Duke of Orleans Bay Regional Park Plan of Development and Management

Department of Conservation and Environment Western Australia

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DUKE OF ORLEANS BAY REGIONAL PARK

PLAN OF DEVELOPMENT AND MANAGEMENT

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SUMMARY

In 1976 the Environmental Protection Authority (EPA) published its "Red Book" for Systems 1-5 containing recommendations about the future control and management of land on portions of the south coast of Western Australia.

One recommendation resulted in the formation of the Esperance Shire South Coast Working Group (Working Group) which provided the EPA with advice about the future use of coastal land in the Esperance Shire.

In August 1981 the Working Group reported that the former Wharton Townsite should be vested in the Esperance Shire for Parks and Recreation, and the area should be the subject of a management plan prepared by the Department of Conservation and Environment (DCE).

In November 1981 a Draft Management Plan was prepared and made available for comment by the Council and various government agencies. After consideration of these comments this plan was prepared. The plan identifies the resources of the area, and the use pressures placed upon it. It outlines the following management aims:-

- develop a holiday centre which will provide some of the recreational opportunities required to serve the people of the region and tourists;

- nominate an appropriate site for a stop-over and service facility for professional fishermen operating out of Esperance;

- conserve the terrestrial and aquatic ecosystems, geological features and landscape of the area;

- incorporate existing developments in the planning process and undertake any improvements which may assist in achieving the other management aims.

The Plan contains development and management proposals which have been prepared to assist in achieving these aims. Finally a section on implementation outlines recommendations concerning priorities and procedures required to effect the plan.

The Plan will be reviewed after December 31, 1988. Amendment to the plan before that date will be undertaken after consultation between Council, DCE and other interested authorities and people.

INTRODUCTION

Background

In July 1976 the EPA published its Red Book "Conservation Reserves for Western Australia, Systems 1, 2, 3, 4 and 5".
System 3 includes the southwest coast between Bald Island and Starvation Bay Harbour, including the area known as the Wharton Town Site on the Duke of Orleans Bay.

In Recommendation 3.10 - The South Coast, the EPA gave notice of its intention "to set up a working group consisting of representatives of local government authorities, state government departments and instrumentalities and the public, to deal with the spirit of the Conservation Through Reserves Committee (CTRC) recommendations for the area". The terms of reference for this group were to make recommendations relating to the future control and management of Crown Lands on the coast of System 3.

Eventually separate working groups were formed to examine the south coast in the Shires of Esperance, Ravensthorpe and Gnowangerup. The Working Group had responsibility for preparing recommendations concerning the Esperance Shire.

In August 1981 the Working Group report relating to recommendation 3.10 was forwarded to the EPA for consideration. The report stated that the former Wharton Town Site should be vested in the Shire of Esperance for the purpose of Parklands and Recreation, and that a management plan, including the existing developments should be prepared for the area. A plan was considered appropriate because of the area's scenic beauty, recreation potential, existing and potential use pressures and close proximity to the Cape Le Grand National Park.

The report also said that the eastern boundary of the park should be determined during the planning process.

These recommendations were endorsed by the EPA and in November 1981 a Draft Plan was prepared and circulated to the Shire of Esperance the Departments of Lands and Surveys, Fisheries and Wildlife, Public Works and the National Parks Authority. After considering the comments of these authorities this plan has been prepared.

Location

The site is located on the south-west coast of Western Australia at latitude 330° 55' south and longitude 122° 36' east (Map 1). It is adjacent to the Duke of Orleans Bay, 97 kilometres by road to the east of Esperance. It is bordered on the western side by Cape Le Grand National Park, the northern side by allotments 322, 139 and 249 in the land locality of Neridup, and on the north eastern side by unoccupied Crown Land which until recently was under option to the Esperance Land Development Corporation (Map 2).

Name of the Park

The land described in the Plan includes areas of unvested Crown Land and a number of Crown Reserves, which will be described collectively as the Duke of Orleans Bay Regional Park.

Extent and Present Status of the Area

The Park will comprise the following areas which are shown on Map 2 including:-

- the former Wharton Townsite of approximately 2,500 hectares which is currently unvested Crown Land;

- Reserve No. 35132, of approximately 7.2135 hectares, "Caravan Parks and Chalets" vested in the Shire of Esperance with power to lease for 50 years;

- Reserve No. 37255, of approximately 5.6088 hectares, "Recreation and Golf Course" vested in the Shire of Esperance with power to lease for 21 years;

- Reserve No. 36979, of approximately 0.7317 hectares, "Camping and Professional Fishermen" vested in the Shire of Esperance with power to lease for 21 years;

- part (approximately 750 hectares) of the vacant Crown Land, between the former Wharton Townsite and Cape Arid National Park, which until recently was under option to the Esperance Land Development corporation;

- Reserve 27091, of approximately 196.9428 hectares "Public Utility", and unvested.

These areas are shown on Map 2.

Park Boundary

As described on Page3 the Working Group recommended that the eastern boundary of the Park should be determined during the development of the Plan.

The western and northern boundaries are fixed by the existence of the Cape Le Grand National Park and freehold land. The eastern boundary will be on a line from the eastern boundary of Reserve 27091, south to the sea. This will enable Council to develop the area near Membinup Point for recreational purposes. Membinup Point is only accessible by four wheel-drive vehicle but a considerable number of people visit the area and camp. Council will construct a low key camping facility there when the Duke of Orleans Bay Caravan Park is fully established.

The waters of Mungliginup Creek will be available to the public for recreational purposes such as fishing, canoeing and swimming.

Council has expressed interest in land east of the boundary. However, this area was not examined during this planning exercise and it will require investigation before recommendations can be made about its future control and use.

Purpose and Aims of the Plan

In the past decisions concerning the vacant Crown Land, around the Duke of Orleans Bay, have been made on an "ad hoc" basis and a plan is required to:-

- facilitate orderly long term development and use;

- ensure that all competing land uses and the capacity of the land to sustain those uses is considered;

- outline authorities which may provide management input into the area.

MANAGEMENT AIMS

The management aims set out in the report of the Working Group are as follows:-

- develop a holiday centre which will provide some of the recreational opportunities required to serve the people of the region and tourists;

- nominate an appropriate site for a stop-over and service facility for professional fishermen operating out of Esperance;

- conserve the terrestrial and aquatic ecosystems, geological features and beautiful landscape of the Park;

- incorporate existing developments in the planning process and undertake any improvements which may assist in achieving the other management aims.

RESOURCES

Geology

The geology of the area is described in some detail by Morgan and Peers (1973). It is not proposed to reproduce that work here, but simply to describe the geological features which may influence the planning and management process.

Precambrian granite and migmatite underlies the entire area, emerging as the islands of the Archipelago of the Recherche and the rugged mountains and headlands along the coast (Plate 1).

Behind the immediate coastline the igneous rocks are overlain by Cainozoic sediments known as Pallinup Siltstone which is in turn overlain by clay, sand deposits, and Holocene sand dune systems (Map 4).

Plate 1. Table Island, formed of Precambian granite and migmatite (Photo. S. Chape)

Vegetation

Beard (1973) describes the vegetation of the Esperance and Malcolm area in some detail. The Park lies in the Fanny's Cove and Esperance Vegetation Systems described by Beard.

Shallow sands overlying the siltstone and sand deposits have poor subsurface drainage and support a low heath (to one metre) dominated by Nuytsia floribunda (Christmas Tree).

The sand dune systems have better drainage and they support coastal scrub-heath (to four metres) which is dominated by Banksia speciosa (Showy Banksia), while the wetlands support Melaleuca cuticularis (Salt Water Paperbark) woodland.

Generally the granite peaks are bare, but some soil does occur in crevices and supports a stunted community including Agonis sp, Calothamnus sp. and Leucopogon sp.

Wildlife

Kitchener, Chapman and Dell, (1975), describe 11 species of mammals including Neophoca cinerea (Australian Sea Lion) and Delphinus sp. (Dolphin), 124 species of birds, three species of reptiles and six species of amphibians, which occur in the Cape Le Grand National Park and parts of the Park. This diversity of species indicates the high value of the south coast as wildlife habitat.

The area immediately north of the Park has been cleared for agricultural purposes with a consequent reduction of wildlife habitat. Areas vested as national parks and nature reserves should not become isolated islands of native vegetation as this will reduce their ability to support wildlife populations. For these reasons it is important that the vegetation between Cape Le Grand and Cape Arid National Parks be conserved. The vegetation of the Park is an important part of this vegetation system.

Climate

The Esperance Region experiences a mediterranean weather pattern with wet winters and dry summers. The average rainfall recorded at Esperance is 674mm received on 128 rainy days. It is thought the rainfall at Cape Le Grand exceeds 700mm.

The temperature range on the coast at Esperance is $10^{o}C$ with a predominance of cloudy weather and cool breezes from the southern ocean. The mean annual maximum is $21^{o}C$ although temperatures up to $47^{o}C$ have been recorded in summer.

Winds are severe and the whole area is exposed to strong southerly winds and gales in winter. During the summer the area is exposed to the southeast sea breeze and hot, dry northerly winds.

Landscape

The Esperance Region has some of the most beautiful coastal scenery in Western Australia. Massive granite outcrops form the islands of the Archipelago of the Recherche and rugged headlands such as Cape Le Grand, Hammer Head and Mount Belches, which are interspersed with white sandy beaches. Rolling sand dunes and plains support a floristically rich vegetation of coastal heath, scrub and mallee providing a grey-green backdrop to the clear, blue waters of the Southern Ocean (Plate 2).

Sheltered Waters, Beaches and Surf

The Duke of Orleans Bay is protected from the prevailing winds by Hammer Head, Table Island and the Archipelago of the Recherche, providing safe waters for boating under most weather conditions. The deeper waters south of the Bay give excellent blue water fishing.

The white sands of the Region form beautiful beaches. Duke of Orleans Bay and Membinup Bay offer sheltered waters and safe swimming, while waves suitable for experienced surfers and strong swimmers occur at Wharton Beach.

Existing Access and Facilities

Map 3 shows the location of coastal access roads and existing recreational nodes, caravan parks and camping areas between Esperance and Cape Arid. Most of these facilities are in national parks and the only land available for intensive development of recreational facilities by the Esperance Shire is in the Park. At present there are day visitor facilities at the Park and in the Cape Le Grand and Cape Arid National Parks.

In addition there is a caravan park in the Park, several low-key camping areas in the Cape Arid and Cape Le Grande National Parks and Reserve 518. Details of these facilities are shown in Table 1.

Plate 2. Hammer Head, typical of the beautiful coastal scenery in the Park. (Photo S. Chape)

The Park is serviced by the Fisheries, Duke of Orleans Bay and Daniels Roads which have been constructed to a high standard to the Park boundary. The road from the boundary to the existing caravan park is of a reasonable standard. Other roads are poorly located or inadequately developed and should be examined with regard to upgrading or relocation.

The caravan park is serviced by the State Energy Commission electricity grid. An adequate supply of good quality water is obtained from nearby bores.

USE PRESSURES

Tourism and Recreation

The Esperance Region is an important tourist centre and tourism is an integral part of the Region's economy.

An Esperance Visitor Survey conducted by the Western Australian Department of Tourism in 1975/76, showed that 46,000 people used commercial accommodation in Esperance during 1975. Of these visitors 31.3% were from the Perth Metropolitan Region, 13.9% country W.A., 50.1% interstate and 1.7% overseas. In contrast, records from the Duke of Orleans Bay Caravan Park Indicate that 50% of visitors to the area live in the Esperance Region, 45% in country W.A., 5% Perth Metropolitan Region and interstate.

Recent surveys indicate the number of people visiting Esperance has not increased significantly since 1975. However, the occupation rate of the Duke of Orleans Bay Caravan Park has increased steadily since it was constructed. Sites in the Park are fully occupied during the summer holidays and Easter, 75% occupied during school term holidays, 40% occupied during non-holiday periods between November and March, and have a low occupancy for the rest of the year.

TABLE 1, RECREATIONAL FACILITIES BETWEEN ESPERANCE AND CAPE ARID (SEE MAP 3)

Area	Location	Facilities
Cape Le Grand National Park	Le Grand Beach	Low-key campsites (10 units) Picnic facilities parking
	Hellfire Bay	Picnic facilities & parking
	Thistle Cove	Parking
	Lucky Bay	Low key campsite (30 units) Picnic facilities & parking
	Rossiter Bay	Picnic facilities & parking
Duke of Orleans Bay	Wharton Townsite	Caravan park (80 camping sites) 1 chalet, toilets, laundry & shop
	Table Island	Toilets, picnic facilities & parking
	Wharton Beach	Parking
	Hammer Head	Parking & boat ramp
Cape Arid National Park	Thomas River	Low-key camping (10 sites)
	Poison Creek	Low-key camping (10 sites)
	Tagon Point	Low-key camping (10 sites)
Reserve 518		Low-key camping

The most popular tourist activites in the area include pleasure driving, camping, observing wildflowers, fishing, boating, swimming, sunbaking, visiting national parks and off-road vehicle operation.

Illegal Camping

A study of nearby areas including Membinup Point, Alexander Bay and Oldfield (Munglinup) Inlet, which are accessible by road, revealed significant evidence of unofficial and illegal camping. This activity produces a number of problems associated with unplanned roads and tracks, damage to vegetation, soil erosion, littering and potential health risks.

Commercial Fishing

For some time the commercial fishing industry has been seeking the provision of a fish landing and boat refuelling facility at Duke of Orleans Bay. The Public Works Department has examined this request and considers that it would be feasible to construct such a facility near Nares Island. Reserve 36979, Camping and Professional Fishermen, of 0.7317 hectares, has been established on the mainland adjacent to the Island to accommodate developments associated with the fishing industry.

While it is not expected that the Nares Island project will proceed in the near future the needs of the fishing industry alter from time to time. These changes result from

the exploitation of alternative fish stocks, changes in technology, or movements in markets which make particular enterprises more or less viable. As a result the long term needs of the fishing industry may be more than a single structure at Nares Island. These needs should be considered when this Plan is revised (Plate 3).

Plate 3. Nares Island (right foreground). (Photo S. Chape)

Quarrying

The existing access system in the Park is inadequate. Most roads and car parks are poorly designed or badly sited. The proper development of the area will require upgrading of the access system, which will necessitate the opening of borrow pits to provide road base material. At present there are four borrow pits in the Park, one is active and three have been closed.

Refuse Disposal

Visitors using the Park generate a considerable amount of garbage. At present this waste is buried in the borrow pit associated with the active quarry. However, quarrying will not continue indefinitely, but garbage disposal will continue to be a major management operation, and other disposal sites will have to be found.

Airport

During 1982 a landing field capable of accomodating light aircraft was constructed in the Park. This facility may increase the number of visitors using the area.

