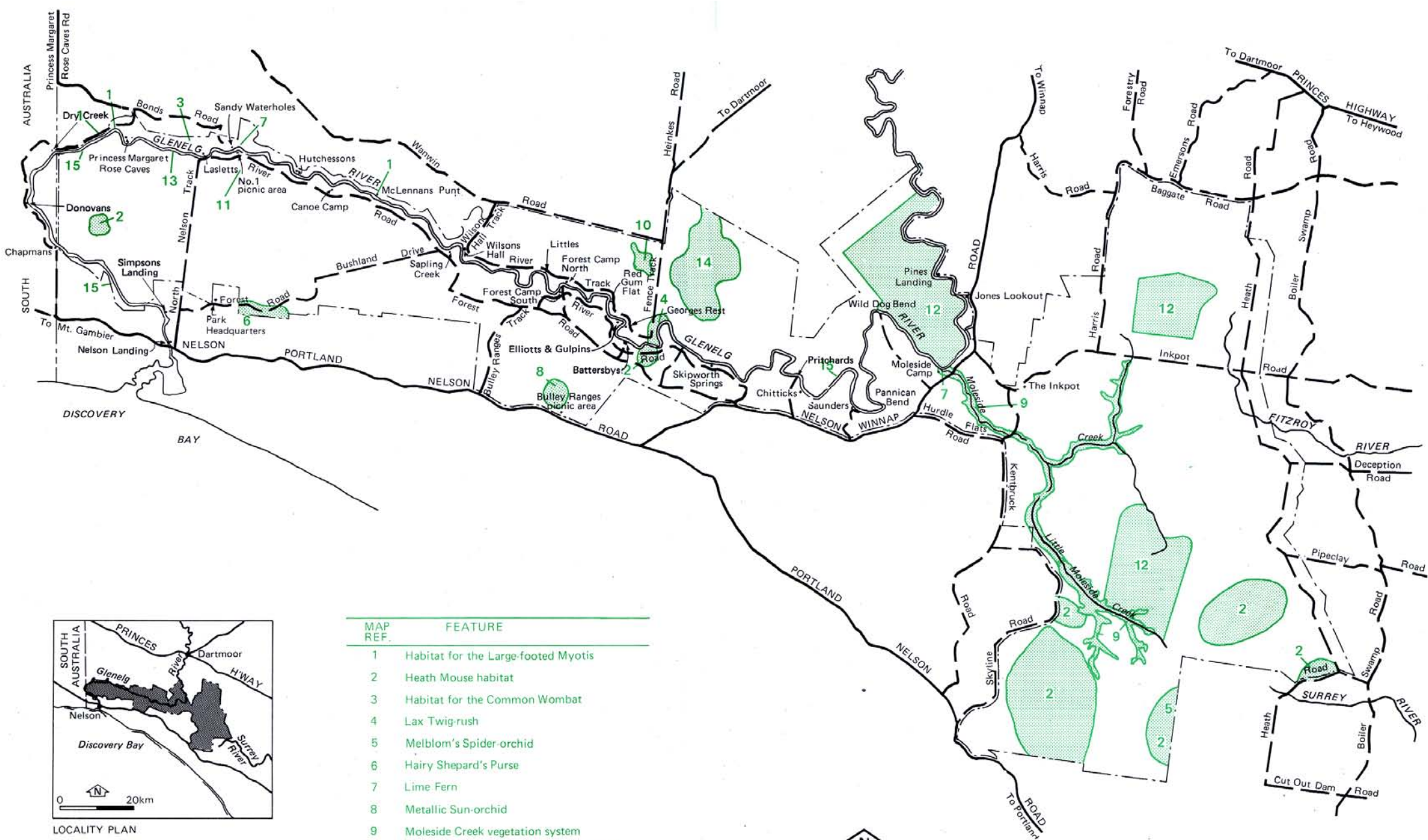
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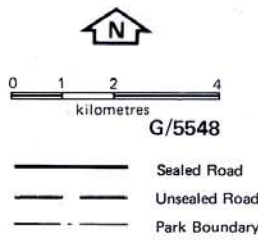
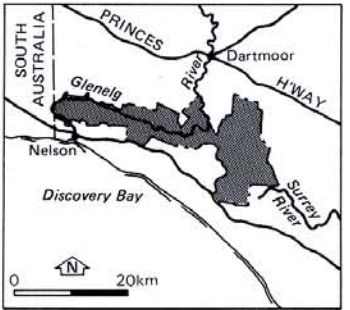
