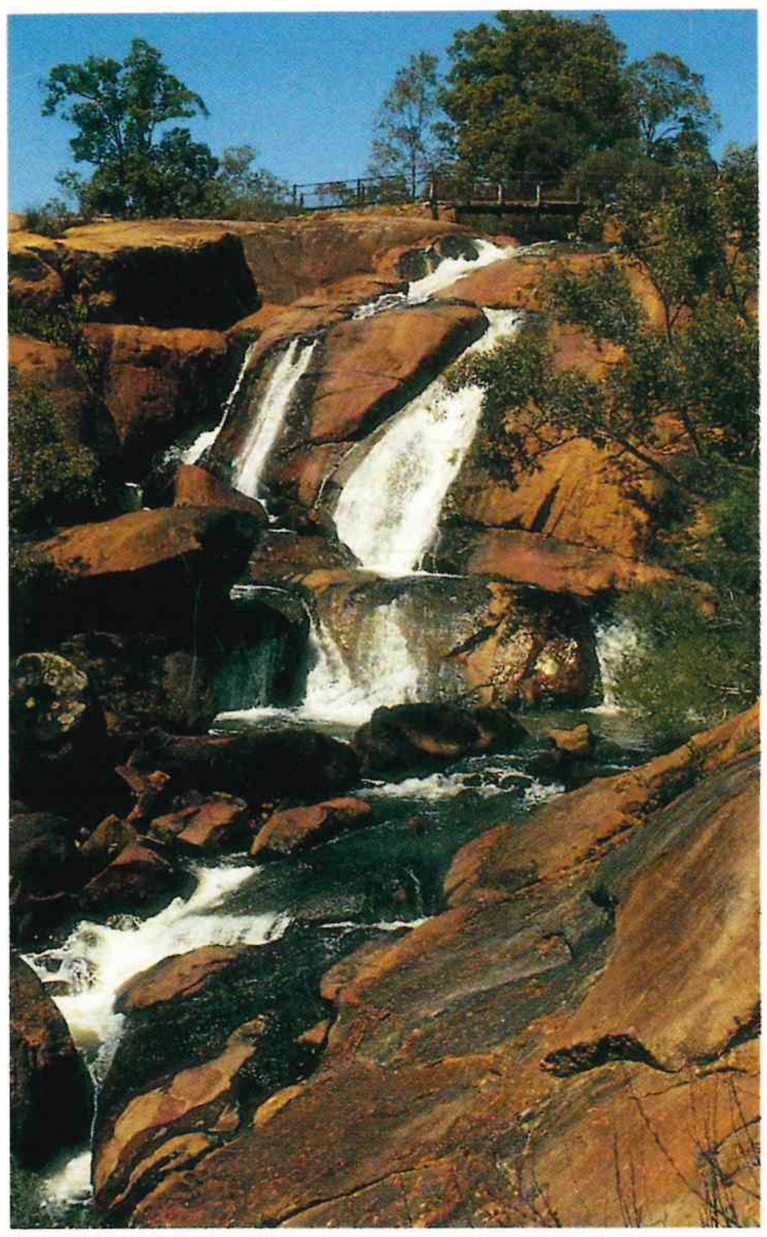
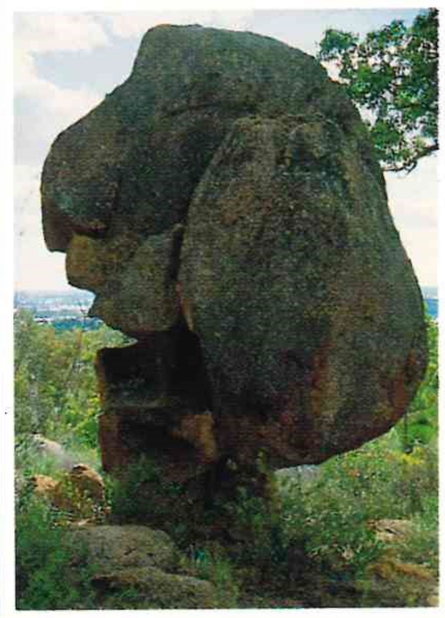
John Forrest National Park

Management Plan 1994 - 2004





MANAGEMENT PLAN No 26

Department of Conservation and Land Management

National Parks and Nature Conservation Authority

JOHN FORREST NATIONAL PARK

MANAGEMENT PLAN

1994 - 2004

Department of Conservation and Land Management
for the
National Parks and Nature Conservation Authority
Perth, Western Australia, 1994

PREFACE

National parks, conservation parks, marine parks, nature reserves and marine nature reserves under the CALM Act in Western Australia are vested in the National Parks and Nature Conservation Authority (NPNCA), and managed by the Department of Conservation and Land Management (CALM).

The NPNCA is responsible for the preparation of management plans for an lands and waters which are vested in it. These are prepared on a regional and area basis. Plans for individual areas are prepared on a priority basis. This plan complements the Northern Forest Region Regional Management Plan (Department of Conservation and Land Management,, 1987).

According to the CALM Act (1984), management plans should contain:

- a statement of the policies or guidelines proposed to be followed; and
- as summary of operations proposed to be undertaken, for a specified period, not exceeding 10 years.

National park management plans provide for the public's recreation needs as long as those needs are consistent with retaining the Park's conservation and other values.

NOMENCLATURE

Inclusion of a name in this publication does not imply its approval by the relevant nomenclature authority.

On 18 March 1994 the Bush Fires Board endorsed this plan under Section 34(1) of the Bush Fires Act (1954).

ACKNOWLEDGEMENTS

The planning team for this management plan consists of Jacqueline Pontre, George Duxbury, Ron Waterhouse, Stev Slavin, Bill Adams, Peter Keppel and Jeni Alford. The contributions of Anna Cuninghame, Allan Briggs and Sue Moore to the early drafts of the plan are acknowledged. The planning team was assisted by Matt Cavana, Kate Orr and Anthony Sutton.

Many individuals and organisations have contributed to this plan, and their assistance is acknowledged. In particular, Dr Libby Mattiske provided advice on the Park's biological values, Paul Armstrong provided advice on flora management issues, David Briggs conducted vegetation mapping in the Park, members of the Mundaring 'Over 50s' Bushwalking Club assisted with the visitor survey.

CALM's Land Information Branch, particularly Steve Jones, produced the maps, and Debbie Bowra typed the document. Richard Grant edited the draft plan and Jim Williamson edited the final plan. Special thanks to the Park rangers who provided assistance and encouragement throughout the plan preparation. The photographs were provided by George Duxbury.

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PART A. INTRODUCTION

1.0 OVERVIEW

1.1 PARK OVERVIEW

John Forrest National Park is located on the edge of the Darling Scarp, adjacent to the Great Eastern Highway, 25 km from the Central Business District of Perth (Map 1). The Park is located within the Shires of Mundaring and Swan, and is accessible to many people living in hills communities and nearby country areas, as well as the Perth metropolitan area. The Park is vested in the National Parks and Nature Conservation Authority (NPNCA).

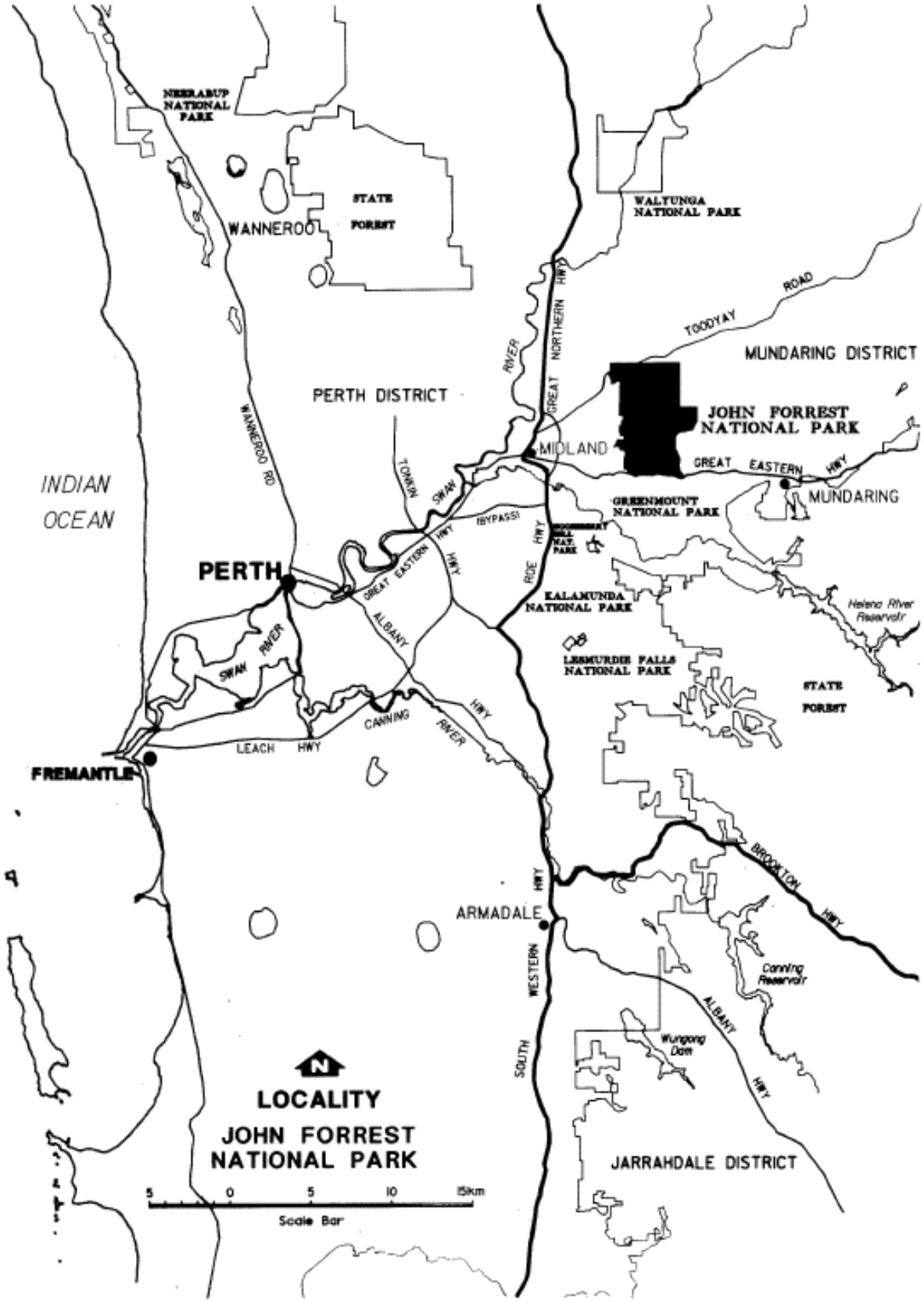
The Park lies within CALM's Mundaring District. in the Swan Region, which is responsible for the management of the Park, and is an integral part of the Hills Forest - an area of diverse forest in the Perth hills area (Mundaring-Kalamunda), where visitors are offered recreation experiences to enhance their awareness and appreciation of forest values. It is part of the Darling Range Regional Park study by the Department of Planning and Urban Development.

The location of the Park near a large and growing population creates both opportunities and problems for managers. Opportunities relate to meeting people's needs for recreation in a bushland setting and increasing their awareness and knowledge of the Park's natural and cultural values. Problems relate to protecting the Park's values from the impacts of increasing numbers of people using and living near the Park.

1.2 HISTORICAL PERSPECTIVE

The historical heritage of the Park is important (see also Section 8.0 Cultural Resource Management). It is one of Australia's earliest national parks and is an area of great Aboriginal significance. The Park was established in 1898 on the recommendation of a past Surveyor General, H. F. Johnston. Declared an 'A' class reserve in 1900, the Park was originally known as Greenmount National Park before its name was changed to John Forrest National Park in 1947. The Park's natural attributes, which helped to secure its status and its placement on the National Estate Register, have been enjoyed by many generations.

Historic land uses include timber production and grazing, and the main east-west rail route passed through the Park from the 1890s until the mid-1960s. During the 1930s depression, sustenance workers built the rock gardens, paths and pool weir in the main picnic area. The historic remnants provide opportunities for visitors to reflect upon and learn about bygone days. Despite the environmental impacts associated with these land uses the Park's conservation and recreational values are significant.


NEERABUP NATIONAL PARK
WANNEROO
STATE FORREST
WALTUNGA NATIONAL PARK
TOODYAY ROAD
MUNDARING DISTRICT
PERTH DISTRICT
RIVER
NORTHERN HWY
GREAT
JOHN FORREST NATIONAL PARK
MIDLAND
GREAT EASTERN HWY
MUNDARING
INDIAN OCEAN
WANNEROO RD
TONKIN
SWAN
(BYPASS)
GREENMOUNT NATIONAL PARK
PERTH
GREAT EASTERN HWY
RIDE HWY
KALAMUNDA NATIONAL PARK
Helena River Reservoir
ALBANY
SWAN RIVER
LESMURDIE FALLS NATIONAL PARK
STATE FORREST
CANNING RIVER HWY
LEACH HWY
FREMANTLE
BROOKTON HWY
ARMADALE
WESTERN
SOUTH
Canning Reservoir
ALBANY HWY
Wungong Dam
N
LOCALITY
JOHN FORREST NATIONAL PARK
JARRAHDALE DISTRICT
5 0 5 10 15km
Scale Bar

MAP 1

1.3 NPNCA AND CALM MANAGEMENT POLICIES

The management plan for John Forrest National Park is based on current National Parks and Nature Conservation Authority (NPNCA) and Department of Conservation and Land Management (CALM) policies. These policies are derived from legislation, principally the CALM Act (1984), and associated regulations. Policies are published and distributed throughout CALM as policy statements and are available to the public on request.

1.4 PUBLIC PARTICIPATION

Public participation in the preparation of this management plan has been extensive and included meetings, submissions, workshops and surveys. Much of the main direction for the future of John Forrest National Park is based on the views expressed by the many people who have become involved in the planning process.

In some issues contradictory views were expressed; this plan reflects proposals to resolve these conflicts. Hopefully, the complexity of the issues involved will be understood as will the resolutions which are aimed at satisfying people's needs while ensuring CALM meets its statutory obligations.

Pre-draft Submissions

In the preparation of this management plan public submissions were canvassed (or sought). This included:

- Distributing leaflets to individuals, groups and organisations seeking information and/or expressing issues of concern and points of view regarding the Park's future management.
- Advertising and the publishing of articles in local newspapers and The West Australian.

The submissions raised many issues and points of view regarding values of the Park, access, recreation facilities, information, interpretation, bushwalking, horse riding and more.

Workshop

A workshop was held to obtain community views on the issue of horse riding in the Park. Representatives from local riding clubs, the local commercial equestrian centre, local Government, conservation and recreation groups, the local community, CALM and the NPNCA attended the workshop.

User Survey

A survey was conducted to obtain information on a sample of users of the Park. Much information has been obtained from the survey, some of which is included in relevant sections of this plan (Cavana and Cuninghame, 1992).

Meetings

A number of meetings with interested groups and individuals were held, including Swan and Mundaring Shire Councils.

Public Submissions to the Draft Management Plan

A total of 75 submissions were received from individuals, community groups, Government departments and clubs/organisations.

The results of the above consultations are a vital component of this plan.

2.0 MANAGEMENT GOALS

2.1 MANAGEMENT GOALS FOR NATIONAL PARKS

CALM's management goals for national parks include:

- conserve biological, physical, cultural and landscape resources;
- facilitate recreation in a manner compatible with conservation and other goals;
- promote informed appreciation of natural and cultural values;
- seek a better understanding of the natural and cultural environment, and the impacts of management activities and visitors; and
- ensure that commercial and other uses are managed in a manner that minimises impact on other values.

2.2 MANAGEMENT GOALS FOR JOHN FORREST NATIONAL PARK

The management goals for John Forrest National Park are based on goals for all of Western Australia's national parks and on values specific to the Park.

Conservation

- Conserve native plant and animal communities and species, and the natural processes that sustain them.
- Conserve the Park's landscapes.
- Conserve the Park's Aboriginal and non-Aboriginal cultural heritage.
- Minimise the occurrence, size and undesirable environmental, social and economic impacts of wildfire.
- Control feral animals and weeds.

- Prevent the introduction of disease into disease-free areas. Control the spread and intensification of disease.
- Reconstruct the native mammalian fauna by controlling predators and reintroducing species previously occurring in the area.

Recreation

- Fulfill the recreation requirements of visitors to the extent that the Park's natural and cultural values are protected and maintained.
- Provide quality recreation opportunities for all visitors including those with special
- needs.
- Ensure that the experience of visitors is not impaired by over use or conflicting uses.
- Maintain the natural qualities of the Park's recreation settings.

Information, Interpretation and Education

- Foster in the community an appreciation and understanding of, and a sense of stewardship for,. the Park's conservation, recreation, cultural and historic values.
- Use the Park as a forum to increase community awareness of the State's natural and cultural environments.

Research and Monitoring

- Promote and undertake the scientific study and monitoring of those physical, biological and social values and natural processes special to the Park.
- Monitor the impacts of management activities and human use on the Park environment.

2.3 VALUES AND MANAGEMENT CONCERNS

Values

The Park's conservation values are significant, and include:

- geographically restricted flora, species gazetted as threatened, and species at their northernmost limit;
- geographically restricted fauna, and species gazetted as threatened or in need of special protection;
- a reserve of high conservation value close to a capital city;
- species of flora and fauna representative of the ecological ecotone between the Swan Coastal Plain and the Darling Plateau;
- protected habitat for flora and fauna species affected by urban development; and
- diversity of vegetation associations including heathlands, wandoo woodlands, granite complexes and riverine areas that provide habitat for species specially adapted to these environments.

The Park's recreation and cultural values are also significant, and include:

- a natural environment in close proximity to Western Australia's capital city and over 80% of the State's residents;
- an area rich in Aboriginal cultural values;
- natural features such as Jane Brook, the associated waterfalls, forested hills and granite outcrops;
- a variety of vegetation, particularly wildflowers during flowering time, and wildlife such as kangaroos;
- extensive views across the Swan Coastal Plain and the Darling Scarp;
- nature based recreation opportunities such as barbecuing, picnicking and walking;
- historic relies that were associated with the east-west rail route such as the tunnel, bridges, embankments and relics where stations once stood;
- rock works built by sustenance workers in the 1930s which contribute to the character of the main recreation area;
- the provision of a range of facilities including the provision of access and opportunities for people with disabilities.

The Park provides opportunities to increase visitor awareness and understanding of the natural, recreational and cultural values, and management issues. Such opportunities could be integrated with interpretive programs introduced elsewhere in CALM's Swan Region, and within the Hills Forest. The opportunities include:

- developing a sense of caring of responsible behaviour and of stewardship;
- interpretive programs that are accessible to people with disabilities; and
- interpretive programs designed to meet the needs of tourists who do not have the time for extended Park tours.

Management Concerns

The main management concerns relate to the impact of the increasing number of people who visit or live near the Park. These impacts will grow as the population of Perth grows and the residential and semi-rural estates in the Shires of Swan and Mundaring are developed.

The management concerns include:

- protecting people, property, and conservation values from wildfires within and adjoining the Park;
- preventing the spread of phytophthora dieback *(Phytophthora spp.)* into disease-free areas and the threat to conservation values;
- minimising the impacts of feral animals and domestic pets on native flora and fauna;
- minimising the effect of weed infestations on native flora and fauna;
- negotiating with relevant authorities to minimise the impact on the views from the Park of urban development which does not harmonise with the surrounding natural landscape;
- controlling erosion of management access tracks; minimising the impacts of horse riding in the Park; implementing devices to decrease the incidence of vandalism;
- managing recreation sites to avoid overcrowding and conflicting activities; and
- providing better interaction between CALM and the public.

PART B LAND USE MANAGEMENT

3.0 LAND TENURE

The objectives are to:

1. *Protect the Park's high conservation values.*
2. *Co-ordinate the management of adjacent reserves and the Park.*
3. *Encourage complementary management of the Park and adjoining private properties.*
4. *Rationalise and simplify Park management by adding unused road reserves to the Park.*

Tenure

John Forrest National Park is an 'A' class reserve (A7537) covering 2 676 ha with a gazetted purpose of "National Park".

In December 1992, 1168 ha of land were added to the Park as recommended in the Darling System - System 6 Report (1983). This included former education endowment land near the Park's south-west comer and State Planning Commission land to the north and west of the Park.

Boundaries

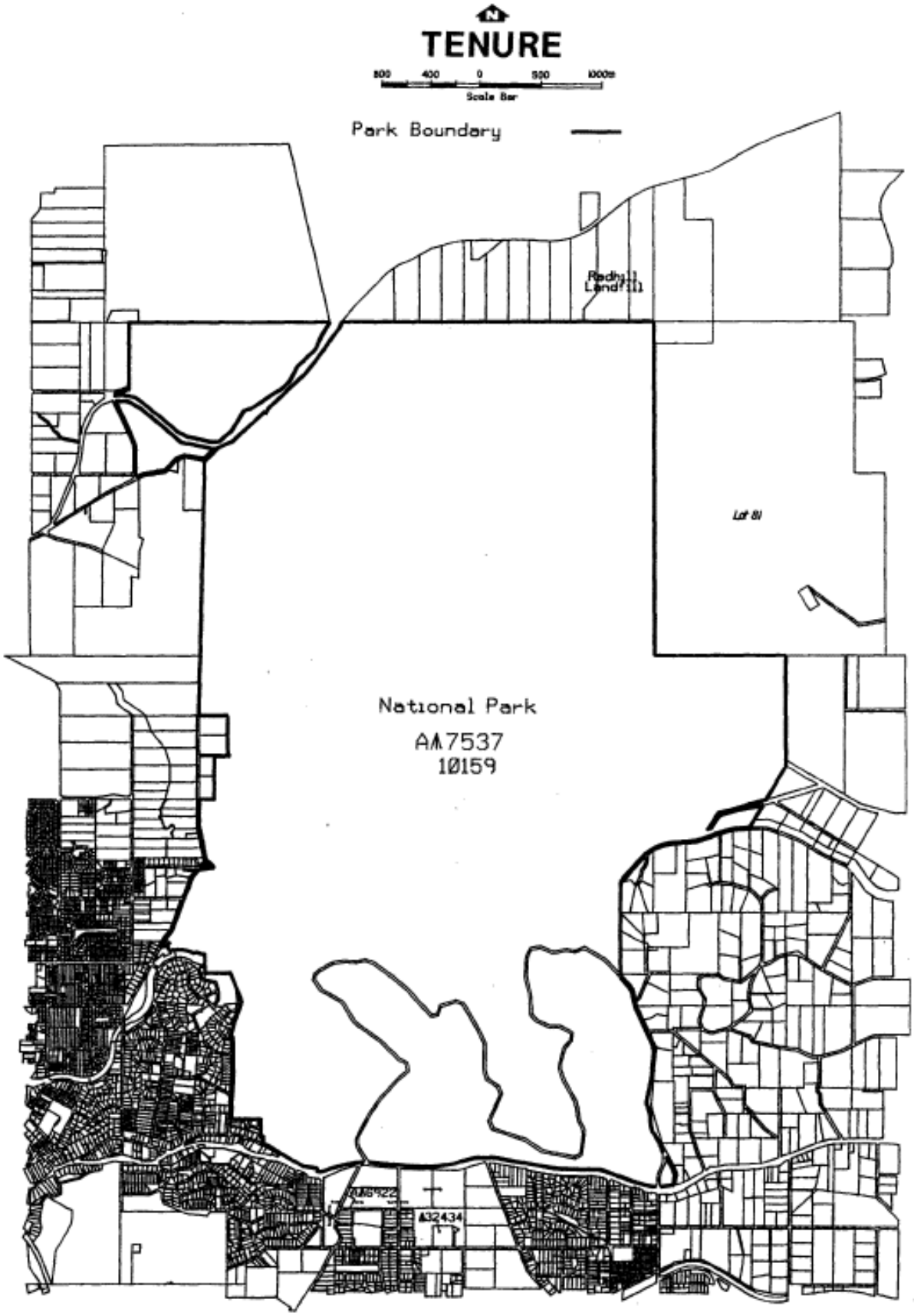
The Park boundaries are well defined and include Pechey Road and part of Throssel Road in Swanview, the Great Eastern Highway in Glen Forrest, Park and Victoria Roads in Hovea, and private property. Toodyay Road traverses the north-west comer of the Park.

No other enclaves of land tenure other than National Park occur within the boundary of the Park. The road reserves include the scenic drive (Park Road) and a small section of Old Toodyay Road. The Main Roads Department is currently reviewing options of. upgrading Toodyay Road which passes through the northern section of the Park and this may in the future alter the alignment of the Toodyay Road. Other road reserves terminate within the Park and now serve no useful purpose. Issues relating to the future of the road reserves are discussed in Section 12.0 Access.