Residential Development

Recently the Department of Lands and Surveys has received requests for land to develop private holiday accommodation in the Park. The existence of road access, an electricity supply, ground water, and the high recreational potential of the park make it attractive for this use.

Off Road Vehicles

Vehicles are used off the defined roads and tracks in the Park. Generally, this use appears to result from people attempting to obtain access to remote camping and fishing areas. Roads are also by-passed when they become unusable because of pavement instability associated with loose sand or poor drainage.

MANAGEMENT PLANNING

Land use planning is a process involving the consideration of an area's resources, the land's ability to support particular uses, constraints on use and likely use pressures. The allocation of appropraite uses to areas of land capable of sustaining those uses is an essential step in management planning. If this step is not taken environmental degradation may occur resulting in the loss of amenity and increased management costs.

The Park has the following significant resources:-

- unspoilt coastal scenery including islands, rugged headlands and mountains, a clear blue sea and heathlands;
- sheltered, safe bays and beaches suitable for swimming, boating and fishing;
- relatively undisturbed physical and biological features which, together with adjacent and nearby national parks and crown lands form ecosystems with a significant conservation value;
- coastal heaths producing wildflowers which are a tourist attraction;
- a developing caravan park and camping facility;
- a site suitable for the development of a commercial fishing boat harbour;
- a system of access roads and tracks;
- materials which are suitable for road construction purposes;
- a useful supply of ground water.

The use constraints which influence planning and management of the area are:-

- highly erodible sandy soils which depend upon vegetation cover for their stability;
- a high risk of bush fires during some periods of the summer;
- the absence of large trees and the associated risk of degradation of the landscape by careless development;
- the distance from Esperance which increases the cost of development and management.

PLANNING AND MANAGEMENT OBJECTIVES

The following planning and management objectives are defined to assist the Esperance Shire Council, private individuals and government authorities to achieve the management aims outlined on Page 4:-

- develop a system of roads, car parks and walking trails. These facilities should enable people to gain access to the attractions of the Park;

- develop camping and picnic facilities which provide for the needs of visitors, but do not degrade the natural environment or beauty of the Park;

- nominate sites which may be used for a jetty or wharf, boat ramp, boat refuelling station and associated vehicle parking facilities;

- undertake effective beach management programmes which will allow visitors ready access to beaches, without degrading sand dune systems or interfering with coastal processes;

- protect the vegetation and wildlife in the Park;

- implement an ecologically based fire protection programme in consultation with the Condinup Bush Fire Brigade, National Parks Authority, West Australian Wildlife Authority and neighbouring land holders;

- implement a soil conservation programme to arrest erosion resulting from unnatural processes;

- encourage recreational activities which are least damaging to the natural ecosystems and restrict potentially damaging activities;

- protect ground water quality;

- develop an efficient system of garbage disposal and litter control;

- control introduced plants and animals and eradicate noxious plants and animals;

- provide an effective system of signs and interpretive material to orientate, educate and control visitors.

MANAGEMENT UNITS

A system of management units has been identified to describe areas of land with varying ability to support development and use. These units are based upon sub-surface geology, soil type and stability, topography, vegetation, drainage, slope and landscape character. The units are shown on Map 5 and Plate 4, and summarised in Table 2 (Page 13).

Sand Plain Unit

This unit is based on the areas of Lower Sand Plain Deposits and Pallinup Siltstone described by Morgan and Peers (1973). The land is slightly elevated (over 50 metres) and relatively flat.

The soil is a shallow grey sand 10 to 100cm deep overlying siltstone, yellow clay or pisolites, and subsurface drainage is restricted. The flat nature of the land and the thin layer of soil limit the risk of erosion if the vegetation is retained.

The most obvious plant species on this unit is Nuytsia floribunda which grows over a low heath community including Isopogon trilobus (Barrel Cone Flower), Dryandra falcata (Prickly Dryandra) Hakea clavata (Coastal Hakea) Beaufortia shaueri (Pink Bottlebrush) and Calytrix decandra, (Pink Starflower). This elevated, flat plain with its wildflowers, Christmas Trees and sweeping views of the ocean provides a wild and lonely landscape with an atmosphere of isolation.

The land unit is capable of supporting development, but care should be taken to avoid drainage problems and any structures should be designed and landscaped to minimise the impact on this delicate open space.

Sand Dune Unit

Between the Sand Plain Unit and the sea there are a number of areas where the land forms have been shaped by wind blown sand, forming rounded hills and elongated dunes 3-8 metres high.

Banksia speciosia is the most obvious plant on the unit growing in association with Calothamnus quadrifidus (One-sided Bottlebrush), Melaleuca globifera, Conospermum omeonum (Blue Smokebush), Agonis obtusissima, Baeckea sp. and Lambertia inermis (Chittick).

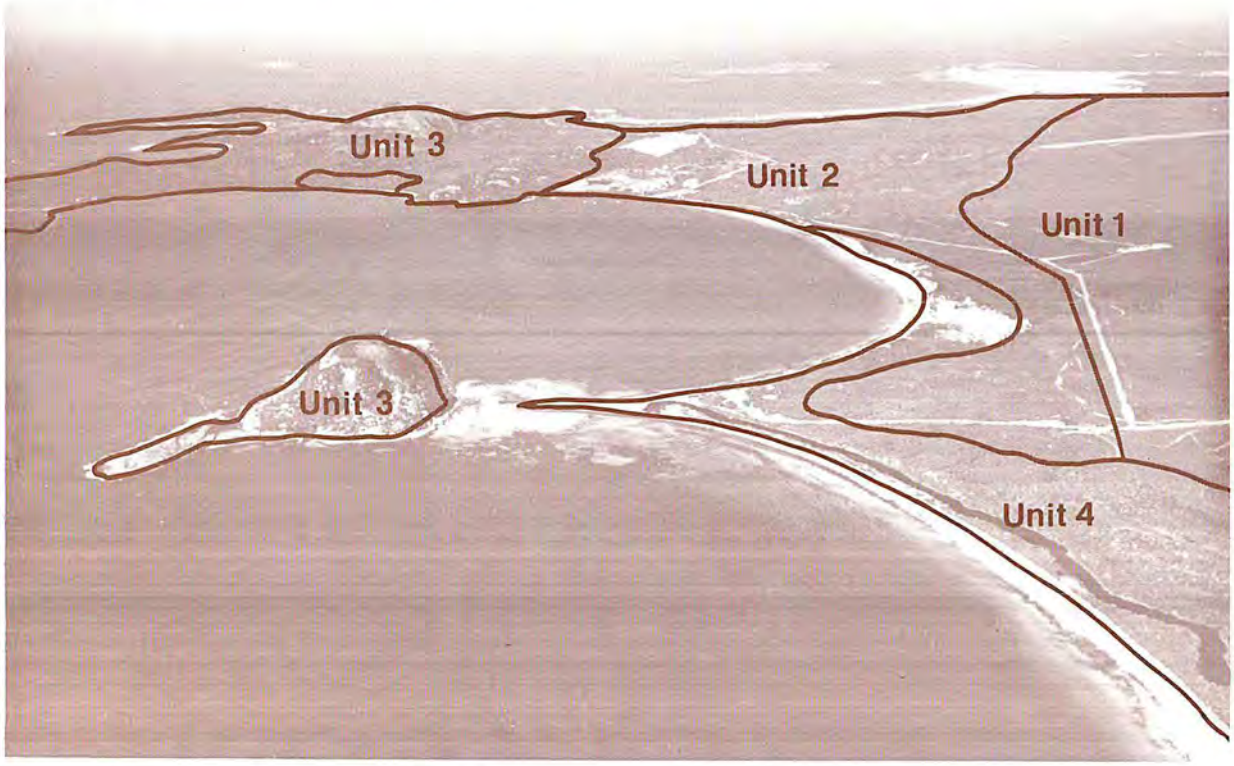


Plate 4. Management Units
Unit 1. Sand Plain Unit, Unit 2. Sand Dune Unit,
Unit 3. Outcrops Unit, Unit 4. Beach Ridges & Wetlands Unit
(Photo. S. Chape)

The landscape in this unit comprises a series of sheltered depressions, and low ridges which provide glimpses of the ocean. The unit includes sheltered sites which could be developed as camping sites and low-key picnic areas. However, such developments must be designed to fit into the landscape and large scale earthworks should be avoided (Plate 5). Any bare sand should be treated or erosion will occur. Fire is a threat to the stability of this unit and would be a potential danger to people camping in the area.

Outcrops Unit

The commanding features of the Park are the massive outcrops of granite and migmatite which form Mount Belches, (Plate 2) Hammer Head, and the other headlands. The spaces between the igneous rocks have filled with sand deposits, forming soil with a shallow grey A horizon and a deep yellow or white B horizon. These soils often occur on steep slopes and are prone to massive gully erosion if left unprotected.

As there is little soil on the outcrops they support practically no vegetation. However, the deep sands between the granite ridges support a plant community dominated by Banksia speciosa and Eucalyptus tetragonia in association with smaller heath forming species. The landscape is rugged and exposed, and the higher peaks provide spectacular views of the ocean and islands.

TABLE 2. DESCRIPTION OF MANAGEMENT UNITS - DUKE OF ORLEANS BAY REGIONAL RESERVE - SHOWN ON MAP 6

Name of Unit	Geology	Soil Type and Stability	Topography and Slope	Vegetation	Drainage	Landscape
Sand Plain Unit	Sand deposits & sand dunes overlying Pallinup siltstone.	Shallow sandy podzol with a grey A horizon to 400mm a thin pale B horizon overlying pisolites or yellow clay. Shallow soil depth reduces the risk of massive erosion.	Generally flat with occasional sand dunes up to 2 metres.	Low heath (to 1 metre) including Isopogon, Dryandra, Hakea Beaufortia Calytrix, with clumps of Nuytsia.	Surface runoff limited by topography. Subsurface drainage restricted by subsurface geology.	An elevated, flat, open plain with attractive wildflowers and ocean views.
Sand Dune Unit	Aoelian sand dunes overlying Pallinup siltstone and granite.	Deep sandy podzol with a grey A horizon to 150mm. Deep B horizon of white sand.	Undulating rounded hills and elongated dunes 3-5 metres high.	Heath-scrub 2-4 metres high. Banksia, Eucalyptus, Calothamnus, Melaleuca, Conospermum, Agonis, Beackia and Lambertia.	Good to excessive drainage on ridges areas of poor drainage in some swales.	Ridges and depressions forming a series of small spaces, providing seclusion and glimpses of the sea.
Outcrops Unit	Exposed granite and migmatite and sand plain deposits.	Large areas with no soil interspersed with areas of sandy podzol with a thin grey A horizon to 150mm and yellow or white B horizon of variable depth.	Undulating sandy plains between very steep rock outcrops.	Practically no vegetation on rock outcrops, low heath on sand plains and some scrub-heath near the sea. Banksia, Eucalyptus, Leucopogon.	Surface run off on rock faces with large areas of swampland on sand deposits.	Spectacular landscape with excellent coastal views from high points.
Beach Ridges and Wetlands	Recent aoelian quartz sands forming beach ridges,	White sand.	Steep slopes on the seaward side and gentle slopes on landward side.	Spinifex and Banksia.	Excessive drainage.	Unspoilt beachscape.
	Sand plain deposits.	Deep dark humic sands.	Almost Flat.	Melaleuca.	Poor drainage forming wetlands.	Sheltered & peaceful landscape.

PLATE 5. The rounded hills of the Sand Dune Unit. Large scale earthworks should be avoided on this unit and developments should occur in the swales. Note the Banksia woodland has been reduced by a recent fire. (Photo. C. Chalmers)

Because of the landscape value of the outcrops and the unstable nature of the soil, development on this unit should be restricted. The only works should be those associated with the proposed commercial fishing facility and redesigning and upgrading of roads and car parks.

Beach Ridges and Wetland Unit

The foredunes in the Park are comprised of well-sorted, fine grained, white sands with low carbonate levels (Morgan and Peers, 1973). The seaward side of the dunes is steep and bears a sparse cover of vegetation, including Spinifex hirsutus and Melaleuca sp. The landward slope is less steep and relatively sheltered, supporting a vegetation community including Banksia speciosa, Agonis linearifolia and Ricinocarpos tuberculatus.

Water draining from the hills is often trapped behind the foredunes forming wetlands and creeks, which fill after heavy rain and drain into the ocean at the sheltered end of the beaches. The wetland community is dominated by Melaleuca cuticularis (Salt Water Paperbark) and sedges.

This is an unstable environment subject to erosion and it should not be developed, with the exception of carefully located beach access trails.

STRUCTURE PLAN

The Structure Plan (Map 6), has been prepared to locate and outline the developments required to assist in achieving the management objectives outlined on Page 10. These developments include the following proposals.

Existing and Proposed Roads and Trails

Upgrading of the access system in the area is an integral part of the future development and management of the Park. Road standards in parks of this type need not be the same as those in surrounding rural areas, as high traffic speeds are neither required nor desirable. Excessive cut and fill are to be avoided if possible, and roads should be aligned so they fit into the landscape.

The following road upgrading programme will occur as funds become available.

The road from Table Island Point to the caravan park will be regravelled and formed with a 6 metre pavement with 1 metre shoulders.

The roads to Wharton Beach, Membinup Beach and Hammer Head will be upgraded by adding 100mm of limestone road base and surfaced with lateritic gravel. The pavement will be 4 metres wide with 0.5 metre shoulders.

Nares Island Road and the track between Table Island and Membinup Beach will have to be realigned and upgraded. After suitable alignments have been determined construction will involve the use of 100mm of limestone road base and a surface of lateritic gravel. The pavement will be 4 metres and the shoulders 0.5 metres wide.

Picnic Facilities

Low-key picnic areas are required to meet the needs of day visitors and campers in the area. These facilities can be associated with car parks and attractive safe beaches. The picnic areas should be small, sheltered, flat areas with tables and rubbish bins. The proposed locations of these facilities are shown on Map 6. Again because of the lack of firewood camp fires and wood barbecues will be prohibited.

Commercial Fishing Facility - Nares Island

For some time the commercial fishing industry has been pressing for the construction of a wharf or jetty with associated fish handling facilities at the Duke of Orleans Bay. Such a facility would also be of value for recreational boating.

The Public Works Department has investigated the area and it is considered feasible to develop a wharf or jetty near Nares Island. (Location shown on Map 6). However there are two difficulties associated with this proposal:

- much of the road alignment to the site passes through poorly drained land and road construction costs will be high.

- the Nares Island site is on the edge of The Outcrops Planning Unit and most of the surrounding land is steep, rocky or wet. Only a small area of flat well drained land is available for the development of facilities which may be required to service the wharf.