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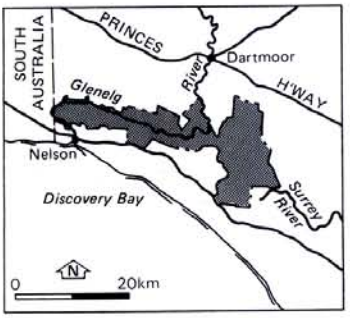
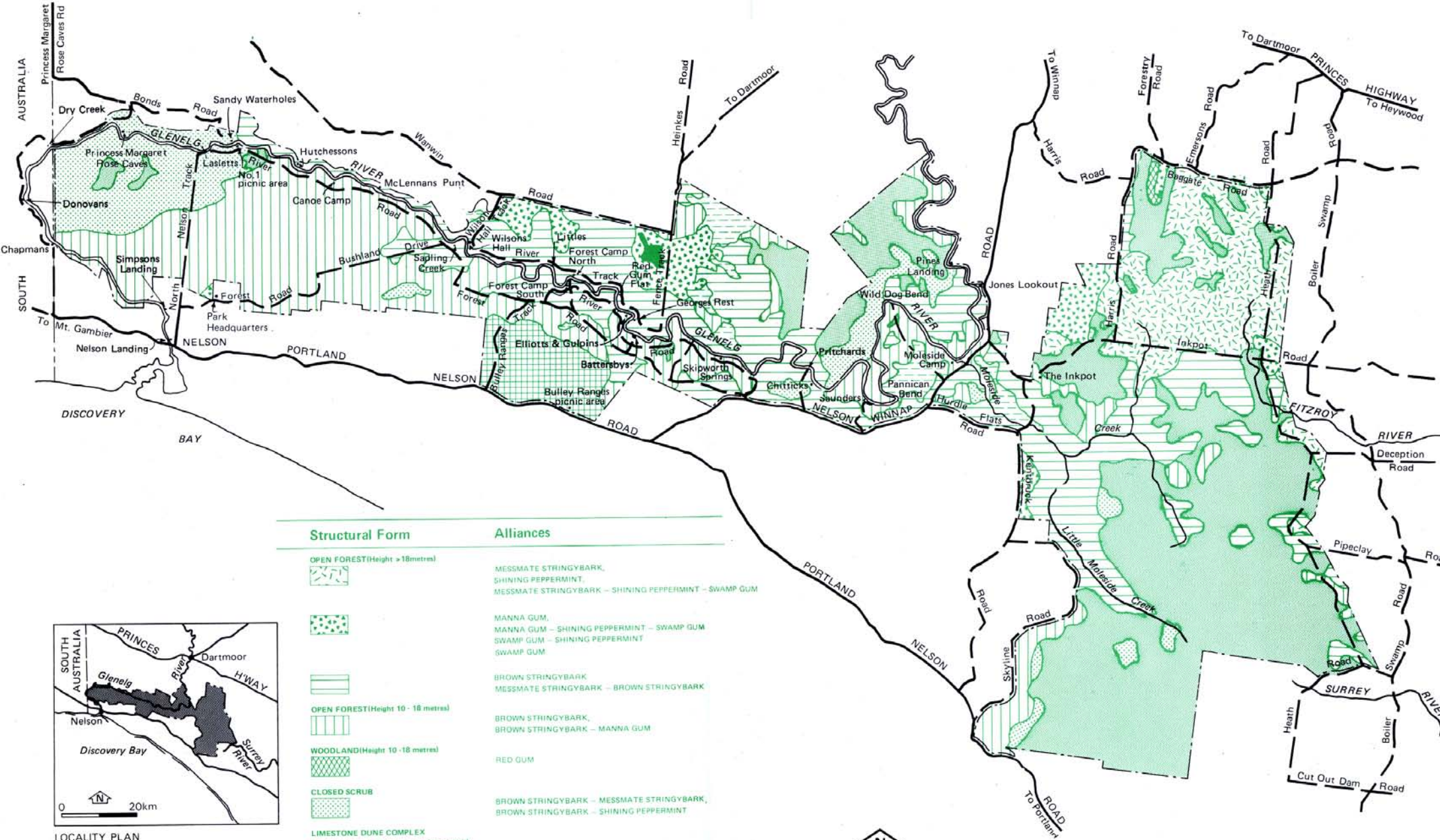
Westhorpe, I. (1988) Ranger, Nelson.