Surrounding Land

Residential land in the suburb of Swanview is located close to the south-western comer of the Park (Map 2). Residences to the east of Throssel Road directly adjoin the western boundary of the Park. Residential land is also located to the south of the Park on the southern side of Great Eastern Highway. Larger lot residential development occurs adjacent to the eastern boundary of the Park in the suburb of Hovea.

Rural land adjoins the eastern, western and northern boundaries of the Park.


TENURE
800 400 0 800 1000m
Scale Bar
Park Boundary
Radhill Landfill
Lot 81
National Park
AM7537
10159
AM8122
A32434

MAP 2

Reserve. A6922, a public park, adjoins the southern boundary of the Park over Great Eastern Highway and comprises bushland, rehabilitated gravel pits, the Bilgoman Swimming Pool and associated parking and information areas. Reserve A32434 covers the old railway formation adjoining the Park. This reserve forms part of the Railway Reserves Heritage Trail that continues through the Park and is one of the major walking tracks in the Shire of Mundaring. Horse riding is permitted on the part of the trail located outside the Park.

The Redhill Landfill Area adjoins the north-eastern corner of the Park. The site is managed by the Eastern Metropolitan Regional Council which represents one third of the total population of the Perth metropolitan area in the Cities of Belmont and Bayswater, the Town of Bassendean and the Shires of Swan and Mundaring. Household and light industrial refuse are deposited at the site. The Western Regional Metropolitan Council proposes to buy into the operation which would add five municipalities to the landfill area. Currently (June 1992), the Environmental Protection Authority is considering a Consultative Environmental Review of the proposal.

Off-road vehicles are catered for in an area gazetted for this activity within the Redhill Landfill Area. To protect the Park values it is necessary to continue to exclude off-road vehicles from the Park (refer to 14.12 Off-road Vehicles). An alternative site will be required in the future as this site is needed for landfill.

The Swanview Equestrian Lodge adjoins the Park on Taaffe Road. Issues relating to the use of the Park for horse riding are addressed in Part D of the Plan.

Proposed Land Use

A proposal exists to develop Lot 8 1, which adjoins the northern and eastern boundaries of the Park, for residential allotments ranging in size from 4 ha adjacent to the Park to 2 ha elsewhere in the subdivision. A landscape protection zone is proposed adjacent to the Park and along watercourses within the subdivision. Another special residential subdivision is planned for land adjoining the Park in the vicinity of Curve Road, Swanview. The proposed allotment sizes vary from 6 000 m2 to 10 000 m2. Special residential subdivisions are also proposed adjacent to the western boundary of the Park.

A new townsite adjoining Roland Road is proposed. It will be approximately 3 km east of the Park.

The Swan Shire Council identifies those lots between Toodyay Road and the northern boundary of the Park as being suitable for extraction of basic raw material, such as gravel.

Residential development (including larger lot housing development subdivisions within rural zones) adjoining and close to the Park has significant management implications for the Park. Proximity of people to the Park has both direct and indirect effects. The direct effects relate to greater pressure upon the resources of the Park through people access. Indirect effects relate to the need for fuel reduction by burning within the Park to protect neighbours from the threat of wildfire leaving or

entering the Park, predation by feral animals and domestic pets, and the intrusion of residential development on the Park's viewshed.

ACTIONS

1 **Liaise with relevant authorities, departments and land owners to encourage land uses on adjoining land that do not adversely affect Park values.**

2. **Liaise with the Health Department, Environmental Protection Authority and Eastern Metropolitan Regional Council with regard to management concerns from the landfill area such as monitoring of groundwater, litter blowing into the Park and the need for visual resource management.**

3. **Assist local Shires, and others where possible, to manage natural areas, particularly areas with conservation values situated close to the Park.**

4. **Initiate proceedings to cancel unnecessary, road reserves within the Park boundaries and add these to Reserve A7537.**

4.0 ZONING

The objective is to introduce management zones that protect the Park's conservation values and provide visitors with a range of recreational opportunities in areas that can sustain those activities.

Management zones establish a framework to protect the Park's environment, provide a range of recreation uses, and indicate the different levels of management required. The John Forrest National Park zoning plan reflects detailed study of the vegetation and its associated phytophthora dieback rating, the intensity and types of recreation uses, and future requirements for, fire management. The zoning scheme will be used as a guide for future management (Table 1 and Map 3).

The management zones identified in John Forrest National Park are:

Special Conservation Zone
Areas that contain plant and/or animal communities that require specific management and protection. Access to special conservation zones will be strictly controlled except for foot access. No motorised access will be permitted except under special circumstances.

Natural Environment Zone
Extensive areas of the Park that will be retained in their natural state. Vehicle access will be restricted to management vehicles only. Very few basic facilities will be provided.

Recreation Zone

High use areas that are accessible to all traffic, including tourist buses. Facilities include barbecue sites, toilets, information shelters and walk tracks.

Park Services Zone

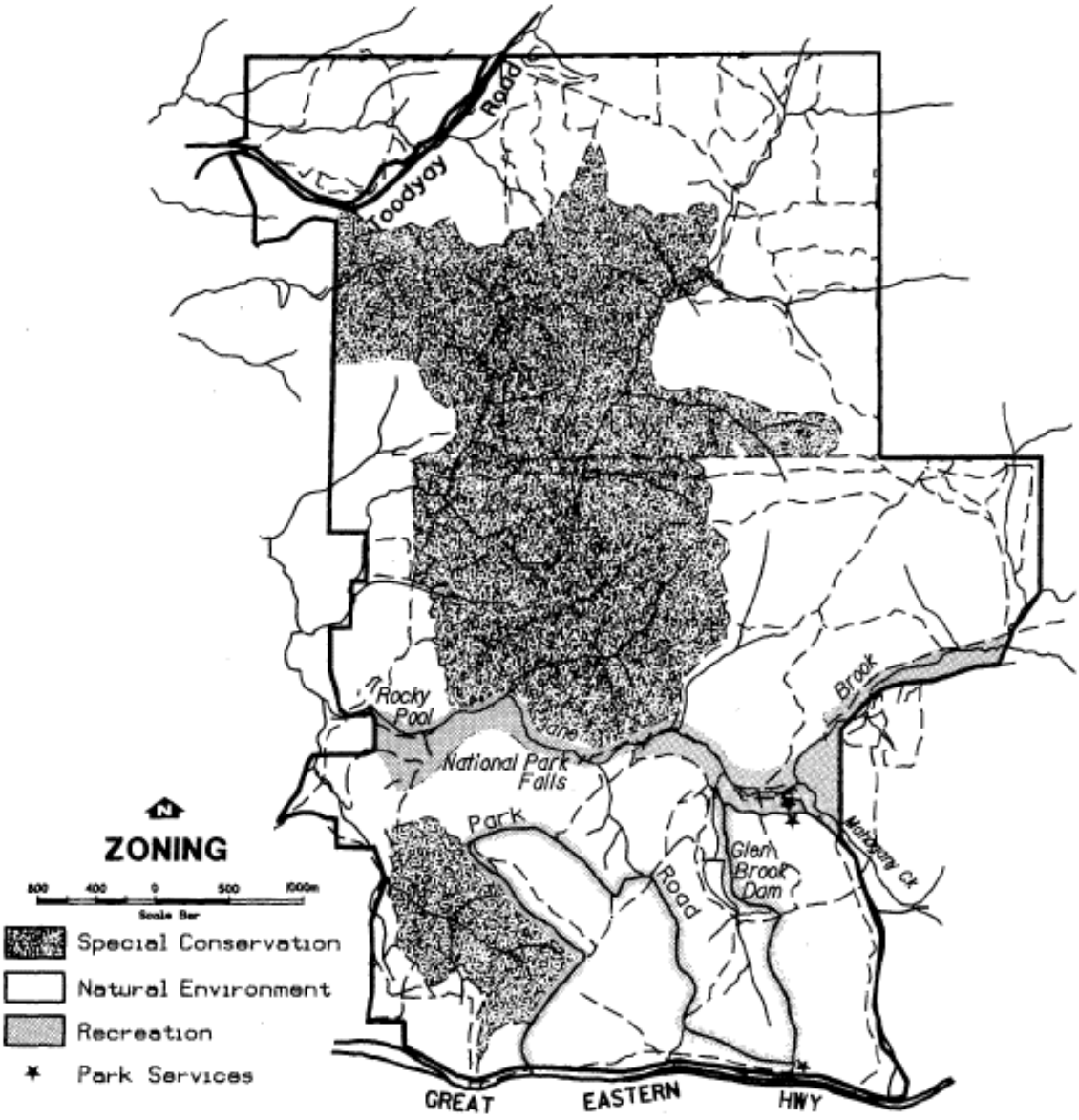
Localised areas for ranger housing, visitor centres and Park administration facilities.

ACTION

1. Base future management of the Park on the zoning scheme (Table 1 and Map 3).

Table 1. ZONING SCHEME

Description	Recreation Opportunities	Level of Facilities	Evidence of Management
	Special Conservation Zone		
Areas which contain unique, vulnerable or threatened species, best examples of natural features, or representatives of plant communities.	• Non-motorised access except under special circumstances. • Recreation not encouraged.	No provision of facilities.	Low
	Natural Environment Zone		
Areas which can sustain, with minimum impairment, a selected range of low-density activities with a minimum of related facilities.	• Non-motorised access except for research and management purposes. • Experience of an environment with little human modification • May be contact with other people	Very few basic facilities provided.	Moderate
	Recreation Zone		
Areas within which a broad range of recreation opportunities of medium to high density can be sustained, with related facilities.	• Motorised and non-motorised access. • Experience of an environment with some modification. • Usually contact with other people.	Developed facilities provided, e.g. barbecues, picnic areas, toilets, information, shelters and walk tracks.	High
	Park Services Zone		
Localised area which provides for ranger housing, visitor centres and Park administration facilities.	• Motorised access to sites. • Access to ranger services. • Opportunities for education.	Formalised facilities for Park administration.	Moderate to High


Toodyay
Road
Rocky
Pool
National Park
Falls
Jane
Brook
Park
Road
Glen
Brook
Dam
Mahogany Ck
GREAT
EASTERN
HWY
N
ZONING
500 400 0 500 1000m
Scale Bar
Special Conservation
Natural Environment
Recreation
Park Services

MAP 3

PART C MANAGEMENT FOR CONSERVATION

5.0 PRINCIPAL CONSERVATION DIRECTIONS

CONSERVATION GOALS

- Conserve native plant and animal communities and species, and the natural processes that sustain them.
- Conserve the Park's landscapes.
- Conserve the Park's Aboriginal and non-Aboriginal cultural heritage.
- Minimise the occurrence, size and undesirable environmental, social and economic impacts of wildfire.
- Control feral animals and weeds.
- Prevent the introduction of disease into disease-free areas. Control the spread and intensification of disease.
- Reconstruct the native mammalian fauna by controlling predators and reintroducing species previously occurring in the area.

CONSERVATION STRATEGY

The conservation strategy for John Forrest National Park will focus, where possible, on reducing external influences on the Park in order to protect wildlife diversity and species richness. Priority will be given to protecting threatened species and their habitats. Conservation values will be protected by minimising degradation caused by fire and *Phytophthora* dieback and the effects of weeds and feral animals. Human activities in the Park will be monitored, and those activities considered compatible with the conservation goals will be encouraged.

6.0 PHYSICAL RESOURCE MANAGEMENT

6.1 CLIMATE

The objective is to consider the effects of climate on Park management decisions.

The Park experiences a mediterranean climate with characteristically hot dry summers and cool wet winters. Mean maximum temperatures vary from 30.8°C in February to 15.4°C in July. Daily temperatures of over 38°C are experienced in February. Average monthly rainfall varies from 217 mm in June to 12 mm in January.

The possible effects of long-term climatic changes may have significant implications for the flora and fauna of the Park. While it is impossible to 'manage' the effects of climate change, monitoring will play an increasingly important role in disentangling effects due to climate change, for example change in direct human impacts on the Park.

ACTIONS

1. **Monitor climatic data for use in the management of the Park, particularly wind speed and direction at times of high fire risk.**

2. **Consider the effects climate changes will have on Park management and the need to change management practices.**

6.2 GEOLOGY, LANDFORM, SOILS AND EROSION RISK

The objectives are to:

1. *Conserve geological features, landforms and soils.*
2. *Rehabilitate eroded areas.*
3. *Provide interpretive information about the geology, landforms and soils in the Park.*

The slope and relief of the land together with the nature of the soils are the basic physical factors determining how the land within the Park can be used (Churchward and McArthur, 1980). These factors have been combined to describe landform units. Each unit has a characteristic geology, landscape position, soil type, and erosion risk rating (Table 2).

Landform units have relevance to: firebreak, walk track and road construction and maintenance; siting of recreation facilities and activities; prescribed burning; conservation values; visitor education and interpretation; site drainage structures; and effluent disposal.

Geology

The Park is sited on the western edge of the Darling Plateau, an ancient plateau composed mainly of granite rock with intrusions and capped with laterite. The geological history may be summarised as follows:

- Between 2650 and 2550 million years ago the predominantly granite bedrock was formed.
- More than 570 million years ago the dolerite dykes (intrusions) were formed.
- About 19 million years ago laterites formed on the low relief plateau as a result of intense weathering of the granite.
- About 7 million years ago the plateau along the Darling Fault was uplifted and deep valleys formed by erosion.

- About 2.5 million years ago some of the laterites were eroded and redeposited to form duricrust, a cemented crust of ironstone formed by the precipitation of salts at the surface of the ground as the groundwater evaporates.
- Today, geological erosion is still occurring. Chemical and physical weathering causes the disintegration of rocks that are redeposited by running water to lower levels in the landscape.

Landforms, Soils and Erosion Risk

As a result of past weathering the Park has a number of distinct landscapes, namely lateritic uplands,, minor valleys, major valleys and scarps. The landscapes can be grouped into landform mapping units based on topography and soils.

The Park's soils are influenced by the granite bedrock and physical geological processes. Within the Park, the soils are highly erodible and are sharply divided into those that are developed on either dolerite or granite. The ecosystems supported by these soils reflect the differences. The erosion risk rating is a measure of how susceptible each landform unit is to erosion, and is based on the interaction between soil erodibility, rainfall erosivity, the steepness and length of slope, vegetative cover and management of the site (King and Wells, 1990). Steepness and length of slope are two major factors contributing to erosion in the Park.

A landform unit with a low risk rating under normal conditions may have a 'high' or 'extreme' rating when disturbed. Consequently, if a works program requires the soil to be disturbed, erosion control measures are required (King and Wells, 1990).

ACTIONS

1. **Continue to assess the land capability of the Park for existing and potential uses.**

2. **Ensure erosion control and rehabilitation are consistent with Departmental policies and guidelines.**

3. **Minimise the impact of public access on areas that have a high erosion risk rating.**

4. **Consider erosion risk and hazard ratings during all management activities, particularly road and facility planning, construction and development.**

5. **Train all personnel involved in risk and hazard assessment and erosion control.**

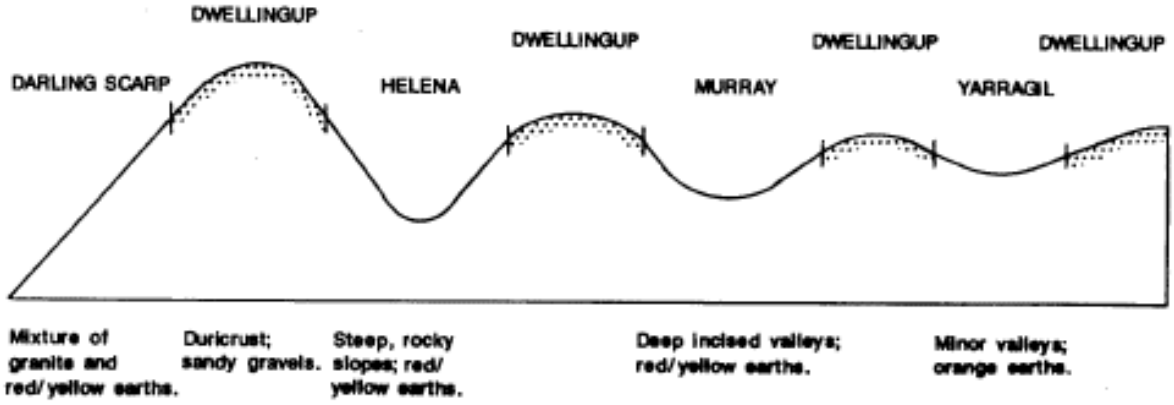
6. **Monitor the effectiveness of erosion control techniques, and incorporate new practices where appropriate.**

Table 2. EROSION RISK OF LANDFORM UNITS

LANDFORM UNIT	DESCRIPTION	EROSION RISK
Dwellingup	Gently undulating landscape; forms uplands of Darling Plateau. Duricrust on ridges; sands and gravels in shallow depressions.	Low
Yarragil	Minor valleys with flat, swampy floors and gentle slopes of less than 5°. Sandy gravels on slopes; orange earths in swampy floors.	Low - medium
Helena	Very deeply incised valleys with steep, rocky slopes of up to 30•. Shallow soils on slopes with pockets of deeper red and yellow earths.	High
Murray	Deeply incised valleys with slopes up to 15•; narrow alluvial terraces often in valleys. Mixture of weathered granite and dolerite, and lateritic materials; red and yellow earths on slopes.	High
Darling Scarp	Steep, rocky landscape with slopes greater than 20•. Shallow, red and yellow earths and much rock outcrop.	High

Source: Heddle et. al., 1980

Figure 1. Schematic cross-section of Darling Range SHOWING landform units.



6.3 HYDROLOGY

The objectives are to:

1. *Maintain or improve the quality of the Park's water resources.*
2. *Minimise changes to natural drainage.*
3. *Protect the Park's water resources, including streams and soaks with high conservation values.*
4. *Ensure that Aboriginal concerns relating to waterways will be taken into account in planning and management activities.*
5. *Ensure, as far as possible, that the quality and quantity of the surface waters flowing from and through the Park are not affected by activities either inside or outside the Park.*

No major river systems occur within the Park. A mainly winter-flowing stream, Jane Brook, is the Park's main drainage line. The three main tributaries to Jane Brook within the Park are Mahogany Creek, Glen Brook and an unnamed stream that originates in the north-east comer of the Park. This latter stream, which flows in a general south/southwest direction, is fed by several other drainage lines and flows into Jane Brook approximately 500 m north-west of Rocky Pool on the Park's western boundary (Map 4).

All streams flow from May to November. During a wet summer they flow for even longer periods. Some areas in the Park become swampy during winter.

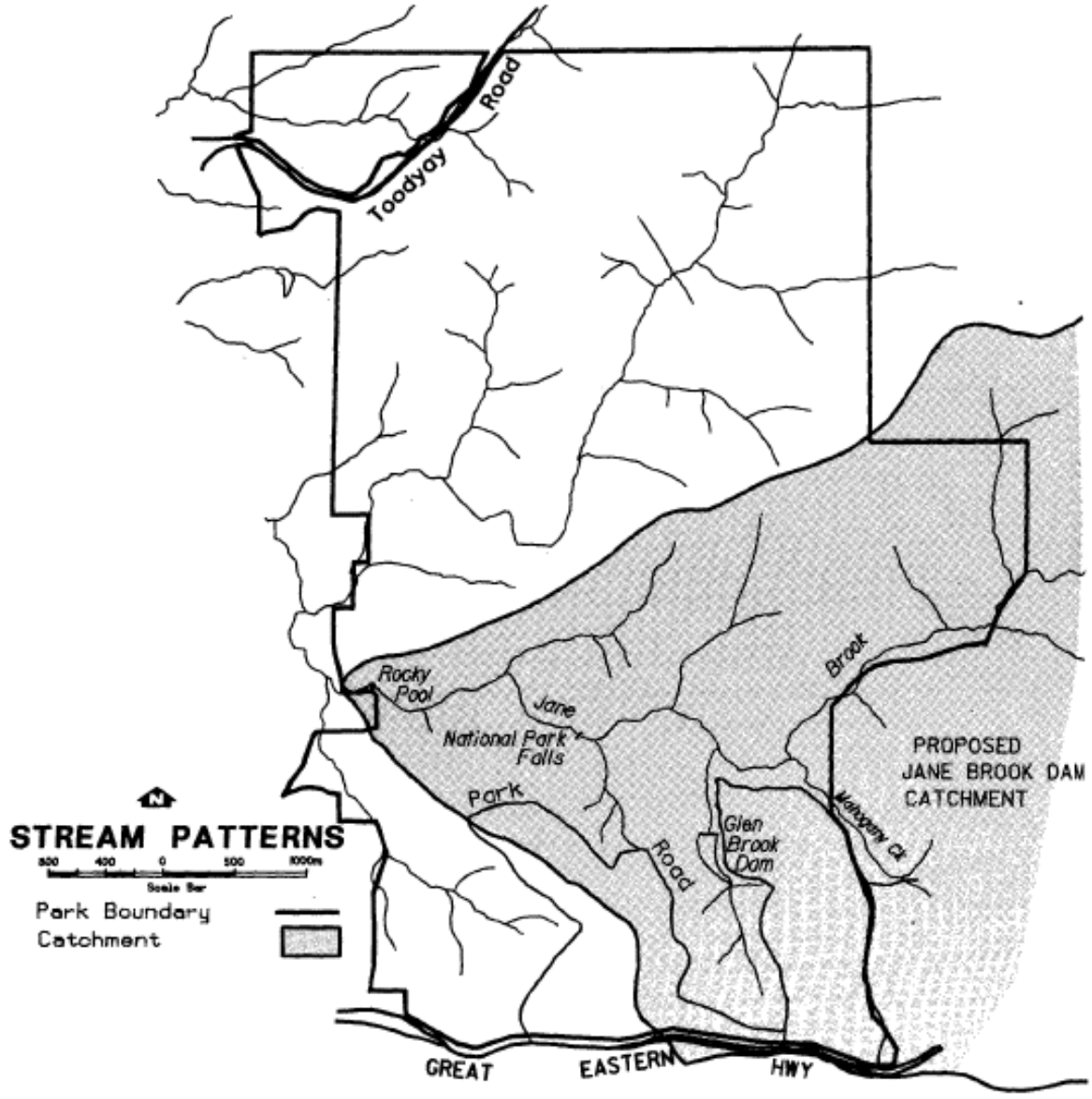
The Park's permanent and intermittent water resources have special significance as fauna habitats. Any changes to natural drainage may adversely affect the fauna and their habitat, frog nesting sites being particularly vulnerable.

The presence of water enhances the recreation experience of visitors, especially Jane Brook and the associated waterfalls. The Park's streams also have significance to Aboriginal people due to the presence of the mythological Wagyl (refer to 8.1 Aboriginal Heritage).

Catchments

The Jane Brook catchment starts on the western side of the Darling Range near Mt Helena and mostly in open farmland. An increasing number of housing areas, however, are encroaching on the catchment. The Red Hill Landfill Area is located within the catchment adjacent to the north-eastern corner of the Park. The implications for water quality are outlined below. After traversing the Park, Jane Brook flows into the Swan River near the Middle Swan Bridge.

The catchments of all streams in the Park consist of steep laterite and clay slopes with occasional granite outcrops. The V-shaped valleys and smaller gullies ensure a fast runoff that often flushes the creek system.


Toodyay Road
Rocky Pool
Jane
National Park Falls
Park
Road
Glen Brook Dam
Brook
PROPOSED JANE BROOK DAM CATCHMENT
GREAT EASTERN HWY
STREAM PATTERNS
Park Boundary
Catchment

MAP 4

Water Quality

All streams contain fresh water. Regular monitoring is carried out by the Water Authority of Western Australia. The Park's water quality is affected by land uses in the catchment area. The potential pollutants include bacteria from septic tanks, and phosphorus and other nutrients from agricultural land and domestic gardens.

The local community has expressed its concern over the possibility of pollutants leaching from the Red Hill Land Fill Area into Jane Brook.

The surface waters are monitored by Health Authorities who consider there is little or no pollution in the stream. Groundwater, however, has not been monitored although permanent monitoring sites are proposed.

Changes to future land use within the catchment areas have the potential to change the quality of the Park's water resources.

Water Storage

Three water storage areas exist within the Park. The largest is the dam across Glen Brook which was built in the mid 1960s. The dam has a wall length of 141 m, a height of 14 m and a holding capacity of 148 000 m3. This water is used for the gardens in and around the main picnic facility area and to flush out the swimming pool during the summer months.

The dam across Mahogany Creek was originally built during the 1930s to supply water for the gardens within the main picnic area. The dam is no longer used for that purpose but provides a refuge for water birds and aquatic fauna.