Camping Facilities

Council will develop low key camping facilities at Membinup Point. This area will provide for the needs of people not wishing to use the more sophisticated facilities associated with the caravan park.

The area will have a low density of campsites and facilities will include formed and gravelled access tracks and sites (Appendices 1a and 1b), toilet blocks (Appendices 1c and 1d), and a bore water supply.

Signs

Timber signs will be erected at the entrance of the Park, at each of the major facilities and road intersections. Typical specifications for the signs are shown in Appendix 2.

MANAGEMENT PROPOSALS

Management of the area will involve a series of activities undertaken to fulfill the Park's purpose. The management objectives provide a framework for conserving the Park's resources, integrating the Park, into its regional environment and accommodating environmentally compatible public use. Management activities include the following operations:-

Fire Management

Fire is one of the most important factors affecting plant and animal populations, and soil stability in the Park. Fire has always occurred on the south coast of WA but its frequency has been increased significantly by the activities of European man (Beard 1973).

The vegetation of Australia has evolved in the presence of fire, and plants use a variety of strategies to survive burning. Some plants regenerate vegetatively from parts of their roots and stems, while others recover by means of seeds stored on the plants or in the soil. Frequent firing reduces plant cover and affects the composition of the community. Banksia speciosa, one of the more significant plants because of its size and abundance, only regenerates from seed, and as it does not flower until it is 3-4 years old it is disadvantaged by a high fire frequency (Plate 6).

Plate 6. Banksia speciosa regenerating after fire. This species regenerates from seed only, and as it does not flower until it is 3-4 year old it is disadvantaged by a high fire frequency. (Photo C. Chalmers)

Until a greater understanding of the relationship between fire and vegetation communities is acquired, the burning frequency in the area will be reduced.

A detailed study of the effects of fire on coastal vegetation would be of considerable assistance in coastal reserve management. Such a study would provide a worthwhile project for a post graduate student.

The continuing threat of uncontrolled fire creates a need for a Bush Fire Protection Plan which considers the need to protect life and property. At present the National Parks Authority maintains a fire break between the Park and the Cape Le Grand National Park, by undertaking hazard reduction burning. It would be advisable to supplement this programme by developing a system of tracks and slashed fire trails around the camping and picnic areas.

The fire protection programme will be developed in co-operation with the Condinup Bush Fire Brigade, National Parks Authority and neighbouring land holders.

Vegetation Management

Protection of the vegetation is vital to conserve the floristic diversity of the Park, and is an integral part of the soil conservation, landscape protection and wildlife management programmes. Vegetation is threatened by a number of factors including fire, disease, firewood collection, exotic flora and noxious plants and the development of roads and facilities.

Disease

There is evidence that some of the Proteaceous plant species growing in the Park are affected by dieback. Plants die after soil is disturbed by road works and vehicle movements. It has not been determined if the problem is a result of infection by a pathogen or some other cause. However, it is recommended that roadworks and vehicle movements be excluded from areas which have not been affected until the cause of the dieback has been determined.

Firewood Collection

The structure and rate of growth of the plant communities on the coast of the Esperance Region provide little natural firewood. The impact of people cutting down small trees and large shrubs, for firewood, is a serious problem. The difficulty could be reduced by prohibiting camp fires and wood barbecues, directing campers to provide their own gas stoves and by the erection of signs prohibiting the destruction of vegetation. (Suggested design and wording for the signs is in Appendix 2).

Exotic Flora and Noxious Plants

The low nutrient status of the soil in the Park makes invasion of the area difficult for most plant species, providing bare areas which are suited to the establishment of introduced plants are kept to a minimum.

Noxious weeds should be eliminated immediately they occur and advice concerning the control of noxious plants is available from the Agriculture Protection Board.

Development of Roads, Tracks and Camping Facilities

The development of facilities in the Park results in damage to the vegetation because of the clearing of bushland and the concentration of surface drainage onto specific areas. Some of this damage is an inevitable result of development, but can be reduced by considering the impact of each proposal before work commences.

Camping areas can be designed so they fit into the environment. Cut and fill and the destruction of the existing vegetation should be kept to a minimum (Appendix 1). No camping or picnic areas should be developed until Council can provide the staff required to maintain them.

Quarrying

There will be a need to continue quarrying road base material for construction purposes in the Park. This operation should take place on a site, producing good quality material which is not readily visible from the roadside, camping areas or coastal viewing points. The existing active quarry is located in an acceptable position, although access could be improved. Borrow pits resulting from quarrying will remain bare of vegetation for a long period unless proper rehabilitation techniques are adopted. After quarrying the following procedure will be undertaken:

- the sides of the pit will be reshaped with slopes of less than 1 in 3.

- the bottom and sides of pits will be ripped to a depth of 0.5 metres.

- top soil and plant material from the surface of the pit will be returned and spread over the site to a depth of 100mm. Top soil used for this purpose should not be stored for more than 3 months (Plate 7).

Maintenance of Landscape Quality

The landscape of the south coast is a valuable resource which can be degraded by unplanned development and management. The careless design or location of buildings, roads, car parks, borrow pits and refuse dumps, or the constant firing of vegetation will quickly detract from the beauty of the area (Plate 8).

Plate 7. An extensive blow-out associated with a disused quarry in the Sand Dune Unit. This disturbance could have been avoided if proper rehabilitation techniques had been used. (Photo S. Chape)

The absence of large trees and the open nature of the country allow man made structures to intrude onto the landscape. This problem can be reduced by the careful siting of structures and the use of materials and colours which harmonize with their surroundings.

Where possible developments should occur on the edge of spaces which are defined by hills, sand dunes and clumps of tall vegetation. Structures should not occur in the middle of open spaces and heathlands. Buildings, water tanks and power lines should not be higher than the skyline formed by nearby hills and bushland.

Toilet blocks and similar structures should not occupy the central or highest point in any area. They are best located away from the foreshore and screened by clumps of natural vegetation. People wishing to use facilities of this type will notice directional signs if they are properly located.

Caravan parks and camping areas should be screened with trees and shrubs. If these plantings are carried out correctly they will assist in landscape protection and provide an effective barrier to the persistent winds which can make the Park an unpleasant place to stay at times. Suitable species and proper windbreak design are shown in Appendix 3.

The roads in the Park should be designed so that they harmonize with the landscape through which they pass. It is not necessary for them to meet the technical standards of other rural roads in the Shire, as vehicle road speeds need not be high. Where possible roads should follow contours, deep cut and fill should be avoided and the width of road pavements and shoulders should be minimized. Areas of bare soil resulting from road construction should be stabilized with native brush and topsoil won during site preparation.

The visual impact of car parks can be kept to a low level if they are well sited, and properly designed. Suggested designs are shown in Appendices 4 and 5.

Plate 8. A roadside borrow pit. This type of land use leads to a rapid degradation of the landscape. (Photo C. Chalmers)

Soil Conservation

Soil erosion caused by running water, the wind and the sea is a natural process which has occurred in the Esperance Region for many thousands of years. This soil movement has been a major influence in the shaping of land forms which exist along the coast to-day. Man's activities also produce erosion because the sandy soils of the area lack structure and become mobile if the protective vegetation is removed (Plate 9).

Erosion degrades the landscape and creates engineering problems when roads become impassable because of drift sands and gullying. When the foredunes erode, beach sands become mobile and move inland burying vegetation and man's improvements, thereby reducing the recreational value of the area. Poor soil fertility and the excessive drainage of drift sands makes revegetation of eroding areas difficult and expensive, therefore, the prevention of erosion is important.

Erosion can be prevented if the vegetation cover is maintained and roads, car parks, camping areas and beach access systems are well designed and carefully constructed.

When vegetation is removed to allow development, areas of bare soil must be surfaced wih gravel or revegetated. Surface drainage from these facilities should be diverted onto existing waterways, vegetated areas or rock faces.

Where pedestrians require access from car parks or camping areas to beaches, properly designed beach access systems are required. Normally these will include clearly defined and fenced pathways which protect dune vegetation from trampling. When paths cross sandy slopes they should be surfaced with gravel, limestone rubble or a board and chain pathway. On steep slopes simple steps are adequate.

Fences are best constructed of pine log rails which provide an effective but aesthetically acceptable barrier. Details are shown in Appendix 7. Some situations may require a stronger barrier and agricultural type fences should be used.

Detailed advice about soil conservation techniques is available from the Department of Agriculture.

Plate 9. Massive gully erosion. The result of unplanned tracks on unstable sandy soil. (Photo C. Chalmers)

Wildlife Management

As stated on Page 6 the Park contains an important wildlife habitat, linking the Cape Le Grand National Park with the unvested Crown Land and the Cape Arid National Park in the east. As the vegetation and wildlife populations in the area are relatively undisturbed extensive wildlife management programmes are not required. The most important operation will be the control of wildfires. Any programme to control rabbits, foxes or feral cats on adjacent farmland, or national parks should be complemented with a similar programme in the Park.

STAFFING AND MANAGEMENT OPERATIONS

At present the Shire of Esperance's management commitment at the Park is limited to the maintenance of roads, toilet facilities and garbage disposal. However, as the Park develops and use increases, a more sophisticated level of management will be required. The appointment of a Ranger to manage and care for all coastal areas in the Shire would be highly desirable. Initially, such an appointment could be made on a holiday season basis, but eventually it will be necessary to employ a full-time officer.

A Ranger would undertake the following operations at the Park and in other coastal areas of the Shire.

Patrols and Interpretation

During school holiday periods a Ranger should patrol the Park to observe and report upon public use of the area, and to control undesirable activities by visitors. The officer would have an important role in informing people about the purpose and management aims of the Park, and in maintaining good relations between the public and Council.

Tourist Management

The Ranger would also have responsibility for directing campers to appropriate facilities, collecting camping fees and controlling illegal camping, fires and unauthorised off-road vehicle operation.

Garbage and Litter Control

During holiday periods garbage and toilet cleaning operations should be undertaken every day. At other times these activities would be carried out on an 'as needed' basis.

Development and Maintenance

If a Ranger is employed on a full-time basis he/she would be available to undertake a variety of minor development and maintenance works during non-holiday periods. These could include small soil conservation and beach management projects, vermin and noxious weed control, the erection and maintenance of signs and fences, and the maintenance of water supply systems.

IMPLEMENTATION

Reserve Vesting

The implementation of this plan requires the establishment of a Crown Land Reserve over the area formerly known as the Wharton Townsite and part of the adjacent, unvested Crown Land. This reserve will be vested in Council for Parks and Reserves. Reserve 27091 will also be vested in Council and its vesting changed to Parks and Reserves. The resulting Park boundary will be as shown on Map 2.

If future development proposals necessitate the leasing of further land to private interests, separate reserves will be created, and vested in Council for particular purposes with power to lease for appropriate periods.

Road Development

Roads will be developed in the following priority order as funds become available.

A road from Table Island Point to the existing caravan park will be upgraded as specified. Wharton Beach Road will be realigned and upgraded. Hammer Head Road will be upgraded. Nares Island Road will be realigned and upgraded. This work will be given higher priority if any development proceeds at Nares Island.

A road to Membinup Point will be designed and constructed.

The road from Table Island Point to Membinup Point will be designed and constructed.

All roads will be formally dedicated "as constructed" and placed under the care, control and management of the Esperance Shire pursuant to the Local Government Act.

If off-road vehicles continue to cause difficulty after the road system has been upgraded Council will approach the Chairman of the Ministerial Advisory Committee on Off-Road Vehicles, requesting that all of the Park be subject to the provisions of the Control of Vehicles Off-Road Areas Act 1978. The entire Park will be declared a prohibited area with the exception of designated roads, tracks, parking areas and beaches.

Car Parking and Beach Access

Council will approach the Departments of Tourism and Conservation and Environment for assistance in the development of car parks and beach access systems. The priority order for development is:-

The Wharton Beach car park and beach access will be constructed and the associated soil erosion control works undertaken as shown in Appendix 4.

A car park and beach access system will be designed and constructed near the existing caravan park.

The car park and beach access at Table Island Point will be upgraded.

The car park and beach access at Hammer Head will be redesigned and upgraded as shown in Appendix 5.

A car park for Membinup Point will be designed and constructed.

All detailed design will be undertaken by Council with advice from the Department of Conservation and Environment. Facilities will be maintained as a part of Council's normal road maintenance programme.

Development and Management of Picnic and Camping Facilities

While the Structure Plan outlines the location and some design detail for proposed picnic and camping facilities in the Park, no development will occur until a Shire Ranger or maintenance staff are available to care for the area.

Development will include picnic facilities at Duke of Orleans Bay, Hammer Head and Membinup Point and a low key camping area at Membinup Point.

Quarrying

When the existing quarry nears the end of its viable life Council will select another site in conjunction with the Department of Conservation and Environment.

Plan Reviewal

This Plan will be reviewed after 31 December 1988. Any amendments prior to this date will be made after consultation between Council, the Department of Conservation and Environment and other interested authorities and people.

REFERENCES

Beard J.S., 1973, The Vegetation of the Esperance and Malcolm Areas, Western Australia: Vegmap Publications, Perth, Western Australia.