MAP REF.	FEATURE
1	Habitat for the Large-footed Myotis
2	Heath Mouse habitat
3	Habitat for the Common Wombat
4	Lax Twig-rush
5	Melblom's Spider-orchid
6	Hairy Shepard's Purse
7	Lime Fern
8	Metallic Sun-orchid
9	Moleside Creek vegetation system
10	Largest of the few native grasslands areas in the Park
11	Old stand of Porcupine Grass
12	Reference Areas
13	Archaeological Sites
14	Wetland bird habitat
15	River gorge landscape (not mapped)



LOWER GLENELG NATIONAL PARK
FIG. 2
NATURAL FEATURES

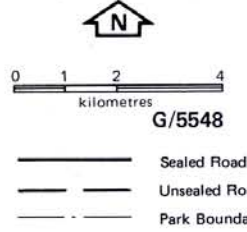


Structural Form

- OPEN FOREST (Height > 18 metres)
- OPEN FOREST (Height 10 - 18 metres)
- WOODLAND (Height 10 - 18 metres)
- CLOSED SCRUB
- LIMESTONE DUNE COMPLEX
(Low open forest, Closed scrubs, Open heath)
- HEATH
(Open heath, Closed heath)
- SWAMP COMMUNITIES
(Sedge/lands)
- GRASSLAND