A smaller dam was built further downstream during the 1930s for use as a swimming pool. Over the years modifications have included the concreting of the pool's floor to enable it to be drained and cleaned. Although swimming is not recommended as the water is untreated, many people ignore the warning signs.

Water Storage Proposals adjacent to the Park

Currently the Water Authority of Western Australia is considering building a small dam across Jane Brook outside the Park (see Map 4 for proposed catchment area). The proposal is to pump water to a major holding source, similar to the Pipehead Dam in the Helena Valley, which feeds water back to the Mundaring Weir. CALM and the Environmental Protection Authority will assess the proposal when it is presented.

ACTIONS

1. Consider Aboriginal concerns relating to the Park's waterways in all management activities.

2. **Protect the Park's water resources during all management activities.**

3. **Minimise environmental impacts from recreation and other management activities along stream lines.**

4. **Liaise with other Government departments, local government authorities and landowners to discourage land-use practices upstream of the Park which may adversely affect the quality and quantity of water in the Park.**

5. **Support and promote the continued monitoring of stream flow and water quality within the Park.**

6.4 VISUAL LANDSCAPE

The objective is to plan and implement management activities to complement the visual qualities of the Park's landscapes

John Forrest National Park's visual landscape is one of its most valuable resources. The landscape includes native bushland, valleys and undulating hills covered with a diversity of vegetation interspersed with granite outcrops, waterfalls and stream courses, and historic and cultural landscape elements such as the picnic shelters.

Visual changes to the landscape occur continually. Natural changes are generally subtle and harmonious. Human imposed changes, however, can either visually intrude upon natural or cultural landscape elements and can appear disharmonious and alien, or enhance the surrounding landscape elements and increase its visual quality. It is also pertinent that modifications to the visual landscape can be perceived as positive or negative depending upon a number of variable factors, including viewer position, length of time that changes are obvious, view distances and type of landscape alteration. The ability of the landscape to absorb change without loss of scenic value also varies and this depends upon topography, soils and vegetation cover. It is thus obvious that visual landscape management involves extensive broad scale and on-site analysis, project impact evaluation, together with sensitive design and construction methods.

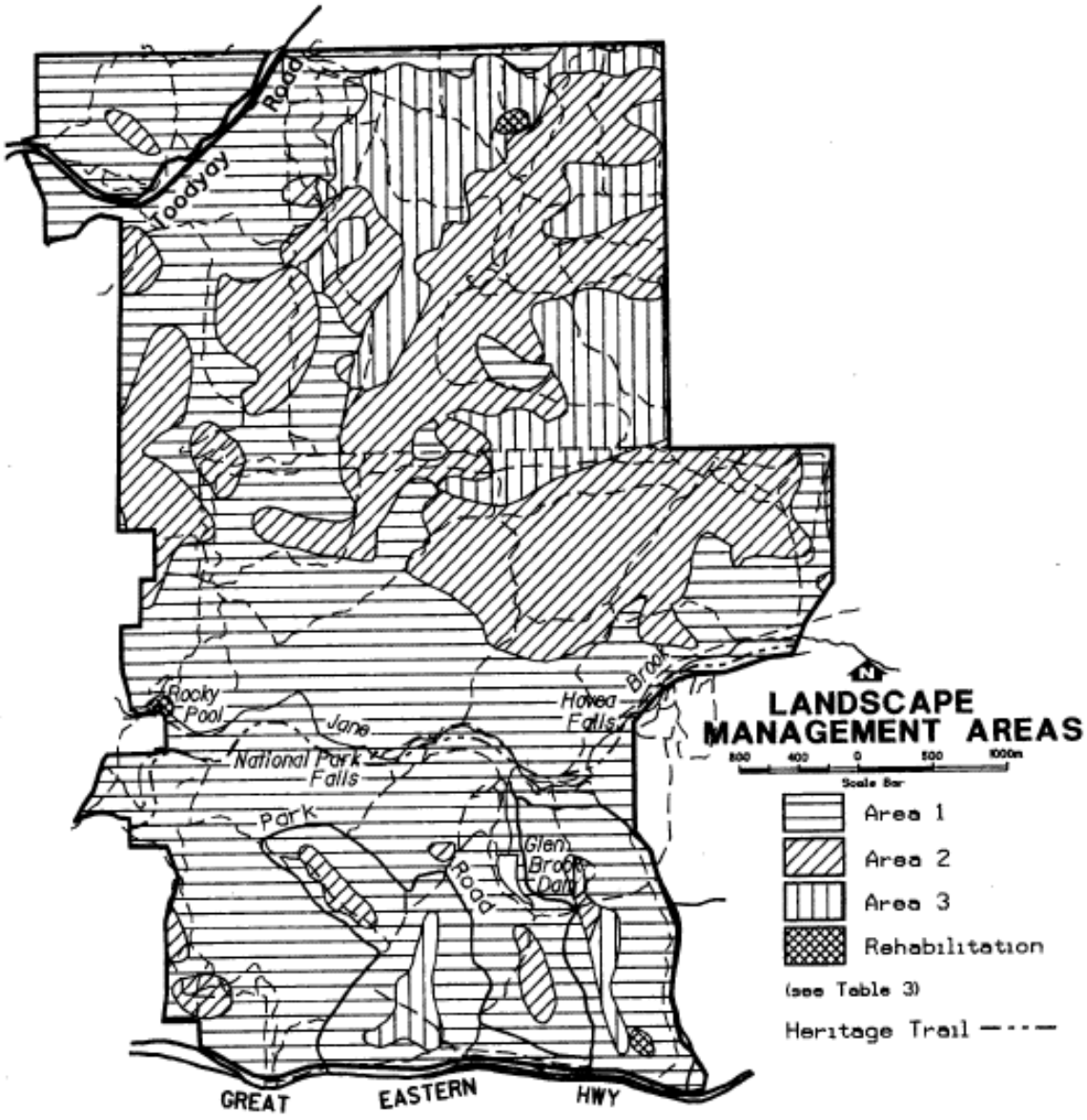
The broad scale and site-specific scale assessments of the Park's visual landscape, with management, follow.

Broad Scale Landscape Assessment

A broad scale landscape assessment was carried out for the Darling Scarp which included John Forrest National Park (Stuart-Street and Kirkpatrick, 1990). This study follows CALM's Landscape Management System as described in Revell (1991). The majority of the Park's landscape is classified

as high scenic quality characterised by the presence of granite rock outcropping, Jane Brook Valley, waterfalls, and a high diversity of vegetation. The remaining landscape is considered moderate scenic quality and is characterised by gently undulating topography and moderate vegetative diversity.

The broad scale landscape management areas for John Forrest National Park were identified and delineated by compiling mapped information on the Scenic Quality Classes (or the physical landscape component), and the Public Sensitivity - Seen Area maps (the social landscape component). This compilation has resulted in the landscape being categorised into broad areas of visual importance for management (Map 5). These landscape management areas, together with management objectives and priorities, are described in Table 3.


Toodyay Road
Rocky Pool
Jane
National Park Falls
Park
Road
Glen Brook Dam
Howea Falls
Brook
GREAT EASTERN HWY
N
LANDSCAPE MANAGEMENT AREAS
800 400 0 500 1000m
Scale Bar
Area 1
Area 2
Area 3
Rehabilitation
(see Table 3)
Heritage Trail

MAP 5

Site-Specific Scale Landscape Assessment

Landscape management at the site-specific scale involves comprehensive on-site analysis so as to define issues and projects relating to protecting and enhancing specific landscape components (including landform, vegetation, waterform and built form components). The planning and design of recommended site improvements would then follow.

The main components of site-specific scale assessment are the:

- identification of a range of viewing opportunities, and optimal view positions;
- identification of points of specific visual interest; and
- identification and restoration of degraded areas.

Table 3. LANDSCAPE MANAGEMENT AREAS

LANDSCAPE MANAGEMENT AREA	LANDSCAPE MANAGEMENT OBJECTIVE	MANAGEMENT PRIORITY
Area 1	The landscape management objective for Areas 1, 2 and 3 is 'Preservation'. These areas include those landscapes where visual landscape values are of very high aesthetic importance and have priority over other natural resource values. The recommended alteration level for these areas allows for little more than natural change or very low impact changes which are carefully planned to accommodate and/or enhance the visual qualities of the area	High
Area 2	See above	Moderate
Area 3	See above	Low
Rehabilitation	Landscape alterations which have resulted from past management practices or natural events and do not satisfy the desired visual quality objective will require rehabilitation. This priority should be retained until the desired standard of visual quality is attained.	High

View Opportunities, Optimal View Positions and Points of Interest

Points or areas which offer extensive views of surrounding areas are identified as optimal view positions.

Optimal view positions and their corresponding points of interest identified in the Park include:

- lookout on hill north of Rocky Pool;
- lookout No. 1 with extensive views over the western edge of the Park, the Swan Coastal Plain, the central business district of Perth, and the coastline;
- National Park Falls;
- Hovea Falls;
- the railway formation from National Park Falls to the tunnel with widespread views of the Swan Coastal Plain;
- the scenic drive;
- parts of the track used by horse riders with views of Jane Brook Valley; and
- the granite outcrops in the north-western portion of the Park.

View Enhancement

Opportunities to rehabilitate, develop or enhance views along travel routes and use areas should be maximised. View enhancement should initially focus on reducing negative visual impacts in the Park. Existing negative impacts within the Park include:

- disused clay and extraction pits, particularly in the northern extension;
- Rocky Pool recreation site - degradation of stream bank associated with undefined car parking, and damage to vegetation from site associated with use;
- eroding surfaces along the scenic drive; and
- numerous track alignments.

In addition, existing developments and land use activities adjoining the Park have the potential to intrude on and detract from the quality of the visual landscape as viewed from the Park. Such impacts include: Hovea residential subdivision; Red Hill landfill area; the litter encroaching into the Park from the truck bay in Great Eastern Highway; and the potential re-alignment and upgrading of Toodyay Road.

Table 4 sets out planning and design guidelines that should be implemented in all the

Park's landscape management programs.

ACTIONS

1 Ensure the landscape management Preservation Objective is adhered to at all times in the management of the Park.

2. Incorporate the planning and design guidelines shown in Table 4 in all the Park's landscape management programs.

3. Liaise with surrounding Shires, other Government agencies and private landholders concerning the need to consider visual landscape management on lands adjoining the Park.

Table 4. VISUAL LANDSCAPE MANAGEMENT GUIDELINES

VISUAL LANDSCAPE MANAGEMENT GUIDELINES

- Alterations to the natural landscape should be subtle, remaining subordinate to natural elements by borrowing extensively from the form, line, colour, texture and scale of the surrounding landscape;
- A site plan, at an appropriate scale, should be completed and approved before any development, maintenance or rehabilitation works are implemented. It is recommended that these priorities be considered:
  - Rocky Pool
  - the scenic drive including vehicle parking nodes and traffic management
  - the main recreation area including the tavern and tea rooms areas;
- Degraded landscapes, eg. quarries and tips, should be rehabilitated after use;
- Road and path design should remain subordinate to landscape elements by utilising minimum design standards, limited cuts and fills, minimum clearing width, undulating edges, sensitive alignment and immediate revegetation of disturbed areas;
- Interpretive and explanatory signs should be used before and during operations that alter visual landscape qualities;
- Where structures are required they should be sympathetic in design, materials and colour to complement surrounding landscape elements and be sited away from major natural focal points, out of viewer sight lines and where vegetation or landform screening can be utilised;
- Roads and walk tracks should focus views onto distinctive features within the area by selective siting and alignment;
- Essential firebreaks should follow natural landform, vegetation or landuse patterns/breaks;
- Protection burning should be done before periods of high vegetation growth (where possible) and incorporate minimal visual impact prescriptions and techniques;
- Previously disturbed areas within areas of high scenic quality should be given the highest priority for rehabilitation until the desired standard of scenic quality is attained; and
- Where facilities and/or activities are likely to negatively impact on visual landscape values, theft such impacts should be clearly identified, through planning and design and subject to ongoing management controls and monitoring.

7.0 BIOLOGICAL RESOURCE MANAGEMENT

7.1 VEGETATION

The objective is to protect existing native plant communities.

One of the most distinguishing features of John Forrest National Park is the diversity of vegetation structure that ranges from jarrah, marri/wandoo woodlands to the scarp heathlands (Beard, 1982). Jarrah dominated forest occupies about 50% of the Park. The vegetation complexes at the edge of the Darling Scarp and the Swan Coastal Plain are of particular interest. These communities are unique and extremely limited in range. The continued pressure of urbanisation enhances the value of these remnants. John Forrest National Park represents the northern limit of several jarrah forest species.

The Park lies within the Dale Botanical subdistrict of the Darling Botanical District. The plant communities are closely linked to the landforms and soils. Five vegetation complexes have been identified (Heddle *et al*, 1980):

- Dwellingup Complex - Lateritic uplands.
- Yarragil Complex - Minor valleys.
- Helena Complex - Major valleys combining slopes and floors.
- Murray and Bindoon Complex - Major valleys combining slopes and floors.
- Darling Scarp Complex - Major valley floors and scarps.

The Yarragil vegetation complex is of particular regional significance because it is inadequately represented in conservation reserves (Havel Land Consultants, 1987). Small areas of this complex are found outside the Park in Kalamunda and Serpentine National Parks, Lake Leschenaultia, and in a proposed conservation park (currently State Forest).

Although well represented in conservation reserves, the Darling Scarp complex is restricted to a linear, north-south strip less than three kilometres wide on the western edge of the Darling Plateau. The area of Darling Scarp complex within John Forrest National Park is, therefore, of regional importance, especially since urban development has, and will continue to, disturb and destroy this vegetation complex outside conservation reserves.

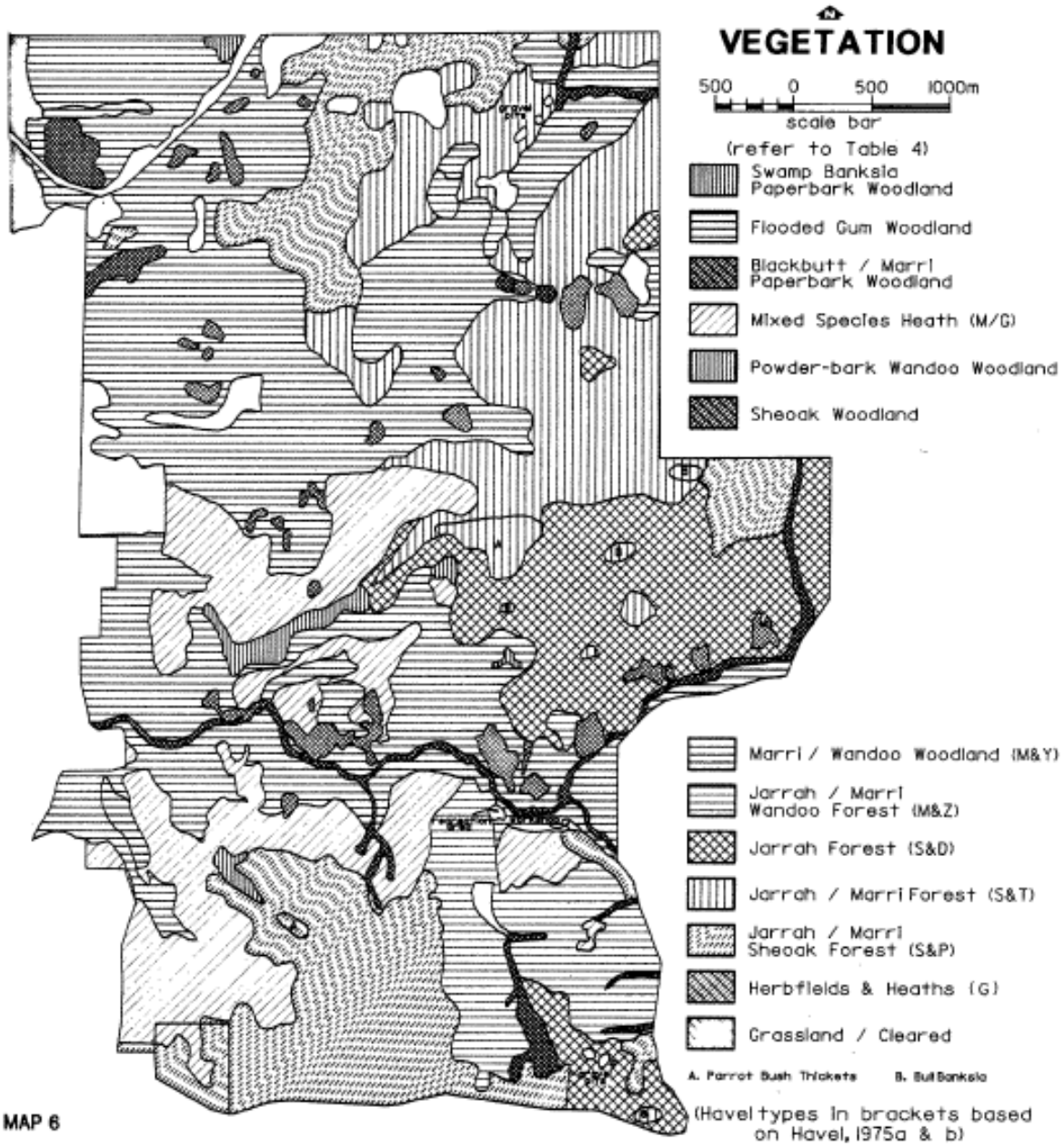
The Dwellingup and Helena vegetation complexes are adequately represented in conservation reserves in the Region, such as the Lane Poole and Monadnocks reserves, Serpentine, Kalamunda, Walyunga and Avon Valley National Parks, and the proposed Wandoo conservation park.

Vegetation Communities

Ten major vegetation communities were identified during a vegetation survey of the Park conducted as part of the preparation of this management plan (Table 5 and Map 6) (E M Mattiske & Associates, A Cuninghame and D Briggs, pers. comm, 1991).

Table 5. VEGETATION COMMUNITIES IN JOHN FORREST NATIONAL PARK

VEGETATION COMMUNITY	DESCRIPTION
River and Wetlands	
Woodlands	• *Banksia littoralis* and *Melaleuca preissiana* woodland. • *Eucalyptus rudis* dominated woodland along major streams. • Mixed woodland of *E. patens, E.calophylla, M. preissiana, E. rudis* with *Trymalium floribundum.*
Valleys and Upland Heaths	
Mixed Species Heath	• Mixed heath of *Hibbertia, Xanthorrhoea, Grevillea, Dryandra, Conostylis, Acacia, Hakea, Leucopogon, Petrophile, Isopogon, Calothamnus* and myrtle with powder-bark on dolerite dykes, Christmas Tree and sheoak.
Powder-bark Wandoo Woodland	• Woodlands dominated by powder-bark wandoo *(E. accedens)* on valley slopes.
Mani/Wandoo Woodland	• Areas dominated by marri/wandoo woodland with an understorey of *Hakea, Trymalium, Xanthorrhoea, Hibbertia, Allocasuarina, Acacia, Calothamnus, Grevillea* and *Darwinia* often in association with granite outcrops.
Sheoak Woodland	• Woodlands dominated by sheoak *(Allocasuarina huegeliana)* on valley slopes.
Jarrah Forest	• Jarrah dominated forest with *Hibbertia, Xanthorrhoea, Zamia, Myrtle, Hakea, Isopogon, Dryandra* and *Pimelia.*
Jarrah/Marri Forest	• Mixed forest containing *Banksia grandis, Bossiaea, Xanthorrhoea, Allocasuarina* and thickets of parrot bush *(Dryandra sessilis).*
Jarrah/Marri/Wandoo Forest	• Mixed forest with understorey of *Acacia, Hakea, Hibbertia, Xanthorrhoea, Trymalium* and myrtle.
Jarrah/Marri/Sheoak Forest	• Mixed forest with *Banksia grandis, Hibbertia, Xanthorrhoea,* sedges and thickets of parrot bush *(Dryandra sessilis).*
Granite Complexes	• Herbfields and heaths associated with granite outcrops.


VEGETATION
500 0 500 1000m
scale bar
(refer to Table 4)
Swamp Banksia Paperbark Woodland
Flooded Gum Woodland
Blackbutt / Marri Paperbark Woodland
Mixed Species Heath (M/G)
Powder-bark Wandoo Woodland
Sheoak Woodland
Marri / Wandoo Woodland (M&Y)
Jarrah / Marri Wandoo Forest (M&Z)
Jarrah Forest (S&D)
Jarrah / Marri Forest (S&T)
Jarrah / Marri Sheoak Forest (S&P)
Herbfields & Heaths (G)
Grassland / Cleared
A. Parrot Bush Thickets
B. Bull Banksia
(Havel types in brackets based on Havel, 1975a & b)

MAP 6

Monitoring Plots
Monitoring plots have been established in the Park in locations that are representative of major vegetation communities (Mattiske *et al,* 1991). Recordings within these plots of species present, flowering and indications of stress were made during spring and autumn, 1990. Data from these plots show that some parts of the Park are floristically very rich, particularly in jarrah/sheoak forest. These plots will provide useful benchmarks for future research, particularly in relation to monitoring the response of plants to fire.

ACTIONS

1. **Minimise the introduction and spread of disease by implementing actions in 7.4 Disease and 12.0 Access.**

2. **Represent each major vegetation complex by a late seral stage (see 7.5 Fire Management).**

3. **Minimise removal or damage to vegetation caused by road or track construction and maintenance, and the development and maintenance of facilities for visitor use.**

4. **Rehabilitate degraded vegetation communities wherever possible.**

5. **Carry out research into the response of plant community types to management regimes, especially fire. Modify management practices as necessary.**

6. **Use the established monitoring plots as reference areas for further research and monitoring. Monitor to determine the longer term responses by plants to fire and other impacts.**

7.2 FLORA

The objectives are to:

1. *Protect and maintain viable populations of local plant species, emphasising threatened, rare or geographically restricted species and those with key roles in plant communities.*
2. *Minimise the introduction and spread of plant diseases and introduced plants.*
3. *Provide opportunities for visitors to gain an appreciation of the Park's flora and its management.*
4. *Gradually replace introduced planted species with local plant species.*

Regional Context
A total of 490 species of flora have been recorded in the Park (P. Armstrong, pers comm, 1990). These species are from eighty-five families, representing almost 50% of those recorded for the Perth

region, including two families of insectivorous plants with more than 12 species represented. However, the flora is generally typical of that expected from the vegetation complexes recorded.

Peak flowering occurs in spring (particularly September and October), and attracts many interstate and local visitors to the Park. An herbarium was established in the Park in 1987 and currently holds about half of the Park's species. It is maintained by Park staff and is used for research and education purposes.

Threatened Flora

Studies of rare flora in the Darling Range have indicated that drainage lines, moist valleys and granite outcrops have particular significance in the conservation of rare species (Gillen, 1982; Worsley Pty Ltd, 1985; Department of Conservation and Environment, 1986). While recognising the importance of these habitats, the frequency of finding rare plants in other habitats, particularly within the lateritic plateau, is sufficiently high to suggest caution in assuming that other habitats are of lesser value (Armstrong and Muir, 1988).

One declared rare flora (DRF)[1] species, Anthocercis gracilis, is found within John Forrest National Park. Studies of rare and priority flora in the Darling Ranges have indicated that vegetation complexes and landforms within the Park may provide suitable habitat for other declared rare species, particularly scarp darwinia (Darwinia apiculata), copy cat dryandra (Dryandra mimica), cinnamon sun orchid (Thelymitra benthamiana) and the rare pimelia (Pimelea rara), although these have not been recorded.

All native flora are protected under the Wildlife Conservation Act (1950) but the declared rare flora are given special protection. The list of rare flora is reviewed annually and published in the Government Gazette. In addition, a priority list of species for the Park has been established which includes species which are rare or poorly known (Appendix 1).

Key Species

A key species is one which, if removed, could precipitate significant changes in the plant community. Key species in the Park include the trees of the forests and woodlands.

1. The term 'declared rare flora' is used to mean any plant taxon that is threatened with extinction and declared by the Minister for the Environment under the Wildlife Conservation Act as "rare flora" (i.e. "is likely to become extinct or rare or otherwise in need of special protection.")