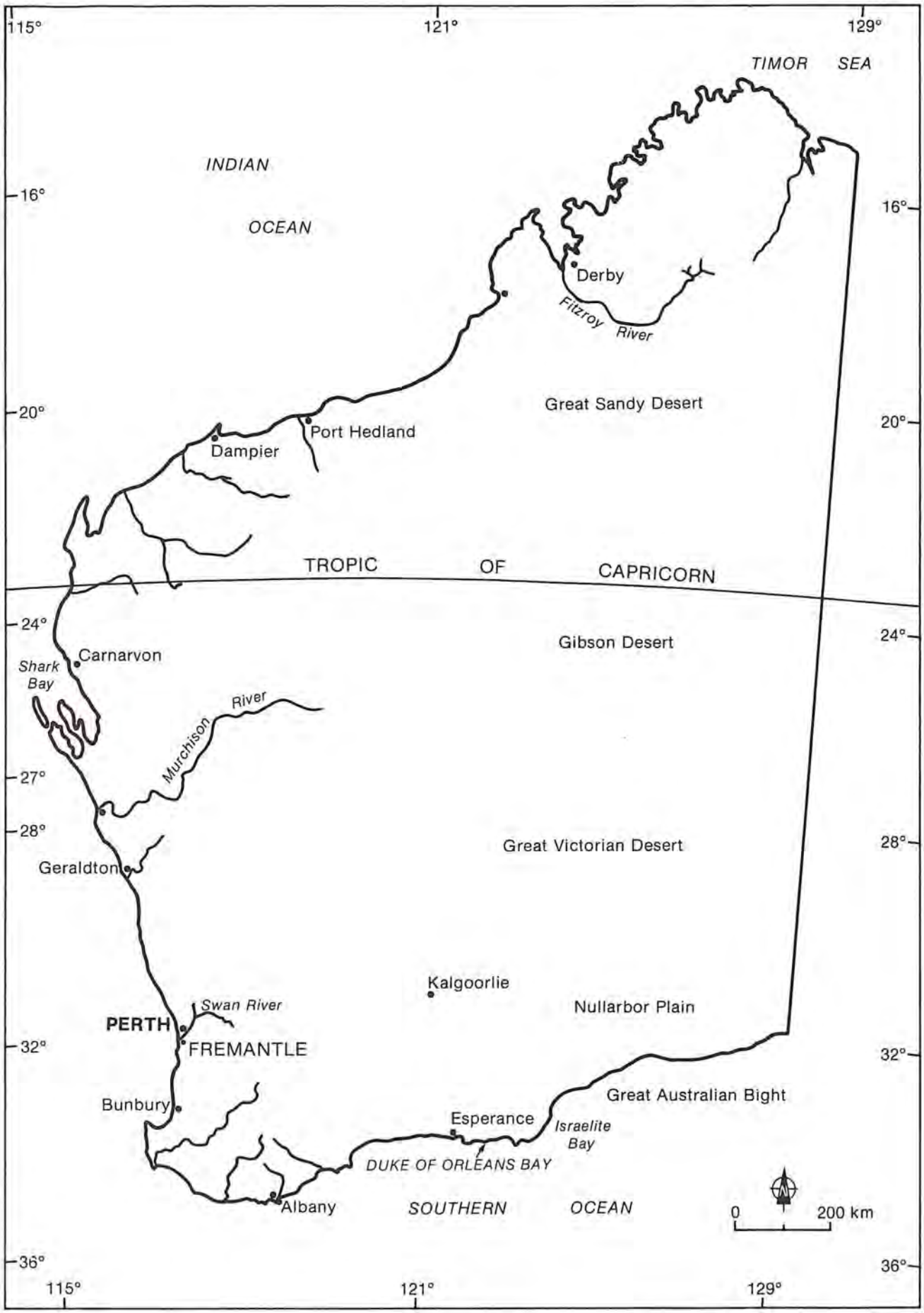
Kitchener D., Chapman A. and Dell J. 1975, A Biological Survey of Cape Le Grand: Records of the Western Australian Museum, Supplement No. 1, 1975.

Morgan K.H. and Peers R., 1973, Esperance and Mondrain Island, Western Australia: Geological Survey of Western Australia.

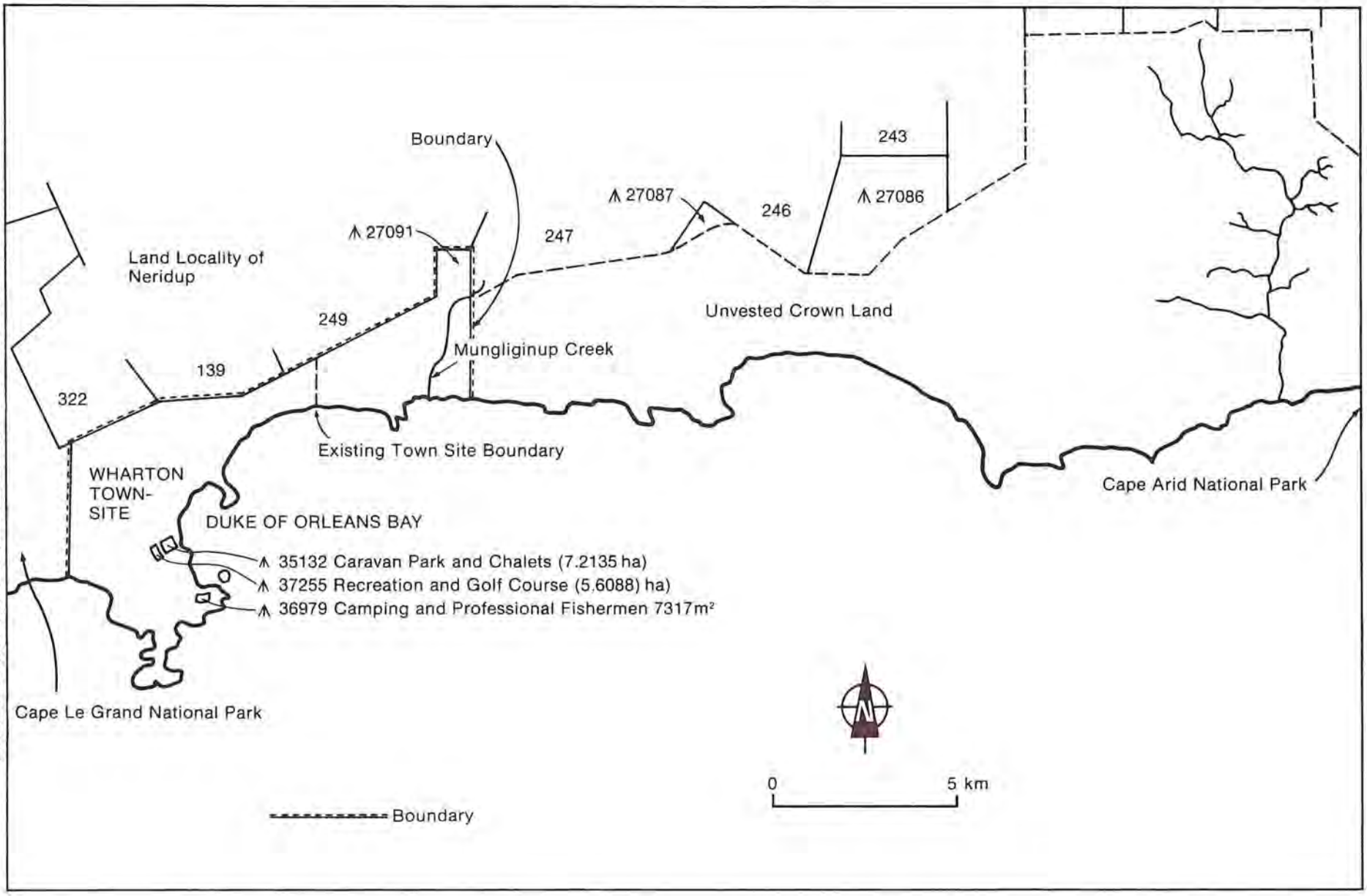
New South Wales, National Parks and Wildlife Service, 1971: Park Furniture Manual. National Parks and Wildlife Service, Sydney.

Western Australian Department of Tourism, 1976, Esperance Visitor Survey 1975-76: Western Australian Department of Tourism.