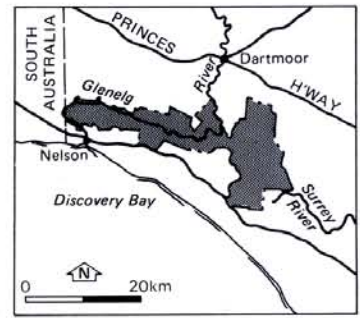
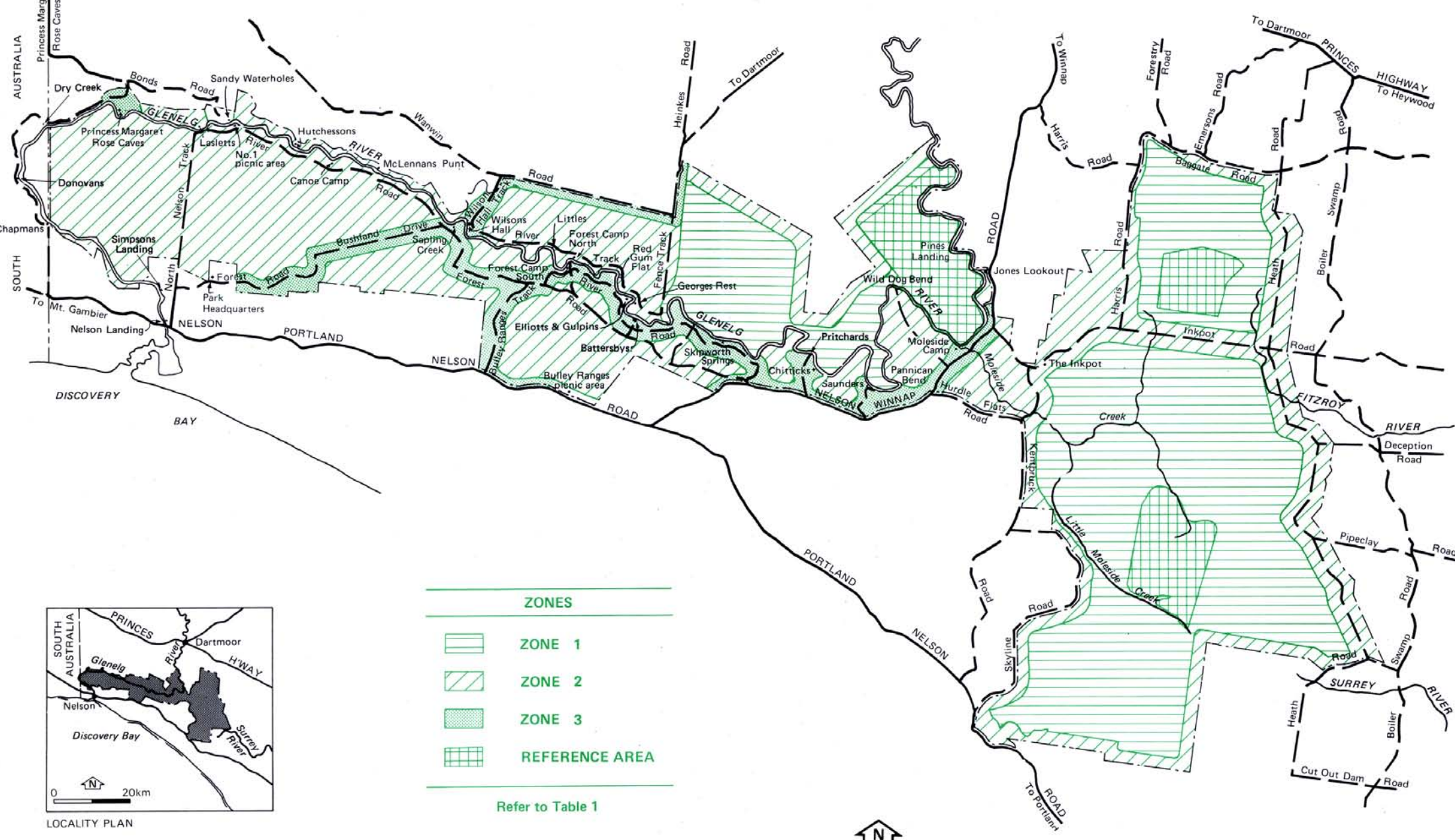
Alliances

- MESSMATE STRINGYBARK,
SHINING PEPPERMINT,
MESSMATE STRINGYBARK - SHINING PEPPERMINT - SWAMP GUM
- MANNA GUM,
MANNA GUM - SHINING PEPPERMINT - SWAMP GUM
SWAMP GUM - SHINING PEPPERMINT
SWAMP GUM
- BROWN STRINGYBARK
MESSMATE STRINGYBARK - BROWN STRINGYBARK
- BROWN STRINGYBARK,
BROWN STRINGYBARK - MANNA GUM
- RED GUM
- BROWN STRINGYBARK - MESSMATE STRINGYBARK,
BROWN STRINGYBARK - SHINING PEPPERMINT
- BROWN STRINGYBARK - MANNA GUM,
COAST BEARD HEATH - COAST WATTLE,
GRASSTREES
- SHE-OAKS, TEA-TREES,
DWARF PAPERBARKS
- RUSHES, SEDGES
- WALLABY GRASS, SPEAR GRASS



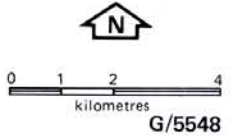
LOWER GLENELG NATIONAL PARK
FIG. 3
VEGETATION

Compiled from map published in the Land Conservation Council, Victoria report, South-Western Area, District 1 - Review