ACTIONS

1. **Protect rare and priority flora, particularly those species susceptible to plant diseases such as *Phytophthora* dieback, and vulnerable to specific fire management regimes.**

2. **Survey areas for rare and priority flora before undertaking management actions.**

3. **Minimise damage and limit access to herbfields on granite outcrops.**

4. **Continue to maintain and develop the herbarium of the Park flora.**

5. **Gradually replace introduced plant species with local plant species.**

6. **Provide opportunities for visitors to view and increase their knowledge of the flora of the Park, including appropriate walk tracks and interpretive material.**

7.3 FAUNA

The objectives are to:

1. *Protect all native species, particularly those that are rare or vulnerable to disturbance.*
2. *Seek to reintroduce former known rare fauna inhabitants.*
3. *Control pests where this does not compromise other conservation objectives.*

The Park is important for fauna for a number of reasons. These include:

- a variety of vegetation types and associated habitats which support a diversity of fauna species. This provides a range of food and shelter that is used by individual species throughout the year. The presence of plants that flower at those times of the year when the range of flowering plants is limited is of particular importance for fauna that depends on nectar for survival;
- a comparatively large area by Darling Scarp standards which meets the needs of mammals, such as kangaroos and bandicoots;
- a corridor for animals moving along or across the Darling Range. This east-west corridor may be particularly important for the seasonal migration of birds; and
- a refuge for species whose habitats have disappeared or been disturbed by urban development on the Swan Coastal Plain and along the Scarp.

Over the years, biological surveys have been carried out and permanent monitoring sites have been established. The Park has 10 species of native mammal (one declared rare), and 91 species of birds (two considered to be in need of special protection), 23 species of reptiles and 10 species of frogs.

Seven species of birds, five reptiles and three mammals that are found in the Park are endemic to the south-west of Western Australia (Ninox Wildlife Consulting, 1991). Feral animals which have become established in the Park include seven mammal and two bird species (see 7.6 Feral Animals and Domestic Pets).

No comprehensive survey of the fauna of the entire Darling Scarp has been undertaken. Environmental assessments for bauxite mining and surveys by the W.A. Naturalists Club have provided data for several selected sites. Opportunistic observations, particularly for birds, have been carried out for a number of years by Park Rangers, other CALM staff and the Royal Australasian Ornithologists Union. The following discussion includes the historical data and the results of a detailed fauna survey of the Park conducted by Ninox Wildlife Consulting (1991).

Mammals

Dell (1983) recorded 23 native mammal species on the Darling Scarp, seven of which have declined not only on the Darling Scarp but throughout the south-west. This decline has been attributed to introduced species such as the fox, disease, land clearing and inappropriate fire regimes. Disturbance associated with urban development has contributed to the decline of mammal populations.

Eleven native mammal species have been recorded in the Park:

- Short-beaked Echidna *Tachyglossus aculeatus*
- Mardo (Yellow-footed Antechinus) *Antechinus flavipes*
- Common Dunnart *Sminthopsis gilberti*
- Quenda (Southern Brown Bandicoot) *Isoodon obesulus*
- Brushtail Possum *Trichosurus vulpecula*
- Western Pygmy Possum *Cercartetus concinnus*
- Honey Possum *Tarsipes rostratus*
- Western Brush Wallaby *Macropus irma*
- Western Grey Kangaroo *Macropus fuliginosus*
- Euro *Macropus robustus*
- Chuditch *Dasyurus geoffroii*

Three mammals found in the Park are endemic to Western Australia, they are the common dunnart (*Sminthopsis giberti*), the honey possum (*Tarsipes rostratus*) and the western brush wallaby (*Macropus irma*). Once common, the latter appears to be declining in numbers and is now rarely seen in the Park (R. Waterhouse, pers. comm., 1991). The quenda and the chuditch are declared rare species.

Birds

Of the 100 bird species known to occur on the Darling Scarp (Dell, 1983), 91 have been recorded within the Park. None of these are declared rare, however, Carnaby's Black Cockatoo

(*Calyptorhynchus funereus latirostris*) and the Red-eared Firetail (*Stagonopleura oculata*) are declared in need of special protection.

Several bird species, or groups of species, rely heavily upon particular vegetation types and habitats in the Park (Ninox Wildlife Consulting, 1991). Parrots, owls and treemartins require hollow trees for nesting. Smaller bush birds, such as wrens and robins, require and thrive in, the dense thickets of hakea and grevillea found around granite outcrops. Creek and stream line vegetation also provides important habitat for wrens and robins, as well as the Grey Shrike-thrush and Red-eared Firetail.

The Park also provides important habitat for migratory and nomadic bird species. Honeyeaters are often regarded as nomadic species, their movements being related to honey and nectar supplies. The Park provides essential refuge for breeding of several such species. Most bird species recorded in the Park are sedentary.

Populations of robins, whistlers, wrens, tree-creepers, several honeyeater species and the Red-eared Firetail have declined dramatically on the Swan Coastal Plain and are declining on the Scarp. This decline may be attributed, in part at least, to habitat fragmentation largely associated with clearing for agriculture and urban development. Disturbance to riparian (streamline) vegetation is likely to have adversely affected the majority of bird species on the Scarp (J. Dell, pers. comm., 1991).

Another impact on bird populations is predation by feral and domestic animals. Predation is likely to have the greatest effect on birds that nest close to the ground, such as wrens and Painted Button-quails. Fires affect birds by temporarily removing vegetation cover, and thus food, nesting material and refuge from predators.

Amphibians and Reptiles

Forty-one species of reptiles and 10 species of frog have been recorded from the Darling Scarp (Dell, 1983). A total of 23 reptile species and all 10 frog species have been recorded from the Park (Ninox Wildlife Consulting, 1991). Further work would no doubt reveal the presence of more reptile species.

Granite outcrops provide specialised habitat for reptiles. The gecko Gehyra variegata, which occurs in the Park, is only known from granite outcrops. Stream zones also provide specialised habitat for several amphibian and reptile species.

No declared rare species have been recorded in the Park. However, one species of snake, the Carpet Python (Morelia spilota imbricata), which is declared as in need of special protection, is likely to occur in the Park (Ninox Wildlife Consulting, 1991).

Terrestrial and Aquatic Invertebrates

Little is known of the Park's invertebrate fauna. They are important in the Parks ecological processes as they are important components of food chains. They also have a major role as decomposers,

recycling nutrients. Stream zones tend to have greater numbers and diversity of invertebrates (J. Dell, pers. comm., 199 1).

The Park is host to a variety of ant species of which the meat ant is the most common. Ants can cause discomfort to picnickers and walkers, particularly in summer when large numbers of ants appear above ground.

John Forrest National Park is the type locality for a species of springtail (Collembola

Little is known about the aquatic invertebrates in the Park, and the effects that introduced invertebrates may have on the native species. Studies elsewhere in the Darling Range indicate that elements of the invertebrate fauna are unnamed, rare and relictual.

ACTIONS

1 **Protect animal habitats from the further spread of *Phytophthora* dieback disease (see 7.4 Disease), inappropriate fire regimes (see 7.5 Fire Management), and human disturbance.**

2. **Regularly monitor fauna in the Park using established monitoring sites.**

3. **Increase knowledge on the Park's fauna, record the incidences of death or injury to fauna from collision with motor vehicles and other causes.**

4. **Determine the key terrestrial and aquatic invertebrates in the Park. Give priority to determining the invertebrates which are rare and threatened.**

5. **Investigate reintroduction of former known rare fauna inhabitants, e.g. chuditch, following fox control.**

6. **Monitor the impact of introduced terrestrial and aquatic invertebrates on the local species.**

7.4 DISEASE

The objectives are to:

1. *Minimise the spread of Phytophthora dieback and other plant diseases.*
2. *Rehabilitate areas affected by Phytophthora dieback and other plant diseases.*

PHYTOPHTHORA DIEBACK (*Phytophthora* spp)

Phytophthora dieback disease, principally *Phytophthora cinnamomi*, has been in John Forrest National Park for about 70 years, probably having been introduced during timber production operations. Spread of phytophthora dieback has been from sources high in the landscape, by machinery used in logging operations and in constructing roads and tracks, and presumably in the use of tracks by vehicles, horses and walkers.

About 70% of the jarrah forest in the Park is infected with *Phytophthora* dieback disease although the impact is highly variable. Several sections of the Park remain free of the disease and have a high conservation value (Map 7).

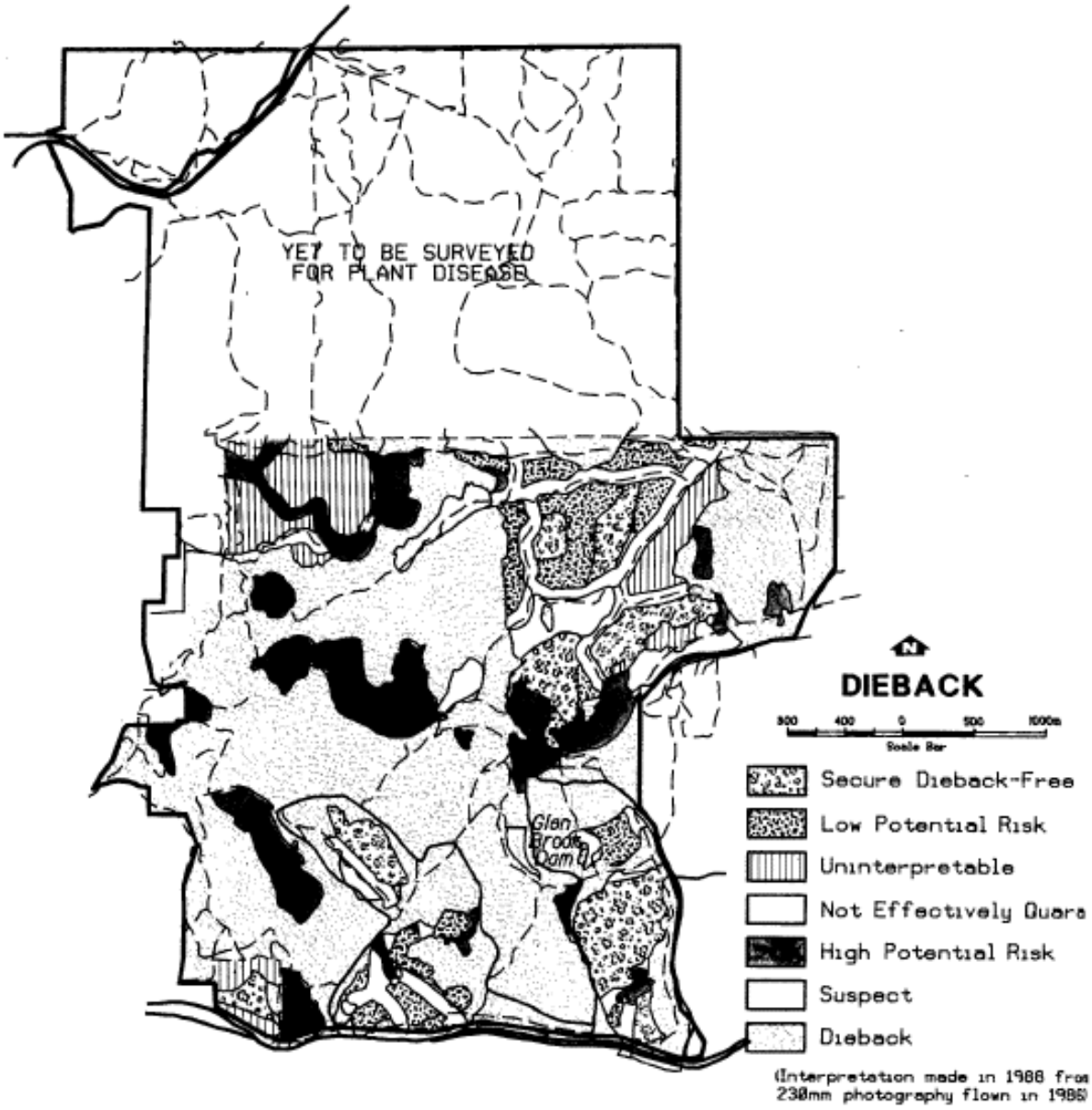
Phytophthora dieback alters the forest environment by:

- killing susceptible species such as jarrah, banksia and many species of understorey vegetation. The families of plants that are known to be affected include Proteaceae, Myrtaceae, Epacridaceae and Papilionaceae, which make up a significant proportion of the Darling Range species;
- indirectly affecting some species when the water table rises after transpiration decreases (the species most likely to suffer are those whose roots are sensitive to water logging); and
- affecting fauna habitats and visual resources as a result of vegetation death.

Despite the presence of *Phytophthora* dieback, the Park's conservation values remain high and the disease does not appear to be spreading rapidly. In some areas of the Park, *Phytophthora* dieback-susceptible species have been replaced by species resistant to the disease.

Methods to reduce the spread and intensification of *Phytophthora* dieback will be introduced with caution. Methods will only be used where research shows that the associated ecological effects are likely to be minimal. During the life of this management plan, methods of increasing plant resistance to disease may become available. CALM is presently testing the application of phosphorous acid to increase the resistance of plants infected with *P. cinnamomi.* Preliminary results are encouraging (B Shearer, pers. comm., 1991). The practical application of this treatment to susceptible plants is being investigated.

External environmental factors that increase the stress of plants, such as drought and fire, also influence disease expression. Table 6 outlines the relationship between landform unit and disease expression.


YET TO BE SURVEYED
FOR PLANT DISEASE
Glen Brook Dam
N
DIEBACK
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Scale Bar
Secure Dieback-Free
Low Potential Risk
Uninterpretable
Not Effectively Quara
High Potential Risk
Suspect
Dieback
(Interpretation made in 1988 fro
230mm photography flown in 1986)

MAP 7

HONEY FUNGUS (Armillaria luteobubalina)

Three areas of the Park are known to be infected with honey fungus, a golden yellow fungus with spores borne on gills similar to a mushroom. The fungus generally grows in clumps on tree bases or stumps, and the fruiting body appears in the wetter months of the year (June/July). Infections can result in many trees dying at some sites or single trees dying at others. Although *Armillaria* is naturally occurring in the south-west, its normal slow rate of spread by direct root contact may be exacerbated by the movement of infected root material associated with construction works.

Table 6. RELATIONSHIP BETWEEN LANDFORM UNIT AND DISEASE EXPRESSION

LANDFORM UNIT	DISEASE EXPRESSION
Dwellingup	Disease expression is high. *Phytophthora* dieback infections are well established and boundaries are obvious.
Yarragil	Disease expression is poor, possibly due to the age of infection resulting in a new forest of disease-resistant species.
Helena	Shows very low disease expression up the slopes, while in the deeply incised valleys expression is moderate.
Murray	Disease expression is low to moderate except where *B. grandis* is present.
Darling Scarp	Disease expression is poor and many deaths are due to dry harsh conditions.

ACTIONS

1 Implement CALM's Policy Statement No. 3 *(Phytophthora* dieback) in all aspects of disease management in the Park.

2. Prohibit vehicles and horses from moving off formed tracks that pass through *Phytophthora* dieback-free areas. Require walkers to stay on formed tracks in disease affected areas especially during high risk times of the year.

3. Include disease management specifications in contract documents (including commercial purpose licences) and job prescriptions, where appropriate.

4. Survey the incidence of plant diseases in the Park's northern extension.

5. Survey for *Armillaria* as required when management and construction operations are to take place.

6. Inform Park users about plant diseases (see 18.0 Information, Interpretation and Education).

7.5 FIRE MANAGEMENT

The objectives are to:

1. *Protect life, property and environmental and community values in and near the Park.*
2. *Provide for and maintain the existing natural abundance, composition and diversity of vegetation associations and wildlife habitats.*
3. *Minimise the spread of disease and weeds by fire management operations.*
4. *Protect landscape values from severe damage by uncontrolled fire, inappropriate burning regimes or suppression techniques.*
5. *Reduce the incidence of unplanned fires.*
6. *Restrict fires to a single block where possible.*

Fire History

Fire was and continues to be a recurrent event in most eucalypt forests in Australia. Lightning strikes and the use of fire by Aborigines were the source of forest fires for thousands of years before European settlement.

Wildfires have occurred from time to time in the Park since its declaration as a National Park, and since the early 1970s prescribed bums have been carried out in the Park as part of a fuel reduction program.

John Forrest National Park is totally surrounded by residential lands, including suburbs and rural lands. These areas represent both a high source of wildfires, as well as highly vulnerable assets that must be protected from fires that could emanate from the Park.

Fire Behaviour

Fire behaviour is affected by the amount and type of fuel, air temperature, fuel dryness, wind speed and topography (Sneeuwjagt and Peet, 1985). Different fuel types accumulate fuel at different rates and have different fire spread characteristics. Two major fuel types exist in the Park, namely a typical jarrah/marri forest mix with understorey vegetation, and heath land to the western/north- western boundary with pockets of wandoo.

A typical summer wind pattern starts with south-east/north-east winds in the morning, followed by often quite fresh south-west sea breezes in the afternoon followed by a return to easterly winds later in the day.

The topography of the Park includes steep rocky slopes and gullies that make wildfires difficult and dangerous to control and can promote erratic and severe fire behaviour.

It is desirable to provide for a wide diversity in vegetation structure and habitat types. This can be achieved by varying fire frequency, intensity and season and relying on the natural variation in vegetation development within the major vegetation types. For example there is a wide variation in the fuel accumulation rates between the vegetation associations. An extensive fire that bums most or all of each major vegetation association is considered undesirable. Fuel reduction burns will ensure sufficient young seral stages. As some rare species tend to be those favouring a late stage of succession, it is desirable to maximise the age of other areas to ensure that vulnerable species are not disadvantaged. Frequent fires (that is every three years or so) could reduce the species diversity of an area and the habitat availability. An increase in the presence of weeds and a long-term impact on an area's visual quality can also result from frequent and high intensity fire.

The fire plan proposed in the draft management plan has been amended after considering submissions that indicated the draft proposal did not provide sufficient protection for life and property due to the Park's location in relation to residential areas. The revised plan still provides for the conservation objectives of the plan but provides better protection of the community from fire.

Fire Suppression

A fire suppression plan for John Forrest and Greenmount National Parks has been developed by the Bush Fires Board in consultation with CALM, the Shires of Mundaring and Swan and the W.A. Fire Brigades Board. The plan ensures rapid deployment of suppression forces for the protection of community values and is supported by a fire detection system.

STRATEGY

In order to achieve the overall objectives of protecting life, property and environmental values and conserving natural ecosystems, three separate fire regimes will be implemented. The plan takes special consideration of the close proximity of residential lands to the Park. Fire regimes will be managed in order to ensure variations in fire intensity, season and soil dryness when areas are burned so that ecological diversity of vegetation responses to fire treatments is provided. As far as possible all vegetation communities will be represented within the two different fire regimes for the Park. Strategic fire breaks, if required, will be developed in conjunction with adjoining land owners and local authorities.

No Planned Burn Regime

Parts of most major vegetation types will not be burnt by prescribed fire within the life of the plan. These areas are located away from likely ignition sources such as major roads and recreation areas. They include all those areas of the Park which are considered to have the highest conservation values and ecological diversity, in particular the Darling Scarp heathlands which are least represented in the conservation estate. Maximum protection from unplanned fires needs to be ensured for these areas, including maintenance of good perimeter access and regular burning of parts of adjacent areas.

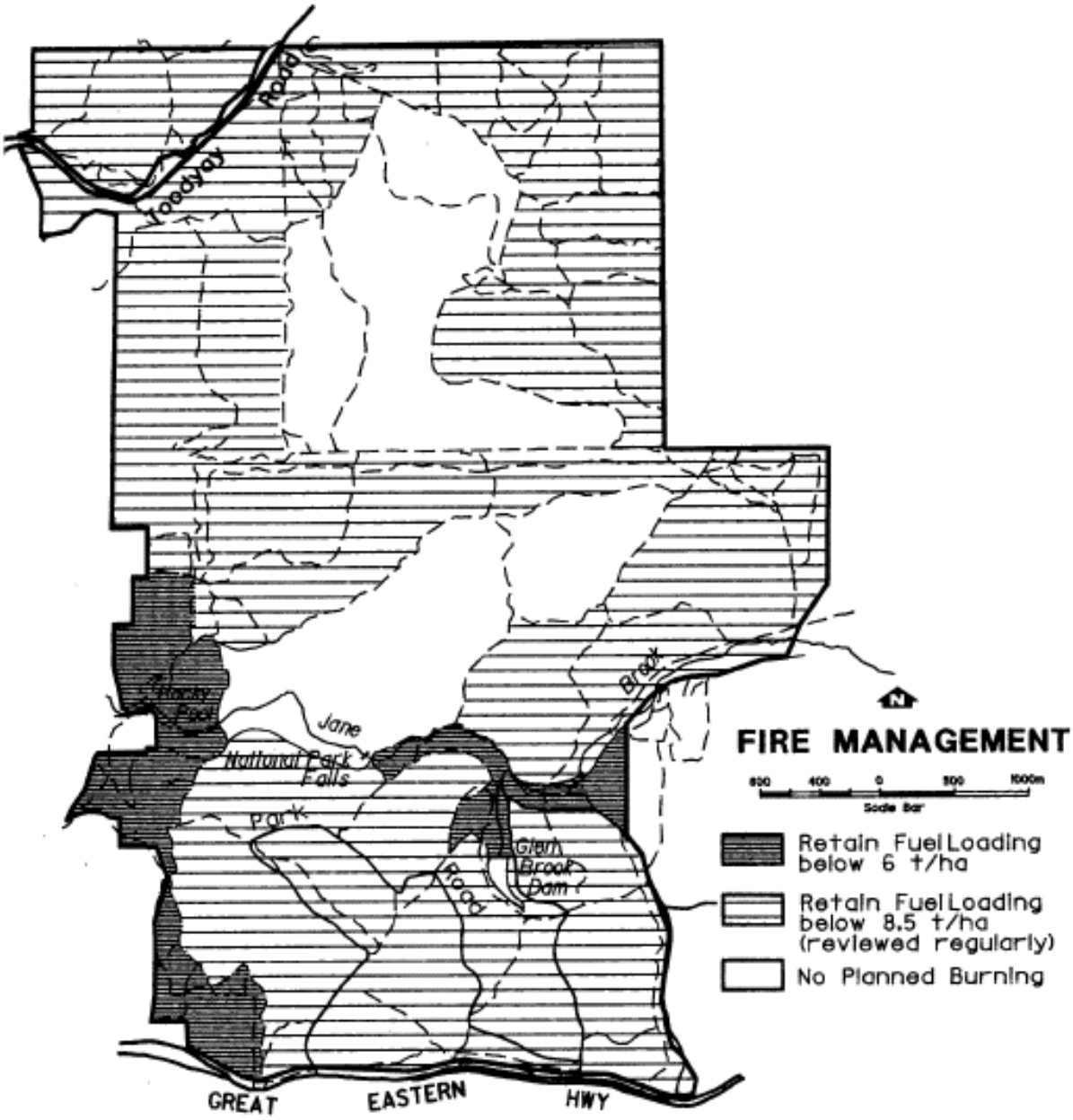
Fuel Reduction Regime

The Fuel Reduction Regime will be applied to designated areas whenever ground fuel loads exceed critical levels at which fire containment by direct attack, under hot summer conditions, becomes very difficult and unsafe for firefighters. Fuel loads are determined by estimates based on field measurements of litter depths and shrub height and density. Fuel tonnage limits within the areas where the Fuel Reduction Regime is applied will be set either at 6 tonnes per ha or 8.5 tonnes per ha depending on location (see Map 8). As fuel accumulates at different rates, the rotation period between burns will vary from approximately 6 years (for dense forests) to approximately 12 years (for heath fuel and open, low forests) thus creating a variety of fuel ages and contributing to ecological diversity within the vegetation communities.

The aim of prescribed burning wide zones is to restrict the spread of large, intense wildfires. Areas of low fuel have been located adjacent to areas with a recognised high risk of fire ignition or where high values are at risk. They consist of perimeter buffers and strategically located blocks throughout the Park. As far as possible, scheduling of adjacent bums will be done to maximise fuel age differences.

The fire management plan will be reviewed annually in the light of additional scientific knowledge, and in the event of unplanned fires, to determine whether or not there should be changes to the areas to be burnt for ecological or protection purposes.

NOTE: As fuels accumulate at different rates depending on the forested vegetation type and cover, the rotation period between bums can vary greatly (for example, from 6 years in dense forest to 12 years in open woodlands).



MAP 8

ACTIONS

1. **Follow the Fire Suppression Response Plan, as prepared by the Bush Fires Board, CALM and local brigades, in the event of wildfire in the John Forrest National Park as defined by the plan.**

2. **Implement prescribed burns in accordance with the fire management plan (Map 8).**

3. **Review the fire management plan annually.**

4. **Minimise construction of any new firebreaks and fire lines, ie. where possible, use existing tracks for suppressing wildfires or conducting prescribed burns.**

5. **Define and maintain roads required for fire control and essential management activities. Close roads not required for management purposes and considered unsuitable for public use.**

6. **Promote public awareness of fire risk, safety and survival through pamphlets, information boards and personal contact by Park staff.**

7. **Close parts of the Park during periods of very high and extreme fire danger where necessary. Prepare and implement a contingency plan for closure of the Park in the event of an emergency.**

8. **Upgrade fire breaks, if required, in conjunction with adjoining land owners and local authorities.**

9. **Liaise with neighbouring landholders and other fire authorities to encourage effective fire prevention on adjoining lands.**

10. **Ensure that Mundaring District's fire detection scheme continues to include John Forrest National Park.**

7.6 FERAL ANIMALS AND DOMESTIC PETS

The objectives are to:

1. *Control, or where possible, eradicate feral animals causing conservation, safety or health problems.*
2. *Minimise the deleterious effects of control measures on the Park's environment, visitors and neighbours.*

3. Minimise the number of domestic (pet) dogs and cats in the Park.

Non-indigenous animals, such as feral cats, rabbits, pigs, goats, foxes and domestic pets are pests and have a. detrimental effect on native animals and plants. They predate on native fauna, compete for food and shelter, and cause damage to native plants and habitats by grazing, trampling and digging.