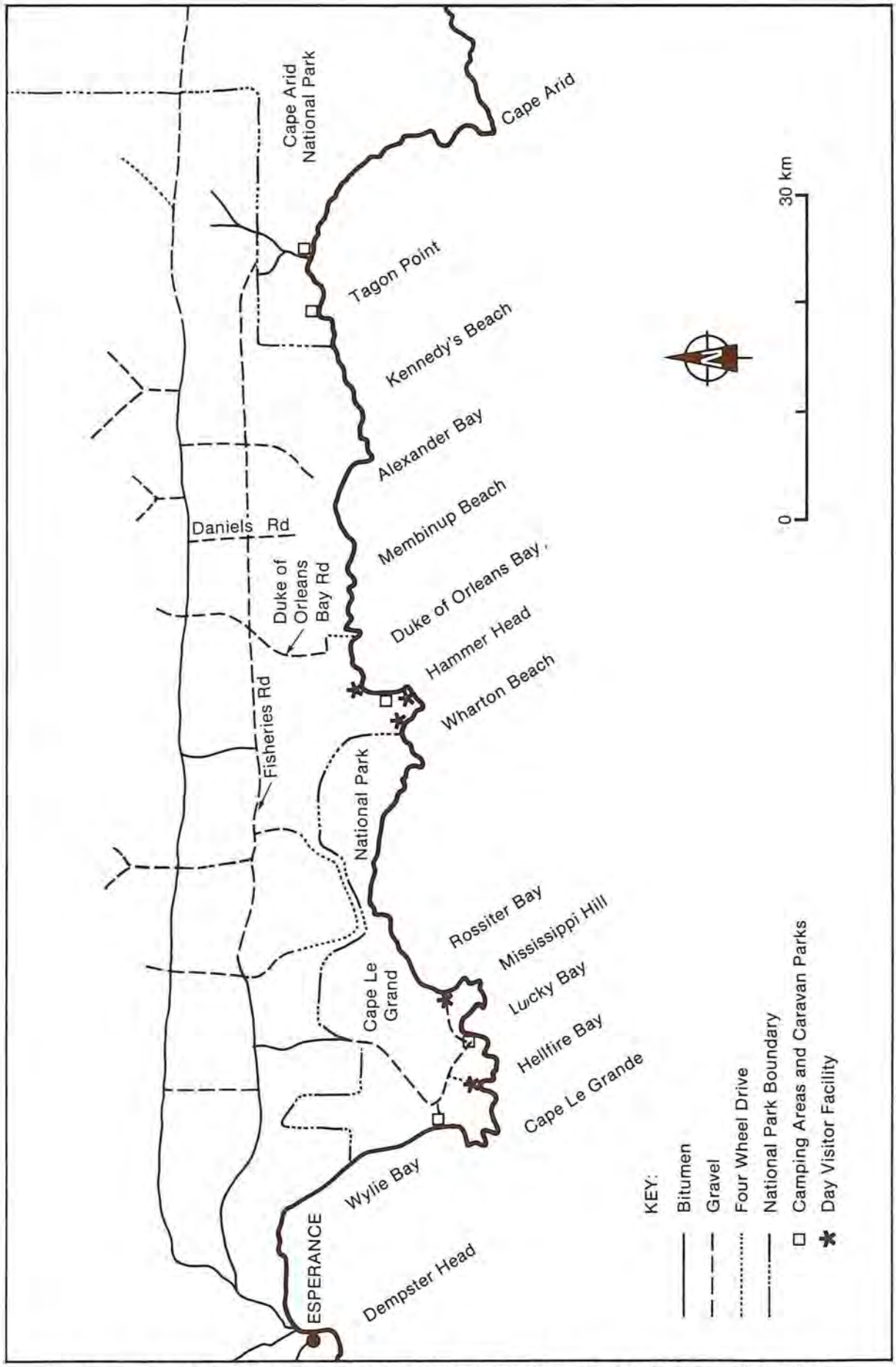
Maps



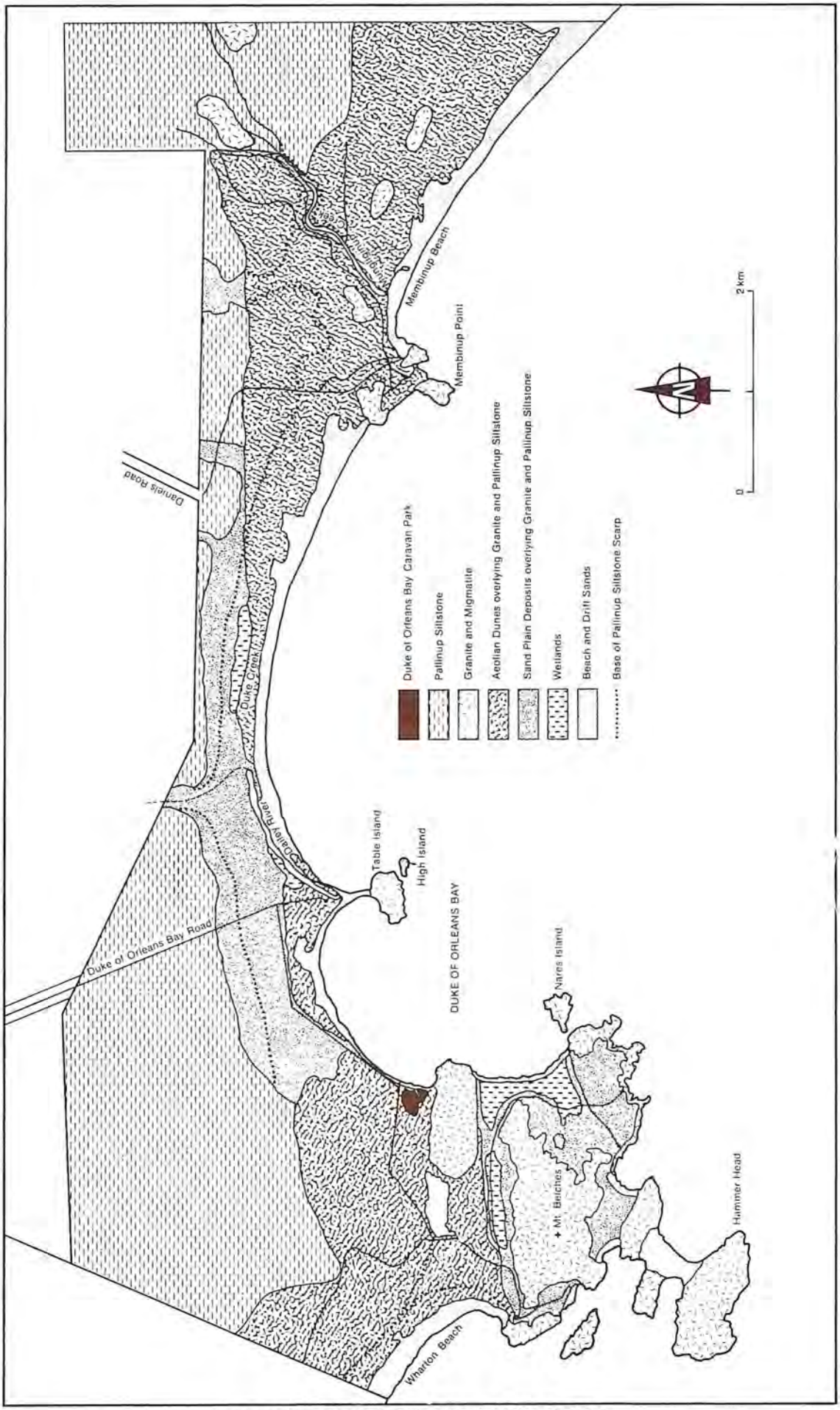
Map 1 DUKE OF ORLEANS BAY — LOCATION



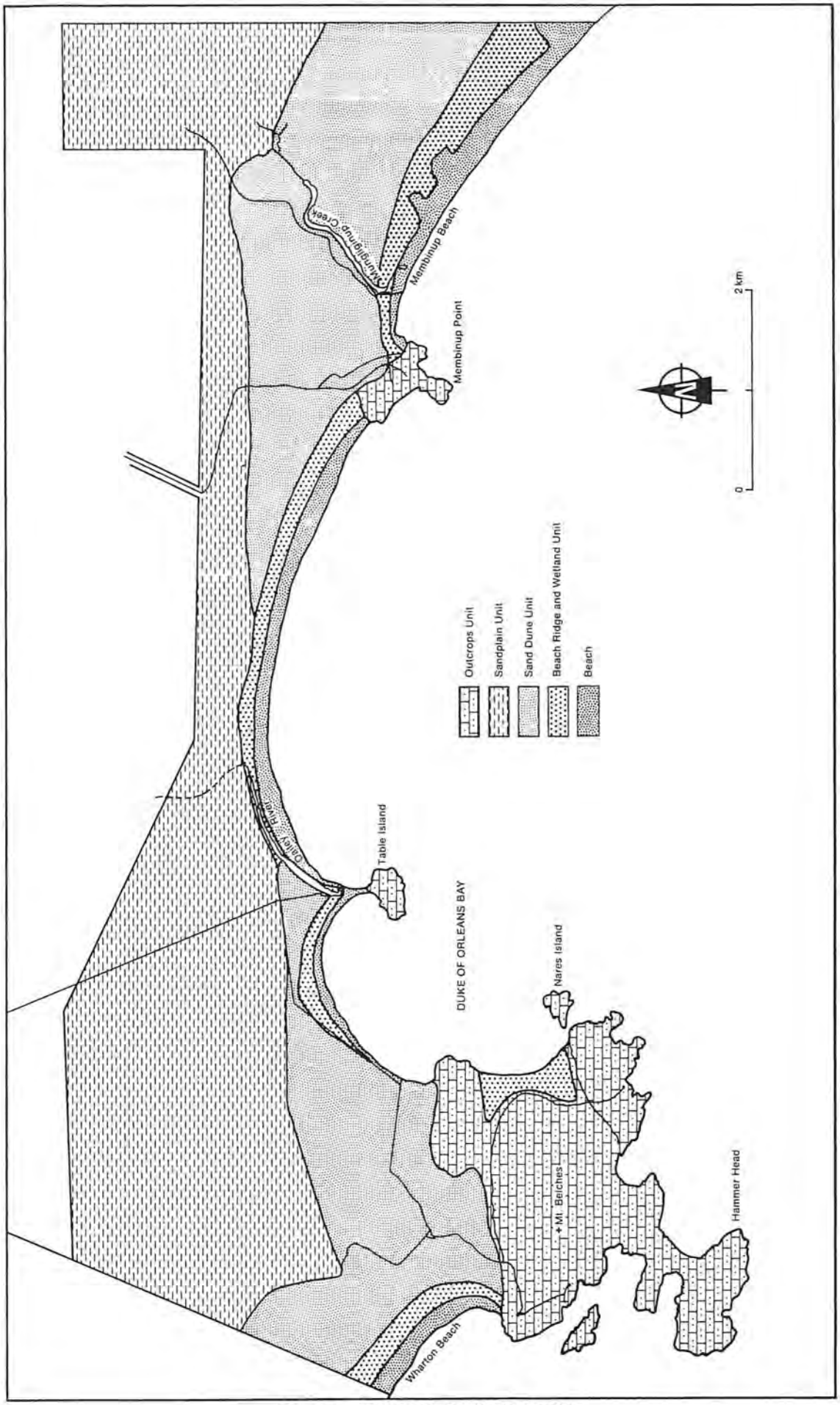
Map 2 PROPOSED BOUNDARY AND ADJACENT LAND TENURE



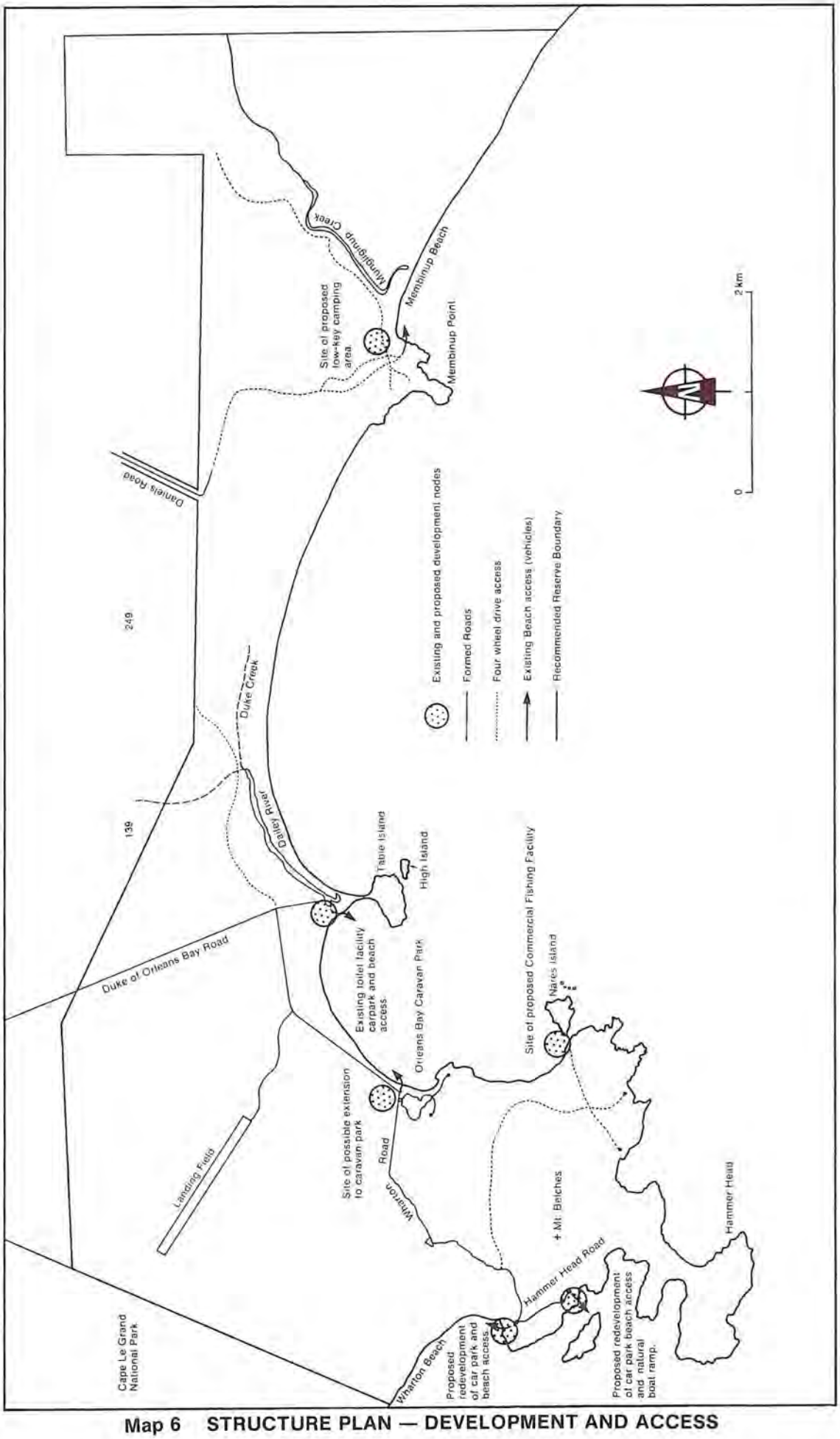
Map 3 RECREATIONAL FACILITIES AND ACCESS ESPERANCE TO CAPE ARID