ZONES	
	ZONE 1
	ZONE 2
	ZONE 3
	REFERENCE AREA

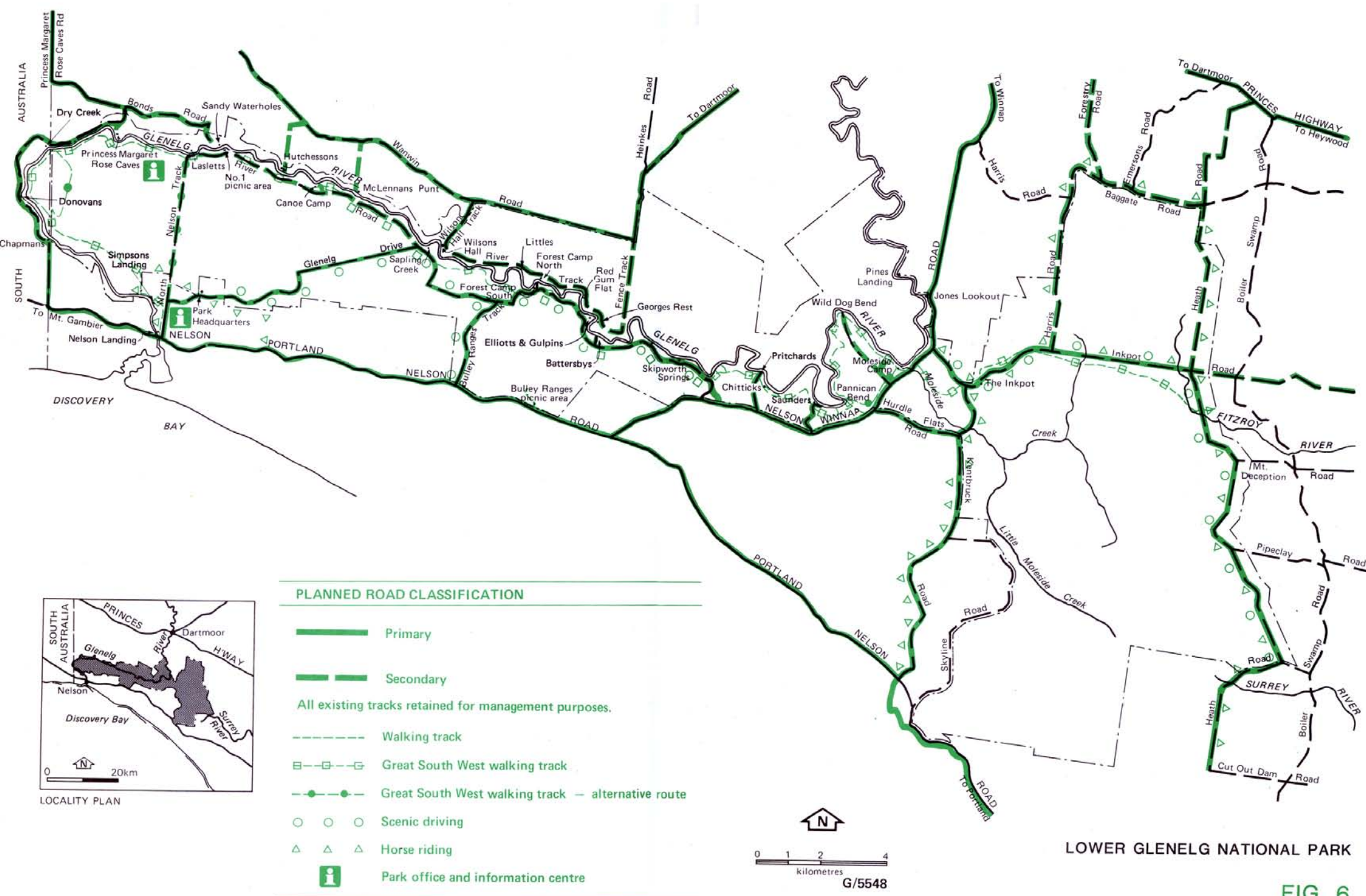
Refer to Table 1



- Sealed Road
- Unsealed Road
- Park Boundary

LOWER GLENELG NATIONAL PARK

FIG. 4
ZONING



LOWER GLENELG NATIONAL PARK

FIG. 6
ACCESS