Seven species of introduced mammal and two species of introduced bird have been recorded in the Park:

- House Mouse *Mus musculus*
- Black Rat *Rattus rattus*
- Rabbit *Oryctolagus cuniculus*
- Fox *Vulpes vulpes*
- Feral Cat *Felis catus*
- Feral Pig *Sus scrofa*
- Feral Goat *Capra hircus*
- Laughing Kookaburra *Dacelo novaeguineae*
- Spotted Turtle-Dove *Streptopelia chinensis.*

Feral animals and pets presumably have reduced the number of smaller animals found in the Park, including the dunnart, and the Yellow-footed Antechinus. Further monitoring is required in order to design management strategies to reduce the problem.

ACTIONS

1. **Implement and monitor feral animal control programs in accordance with Departmental policies and guidelines and enlist the support of the community.**

2. **Monitor and record the incidence of feral animals and pets in the Park and their impacts on the Park's flora and fauna.**

3. **Implement an education program to:**
   - **inform local residents of the effects of pets on the fauna of the Park, and prohibit pets to the Park; and**
   - **notify residents of feral animal control programs.**

7.7 WEEDS

The objectives are to:

1. *Control weeds causing major conservation problems.*
2. *Minimise the adverse effects on the environment associated with control measures.*
3. *Provide the public with interpretive opportunities to understand issues relating to weed presence and control.*
4. *Liaise with local government, other authorities, adjacent landowners and residents to promote the control of weeds on land adjoining or in the vicinity of the Park.*

A weed is defined as a plant or species growing out of place. Owing to the long history of disturbance and alienation of bushland, John Forrest National Park has severe weed problems. Numerous weed species were introduced during the installation of the railway line through the Park and other associated works. Weeds displace native plants, particularly in disturbed sites, by out-competing the indigenous species for light, nutrients and water. Changes to native plant communities by weed infestations consequently affect animal habitats. Weeds can also harbour pests and disease.

Many species of weeds have been identified along Jane Brook and the railway formation. They include Patterson's curse, capeweed, lupins, castor oil bush and cape tulip. Furthermore, several species of non-local native plants, such as *Acacia acuminata* and *Pityrodia tectiana,* occur far to the west of their natural distribution and were probably introduced by railway traffic (G. Keighery, pers. comm., 1991). Bulb-producing species, such as watsonia and chasmanthe, have invaded areas where there has been little disturbance and the native vegetation is in good condition, particularly along Jane Brook. Also of concern are the perennial grasses which are invading heathland near Rocky Pool. Control of all watsonia species must be a priority to limit further spread. Some measures to control this weed have already been instigated (English, 1990).

ACTIONS

1. **Prepare and initiate a five-year weed management program in accordance with CALM Policy Statement No. 14 (Weeds on CALM Land). Update the program annually seeking specialist advice as required.**

2. **Give priority to control of watsonia species and weeds that are encroaching on rare and priority flora.**

3. **Eradicate, where practical, isolated outbreaks of weeds while the infestations are small and easily controlled.**

4. **Revegetate areas denuded by weed control measures with appropriate local species from that habitat.**

5. **Liaise with neighbours, local government and other relevant authorities to encourage an integrated approach to weed management.**

6. **Monitor weed control measures to determine their success and the need for further treatment.**

7.8 RAW MATERIAL EXTRACTION

The objectives are to:

1. *Protect the Park's conservation and landscape values from the removal of raw material except where necessary for limited use in the Park.*
2. *Obtain raw material from outside the Park for use within the Park wherever practical.*
3. *Prohibit the removal of the Park's raw materials for use outside the Park.*

Numerous old gravel pits that were used for road works can be found in the southern area of the Park. Most are partially rehabilitated by the natural regeneration of native vegetation. Extensive gravel extraction has taken place in the northern extension of the Park. Some natural regeneration has occurred but further rehabilitation is required.

Other raw materials taken from within the Park include:

- firewood for brick kilns collected from the northern part of the Park before the area was bought by the Metropolitan Regional Planning Authority;
- saw logs from logging operations carried out until the mid 1950s;
- stone for use in the construction of walls, kerbs and paths in the main picnic area; and
- stream bed stones and small pieces of granite.

Occasionally, raw materials from the Park may be needed for maintenance and construction works (for example, stones dislodged by track maintenance for rockwork repairs). The use of materials that harmonise with existing works and the surrounding natural environment, such as the rock work associated with the gardens and paths in the main picnic area, is justified. However, in order to protect the Park's conservation, recreation and landscape values it is important that the extraction of raw materials is undertaken in a manner that protects these values.

ACTIONS

1. **Raw material may be extracted from the Park in accordance with CALM Policy Statement No. 2 (Basic Raw Materials).**

2. **Assess potential extraction sites for *Phytophthora* dieback, rare or endangered flora and fauna, and cultural significance.**

3. **Prohibit the public from taking stones and other raw materials from the Park.**

4. **Monitor the effects of taking raw materials from the Park. Use the results to protect the Park's values.**

7.9 REHABILITATION

The objective is to rehabilitate degraded areas with appropriate local species.

Some areas of John Forrest National Park have been degraded by the removal of gravel and clay, the erosion of management tracks, disturbance by people and vehicles, and weed infestations.

Earthworks will be needed to enable rehabilitating of gravel pits in the Park's north-east comer.

Tracks in the Park can erode even without use because of their location in relation to the topography. The worst erosion occurs on tracks used by horses. Other tracks in the same area are affected by vehicles and walkers. Ongoing maintenance is required.

At recreation sites, ground storey vegetation has been lost and soil compaction has occurred. A number of sites need rehabilitating, including:

- the bank of Jane Brook where erosion threatens paperbark trees;
- the Rocky Pool picnic area, including sites damaged by undefined vehicle parking; and
- the No. 2 lookout.

In addition, land in the northern extension that has been previously used for pasture will need rehabilitating. Areas from which weeds are removed may also need rehabilitating.

Indigenous species grown from seeds collected in the Park will be used to revegetate degraded sites. Where the seeds cannot be collected, an appropriate alternative source will be considered. Environmental damage must be kept to a minimum during seed collection.

ACTIONS

1. **Rehabilitate degraded areas in accordance with CALM Policy Statement No. 10 (Rehabilitation of Disturbed Land) and guidelines.**

2. **Prepare a detailed rehabilitation program.**

3. **Provide opportunities for interested individuals and groups to be involved in rehabilitation projects.**

4. **Review the rehabilitation program on an annual basis.**

5. **Train Park staff in all aspects of rehabilitation work. Seek specialist advice as required.**

6. **Monitor the effects of rehabilitation works on a regular basis. Recommend changes to rehabilitation strategies to effect improvement.**

8.0 CULTURAL RESOURCE MANAGEMENT

8.1 ABORIGINAL HERITAGE

The objectives are to:

1. *Protect the Park's Aboriginal cultural heritage.*
2. *Involve Aboriginal people in the management of the Park's cultural resources.*
3. *Encourage greater understanding and appreciation of the Park's cultural heritage.*

All Aboriginal sites are covered by the Aboriginal Heritage Act (1972-80) regardless of whether they are known to the W.A. Museum. Section 17 of this Act makes it an offence to alter in any way an Aboriginal site without written permission from the Minister for Aboriginal Affairs.

Six Aboriginal sites are presently recorded within John Forrest National Park, including Jane Brook (WA Museum, pers. comm., 1990). A comprehensive study of John Forrest National Park is necessary to determine if other sites exist.

Aboriginal people have clearly indicted that the Park is very important to them for the enjoyment of their religious and cultural life. Noongar[2] people have used this area in the past, as evidenced by the presence of archaeological sites and contemporary Noongars want to maintain these links.

CALM has made considerable progress in recent years in establishing contacts and consultation with Noongar people throughout the South-west, although formal consultations with Aboriginal groups around the Perth area have not yet advanced far.

It is likely that further mechanisms for the involvement of Aboriginal interests in conservation management will develop through the term of this plan and CALM will seek to consult with and involve Noongars consistent with Government policy of the time.

2 Noongar spelling as per Noongar Dictionary: "Noongar Language and Culture Centre (Bunbury)" 1992.

ACTIONS

1. **Identify Noongar people having cultural links and ongoing interests in the Park.**

2. **Consult with Noongar people on matters of cultural interest and involvement in Park management.**

3. **Grant Aboriginal people access for the purposes of religious and cultural activities and the protection of sites, subject to the consideration of other management requirements for the Park.**

4. **Develop suitable consultative mechanisms between Aboriginal people and CALM consistent with Government policy.**

5. **In conjunction with Noongar representatives, and subject to their views, conduct an Aboriginal site study of the Park.**

6. **Until such a study is completed, ensure that CALM's obligations are fulfilled according to relevant legislation, if any proposed activities in the Park involve development.**

7. **Incorporate information on the Aboriginal history of the Park into interpretive material.**

8. **Encourage study of Aboriginal cultural history by tertiary institutions and interested individuals.**

8.2 EUROPEAN HISTORY

The objectives are to:

1. *Protect the Park's European cultural heritage.*
2. *Encourage greater understanding and appreciation of the Park's cultural heritage.*

John Forrest National Park was declared an "A" Class reserve on 30 November 1900 and was originally known as Greenmount National Park followed by just 'National Park'. The Greenmount Road Board assumed control of the National Park in 1915. In 1928 the Road Board relinquished management of the Park to the State Gardens Board, a forerunner of the National Parks Authority. The reserve was named John Forrest National Park in late 1947 in recognition of John Forrest's involvement in the establishment of the Park.

Prior to the gazettal of John Forrest National Park in 1900, small areas were used for farming, grazing and timber production. From 1896 to 1928 William Priest, the first caretaker for the Park, lived and worked a small orchard on a 4 ha freehold block in the south western part of the Park. The National Parks agency periodically logged parts of the Park up to the mid-1950s. Stumps and snig tracks can still be seen in some parts of the Park.

In 1894/95, approximately 20 kms of railway line from Bellevue to Mt Helena was constructed. This line was known as the Mahogany Creek Deviation, although it went through Jane Brook valley, and was an improvement on the original steep and dangerous section of track up the Darling Scarp via Glen Forrest. To complete the deviation one tunnel had to be constructed, five bridges and two stations built, and six short cuttings made. Four of the bridges were in the area which is now a National Park. The 340 m long tunnel is the only tunnel built on a main railway line in Western Australia. The first passenger train used the line in 1896. The deviation remained in use as the main eastern line until 1966, when the new Avon Valley dual gauge railway was opened. The alignment now forms part of the John Forrest Heritage Trail, established to commemorate the 1988 Bicentenary.

During the 1930s sustenance workers developed the main picnic area, constructed the scenic drive, built the picnic shelters and cut firewood supplies for needy Perth families. Jane Brook was dammed to form a swimming pool and local granite was -used to build extensive rockwork parking areas, paths, seats and terraced rock gardens. Remains of their camp in the north-east corner of the Park can still be seen, including remnant foundations and a wooden bridge.

The National Parks Board, National Parks Authority and subsequently CALM have upgraded the Park's recreation facilities over the past 30 years. In 1966, the Water Authority of W.A. constructed the Glen Brook Dam. The tavern and the second rangers house were built in 1978/79.

Since 1978, John Forrest National Park has been registered on the National Estate Re Register

ACTIONS

1. **Ensure that all management decisions concerning the conservation and restoration of places of historic interest within the Park, adhere to the principles of the Burra Charter3.**

2. **Continue to protect the Park's historic structures.**

3. **Celebrate the 1995 anniversary of the completion of the Mahogany Creek Deviation with its tunnel (1895) and opening of the deviation around the tunnel (22 October 1945).**

4. **Remove the brickwork, doors and concrete survey 'stations' built in the 1970s in the Swan View Tunnel prior to 1995.**

5. **Ensure that any cultural sites, buildings and structures considered worthy of statutory protection are recommended to the Heritage Council of WA, for inclusion on the list of places of historical interest.**

6. **Develop close liaison with the organisations that are concerned with archaeology in Western Australia.**

7. **Prepare and maintain a Sites and Building Record (archaeological index) and written statement of conservation policy for the main facility area and railway line.**

8. **Seek external funding to evaluate the local, regional and national cultural significance of each historic site.**

9. **Consider ways to interpret historic sites in conjunction with the Heritage Council of WA and other agencies in a manner consistent with other National Park objectives.**

3 The Australia International Council on Monuments and Sites (ICOMOS) Charter for the Conservation of Places of Cultural Significance (the Burra Charter) contains principles concerning the preservation of structures considered to have historical value.

9.0 COMMERCIAL RESOURCE MANAGEMENT

9.1 MINING

The objective is to prohibit exploration and mining in the Park.

No 1978 Mining Act titles nor State Agreement Act titles exist over the Park. Extensive gravel extraction has taken place in the past in the northern extension of the Park. Clay deposits occur in the north-east comer of the Park.

ACTIONS

1. **Follow Government policy on exploration and mining in national parks.**

2. **Ensure that as far as possible any mining operations adjacent to the Park have minimum impact on the Park, particularly with regard to landscape values, spread of *Phytophthora* dieback and decrease in water quality.**

9.2 UTILITIES AND SERVICES

The objectives are to:

1. *Keep the Park free from future utility and service corridors.*
2. *Maintain existing corridors to minimise their impacts on the Park.*

Telecom's co-axial underground cable from the Metropolitan area to Northam follows the rail formation through the Park. Local Telecom cables are located within the Park adjacent to Great Eastern Highway and Park Road.

An overhead power transmission line from Park Road connects to the workshop, tavern and tearooms. An underground power transmission line from Park Road connects to the Ranger's residence near the Great Eastern Highway. A transmission line runs adjacent to and outside the eastern half of the northern extension of the Park.

Water supply services are provided to the workshop, tavern, tea rooms and Ranger's residences and the Rocky Pool area. Glen Brook Dam supplies water for gardens and to flush and top the main picnic area swimming pool in summer. A gauging weir is located on Jane Brook and enables flow and quality readings to be obtained.

Future Proposals

Unforeseen proposals may be made within the life of this plan. To safeguard the Park's values, it is important that proposals are consistent with the goals, objectives and actions in the plan. All proposals that may have an impact on the environment are referred to the Environmental Protection Authority (EPA), and are subject -to environmental impact assessment in accordance with the Environmental Protection Act (1986). The EPA seeks advice from CALM.

ACTIONS

1 **Negotiate the placement of new utility and service corridors outside the Park.**

2. **If a utility or service corridor must go through the Park ensure that its placement and maintenance follows strict *Phytophthora* dieback hygiene procedures, protects priority species of flora and fauna, minimises disturbance to natural drainage, minimises erosion, is in harmony with the surrounding landscape, and minimises disturbance to visitors.**

3. **Monitor the effects of utility corridors and their maintenance upon the Park's conservation, landscape and recreation values.**

9.3 BEEKEEPING

The objective is to exclude beekeeping from the Park.

No current registered apiary sites exist in the Park. An unregistered site has been used in the Park's northern extension in the past.

The environmental implications associated with the presence of honey bees from commercial hives are not yet fully understood, and the potential for adverse effects on the conservation values of the Park may be significant. Therefore, until further research indicates otherwise, beekeeping is considered an inappropriate activity in the Park.

ACTION

1. **Do not approve any apiary sites in the Park.**

PART D MANAGEMENT FOR RECREATION

10.0 PRINCIPAL RECREATION DIRECTIONS

RECREATION GOALS

Fulfill the recreation requirements of visitors by providing the widest possible range of opportunities consistent with CALM's policy statement on Recreation, Tourism and Visitor Services (Policy Statement No. 18) and to the extent that the Park's flora, fauna, landscape, and cultural values are maintained.

Provide quality recreation activities and experiences to all visitors including those with special needs.

Ensure that the experience of visitors is not impaired by overuse or conflicting uses.

Maintain the natural qualities of the Park's recreation settings.

RECREATION MANAGEMENT PHILOSOPHY

To ensure the continued enjoyment of Park visitors, it is vital that the Park be managed to protect its conservation values and to maintain both the natural environment and social values of the setting in which recreation occurs. Recreation will be managed according to the policies outlined in CALM's Policy Statement No. 18 (Recreation, Tourism and Visitor Services).

In essence, the recreation management philosophy for John Forrest National Park is to meet the needs of visitors seeking nature-based activities. This will be achieved by acknowledging special needs and providing access, where practical, to quality recreation experiences for the widest range of visitors seeking such experiences. Recreation activities will be managed to protect the Park's conservation values and to maintain the natural environment, and social values of recreation settings in perpetuity.

11.0 RECREATION OPPORTUNITIES

11.1 THE REGION

The objective is to provide recreation opportunities within the Park that complement attractions and facilities elsewhere.

A comprehensive range of outdoor recreation opportunities are available within CALM's Swan Region. These include national parks, State forest, Shire reserves, other reserves and vacant Crown land.

The Region encompasses the area south of Lancelin to Mandurah and eastwards to York and Northam, and caters for a significant proportion of "the outdoor recreation opportunities sought by the people of Perth. Recreation opportunities are also managed by local Government, and other Government departments such as the Water Authority of WA and the Department of Planning and Urban Development (DPUD).

John Forrest National Park is located in CALM's Mundaring District. Other national parks in the District include Gooseberry Hill, Greenmount, Kalamunda, Lesmurdie, Walyunga and Avon Valley (Map 1, p.2). The level of facility development in these parks varies in order to maintain a range of recreation opportunities across the District. State forest provides opportunities for recreation activities considered to be incompatible with national park objectives, and areas such as Lake Leschenaultia (Mundaring Shire) and Whitemans Park (DPUD) offer opportunities in more developed settings.

STRATEGY

It is essential that a regional perspective is maintained when planning for recreational opportunities in the Park in order to complement existing opportunities in the region. The regional integration of recreation opportunities in the Park with those of the surrounding District will become increasingly significant as greater numbers of people come to the area either to live, in new housing developments near the Park, or to recreate. Interagency liaison at a regional level will help to integrate opportunities in the Park with those in the District.

The Regional Management Plan for the Northern Forest Region (CALM, 1987) outlines strategies for recreation management in the Region. These strategies will continue to be implemented in the planning for future recreational opportunities in the Mundaring District and John Forrest National Park in order to complement existing opportunities in the area.

ACTIONS

1. **Provide recreation opportunities in the Park that complement opportunities available elsewhere on CALM-managed and other public land in the Region.**

2. **Identify alternative locations for recreation activities that are inappropriate in the Park and seek to utilise and promote these.**

3. **Suggest alternative sites outside the Park on those days when the Park is full. Explore opportunities to advise visitors of alternative areas prior to busy days.**

11.2 THE PARK

The objective is to provide a range of nature-based recreation opportunities to meet the needs of as wide a range of people as possible while maintaining the Park's conservation values.

John Forrest National Park has provided inspiration and enjoyment to visitors for nearly a hundred years. Until 1966, visitors could travel by train up the Darling Scarp to disembark at the National Park or Hovea Stations, the former being specifically built to cater for day trippers out to enjoy the Park's attractions.

Today, the Park is accessible to conventional 2WD vehicles through any of three entrances leading off Great Eastern Highway. A network of walk tracks, including a Heritage Trail, allows people to bushwalk with relative ease to attractive features like the Hovea Falls, National Park Falls, Mahogany Creek Dam and Glen Brook Dam. Some tracks have been set aside for horse use.

'Me proximity of the Park to the city provides visitors with the opportunity for day trips to enjoy a barbecue or picnic, or to go for a bushwalk. The location of the Park on the edge of the metropolitan area, and its wide variety of attractions and facilities makes it a very popular venue for people of all ages.

No public transport services or regular day tours operate in the Park. Some coach tours include a drive along the scenic drive (Park Road) as part of their itinerary of visiting attractions in the northern forest. Other coach operators stop for morning or afternoon tea or lunch during the wildflower season.

Current use of the Park focuses on the main facility area which is the most developed recreation site in the Park. In this area, barbecues, picnic furniture (tables and seats), picnic shelters, walkways, toilets and bituminised carparking facilities are provided. In addition, there is a kiosk, tea rooms and tavern

which are leased by concession. The other focal point for recreation in the Park is the Rocky Pool area on the western boundary. This area is less developed than the main facility area, although toilets and an area for carparking are provided.

A visitor survey was conducted between June and September, 1990. The survey showed that the Park predominantly caters for local recreation needs with the most popular activities being scenery appreciation (sightseeing), indicated by 85%[4] of people surveyed, bushwalking (77%), wildflower appreciation (52%), wildlife appreciation (48%), barbecuing (41%) and picnicking (34%). The most popular recreation sites in the Park are the main facility area, the railway formation, the National Park Falls and the Rocky Pool area. Generally, visitors to the Park consists of families or groups of friends although some visitors are members of recreation clubs, such as bushwalking or youth groups. A variety of organisations such as nursing homes, retirement villages, and disabled peoples groups also use the Park for outings.

Up to 135 000 people visit the main picnic area each year. The highest numbers of people visit the Park during late winter and spring to see the wildflowers, waterfalls and creeks, and to appreciate the warm weather. The least number of people visit the Park during summer owing to the high temperatures which limit recreation opportunities. The busiest days of the year coincide with Anzac Day (800 visitors in 1990), Fathers Day (700 visitors in 1990) and Mothers Day, (500 visitors in 1990) (de Braganca, 1992). These figures do no include visitors to the Rocky Pool area. On a weekly basis, Sunday is the most popular day. The visitor survey revealed that most people tend to stay in the Park for up to three hours (70%). This time is most commonly spent over lunch between 11.00 am and 2.00 pm.

To ensure that Park visitors know where and how to reach the recreation site most suitable to their needs, readily accessible information is essential. The recreation experience of visitors interested in the Park's natural and cultural environments is enhanced by information and interpretation opportunities which are integrated with recreation opportunities. Ranger presence in the proposed interpretation facility will ensure better management and help enhance visitor satisfaction. The needs of visitors should be consistently reviewed in order to determine how the opportunities provided in the Park meet these needs. Monitoring provides a useful tool to ensure the continued enjoyment of visitors by allowing management practices to be improved.

4 Percentage do not add up to 100 as survey participants had opportunity to provide multiple responses to the question.

STRATEGY

The increase in the numbers of people that are likely to seek recreation opportunities in the Park has, without proper management, the potential to degrade those values that attract them in the first place. For this reason, recreation use of John Forrest National Park will be managed according to the zoning plan (4.0 Zoning) which aims to protect the Park's conservation values by allocating recreation facilities and activities to those areas capable of sustaining use. Recreation opportunities will continue to be provided that:

- meet the needs of visitors of all ages where this can be practically achieved;
- meet the requirements of people with disabilities including wheelchair access;
- maintain the natural qualities of recreation settings; and
- do not impair recreation experiences by overuse or conflicting uses.

ACTIONS

1. **Provide recreation opportunities for the widest group of people possible and that have minimal impact on the environment.**

2. **Identify groups with special needs and liaise with them to determine how to provide opportunities and facilities to meet these needs.**

3. **Determine visitor numbers and patterns of use by using traffic counters, and conducting site surveys and interviews to determine recreation needs.**

12.0 ACCESS

The objectives are to:

1. *Control vehicle and pedestrian access within the Park to protect conservation and recreation values.*
2. *Provide and maintain access for vehicles which facilitates safe, efficient traffic flow into and within the Park.*
3. *Facilitate access for people with disabilities, where possible, within the Park. 4. Ensure that erosion control receives high priority when considering access.*

Great Eastern Highway is currently the major travel route which provides access to the Park. The Main Roads Department is in the process of reviewing options for alternatives to the current Great Eastern Highway. One of these options may involve an upgrading and realignment of Toodyay Road in the northern section of the Park.

There are currently three entrance points from Great Eastern Highway which connect to Park Road, a scenic drive (Tourist Drive 201) which also forms part of the eastern boundary of the Park.

The Park's western boundary is accessible from Pechey, Throssel and Taaffe roads. Pechey Road forms the predominant travel route for visitors going to the Rocky Pool area. Throssel Road, a no-through road with limited public carparking, predominantly provides access for local residents. Taaffe Road provides access to the mid-west section of the Park although public vehicle access to the adjoining management tracks is precluded by a locked gate. Room for vehicle parking is provided at the end of Taaffe Road. Toodyay Road traverses the northern section of the Park. Limited parking is available for people who wish to access the Park on foot.