Map 4 GEOLOGY AND LANDFORMS

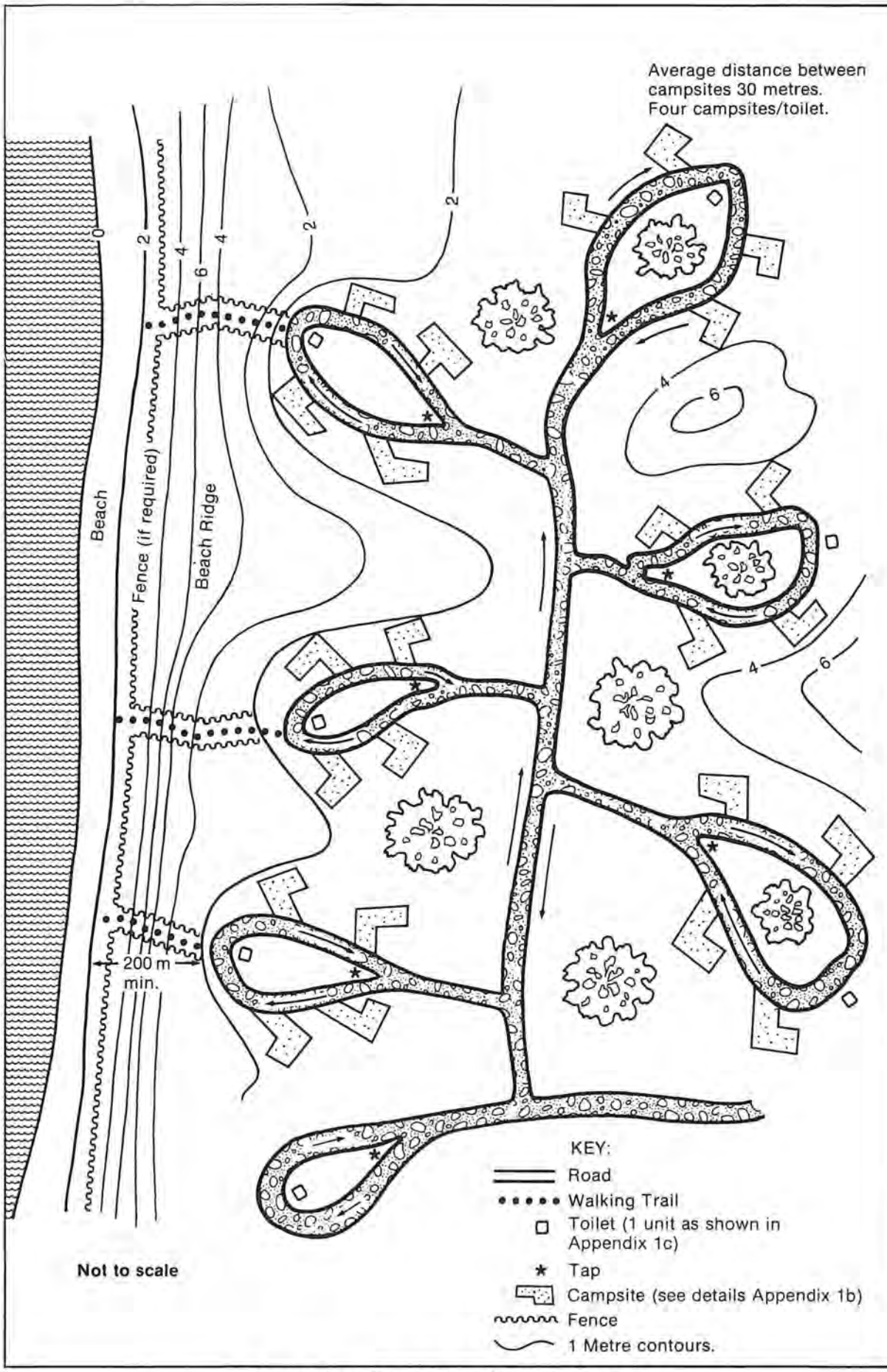


Map 5 MANAGEMENT UNITS

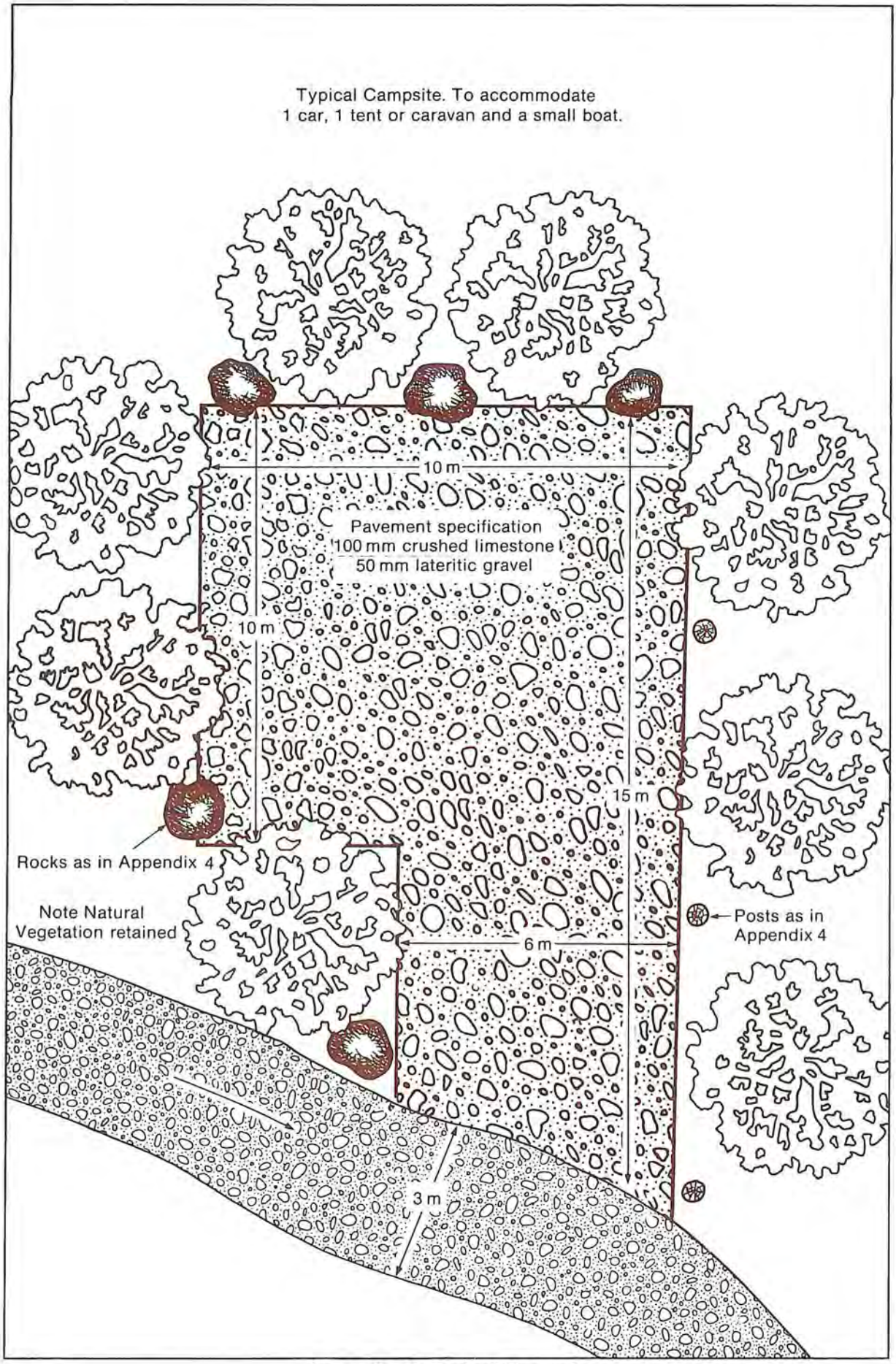


Map 6 STRUCTURE PLAN — DEVELOPMENT AND ACCESS

Appendices

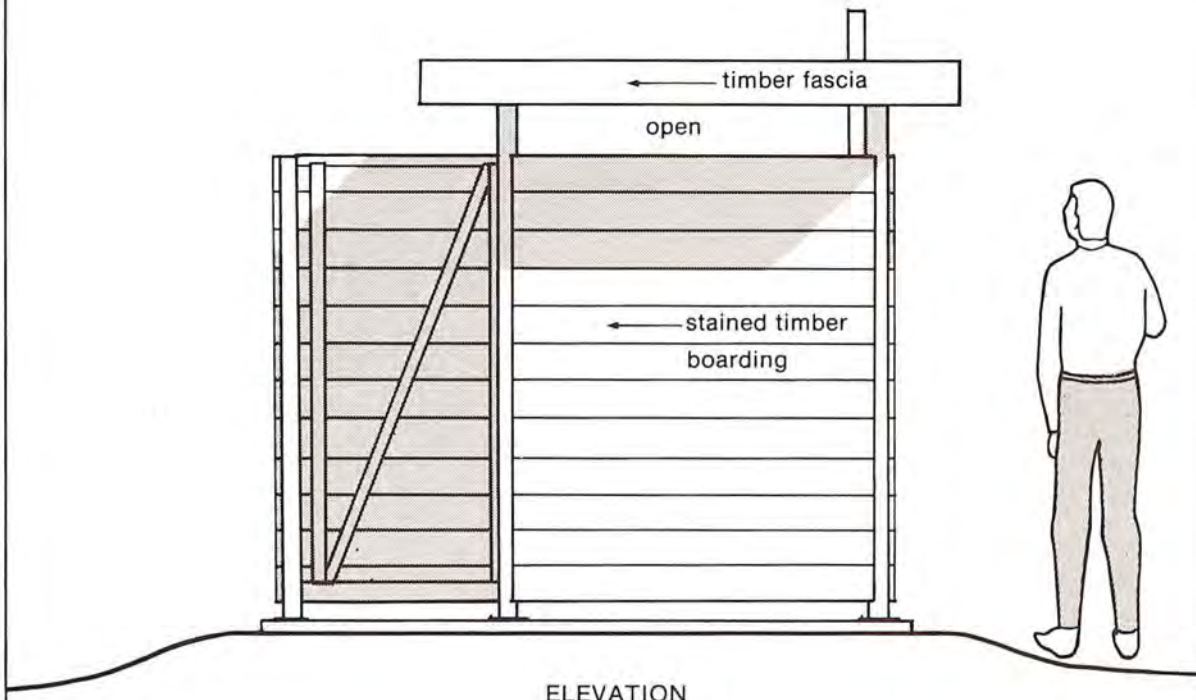


Appendix 1a Typical Low Key Campground

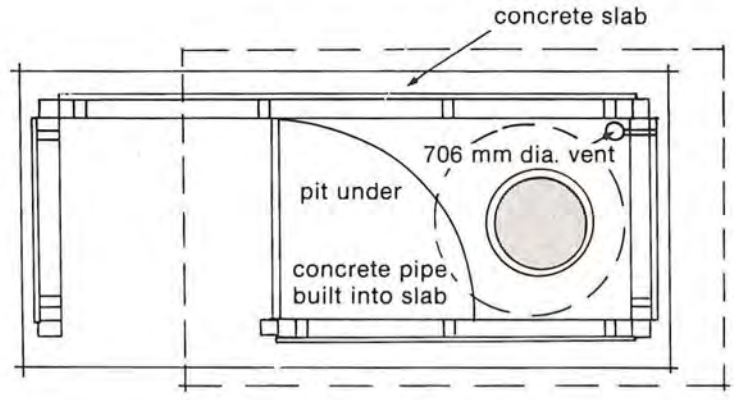


Appendix 1b Typical Campsite

PREFABRICATED PIT TOILET



ELEVATION



PLAN

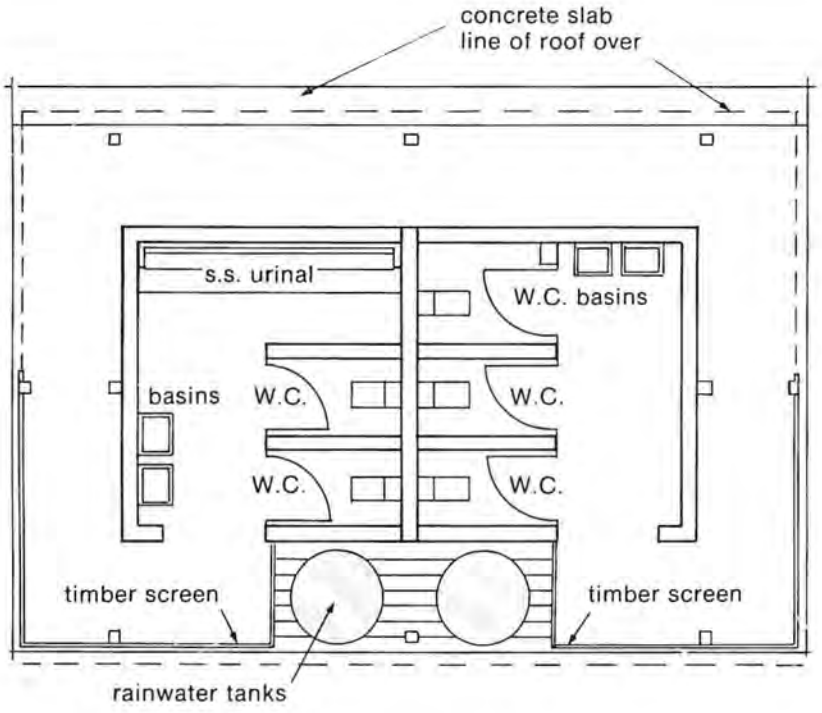
(Source: Park Furniture Manual, N.S.W. N.P.W.S.

Scale: 1 cm equals 380 cm

Appendix 1c Prefabricated Pit Toilet

TOILET BLOCK

ELEVATION SECTION



painted bagged brickwork
or concrete blockwork
full-height filling internally

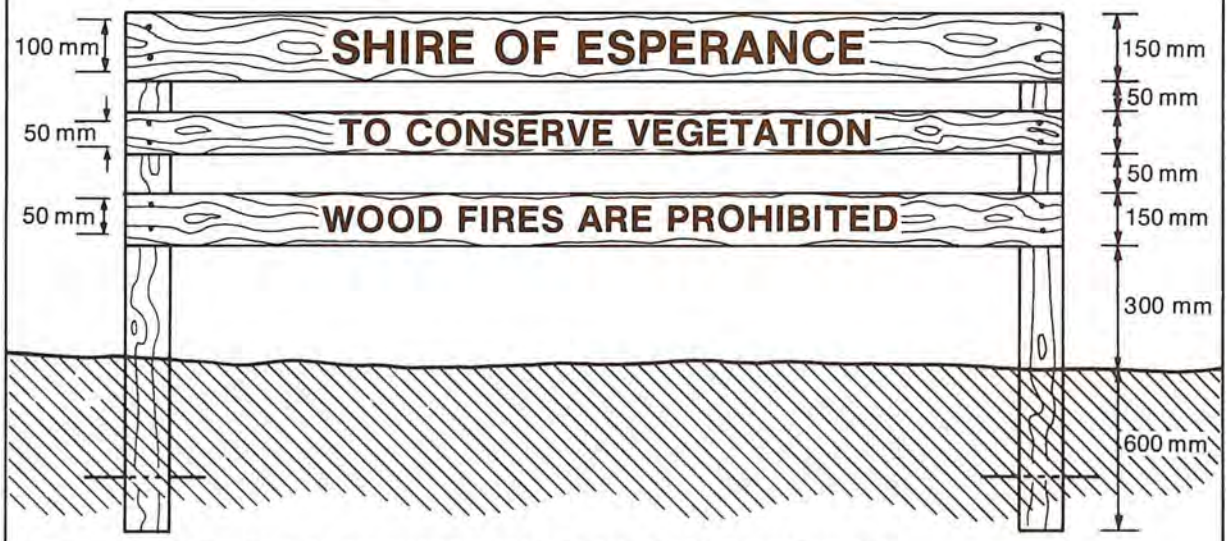
PLAN

Source: Park Furniture Manual, N.S.W. N.P.W.S.