The only public access within the Park is along Park Road, a scenic drive approximately 10.4 km long. The scenic drive provides visitors with the opportunity for vehicle-based sightseeing which is enhanced by views of the Park's landscapes, and the Swan Coastal Plain with the city centre and coastline in the background. Lookouts at major viewing points and carparking areas along the route meet the needs of visitors for places to stop in safety and view the features. The scenic drive is mainly used by visitors driving to the main facility area and by drivers detouring off Great Eastern Highway.

Management access tracks in the Park were constructed in the 1930s, 1940s and 1950s. Some of the tracks were constructed in association with timber gathering, others were developed for park management purposes. All tracks are accessible to walkers and some are identified as designated horse riding tracks. In terms of park management, most of the tracks are required for fire control access and form boundaries of burning blocks. Subsidiary uses include access for research, and search and -rescue operations. Management access tracks in the northern extension of the Park require review to determine which tracks are needed and which tracks may be rehabilitated.

Many of the tracks in the Park are subject to erosion through natural and human-induced processes. Erosion occurs because of the nature of the soil, the location of tracks in respect to the topography, visitor use and management practices. The use of some or all tracks by horses, in particular regular organised trail rides, contributes to erosion. Tracks in the Park are also conduits for the spread of phytophthora dieback disease (see 7.4 Disease). Those areas which pose a high risk need to be identified to determine the appropriate management strategy to minimise the spread of the disease.

Some provision for access for wheelchairs has been made in the main facility area around Jane Brook. Specially designed picnic tables, chairs and barbecues have also been provided. There is potential for the existing wheelchair access to be extended. Wheelchair access also provides access for other people with restricted mobility such as people with a walking frame or parents pushing strollers.

Potential exists for public transport access to the Park, in particular, Transperth buses to the main facility area. As not all visitors have access to vehicles, including interstate and overseas tourists, public transport to the Park is important to provide these people with the opportunity to enjoy the Park's facilities. The use of public transport in the mid to long term is likely to become more

appropriate unless new technology increases the efficiency of fuels. Community bussing to transport visitors from external locations could also be investigated.

Concerns regarding the current access network into and within the Park include:

- the scenic drive;
- the fee collection point; and
- the No. 2 entrance.

STRATEGY

Public vehicle access will continue to be provided along the scenic drive in' the Park. Occasionally private vehicles may be given access to management tracks, e.g. during search and rescue operations.

In order to ensure public safety along the scenic drive, several options will be considered.

These include:

- restricting the road to one-way traffic;
- negotiating a reduced speed limit along the drive to one that is more appropriate to road conditions; and
- strategically placing information and warning signs along the drive.

Furthermore, in order to alleviate current problems associated with the location of the fee collection point, or' gate', the gate will be relocated to Beehive Corner along Park Road (Map 9). The section of road from the tavern area past the workshops and No. 2 ranger's residence to the eastern entrance to the Park will be closed to public traffic and maintained for management purposes only. A new section of road approximately 600 m in length will be constructed along the general alignment of a current fireline through a valley to join the scenic drive at Beehive Comer with Park Road near Oxley Road. Access into the main facility area will be controlled by a gate which may be locked after hours. The advantages of this proposal include:

- 24-hour vehicle access along the scenic drive but not to the main facility area;
- removing a dangerous corner from the current alignment, as access into the main facility area will be via a T-junction with the scenic drive;
- better protection of Park facilities outside working hours;
- access for walkers outside working hours around Glen Brook Dam and to the lookout above the dam; and
- an increase in revenue collection for Park management.

ACTIONS

1. Confine public vehicle access to developed roads.

2. Maintain access for emergency vehicles.

3. **Construct the new section of road as outlined in the above strategy to facilitate improved traffic flow along the scenic drive and into the main facility area.**

4. **Relocate the fee collection point to the Beehive Corner along Park Road.**

5. **In conjunction with the Shire of Mundaring consider the following options to ensure public safety along the scenic drive:**
   - **(a) Restrict the road to one-way traffic;**
   - **(b) Negotiate a reduced speed limit on the scenic drive to one that is more appropriate to road conditions; and**
   - **(c) Strategic placement of information and warning signs along the drive to improve visitor safety.**

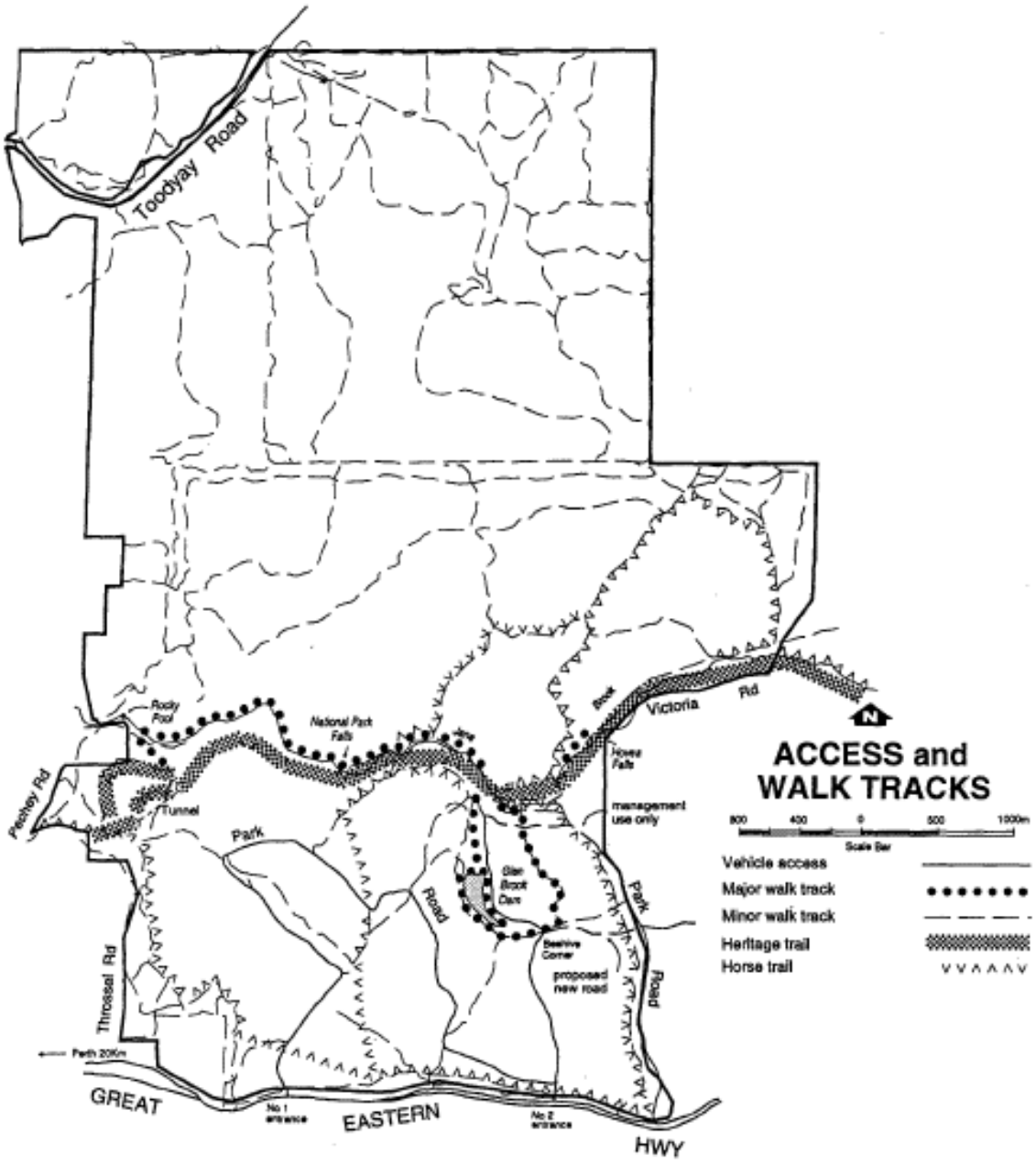
6. **Determine which management tracks are not required. Close and rehabilitate accordingly.**

7. **Optimise the use of public transport or community bus to transport visitors to the Park at peak periods.**

8. **Review the status of the No. 2 entrance.**

9. **Provide or upgrade view bays for motorists along the scenic drive.**

10. **In conjunction with the Main Roads Department negotiate the upgrading and re-alignment of the Toodyay Road as required with consideration to rare flora and construction conditions.**


Toodyay Road
Victoria Rd
Rocky Rd
National Park Falls
Piesley Rd
Tunnel
Park
Throssel Rd
Perth 20Km
GREAT
No 1 entrance
EASTERN
No 2 entrance
HWY
Road
Park
Road
proposed new road
management use only
ACCESS and WALK TRACKS
800 400 0 500 1000m
Scale Bar
Vehicle access
Major walk track
Minor walk track
Heritage trail
Horse trail

MAP 9

12.1 VEHICLE-PARKING

The objectives are to:

1. *Provide sufficient vehicle-parking spaces to meet visitor needs while protecting the Park's conservation and recreation values.*
2. *Minimise changes to natural drainage and erosion in providing vehicle-parking areas.*
3. *Provide for safe, efficient traffic and pedestrian flow within and out of vehicle parking areas.*

Parking areas are provided in the main facility area, at Glen Brook Dam and at the Rocky Pool area. In addition, small parking areas are provided at pull-overs on the scenic drive.

The main facility area parking provides parking for approximately 150 vehicles. The area is also used by large coach buses. A fee applies to all users. This means that on busy days many visitors who are unable to find space in the main car-park will park outside the present ticket gate and walk in without paying. This is unfair on the people who do pay and the Department loses revenue. A fee collection box is mounted at the gate although it is generally only attended during peak visitor periods. Repositioning the ticket gate is discussed in 12.0 Access.

STRATEGY

In the event that parking areas are redesigned or modified over the term of this plan, their development will be to a standard that is appropriate to the level of use. As far as possible, such modifications should harmonise with the surrounding natural environment in order to enhance the visual amenity within vehicle parking areas. The sensitive location of vegetation buffers will be incorporated into parking design as will the maintenance of the historic character of the Park. Safe pedestrian access within parking areas is an integral part of parking design.

ACTIONS

1. **Maintain sufficient vehicle parking spaces at the main facility area to meet the needs of people consistent with conservation objectives.**

2. **Maintain vehicle parking along the scenic drive.**

3. **Provide appropriate parking bays for exclusive use by people with disabilities.**

4. **Rationalise the vehicle parking area at Rocky Pool as part of a site development plan.**

13.0 RECREATION AREAS

The objectives are to:

1. *Provide a range of high quality and well designed recreation areas.*
2. *Ensure where possible, that all recreation areas are capable of sustaining expected levels of use.*
3. *Design areas for practical maintenance, ensuring other values are not significantly compromised.*
4. *Manage areas to protect the natural environment and maintain each site's attractiveness to visitors.*

Most visitors go to one of the Park's two established barbecue and picnic areas, that is the main facility area or Rocky Pool. Both these areas are focal points from where people have the opportunity to walk along tracks to Park features. Other recreation areas in the Park include:

- the scenic drive with associated pull-overs at view points;
- Glen Brook Dam;
- lookouts associated with the scenic drive and walk track network; and
- a bushland camping area available for group camping.

Main Facility Area

The main facility area covers approximately 7.8 ha and is the most formalised recreation area in the Park. The area was developed in the 1930s when sustenance workers built the rock gardens and paths around Jane Brook. At about the same time, the picnic shelters were built based on a slab hut design. The shelters are unique and although the old thatched roofs have been replaced by iron, they reflect the character of the Park during these years. Similarly, the tea rooms were built in the 1930s and have been operating ever since. They too reflect the character of bygone years.

The area contains barbecues which are fired by gas or electricity. All barbecues are free to the public. Picnic tables and seats are also provided near each barbecue and in picnic shelters.

Parking is available for approximately 150 vehicles (see 12.1 Vehicle Parking). The parking space is generally sufficient to cater for the number of people visiting the Park apart from peak periods when it fills to capacity. Visitors are presently required to pay a vehicle entry fee or to have purchased an annual vehicle pass.

In 1989, a wheel chair access track for people with disabilities was built around the Jane Brook pool area. The path also caters for other people with restricted mobility.

Other features of the main facility area include the tavern which was opened in the late 1970s. The tavern and tea rooms/kiosk are operated on a concessionary basis (see 15.0 Leases and Commercial Concessions . Toilet facilities are also provided including wheel chair accessible toilets and change rooms. The area is enhanced by native plant gardens within the picnic area planted by Park staff over the years.

Visitors' perceptions of the facilities were surveyed between June and September, 1990. Overall, people are satisfied with the availability of barbecues, picnic tables and shelters in the Park as they contribute to the recreation experience being sought. The survey also indicated that opinions regarding the retention of the tea rooms were evenly divided, and that most people are against the tavern being in the Park. An important outcome of the survey was the dissatisfaction of visitors regarding the availability of interpretive information on the Park. Most people felt that a visitor information centre was needed in the main facility area.

An opportunity exists to cater for visitors wishing to purchase small souvenirs and, at the same time, to generate funds for Park management.

Management concerns with the main facility area stem largely from the location of the ticket gate (see 12.0 Access). Patrons of the tavern are required to pay a vehicle entrance fee when many are unlikely to use the other facilities of the site. This often causes conflict between tavern patrons and ranger staff.

Rocky Pool Area

This recreation area is not as developed as the main facility area but is characterised by the high scenic quality of the surrounding landscape which includes flowing water, granite outcrops, Rocky Pool and views of the hills. Facilities at this area include a toilet block, a bridge across Jane Brook and an undefined parking area. The parking area is not bitumenised, and no picnic tables or shelters are provided.

The location of a picnic area, on the western edge of the Park away from the ranger station, means ranger presence is not as predominant as in the main facility area. Visitors are known to bring dogs to Rocky Pool after hours and let them roam free. Vandalism also occurs and has led to the removal of three coin-operated barbecues. Undefined car parking has degraded the banks of Jane Brook and the walk track along the Brook is eroding.

The visitor survey indicated the Rocky Pool area as one of the most popular attractions in the Park, and that its lack of development contributes to this popularity.

Glen Brook Dam

Glen Brook Dam was constructed in 1966 by the Water Authority of W.A. and is a popular area within the Park. Water-based activities will not be encouraged at Glen Brook Dam but parking will be rationalised as part of a site development plan for the area.

Recreation Area Management

The management of recreation areas and facilities is a major component of CALM's park management policies. To a large extent, recreation areas are managed according to the availability of resource's including staff and finance. This is an important responsibility, however, as public

perception of Park management is, to a certain extent, determined by the maintenance of recreation areas and facilities.

Funds and facilities that meet the average demand of visitor use should be provided. It is an inefficient use of resources to plan on the basis of peak demand which occurs on relatively few days each year. Furthermore, before new recreation areas and facilities are developed in the Park, the capacity for the proper management of those areas must be available.

In addition to the maintenance of the main facility area, an opportunity exists to promote environmentally friendly management practices by introducing a recycled rubbish facility. This could be relatively easily achieved by providing bins for different types of rubbish such as paper waste, glass and plastics, and promoting the concept to Park visitors. The demand on Park rangers to collect and empty rubbish bins would be alleviated if alternative arrangements for picking up the recycle bins were made.

Vandalism is a particular problem at recreation areas. Vandalism can be minimised through the choice of materials which offer a degree of protection, and through sensible design and location. The opportunity to isolate the main facility area from vehicle access after hours is being investigated (refer 12.0 Access).

Recreation areas management would be more effective if there were ranger presence in the main recreation area.

ACTIONS

1. **Maintain recreation areas and facilities to departmental standards.**

2. **Develop and implement a master Development Plan for the main facility area and a site development plan for Rocky Pool, Glen Brook and other recreation areas as required.**

3. **Encourage visitors to use walkways in the main facility area to protect this location from unnecessary trampling.**

4. **Explore the practicality of recycling rubbish collected in the Park. Design a comprehensive plan for facilitating the recycling of rubbish in an efficient manner.**

5. **Manage areas and facilities to minimise the incidence and effects of vandalism.**

6. **Monitor the impact of visitor use on recreation areas and facilities.**

14.0 RECREATION ACTIVITIES

Given that recreational pursuits should be dependent on the values of the Park and consistent with the maintenance of the Park's natural character, the following criteria have been applied to determine the acceptability of recreational activities:

- activities will be based on the values of the Park.
- the participation in, or enjoyment of, the activity will be in some way dependent on the Park's natural features and resources;
- activities will be compatible with other recreational uses of the Park
- activities will not be permitted to diminish the enjoyment of other users;
- activities will depend on the availability of resources;
- priority will be given to those activities which do not degrade the Park or reduce its conservation values; and
- the intensity of the activity will be controlled, if necessary, to ensure that it does not destroy the value and nature of the activity.

14.1 PLEASURE DRIVING AND SIGHTSEEING

The objective is to foster an appreciation of the natural environment by vehicle-based sightseers.

A large proportion of the recreating or touring public who visit national parks could be aptly termed 'windscreen' visitors, as much of their experience and enjoyment of the natural environment is derived from scenic driving.

In John Forrest National Park, scenery appreciation is the most popular activity undertaken by visitors (85% of people surveyed; Cavana and Cuninghame, 1992). The scenic drive (Park Road) provides a looped route of approximately 10.4 km from the Great Eastern Highway, through the southern part of the Park and back onto the Highway. Features of the drive include scenic views of the Park's forested hills and granite rocks, and extensive views across the Swan Coastal Plain with the city centre in the background. Pull-over bays along the drive provide safe locations to admire the views, and provide opportunities along the way for walking down management access tracks.

Management concerns regarding the scenic drive are discussed in 12.0 Access.

ACTIONS

1 Continue to provide opportunities for safe vehicle-based sightseeing along the scenic drive.

2. **Maintain safe vehicle-parking areas along the scenic drive.**

3. **When appropriate provide loop walks of varying duration from vehicle-parks along the scenic drive.**

14.2 BUSHWALKING

The objective is to provide a variety of bushwalking opportunities in the Park which do not adversely affect conservation and landscape values.

Bushwalking is the second most popular activity in the Park (77% of visitors; Cavana and Cuninghame, 1992).

The most popular walks in the Park are the Heritage Trail, which follows the length of the rail formation through the Park, and the Jane Brook track which follows the north side of the Brook to Rocky Pool. The walk around Glen Brook Dam is also enjoyed by a number of visitors. Walking is an activity enjoyed by people of all ages, interests and levels of fitness, and it enables visitors to explore and appreciate the natural environment at close range.

Management access tracks provide walkers with the opportunity to explore those parts of the Park that are away from the main facility areas. These are generally accessible from the main recreation areas, the rail formation (Heritage Trail), car-parks along the scenic drive, or public roads on the Park boundaries.

The impact of bushwalking, while generally low, is variable depending on soil conditions, landform, vegetation type and intensity of use. Where use levels are high, bushwalking can lead to the loss of vegetation as well as localised soil compaction and erosion problems. Other impacts such as the spread of weeds and plant diseases may also occur. These problems can usually be minimised through the sensitive location and design of walks and suitable education of bushwalkers.

Sufficient opportunities exist for improving and enlarging the existing walk track network in the Park, especially the Heritage Trail which is the most frequented facility in the Park. This trail links the two main recreation areas and provides access to several natural and cultural features in the Park including National Park Falls, Hovea Falls, the railway tunnel, bridges and railway station relics. Interpretive information is supplied at points of interest along this trail. Potential exists to upgrade a section of the Heritage Trail between the main facility area and National Park Falls for use by people with wheelchairs or having other restricted mobility.

Several suggestions were made during the visitor survey for additional information on other walks in the Park. This could include identification of certain plants and vegetation associations along walk tracks by mounted plaques (as for the Heritage Trail) and supplemented by information in brochures. The lack of directional information at track intersections is also of concern, and additional information such as the length and time required for walks would be of benefit for first time walkers to select the appropriate walk.

ACTIONS

1. **Develop walk tracks in locations which are capable of sustaining them.**

2. **Continue to provide a variety of walks including access for people with disabilities where possible.**

3. **Upgrade the Heritage Trail (rail formation) by improving the surface, providing interpretive material and restoring the tunnel.**

4. **Promote the code of ethics for walking in the Park (refer to 18.0 Information, Interpretation and Education).**

5. **Provide adequate information from which visitors can choose the walk that is best suited to their needs.**

6. **Close walk tracks temporarily or permanently where the results of monitoring indicates that this is appropriate for environmental protection.**

7. **As far as possible, integrate bushwalking tracks outside the Park into the Park's walk track network.**

8. **Monitor the environmental effects of bushwalking and how bushwalking opportunities meet visitor needs.**

9. **Develop walk tracks in the northern extension of the Park.**

14.3 BARBECUING AND PICNICKING

The objective is to provide barbecue and picnic facilities for visitors, and ensure that these facilities do not impinge on conservation and recreation values.

The opportunity to relax and socialise with family and friends over an outdoor meal in the bush has become a tradition for many Australians. The bush picnic or barbecue often provides the central focus for other nature-based leisure activities such as sightseeing and bushwalking.

In John Forrest National Park, electric and gas barbecues are provided free at the main recreation area, the cost being covered by the entrance fee to the area. Picnic tables and shelters are provided in the main facility area (see 13.0 Recreation Areas).

Unmanaged barbecue and picnic areas can result in various localised impacts including the trampling and loss of understorey plants, soil compaction and erosion, and littering. These impacts can be largely eliminated or minimised through careful site design.

ACTIONS

1. **Continue to provide gas or electric barbecues, tables and shelters as defined by the site development plans.**

2. **Encourage Park visitors to provide their own gas barbecue cooking facilities.**

14.4 NATURE APPRECIATION

The objective is to encourage visitors to appreciate, and increase their understanding of, *the natural environment.*

For many of the visitors to the Park, whose day-to-day lifestyle is urbanised, the opportunity for appreciating the natural environment is significant. Through greater awareness and understanding of the natural environment, visitors are likely to gain a greater appreciation of the conservation values of the Park as well as the social values that the natural environment inspires.

The visitor survey conducted between June and September .1990 (Cavana and Cuninghame, 1992), indicated that nature appreciation, of both flora and fauna in the Park, is one of the most popular activities undertaken by Park visitors. Similarly, it was shown that the most liked features of the Park are its naturalness and the associated peaceful surroundings.

The Park has many natural features which attract visitors and many informal opportunities for appreciating the natural environment. Opportunities are also available to enhance visitor's appreciation of the environment through interpretive programs (see 18.0 Information, Interpretation and Education). These programs could be based on particular themes such as wildflowers, fauna, vegetation associations or cultural heritage.

ACTION

1. **Provide visitors with a variety of opportunities to appreciate the Park's natural features.**

14.5 CAMPING

The objective is to provide camping opportunities appropriate to the Park.

Currently only one area is available in the Park for tent-based camping and is located near the old Hovea Station between the rail formation and Jane Brook where the station master's house once stood. A basic toilet, water tank and campfire ring are the only facilities provided. Fire wood is provided by Park staff. The area is used by small numbers of people and groups such as the Scout Association.

The Hovea campsite is less than 100 m from Victoria Road, a no-through road which forms a boundary for the Park in this area. This poses several management concerns including disturbances to campers through vehicle noise, and security risks to campers and their belongings. Potential exists to develop an alternative location for tent-based camping.

John Forrest National Park provides potential opportunities for backpack camping, particularly in the northern extension to the Park. Areas designated for backpack camping must be able to sustain the activity with minimal environmental impact, and inspire the intrinsic feeling that the area is a 'good place' to camp. Backpack camping will be managed according to CALM Policy Statement No. 18 (Recreation, Tourism and Visitor Services).

ACTIONS

1. **Continue to permit camping at the Hovea camping area. Approval for camping will be at the Ranger's discretion. Upgrade the area to improve visual amenity as part of a site development plan.**

2. **Allow the use of camp fires in the fire rings provided.**

3. **Provide basic toilet facilities at campsites where group camping occurs.**

4. **Provide another camping area for group-based camping as an alternative to Hovea.**

5. **Continue to provide opportunities for backpack camping.**

6. **Monitor the environmental impacts associated with camping. Use the results of monitoring to refine management practices.**

14.6 HORSE RIDING

The objective is to facilitate enjoyment of John Forrest National Park by horse riders through the provision of designated trails for horses while minimising any negative impacts of horse riding on the Park.

For the last 30 years, many people have ridden through John Forrest National Park as part of organised trail rides conducted by a commercial equestrian establishment located on Taaffe Road adjacent to the Park's western boundary. Individual horse owners also use the Park for horse riding and exercising.

Currently the commercial equestrian establishment pays an annual permit for the use of designated tracks in the Park. The general community also pays for an annual permit which covers one horse rider and/or a horse rider and family. Day permits are also available for occasional riders. Very few Park users hold permits and unauthorised riding is common.

CALM policy makes provision for horse riding in national parks where use was previously authorised, but allows for the activity to be redirected, restricted or prohibited where there are sound reasons for doing so.

The management concerns with horse riding in John Forrest National Park include:

- the inherent land capability of the Park to sustain horse riding;
- the potential for horses to further spread disease and weed species through the Park;
- the riding of horses by a small number of individuals off designated tracks;
- the conflicts that arise between bushwalkers and horse riders using the same tracks; and
- the safety of Park visitors is a priority. Hazardous situations have occurred when bushwalkers have been confronted by horses either crossing or using the same track.

A workshop was organised during the preparation of the plan to provide an opportunity for different groups of people to explain their views, and suggest ways of resolving problems associated with horse

riding in John Forrest National Park (Pontre, 1992). Although there was general agreement that, provided horse riding is managed properly and horse riders took appropriate responsibility, horse riding could continue in the Park, the NPNCA was inclined to the view that two alternatives should be canvassed in the draft management plan for John Forrest National Park to provide an indication of public opinion about horse riding in the Park. One proposal, consistent with the outcome of the public workshop, was to allow horse riding with some provisos. The other proposal was to ban horse riding in the Park. While some people supported the latter proposal the majority of people who contributed a submission were against it. Horse riding will continue in the Park with the proviso of phasing out if impacts on the Park involve costs to management that exceed benefits or if environmental damage is unacceptable.

STRATEGY

An assessment has been conducted in the Park in order to determine the most appropriate areas for horse riding.

All horse riders in the Park are required to be registered to ride within the Park, and to pay an appropriate fee which will be regularly reviewed. (Riding trails which are currently approved are shown on Map 9). Tracks that require maintenance work or rehabilitation will be closed. Alternative tracks in the region for use by large groups of horse riders will be, identified during the first two years of this plan in order to redirect the operation into areas more capable of sustaining large groups of horses. Horse riders will be encouraged to feed their horses on a seed free diet for 24 hours prior to entering the Park in order to minimise the impacts of weeds, and will be discouraged from feeding horses in the Park. Riding of horses will be conducted in a manner which will not endanger the safety of other Park users or their enjoyment of the Park. Non-compliance with horse riding regulations will lead to disqualification and no further right to use the Park. Park staff may need to close certain tracks at any time if these tracks appear to be degraded.

ACTIONS

1. **Continue to determine the ongoing suitability of tracks for horse riding.**

2. **Establish a code of ethics for horse riding within the Park.**

3. **Establish a system of registration within the Park which will require all riders to carry a licence tag on their horse.**

4. **Permit horse riding only on clearly defined horse riding tracks.**

5. **Close tracks when maintenance work or rehabilitation is required.**

6. **Ensure that designated horse trails are constructed and maintained according to strict *Phytophthora* dieback disease hygiene principles and the need to prevent erosion.**

7. **Continue to develop, in liaison With interested groups, alternative riding tracks in the Hills Region.**

8. **Encourage horse riders to feed their horses on a seed free diet for 24 hours prior to entering the Park, and require riders to bring feed free of seed with them, if horses require feeding in the Park.**

9. **Monitor the impact of horse riding in the Park and make any necessary changes to management including phasing out of the activity if, environmental impacts are found to be unacceptable.**

14.7 CYCLING

The objective is to ensure that cycling in the Park is enjoyable, safe and does not negatively impact. on the Park's environment.

Comparitively few cyclists use the Park. The areas used by cyclists in the past include the scenic drive, the rail formation and some management tracks.

Concerns with cycling in the Park include:

- the ability of tracks to sustain use by bicycles;
- conflicts between cyclists and other Park visitors; and
- the steep terrain and unstable track surfaces.

ACTIONS

1. **Permit cycling on designated tracks only.**

2. **Regulate cycle groups where conflicts between cyclists and other Park users arise.**

3. **Encourage cyclists to ride in a environmentally responsible 'manner consistent with a code of ethics.**

4. **Regularly monitor tracks used by cyclists to determine the environmental effects of use.**

5. **Define alternative areas or tracks for cyclists should conflicts and environmental effects occur.**

14.8 SWIMMING

The objective is to allow swimming if health and safety requirements are not compromised.

The swimming pool was created by damming Jane Brook in the early 1930s. Swimming has occurred there ever since.

In the earlier years, there was little or no development within the Jane Brook catchment and so water quality could be considered as having been good. In recent years, extensive development has occurred in the catchment area. This has increased pollution and turbidity of the water to the extent that it now may be considered a health risk to swimmers.

Swimming in Glen Brook Dam has never been permitted. The water is used in the Park and access to the water is dangerous.

ACTIONS

1 **Regularly consult with appropriate authorities to assess the risk to health of swimming in Jane Brook.'**

2. **Prohibit swimming in Glen Brook Dam and erect signs that explain the reasons for this.**

3. **Provide appropriate risk area signs and safety and rescue devices for visitors as required.**

14.9 FISHING

The objective is to allow use of the Park for fishing where this does not lead to degradation of the environment or unacceptable levels of conflict with other user groups.

Recreational fishing is regulated under the Fisheries Act which is administered by the Fisheries Department. Fishing is not a common activity in the Park but it will be managed as a recreational pursuit. Fishing methods considered to be environmentally damaging will not be allowed.

ACTION

1. **Liaise with the Fisheries Department over the regulation of fishing, activities in the Park and investigate marron fishing in the Park using only snare or scoop net methods. Prohibit the use of traps, set-lines or nets.**

14.10 GROUP AND CLUB-BASED ACTIVITIES

The objective is to accommodate use by groups and clubs to the extent that it is compatible with the goals of this plan.

The Park is used by bushwalking and naturalist clubs and various community groups, including the Scout Association and by groups of people with mobility, intellectual and sensory disabilities. Most of these groups use the Park for day outings using the existing facilities and services. Scout groups often camp overnight at the Hovea campsite (see 14.5 Camping).

The potential exists for promoting the Park to people with disabilities by providing opportunities for recreation in an outdoor environment (see 11.2 Recreation Opportunities - The Park and 13.0 Recreation Areas). Such opportunities may require improved access to features of interest, or the development of outdoor activities for community groups with special needs.

ACTIONS

1 **Continue to provide opportunities for group and club based activities in a manner consistent with the goals for the Park.**

2. **Where practical, provide access to meet the special needs of community groups where this does not compromise the natural environment or other visitors' enjoyment.**

3. **Encourage visitors participating in group activities to appreciate Park values through visitor information and a code of ethics specific for group activities.**

4. **Liaise with groups to discuss their needs and ways of catering for them.**

14.11 ORIENTEERING, ROGAINING AND CROSS-COUNTRY RUNNING

The objective is to ensure that orienteering, rogaining and cross-country running are conducted in appropriate areas.

Orienteering is an organised activity which requires participants to visit on foot a set number of control points in the bush in a given sequence in the shortest time. Usually each event has a number of courses.

Rogaining is a long distance cross-country navigation event which takes between 12-24 hours to complete. Participants visit control points on a course in any order, the aim being to accumulate the highest number of points possible. Competitors carry packs and there is a large number of participants visiting particular control points. Only one course is set for each event and it involves less running and greater use of roads and tracks than orienteering.

Cross-country running is a foot race that occurs outdoors over a variety of surfaces along a single, marked course. The objective is to complete the course in the shortest time. All competitors follow the same course.

John Forrest National Park has- been used as one of the venues for orienteering events within the Perth metropolitan area. Events have been held on a regular basis approximately twice a year. Problems associated with this activity include participants' vehicles filling up the main car-park to the exclusion of other Park visitors, and the trampling of vegetation along the course. The Park is also used for cross-country running by students from local schools. Students run along management tracks as training for cross-country running events.

ACTIONS

1. **Continue to ensure organisers of events liaise with the Park ranger prior to events.**

2. **Monitor the impacts of orienteering, rogaining and cross-country running.**

3. **Permit orienteering and rogaining in areas other than the special conservation zone.**

4. **Permit cross-country running on approved management tracks only.**

14.12 OFF-ROAD VEHICLES

The objective is to prohibit vehicles being driven off *roads in the Park.*

Off-road driving is not allowed in the Park. An area of land adjacent to the Red Hill Landfill site to the north of the Park has been registered for use by trail bikes under the Control of Vehicles (Off-Road Areas) Act. This area is proposed as an extension to the landfill site. Other areas in the Region designated for use by trail bikes are Gnangara and Pinjar pine forests.

ACTION

1. **Use appropriate measures to prohibit vehicles being driven off roads in the Park, except in the case of emergencies.**

15.0 LEASES AND COMMERCIAL CONCESSIONS

The objective is to ensure that the operation and management of leases and commercial concessions bring benefits to the Park by way of providing visitor service and resource for the Park's management.

Leases and commercial concessions may be granted on CALM-managed public lands or waters to provide appropriate facilities and services to visitors. Proposals are carefully considered by CALM and require approval by the NPNCA and the Minister. Leases and concessions must be consistent with the purpose of the Park and the protection of its values. Facilities or services which exist or can be developed elsewhere in a way which adequately meet visitor needs should not be provided on public lands and waters managed by CALM. Leases and commercial concessions, if excessive, can detract from the conservation values of the Park, while limited concessions can enhance public access and enjoyment.

Currently, there is one lease and one commercial operator in the Park.

The tavern, tearooms and kiosk form part of the same lease which expires in September 1995. Alternative uses of the tavern will be evaluated before the lease expires, including redevelopment and other commercial interests. These interests will be determined by calling for expressions of interest.

The other commercial operator in the Park is a local equestrian establishment. The equestrian establishment pays an annual fee for the use of the designated tracks in the Park to take groups horse riding. Concern has been expressed about the environmental problems associated with the impacts of

horse riding in the Park. Conflicts also exist between bushwalkers and horse riders using the same tracks (see Section 14.6 Horse Riding).

ACTION

1. **Call for expressions of interest for the redevelopment of the tavern and tearoom/kiosk building to provide suitable commercial outlets as well as information facilities.**

16.0 BUILDINGS

The objective is to maintain a minimum number of suitable buildings for Park management purposes.

Tearoom Residence
This small residence adjoins the tearoom building and is in fair condition. It is used by the lessee.

Residences in the Park
Staff residences provide accommodation for Park rangers. It is necessary to have some staff residing in the Park to cover after hours contingencies. Two residences are located on Lots 21 and 22 Pechey Road. They are currently let. The condition of these residences will need to be assessed and their future use investigated.

Workshop Complex
The workshop complex comprises two main sheds, a nursery shadehouse, a small fuel and oil shed, ranger's office and an amenity room. The complex is located in an unobtrusive and convenient location.

Monkey Hut
This building, situated in the main picnic area, was actually used to house monkeys at the Perth Zoo. It was transferred to the Park during the 1960s and is currently used as a garden shed.

Visitor Shelter Sheds
The visitor shelter sheds have been a feature in the John Forrest National Park since the early 1930s. The shelters are unique to the Park, are part of its character and are in great demand in wet or hot weather.

Toilets
Four toilet blocks are located in the Park. One is a prefabricated, precast construction which originally saw service at the Perth Zoo. The central toilet in the main picnic area includes a wheelchair accessible facility. Both these toilets are in sound condition.

A toilet and changeroom complex is located north east of the swimming pool. This little used change room facility could be better utilised as toilets for people with disabilities as it is close to and easily accessible from the disabled trail. The building suffers from foundation subsidence but is considered serviceable for the duration of this plan. A fourth toilet block is situated at Rocky Pool. Despite vandalism, it is in sound condition.

National Park Siding Shelter

This building was removed after the closure of the railway through the Park in 1966, although part of the foundations are still in place. It was proposed to re-erect the shelter as part of the heritage trail construction, but insufficient funds precluded this. A copy of the original plans is available and, if reconstructed, could provide a venue for railway history and interpretation.

ACTIONS

1 **Review the use of the buildings in the Park towards maximising the management objectives of the Park and implement upgrading or removal as appropriate.**

2. **Retain staff residences in the Park.**

3. **Maintain visitor shelters in the Park and construct replacements when they become unserviceable.**

4. **Maintain the workshop complex in its present location and upgrade access and facilities as required.**

5. **Reconstruct the National Park siding shelter when funds. become available.**

17.0 SIGNS

The objective is to provide effective signs that clearly direct visitors to Park features, lead to more effective use of the recreation area and a greater understanding of the Park.

Effective signs provide a positive link between CALM, the visitor and the environment. They are a key form of communication, and an integral part of the overall management of John Forrest National Park. Signs enable visitors to become oriented, to be aware of the opportunities available, and to have a greater understanding of the Park environment. Signs are also important mechanisms for advising visitors of the restrictions and opportunities in the Park.

The sign system in John Forrest National Park needs to be reviewed and improved. Proper use of signs encourages visitors to make effective use of facilities and areas.

ACTIONS

1. **Prepare and implement a sign plan consistent with the CALM sign manual. Include information on: access; code of ethics; interpretation; facilities; and rehabilitation.**

2. **Maintain and regularly update signs when changes occur.**

PART E INFORMATION, INTERPRETATION AND EDUCATION

INFORMATION, INTERPRETATION AND EDUCATION GOALS

Foster in the community an appreciation and understanding of, and a sense of stewardship for, the Park's conservation, recreation, cultural and historic values.

Use the Park as a focal area within the Hills Forest to increase community awareness of the management of our State's natural and cultural environments.

18.0 INFORMATION, INTERPRETATION AND EDUCATION

The objectives are to:

1. *Enhance the enjoyment awareness, appreciation, confidence and safety of people visiting the Park by providing appropriate information and interpretation.*
2. *Provide and promote a range of information, interpretation and educational opportunities for the maximum diversity of interests of visitors.*
3. *Promote and expand the Park's use for environmental education purposes, and inform visitors of other CALM-managed areas and Statewide management issues.*
4. *Integrate the Park's information, interpretive and education programs with those provided elsewhere in the Region, particularly within The Hills Forest.*

To achieve the goals and objectives for management of John Forrest National Park an effective information, interpretation and education strategy is essential. It informs the public of attractions, facilities and recreational and educational opportunities available and provides an avenue for an appreciation and a greater understanding of the natural environment. At the same time, it fosters appropriate behaviour so that impacts on the environment are minimised.

The information process has three parts:

- Information - provides details of facilities, activities and regulations;
- Interpretation - enriches visitor appreciation and understanding through the explanation of cultural and natural features; and
- Education - provides detailed materials and programs designed to assist groups at all levels and serves to engender public support for management programs. -

The Park has been a favourite destination for a long time. Its proximity to Perth and magnificent views, makes it a popular tourist destination especially in the wildflower season. The Park is rich in interpretive stories and sites including geology, plants, animals, landscape and history - both

Aboriginal and non-Aboriginal. John Forrest also offers great opportunities as an education venue because it is the closest national park to Perth with permanently based CALM staff.

Owing to the lack of public contact and an appropriate venue, current information is primarily impersonal. One information shelter and a Park brochure is provided in the Park. In the visitor survey, 63% of visitors indicated that there should be a visitor information centre. Options for such a centre are being investigated but, in the interim, a small facility could be constructed, possibly in the locality of the 'existing information shelter, as the focal point for visitors.

Many schools visit the Park and Rangers have developed a self-guided walk to offer teachers a way of communicating some of the values of the Park. Rangers also address schools on arrival and participate in some of the school activities that take place in the Park.

It is important that the information conveyed is integrated throughout the Park, the District, and the Region (each site or area should consider a different thematic story as well as reinforcing park messages) and careful planning should ensure that there is not an over-provision of information. Interpretive stories should encourage exploration and enhance visitors' experiences and understanding of Park values.

Because of the Park's proximity to Perth and its diverse natural and cultural features it is an ideal place for raising visitor awareness of our environment. Through innovative interpretation and education techniques, staff can also communicate how CALM manages its estate, not only in the Park but in all national parks, forests and other natural areas.

ACTIONS

1. **Develop and implement a comprehensive communication plan for the Park.**

2. **Train staff in interpretation and education techniques.**

3. **Develop quality interpretation and visitor education programs which highlight the Park's natural features (including flora and fauna), cultural heritage, and management issues.**

4. **Allow Aboriginal people to use John Forrest National Park for Aboriginal cultural education.**

5. **Develop visitor facilities which provide maximum opportunities for CALM staff to make contact with visitors.**

6. **Establish volunteer programs within the Park to use community expertise, knowledge and enthusiasm for interpretation and education purposes.**

7. **Implement schemes within the Park that will promote positive visitor attitudes about the care and management of the natural environment and develop visitor confidence in outdoor pursuits.**

8. **Assess all communication programs regularly and revise as required.**

9. **Liaise with community groups to develop an information base for use in education and interpretive programs.**

10. **Use John Forrest National Park as an opportunity to promote CALM's activities elsewhere in the State.**

11. **Seek an appropriate location in the Park where a facility for open air programs and lessons can be developed.**

PART F RESEARCH AND MONITORING

RESEARCH AND MONITORING GOALS

Promote and undertake the scientific study and monitoring of those physical, biological and social values and natural processes special to the Park.

Monitor impacts of management activities and human use on the Park environment.

19.0 RESEARCH AND MONITORING

The objectives are to:

1. *Undertake research on the Park's plant and animal species and communities where required.*
2. *Promote and undertake research to determine visitor needs.*
3. *Develop and implement research and monitoring programs to determine the effectiveness of management practices.*
4. *Provide interpretation of research and monitoring findings.*

Research and monitoring are essential components of effective management and provide a scientific basis for Park management.

It is important to monitor and evaluate the effectiveness of management practices. Gathering new knowledge associated with research, both in the Park and elsewhere, also provides a scientific basis for improving management practices.

Monitoring projects should evaluate:

- the environmental impacts of management practices;
- the social impacts of management practices where appropriate; and
- the operation of management methodologies.

Research needs to be oriented to both natural and social environments.

Research and monitoring projects should give priority to those values identified as being most at risk (sensitive to disturbance) and to management practices most likely to have adverse ecological impacts.

Social research and monitoring projects should determine if recreation, environmental education and interpretation activities and facilities are meeting visitor needs.

Research projects and monitoring programs should involve as wide a range of people as possible. Involving volunteers, educational institutions and individual researchers can reduce research and monitoring costs, and help provide information to the broader community.

CALM currently co-ordinates and promotes research undertaken within the Park. Permanent monitoring plots have been established in the main vegetation and habitat types.

ACTIONS

1. **Implement an integrated program of survey, research and monitoring, including social monitoring, based on the relevant sections of this plan.**

2. **Integrate research and monitoring in the Park with studies outside the Park.**

3. **Encourage the participation of volunteers, educational institutions and other organisations in research projects within the Park. Promote research programs and findings that address key issues.**

PART G IMPLEMENTATION OF THE PLAN

20.0 PRIORITIES

The objective is to manage the Park according to the priorities developed to implement this plan.

The implementation of this plan of management will be undertaken within the annual works program of CALM's Mundaring District. Priorities, determined in the context of District and Regional planning, will be subject to the availability of staff and funds. Table 7 presents management priorities for all actions in the plan.

Priorities will be reviewed on an annual basis or as circumstances change.

ACTION

1. **Prepare a 10-year implementation plan taking into account the priorities outlined in Table 7. Prepare an annual progress report and review the implementation plan annually or as changing circumstances require.**

Table 7. MANAGEMENT PRIORITIES FOR JOHN FORREST NATIONAL PARK

HIGH PRIORITY

3.0 Land Tenure

1. Liaise with relevant authorities, departments and land owners to encourage land uses on adjoining land that do not adversely affect Park values.

4.0 Zoning

1. Base future management of the Park on the zoning scheme (Table 1 and Map 3).

6.2 Geology, Landform, Soils and Erosion Hazard

1. Continue to assess the land capability of the Park for existing and potential uses.
2. Ensure erosion control and rehabilitation are consistent with Departmental policies and guidelines.
3. Minimise the impact of public access on areas that have a high erosion risk rating.
4. Consider erosion risk and hazard ratings during all management activities, particularly road and facility planning, construction and development.

6.3 Hydrology

1. Consider Aboriginal concerns relating to the Park's waterways in all management activities.
2. Protect the Park's water resources during all management activities.
3. Minimise environmental impacts from recreation and other management activities along stream lines.

6.4 Visual Landscape

1. Ensure that the landscape management Preservation Objective is adhered to at all times in the management of the Park.
2. Incorporate the planning and design guidelines shown in Table 4 in all the Park's landscape management programs.

7.1 Vegetation

1. Minimise the introduction and spread of disease by implementing actions in 7.4 Disease and 12.0 Access.
2. Represent each major vegetation complex by a late seral stage (see 7.5 Fire Management).
3. Minimise removal or damage to vegetation caused by road or track construction and maintenance, and the development and maintenance of facilities and visitor use.

7.2 Flora

1. Protect rare and priority flora, particularly those species susceptible to plant diseases, such as *Phytophthora* dieback, and vulnerable to specific fire management regimes.
2. Survey areas for rare and priority flora before undertaking management actions.
3. Minimise damage and limit access to herbfields on granite outcrops.

7.3 Fauna

1. Protect animal habitats from the further spread of *Phytophthora* dieback disease (see 7.4 Disease), inappropriate fire regimes (see 7.5 Fire Management), and human disturbance.

7.4 Disease

1. Implement CALM's Policy Statement No 3. *(Phytophthora* dieback) in all aspects of disease management in the Park.
2. Prohibit vehicles and horses from moving off formed tracks that pass through *Phytophthora* dieback-free areas. Require walkers to stay on formed tracks in disease affected areas especially during high risk times of the year.
3. Include disease management specifications in contract documents (including commercial purpose licences) and job prescriptions, where appropriate.
4. Survey the incidence of plant diseases in the Park's northern extension.

7.5 Fire Management

1. Follow the Fire Suppression Response Plan, as prepared by the Bush Fires Board, CALM and local brigades, in the event of wildfire in the John Forrest National Park as defined by the Plan.
2. Implement prescribed burns in accordance with the fire management plan (Map 8).
3. Review the fire management plan every two years.
4. Minimise construction of any new firebreaks and fire lines, ie. where possible, use existing tracks for suppressing wildfires or conducting prescribed burns.
5. Define and maintain roads required for fire control and essential management activities. Close roads not required for management purposes and considered unsuitable for public use.
6. Promote public awareness of fire risk, safety and survival through pamphlets, information boards and personal contact by Park staff.
7. Close parts of the Park during periods of very high and extreme fire danger where necessary. Prepare and implement a contingency plan for closure of the Park in the event of an emergency.
8. Upgrade fire breaks, if required, in conjunction with adjoining land owners and local authorities.
9. Liaise with neighbouring landholders and other fire authorities to encourage effective fire prevention on adjoining lands.
10. Ensure that Mundaring District's fire detection scheme continues to include John Forrest National Park.

7.6 Feral Animals and Domestic Pets

1. Implement and monitor feral animal control programs in accordance with Departmental policies and guidelines and enlist the support of the community.
2. Monitor and record the incidence of feral animals and pets in the Park and their impacts on the Park's flora and fauna.
3. Implement an education program to:
4. inform local residents of the effects of pets on the fauna of the Park, and prohibit pets to the Park; and
5. notify residents of feral animal control programs.

7.7 Weeds

1. Prepare and initiate a five-year weed management program in accordance with CALM Policy Statement No. 14 (Weeds on CALM Land). Update the program annually seeking specialist advice as required.
2. Give priority to control of watsonia species and weeds that are encroaching on rare and priority flora.
3. Eradicate, where practical, isolated outbreaks of weeds while the infestations are small and easily controlled.
4. Revegetate areas denuded by weed control measures with appropriate local species from that habitat.

7.8 Raw Material Extraction

1. Raw material may be extracted from the Park in accordance with CALM Policy Statement No. 2 (Basic Raw Materials).
2. Assess potential extraction sites for *Phytophthora* dieback, rare or endangered flora and fauna, and cultural significance.
3. Prohibit the public from taking stones and other raw materials from the Park.

7.9 Rehabilitation

1. Rehabilitate degraded areas in accordance with CALM Policy Statement No. 10 (Rehabilitation of Disturbed Land) and guidelines.
2. Prepare a detailed rehabilitation program.
3. Provide opportunities for interested individuals and groups to be involved in rehabilitation projects.

8.1 Aboriginal Heritage

1. Identify Noongar people having cultural links and ongoing interests in the Park.
2. Consult with Noongar people on matters of cultural interest and involvement in Park management.