Scale: 1 cm equals 1,020 cm

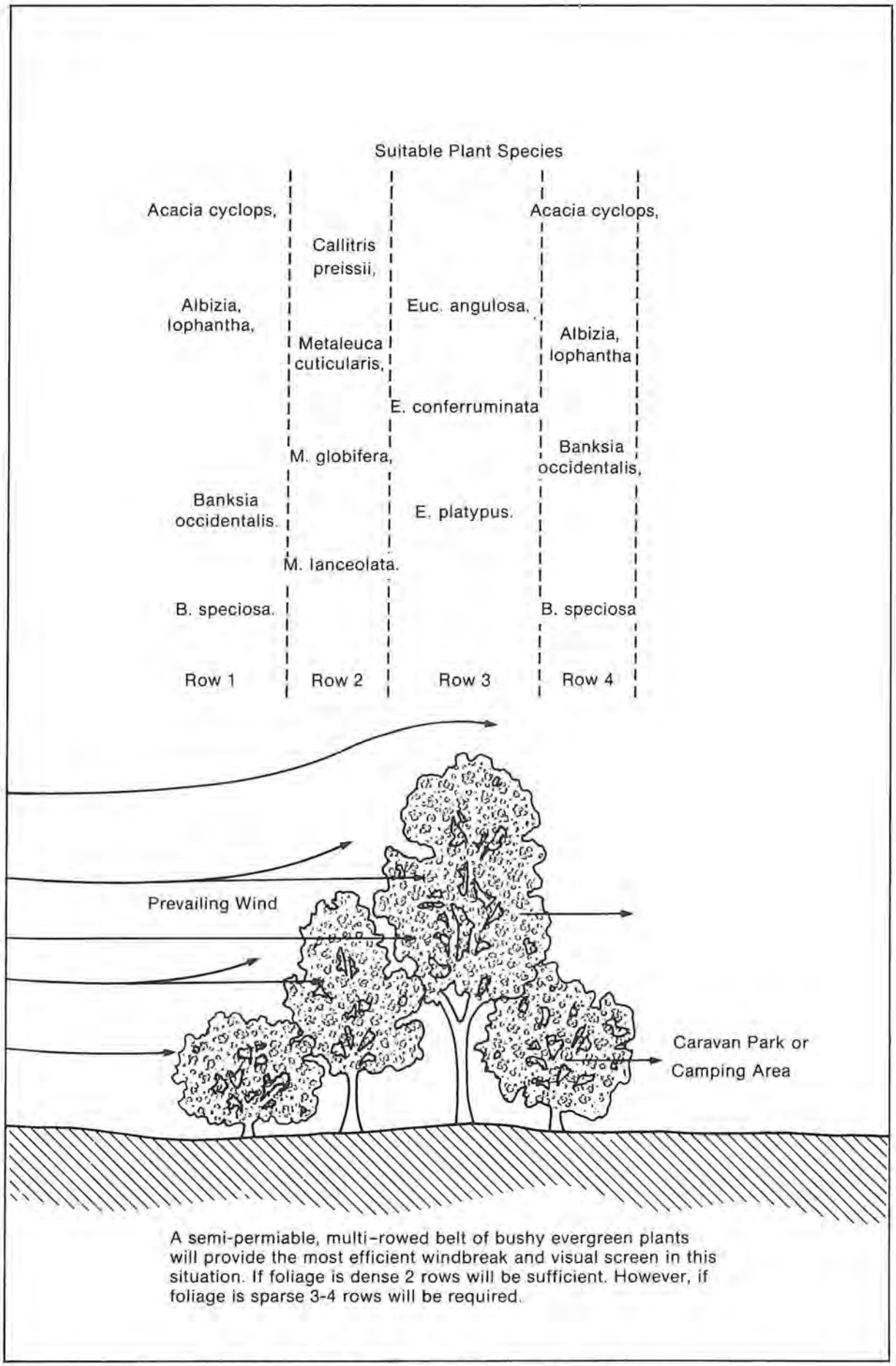
Appendix 1d Toilet Block

SUGGESTED SIGN FOR RESERVE ENTRANCE



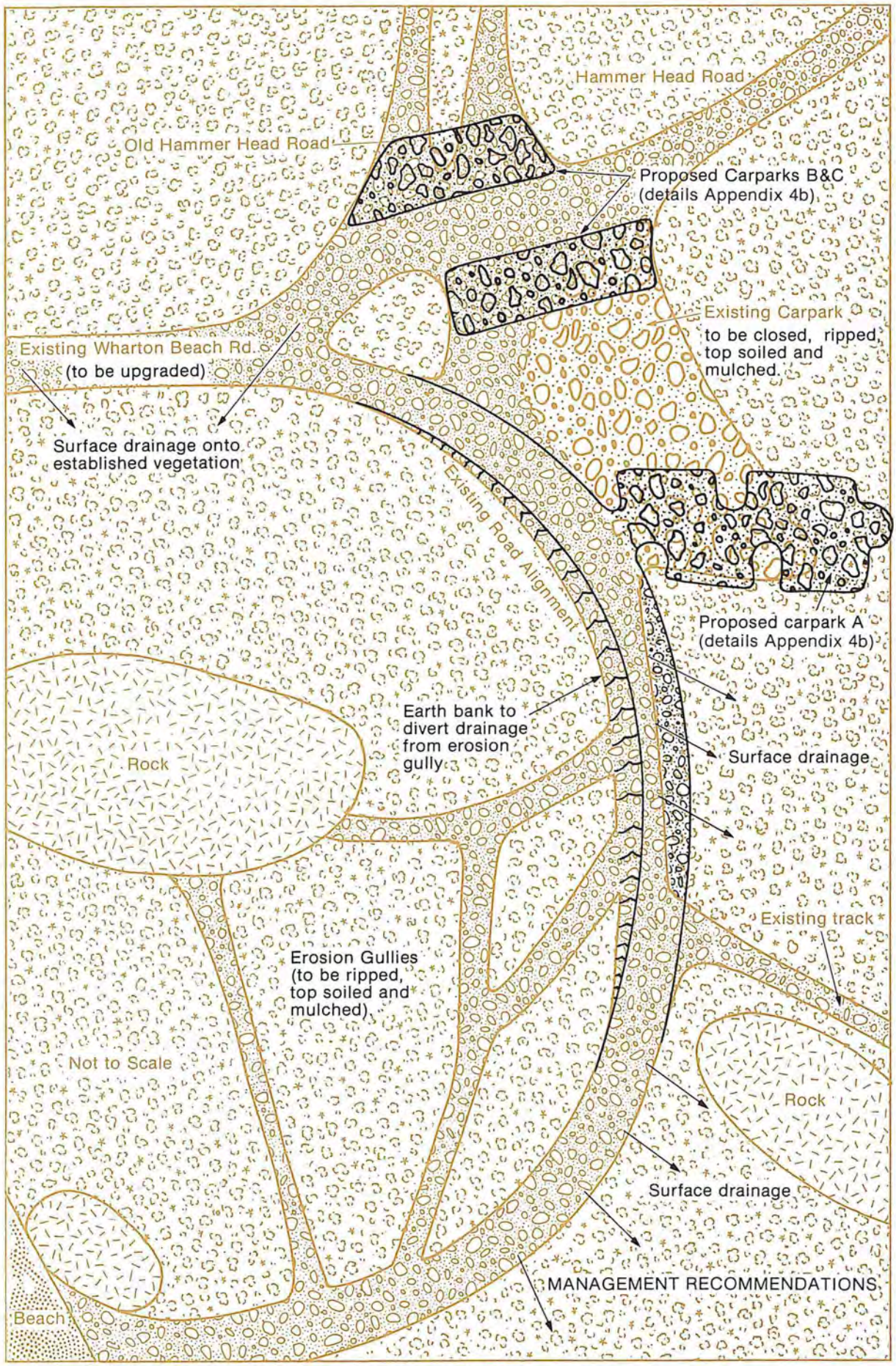
SIGN TO BE ERECTED AT CARPARKS, PICNIC AREAS AND CAMP SITES

Appendix 2 Signs

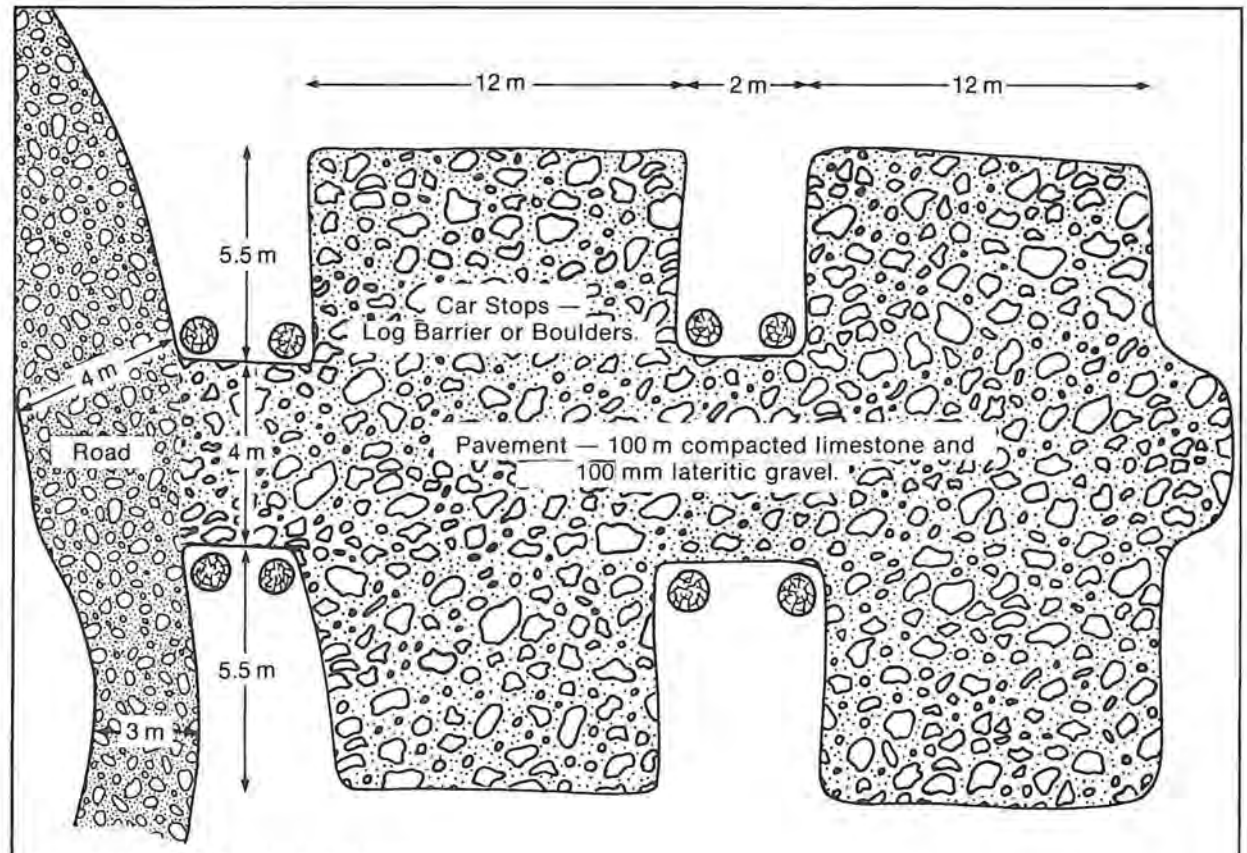


A semi-permiable, multi-rowed belt of bushy evergreen plants will provide the most efficient windbreak and visual screen in this situation. If foliage is dense 2 rows will be sufficient. However, if foliage is sparse 3-4 rows will be required.

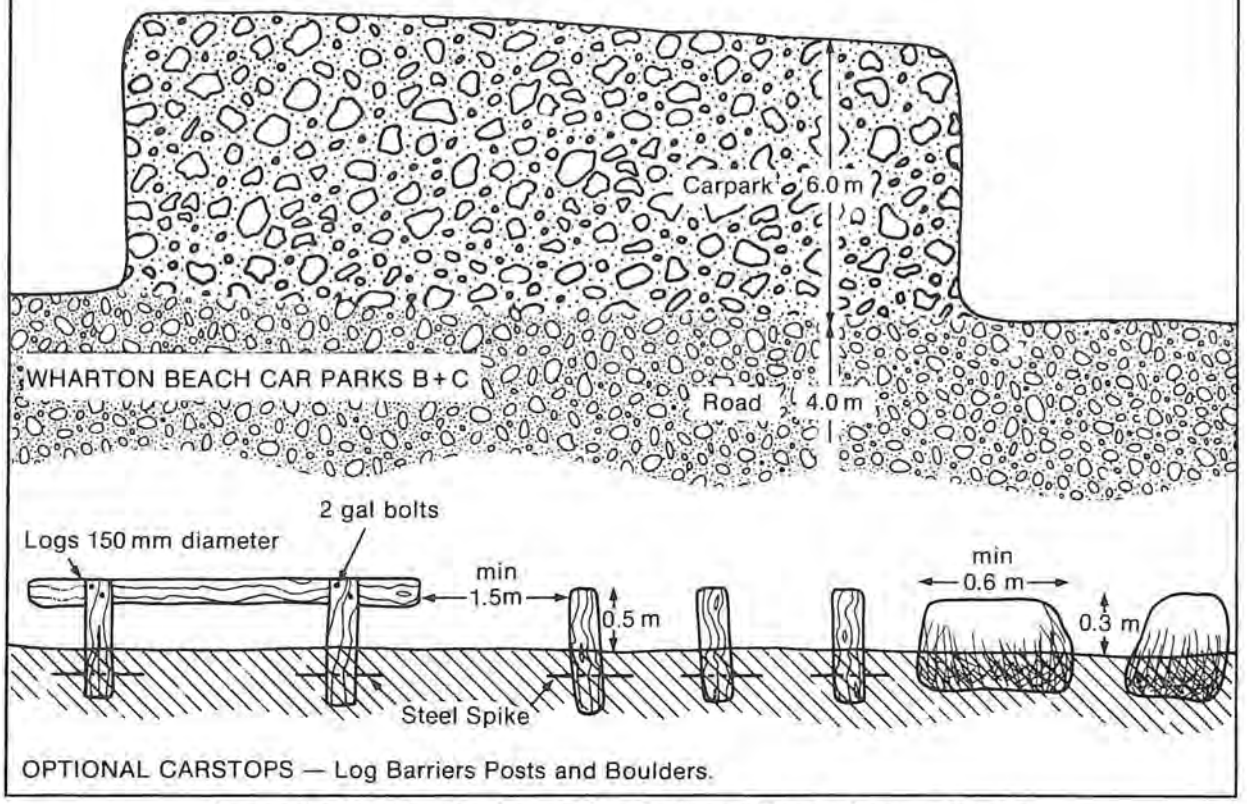
Appendix 3 Design of Windbreaks and Visual Screens