3. Grant Aboriginal people access for the purposes of religious and cultural activities and the protection of sites, subject to the consideration of other management requirements for the Park.
4. Develop suitable consultative mechanisms between Aboriginal people and CALM consistent with Government policy.
5. In conjunction with Noongar representatives, and subject to their views, conduct an Aboriginal site study of the Park.
6. Until such a study is completed, ensure that CALM's obligations are fulfilled according to relevant legislation, if any proposed activities in the Park involve development.
7. Incorporate information on the Aboriginal history of the Park into interpretive material.
8. Encourage study in Aboriginal cultural history by tertiary institutions and interested individuals.

8.2 European History

1. Ensure that all management decisions concerning the conservation and restoration of places of historic interest within the Park, adhere to the principles of the Burra Charter.
2. Continue to protect the Park's historic structures.
3. Celebrate the 1995 anniversary of the completion of the Mahogany Creek Deviation with its tunnel (1895) and opening of the deviation around the tunnel (22 October 1945).
4. Remove the brickwork, doors and concrete survey 'stations' built in the 1970s in the Swan View Tunnel prior to 1995.
5. Ensure that any cultural sites, buildings and structures considered worthy of statutory protection are recommended to the Heritage Council of WA, for inclusion on the list of places of historical interest.

9.1 Mining

1. Follow Government policy on exploration and mining in national parks.
2. Ensure that, as far as possible any mining operations adjacent to the Park have minimum impact on the Park, particularly with regard to landscape values, spread of *Phytophthora* dieback and decrease in water quality.

9.2 Utilities and Services

1. Negotiate the placement of new utility and service corridors outside the Park.
2. If a utility or service corridor must go through the Park ensure that its placement and maintenance follows strict dieback hygiene procedures, protects priority species of flora and fauna, minimises disturbance to natural drainage, minimises erosion, is in harmony with the surrounding landscape, and minimises disturbance to visitors.

9.3 Beekeeping

1. Do not approve any apiary sites in the Park.

11.1 The Region

1. Provide recreation opportunities in the Park that complement opportunities available elsewhere on CALM-managed and other public land in the Region.
2. Identify alternative locations for recreation activities that are inappropriate in the Park and seek to utilise and promote these.
3. Suggest alternative sites outside the Park on those days when the Park is full. Explore opportunities to advise visitors of alternative areas prior to busy days.

11.2 The Park

1. Provide recreational opportunities for the widest group of people possible and that have minimal impact on the environment.
2. Identify groups with special needs and liaise with them to determine how to provide opportunities and facilities to meet these needs.
3. Determine visitor numbers and patterns of use by using traffic counters, and conducting site surveys and interviews to determine recreation needs.

12.0 Access

1. Confine public vehicle access to developed roads.
2. Maintain access for emergency vehicles.
3. Construct the new section of road as outlined in the above strategy to facilitate improved traffic flow along the scenic drive and into the main facility area.
4. Relocate the fee collection point to the Beehive Corner along Park road.
5. In conjunction with the Shire of Mundaring consider the following options to ensure public safety along the scenic drive:

a) Restrict the road to one-way traffic;
b) Negotiate a reduced speed limit on the scenic drive to one that is more appropriate to road conditions; and
c) Strategic placement of information and warning signs along the drive to improve visitor safety.

12.1 Vehicle Parking

1. Maintain sufficient vehicle parking space at the main facility area to meet the needs of people consistent with conservation objectives.
2. Maintain vehicle-parking along the scenic drive.
3. Provide appropriate parking bays for exclusive use by people with disabilities.
4. Rationalise the vehicle parking area at Rocky Pool as part of a site development plan.

13.0 Recreation Areas

1. Maintain recreation areas and facilities to departmental standards.
2. Develop and implement a master Development Plan for the main facility area and a site plan for Rocky Pool, Glen Brook and other recreation sites as required.

14.1 Pleasure Driving and Sightseeing

1. Continue to provide opportunities for safe vehicle-based sightseeing along the scenic drive.
2. Maintain safe vehicle-parking areas along the scenic drive.

14.2 Bushwalking

1. Develop walk tracks in locations which are capable of sustaining them.
2. Continue to provide a variety of walks including access for people with disabilities where possible.
3. Upgrade the Heritage Trail (rail formation) by improving the surface, providing interpretive material and restoring the tunnel.
4. Promote the code of ethics for walking in the Park (refer to 18.0 Information, Interpretation and Education).
5. Provide adequate information from which visitors can choose the walk that is best suited to their needs.
6. Close walk. tracks temporarily or permanently where the results of monitoring indicates that this is appropriate for environmental protection.

14.3 Barbecuing and Picnicking

1. Continue to provide gas or electric barbecues, tables and shelters as defined by the site development plans.
2. Encourage Park visitors to provide their own gas barbecue cooking facilities.

14.4 Nature Appreciation

1. Provide visitors with a variety of opportunities to appreciate the Park's natural features.

14.5 Camping

1. Continue to permit camping at the Hovea camping areas. Approval for camping will be at the Ranger's discretion. Upgrade the area to improve visual amenity as part of a site development plan.
2. Allow the use of camp fires in the fire rings provided.
3. Provide basic toilet facilities at campsites where group camping occurs.

14.6 Horse Riding

1. Continue to determine the ongoing suitability of tracks for horse riding.
2. Establish a code of ethics for horse riding within the Park.
3. Establish a system of registration within the Park which will require all riders to carry a licence tag on their horse.
4. Permit horse riding only on clearly defined horse riding tracks.
5. Close tracks when maintenance work or rehabilitation is required.
6. Ensure that designated horse trails are constructed and maintained according to strict *Phytophthora* dieback disease hygiene principles and the need to prevent erosion.

8. Encourage horse riders to feed their horses on a seed-free diet for 24 hours prior to entering the Park, and require riders to bring feed free of seed with them, if horses require feeding in the Park.
9. Monitor the impact of horse riding in the Park and make any necessary changes to management including phasing out of the activity, if environmental impacts are found to be unacceptable.

14.7 Cycling

1. Permit cycling on designated tracks only.
2. Regulate cycle groups where conflicts between cyclists and other Park users arise.
3. Encourage cyclists to ride in a environmentally responsible manner consistent with a code of ethics.

14.8 Swimming

1. Regularly consult with appropriate authorities to assess the risk to health of swimming in Jane Brook.
2. Prohibit swimming in Glen Brook Dam and erect signs that explain the reasons for this.
3. Provide appropriate risk area signs and safety and rescue devices for visitors as required.

14.11 Orienteering, Rogaining and Cross-Country Running

1. Continue to ensure organisers of events liaise with the Park ranger prior to events.

14.12 Off-Road Vehicles

1. Use appropriate measures to prohibit vehicles being drive off roads in the Park, except in the case of emergencies.

15.0 Leases and Commercial Concessions

1. Call for expressions of interest for the redevelopment of the tavern and tearoom/kiosk building to provide suitable commercial outlets as well as information facilities.

16.0 Buildings

1. Review the use or removal of the buildings in the Park towards maximising the management objectives of the Park and implement upgrading or removal as appropriate.
2. Retain staff residences in the Park.
3. Maintain visitor shelters in the Park and construct replacements when they become unserviceable.

17.0 Signs

1. Prepare and implement a sign plan consistent with the CALM sign manual. Include information on:
   - access
   - code of ethics

- interpretation
- facilities
- rehabilitation

2. Maintain and regularly update signs when changes occur.

18.0 Information, Interpretation and Education

1. Develop and implement a comprehensive communication plan for the Park.
2. Train staff in interpretation and education techniques.
3. Develop quality interpretive and visitor programs which highlight the Park's natural features (including flora and fauna), cultural heritage, and management issues.
4. Allow Aboriginal people to use John Forrest National Park for aboriginal cultural education.
5. Develop visitor facilities which provide maximum opportunities for CALM staff to make contact with visitors.
6. Establish volunteer programs within the Park to use community expertise, knowledge and enthusiasm for interpretation and education purposes.
7. Implement schemes within the Park that will promote positive visitor attitudes about the care and management of the natural environment and develop visitor confidence in outdoor pursuits.

19.0 Research and Monitoring

1. Implement an integrated program of survey, research and monitoring, including social monitoring, based on the relevant sections of this plan.
2. Integrate research and monitoring in the Park with studies outside the Park.

20.0 Priorities

1. Prepare a 10-year implementation plan taking into account the priorities outlined in Table 7. Prepare an annual progress report and review the implementation plan annually or as changing circumstances require.

21.0 Staff and Funding

1. Ensure that staff numbers are adequate to manage the northern extension of the Park, to implement this plan and to maintain developments.
2. Ensure that staff are trained to carry out their duties.
3. Develop volunteer programs for as many of the Park's management programs as practicable.
4. Seek adequate funding in the first two to three years of this plan to carry out high priority projects.
5. Seek funding from the Main Roads Department for proposed road works.
6. Seek external funding from both government and private sources to implement this plan.
7. Investigate and implement revenue raising methods based on the user-pays principle. Negotiate to retain a proportion of revenue collected for Park management.

22.0 Liaison

1. Provide opportunities for Park staff to continue to develop liaison skills.

23.0 Evaluation and Review

1. Review the implementation of the plan annually, prior to preparing the works program for the following year. The review should identify which actions have been achieved and to what degree, and any new information which may affect management.
2. Review the plan within 10 years of its gazettal. This review should identify the extent to which the objectives have been achieved and implemented, the reason for lack of achievement or implementation, and a summary of information which may affect future management.

MEDIUM PRIORITY

3.0 Land Tenure

2. Liaise with the Health Department, Environmental Protection Authority and Eastern Metropolitan Regional Council with regard to management concerns from the landfill area such as monitoring of groundwater, litter blowing into the Park and the need for visual resource management.
3. Assist local Shires, and others where possible, to manage natural areas, particularly areas with conservation values situated close to the Park.

6.2 Geology, Landform, Soils and Erosion Hazard

5. Train all personnel involved in risk and hazard assessment and erosion control.
6. Monitor the effectiveness of erosion control techniques, and incorporate new practices where appropriate.

6.4 Visual Landscape

3. Liaise with surrounding Shires, other Government agencies and private landholders concerning the need to consider visual landscape management on lands adjoining the Park.

7.1 Vegetation

4. Rehabilitate degraded vegetation communities wherever possible.
5. Carry out research into the response of plant community types to management regimes, especially fire. Modify management practices as necessary.
6. Use the established monitoring, plots as reference areas for further research and monitoring. Monitor to determine the longer term responses by plants to fire and other impacts.

7.2 Flora

4. Continue to maintain and develop the herbarium of the Park flora.
5. Gradually replace introduced plant species with local plant species.
6. Provide opportunities for visitors to view and increase their knowledge of the flora of the Park, including appropriate walking tracks and interpretive material.

7.3 Fauna

2. Regularly monitor fauna in the Park using established monitoring sites.
3. Increase knowledge of the Park's fauna, record the incidences of death or injury to fauna from collision with motor vehicles and other causes.
4. Determine the key terrestrial and aquatic invertebrates in the Park. Give priority to determining the invertebrates which are rare and threatened.

7.7 Weeds

5. Liaise with neighbours, local government and other relevant authorities to encourage an integrated approach to weed management.
6. Monitor weed control measures to determine their success and the need for further treatment.

7.8 Raw Material Extraction

4. Monitor the effects of taking raw materials from the Park. Use the results to protect the Park's values.

7.9 Rehabilitation

4. Review the rehabilitation program on an annual basis.
5. Train Park staff in all aspects of rehabilitation work. Seek specialist advice as required.
6. Monitor the effects of rehabilitation works 'on a regular basis. Recommend changes to rehabilitation strategies to effect improvement.

8.2 European History

6. Develop close liaison with the organisations that are concerned with archaeology in Western Australia.
7. Prepare and maintain a Sites and Building Record (archaeological index) and written statement of conservation policy for the main facility area and railway line.
8. Seek external funding to evaluate the local, regional and national cultural significance of each historic site.
9. Consider ways to interpret historic sites in conjunction with the Heritage Council of WA and other agencies in a manner consistent with other National Park objectives.

12.0 Access

6. Determine which management tracks are not required. Close and rehabilitate accordingly.

13.0 Recreation Areas

3. Encourage visitors to use walkways in the main facility area to protect this location from unnecessary trampling.
4. Explore the practicality of recycling rubbish collected in the Park. Design a comprehensive plan for facilitating the recycling of rubbish in an efficient manner.
5. Manage areas and facilities to minimise the incidence and effects of vandalism.
6. Monitor the impact of visitor use on recreation areas and facilities.

14.2 Bushwalking

7. As far as possible, integrate bushwalking tracks outside the Park into the Park's walk track network.
8. Monitor the environmental effects of bushwalking and how bushwalking opportunities meet visitor needs.

14.5 Camping

4. Provide another camping areas for group-based camping as an alternative to Hovea.
5. Continue to provide opportunities for backpack camping.
6. Monitor the environmental impacts associated with camping. Use the results of monitoring to refine management practices.

14.6 Horse Riding

7. Continue to develop, in liaison with interested groups, alternative riding tracks in the Hills Region.

14.7 Cycling

4. Regularly monitor tracks used by cyclists to determine the environmental effects of use.
5. Define alternative areas or tracks for cyclists should conflicts and environmental effects occur.

14.9 Fishing

1. Liaise with the Fisheries Department over the regulations of fishing activities in the Park and investigate marron fishing in the Park using only snare or scoop net methods. Prohibit the use of traps, set-lines or nets.

14.10 Group and Club-based Activities

1. Continue to provide opportunities for group and club based activities in a manner consistent with the goals for the Park.

2. Where practical, provide access to meet the special needs of community groups where this does not compromise the natural environment or other visitors' enjoyment.
3. Encourage visitors participating in group activities to appreciate Park values through visitor information and a code of ethics specific for group activities.

14.11 Orienteering, Rogaining and Cross-country Running

2. Monitor the impacts of orienteering, rogaining and cross-country running.

16.0 Buildings

4. Maintain the workshop complex in its present location and upgrade access and facilities as required.

18.0 Information, Interpretation and Education

8. Assess all communication programs regularly and revise as required.
9. Liaise with community groups to develop an information base for use in education and interpretive programs.
10. Use John Forrest National Park as an opportunity to promote CALM's activities elsewhere in the State.

19.0 Research and Monitoring

3. Encourage the participation of volunteers, educational institutions and other organisations in research projects within the Park. Promote research programs and findings that address key issues.

21.0 Staff and Funding

8. Encourage the continued use of the Park to place trainee rangers.

22.0 Liaison

2. Consider establishing an Advisory Committee to advise on management of the Park and its relationship with the community.

LOW PRIORITY

3.0 Land Tenure

4. Initiate proceedings to cancel unnecessary road reserves within the Park boundaries and add these to Reserve A7537.

6.1 Climate

1. Monitor climatic data for use in the management of the Park, particularly wind speed and direction at times of high fire risk.
2. Consider the effects of climate changes will have on Park management and the need to change management practices.

6.3 Hydrology

4. Liaise with other Government departments, local government authorities, and landowners to discourage land-use practices upstream of the Park which may adversely affect the quality and quantity of water in the Park.
5. Support and promote the continued monitoring of stream flow and water quality within the Park.

7.3 Fauna

5. Investigate reintroduction of former known rare fauna inhabitants, e.g. chuditch, following fox control.
6. Monitor the impact of introduced terrestrial and aquatic invertebrates on the local species.

7.4 Disease

5. Survey for Armillaria as required when management and construction operations are to take place.
6. Inform Park users about plant diseases (see 18.0 Information, Interpretation and Education).

9.2 Utilities and Services

3. Monitor the effects of utility corridors and their maintenance upon the Park's conservation, landscape. and recreation values.

12.0 Access

7. Optimise the use of public transport or community bus to transport visitors to the Park at peak periods.
8. Review the status of No. 2 entrance.
9. Provide or upgrade view bays for motorists along the scenic drive.
10. In conjunction with the Main Roads Department negotiate the upgrading and re-alignment of the Toodyay Road as required with consideration to rare flora and construction conditions.

14.1 Pleasure Driving and Sightseeing

3. When appropriate provide short looped walks of varying duration from car-parks along scenic drive.

14.2 Bushwalking

9. Develop walk tracks in the northern extension of the Park.

14.10 Group and Club-based Activities

4. Liaise with groups to discuss their needs and ways of catering for them.

14.11 Orienteering, Rogaining and Cross-country Running

3. Permit orienteering and rogaining in areas other than the special conservation zone.
4. Permit cross-country running on approved management tracks only.

16.0 Buildings

5. Reconstruct the National Park siding shelter when funds become available.

18.0 Information, Interpretation and Education

11. Seek an appropriate location in the Park where a facility for open air programs and lessons can be developed.

21.0 STAFF AND FUNDING

The objectives are to:

1. Ensure staffing levels are sufficient to manage the Park and implement the plan.

2. Maximise the use of available funds to manage the Park.

3. Explore options to increase finds to implement the plan.

The Park is serviced by CALM's Mundaring District which includes a group of rangers based at the Park. The rangers based at the Park also manage and maintain Lesmurdie, Gooseberry Hill, Kalamunda and Greenmount national parks. Staff from specialist branches within CALM provide services, advice and assistance as required. The Park is also used to place trainee rangers. It is a good location for trainee rangers due to its close proximity to the urban area and offers a broad range of experience, opportunities and district support.

Current staff levels will need to be investigated due to the development of the Park over the next 10 years as described in this management plan. The addition of the northern extension to the Park, the establishment of a visitor information centre and the new ticket collection gate are likely to place greater demands on existing staff. The plan will be implemented as funding is available. Use of volunteers would be of considerable help in many aspects of Park management.

Management of John Forrest National Park is funded by CALM. External funding has also been provided for special research projects. Implementation of this plan will require additional funding resources particularly in planning, design, supervision and interpretation. Alternative means of funding will be investigated, including the establishment of a trust fund for monies collected to be used in Park management.

ACTIONS

1. **Ensure that staff numbers are adequate to manage the northern extension of the, Park, to implement this plan and to maintain developments.**

2. **Ensure that staff are trained to carry out their duties.**

3. **Develop volunteer programs for as many of the Park's management programs as practicable.**

4. **Seek adequate funding in the first two to three years of this plan to carry out high priority projects.**

5. **Seek funding from the Main Roads Department for proposed road works.**

6. **Seek external funding from both government and private sources to implement this plan.**

7. **Investigate and implement revenue raising methods based on the user-pays principle. Negotiate to retain a proportion of revenue collected for Park management.**

8. **Encourage the continued use of the Park to place trainee rangers.**

22.0 LIAISON

The objective is to develop, encourage and facilitate effective communication for information sharing and integrated management.

Liaison, which facilitates effective communication, is an essential component of sound Park management. Well organised liaison provides a forum for the community to contribute to the management of the Park and be informed about the Park and management issues. Liaison between neighbours and land managers also provides for integrated land management which is of particular importance when management issues go beyond the boundaries of the Park, such as fire, weed and visual resource management. Contingency plans in case of an emergency, such as rescue and evacuation in the event of a fire, have been prepared for the Park.

Liaison is relevant to a Park as close to the metropolitan area as John Forrest is because of the large number of visitors or potential visitors and the various organisations affecting management.

Groups and organisations include visitors, neighbours, special interest groups, community, relevant local authorities and Government departments, commercial operators, lessees and the media.

ACTIONS

1. **Provide opportunities for Park staff to continue to develop liaison skills.**

2. **Consider establishing an Advisory Committee to advise on management of the Park and its relationship with the community.**

23.0 EVALUATION AND REVIEW

1 **Review the implementation of the plan annually, prior to preparing the works program for the following year. The review should identify which actions have been achieved and to what degree, and any new information which may affect management.**

2. **Review the plan within 10 years of its gazettal. This review should identify the extent to which the objectives have been achieved and implemented, the reason for lack of achievement or implementation, and a summary of information which may affect future management.**

Section 61 of the CALM Act provides for the plan to be amended as required. If major changes to the plan are proposed, the revised plan will be released for public comment.

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APPENDIX 1. LIST OF PRIORITY FLORA SPECIES

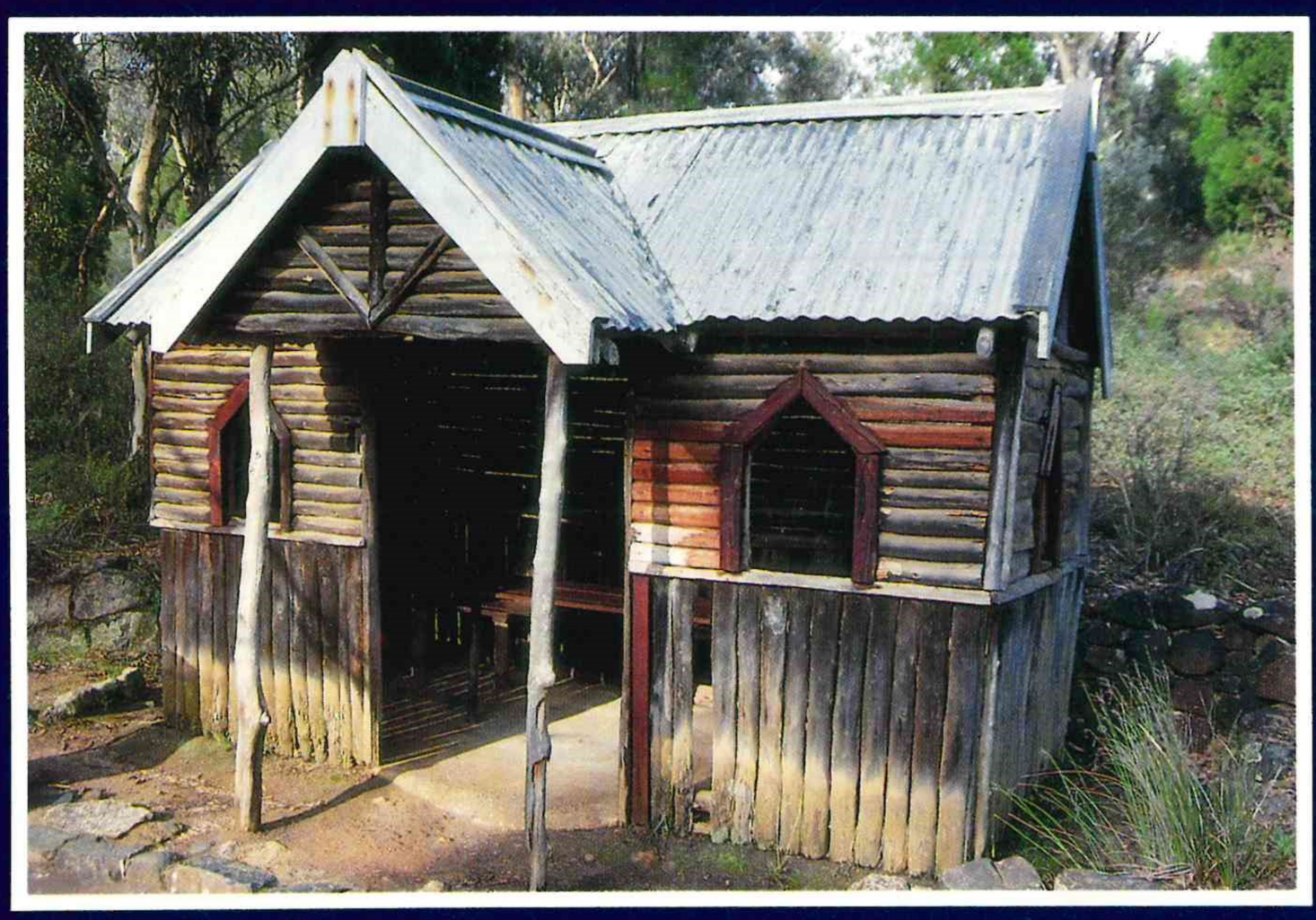
SPECIES	PRIORITY	FLOWERING PERIOD
Darwinia pimelioides	2	October
Diplolaena andrewsii	2	July - October
Gastrolobium epacridoides	I	July - October
Hakea myrtoides	2	July - August
Synaphea acutiloba	3	July
Templetonia drummondii	3	-
Tetratheca pilifera	3	August - September
Thysanotus anceps	2	December

PRIORITY CODES

Priority 1. Poorly known Taxa.
Species which are known from one or a few populations, and which are under immediate threat, eg. road verges, urban areas, active mineral leases, areas grazed by feral animals etc. These species are under consideration for declaration as rare flora but are in need of urgent high priority further survey.

Priority 2. Poorly known Taxa.
Species which are known from one or a few populations, some of which are not under immediate threat, eg. nature reserves, national parks, water reserves etc. These species are under consideration for declaration as rare flora but are in need of urgent high priority further survey.

Priority 3. Poorly known Taxa.
Species which are known from several populations, some of which are on lands not under immediate threat. These species are under consideration for declaration as rare flora but are in need of further survey.



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