Appendix 4a Wharton Beach Car Park and Beach Access



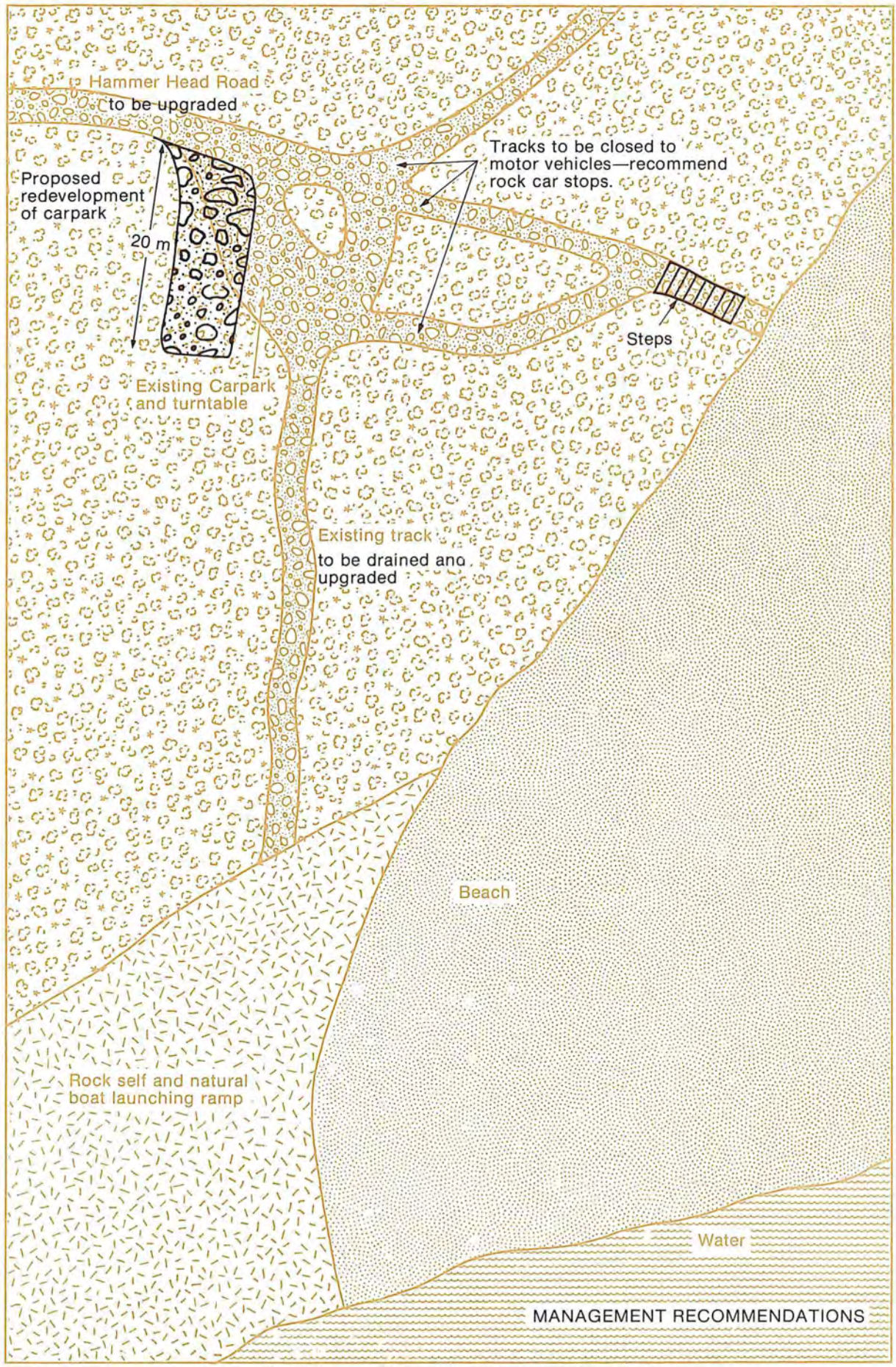
WHARTON BEACH CAR PARK A



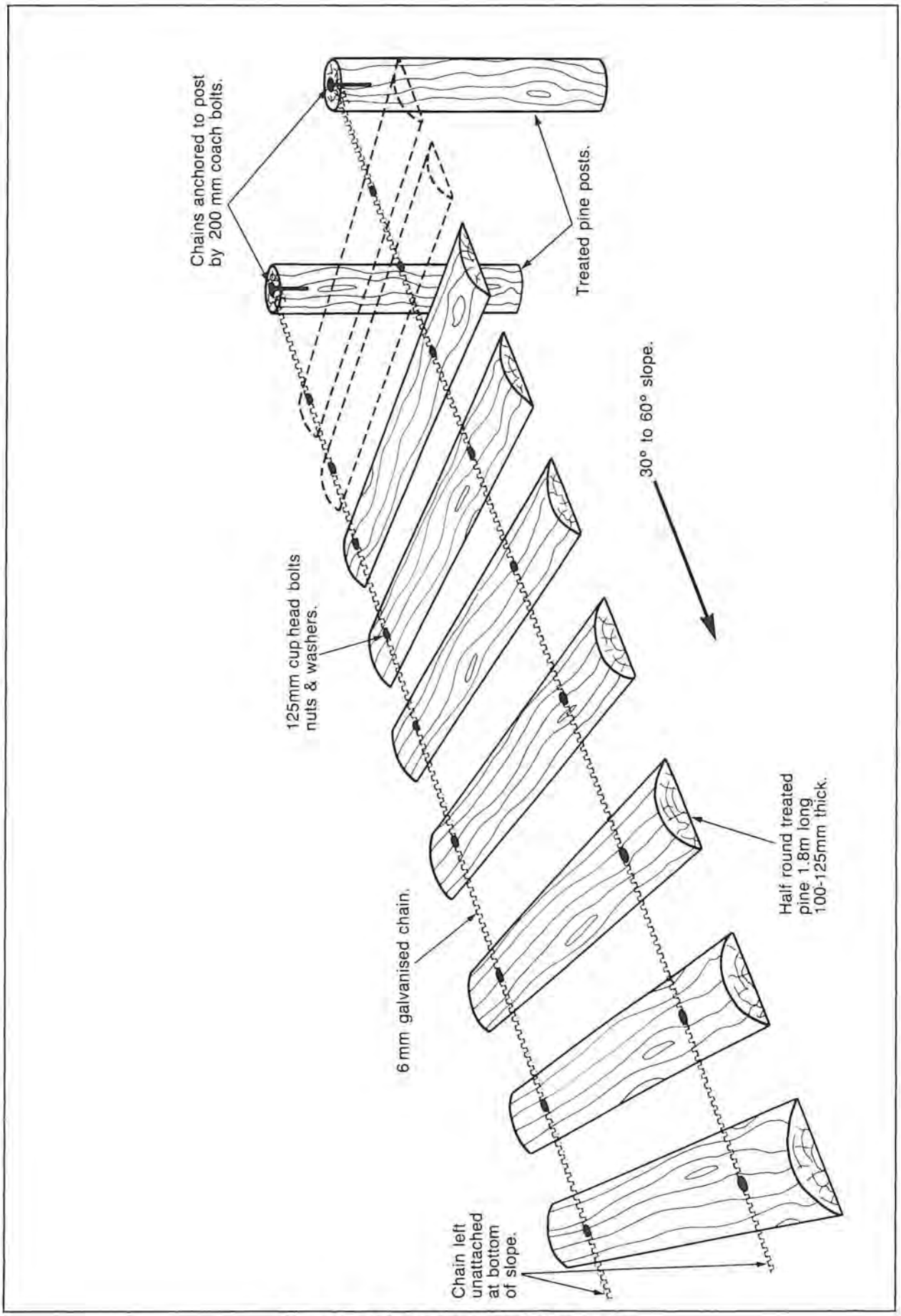
WHARTON BEACH CAR PARKS B+C

OPTIONAL CARSTOPS — Log Barriers Posts and Boulders.

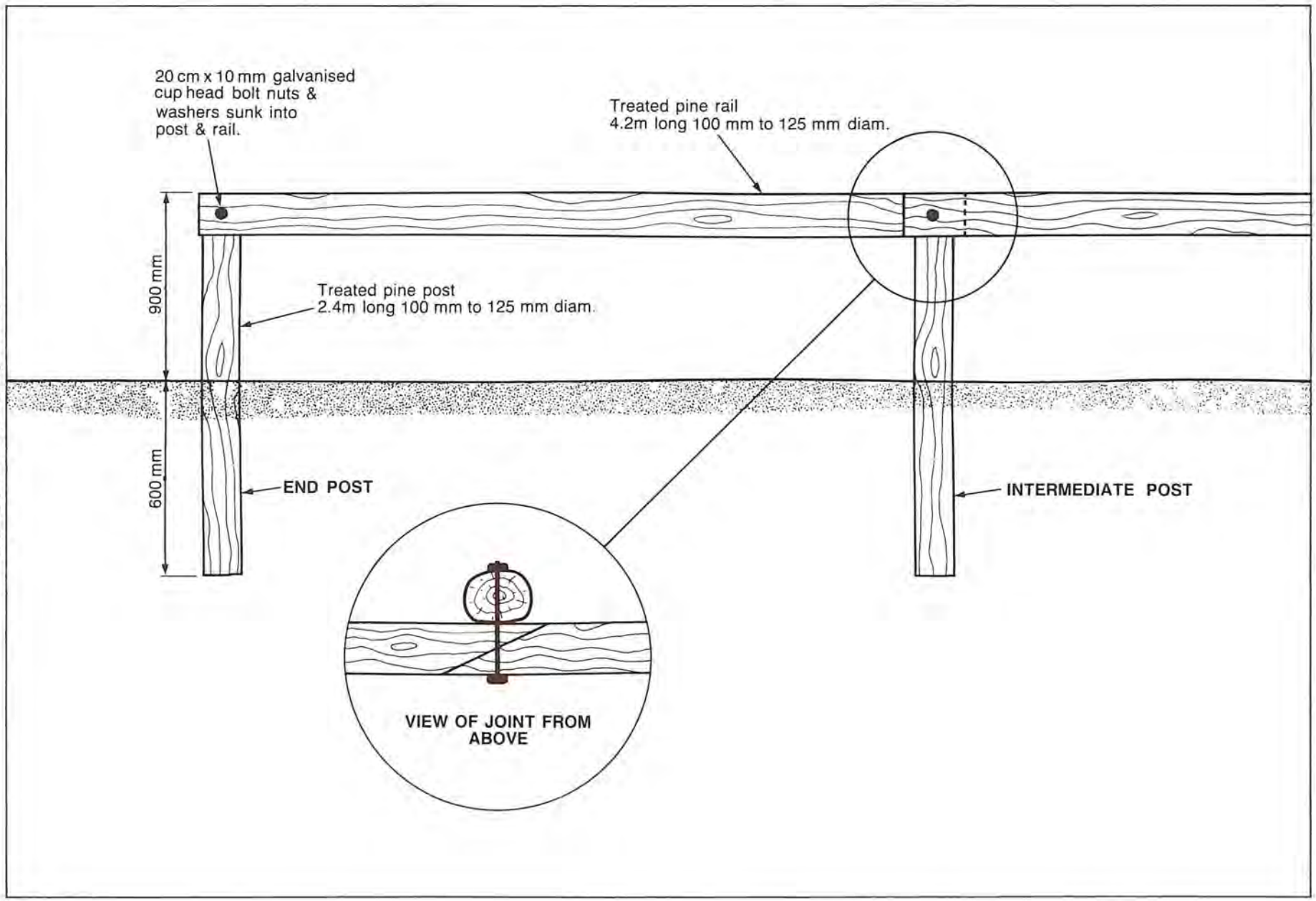
Appendix 4b Wharton Beach Car Park and Beach Access (cont.)



Appendix 5 Hammer Head Car Park and Beach Access

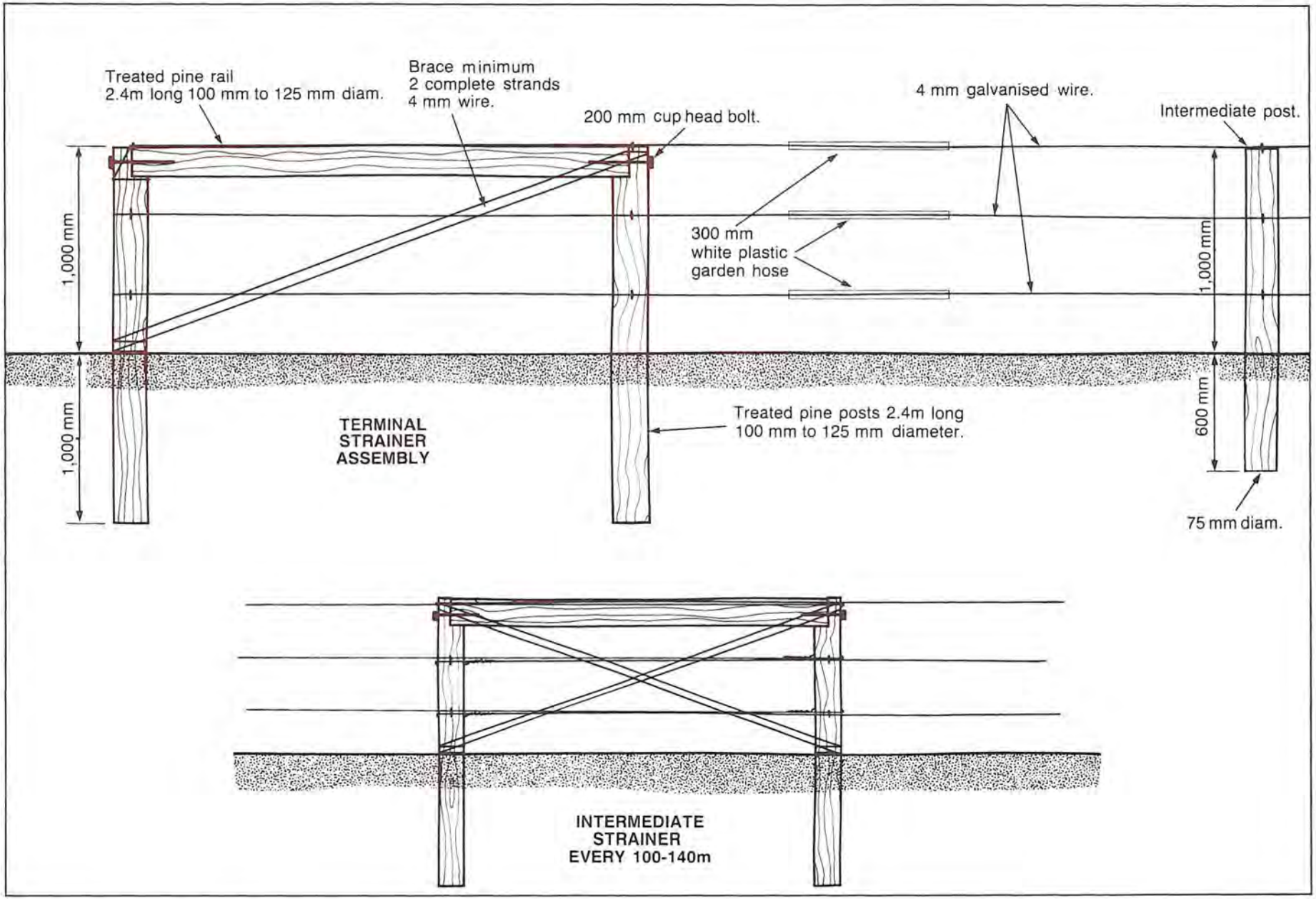


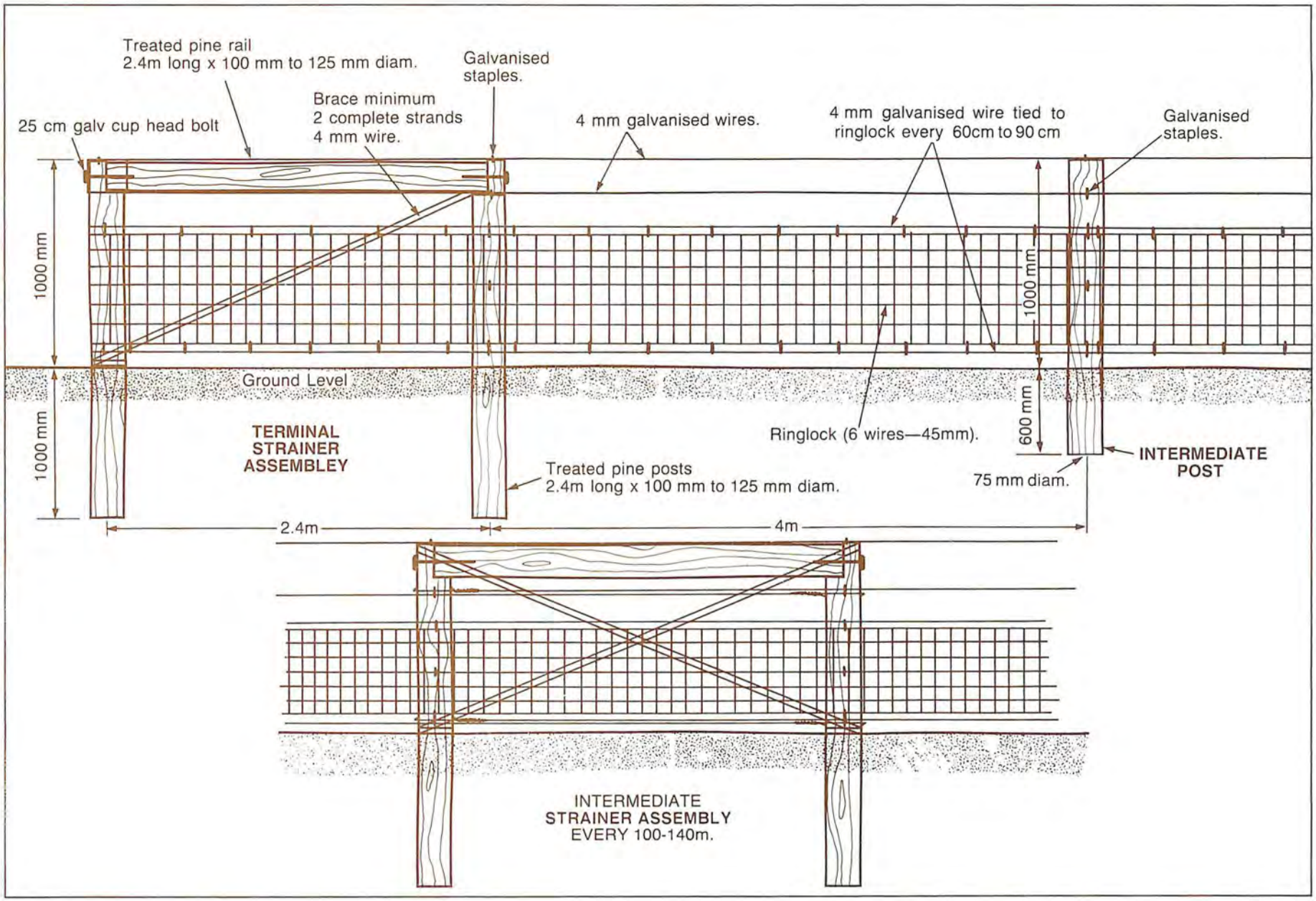
Appendix 6 Board and Chain Pathway



Appendix 7a Post and Rail Fence

Appendix 7b Post and Wire Fence




Treated pine rail
2.4m long x 100 mm to 125 mm diam.
Galvanised staples.
Brace minimum
2 complete strands
4 mm wire.
25 cm galv cup head bolt
4 mm galvanised wires.
4 mm galvanised wire tied to ringlock every 60cm to 90 cm
Galvanised staples.
1000 mm
1000 mm
1000 mm
600 mm
Ground Level
TERMINAL STRAINER ASSEMBLEY
Ringlock (6 wires—45mm).
INTERMEDIATE POST
Treated pine posts
2.4m long x 100 mm to 125 mm diam.
75 mm diam.
2.4m
4m
INTERMEDIATE
STRAINER ASSEMBLY
EVERY 100-140m.