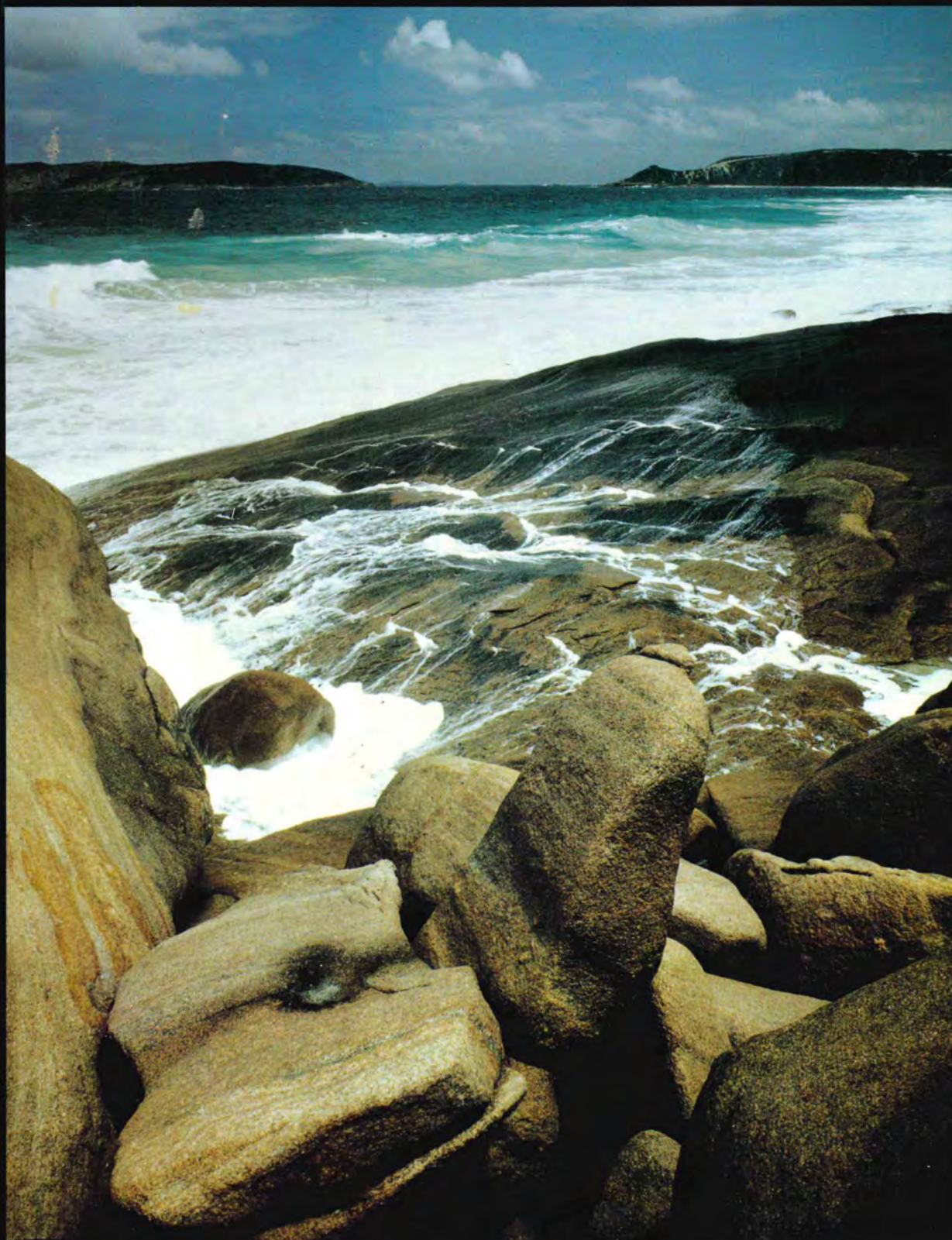


# ESPERANCE DISTRICT COASTAL MANAGEMENT PLAN



Department of Conservation & Environment  
Perth Western Australia

Report 11  
March 1983

*Front Cover*

*Striking coastal scenery is characteristic of the Esperance district.*

*Back Cover*

*Twilight Cove, part of a proposed Regional Coastal Park west of Esperance.*

*Photography by Stuart Chape.*



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# **ESPERANCE DISTRICT COASTAL MANAGEMENT PLAN**

**Stuart Chape and Graham Sansom**



**Department of Conservation & Environment  
Western Australia**

**Report 11  
MARCH 1983**





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# Chapter 1 – INTRODUCTION

This report presents a coastal management plan for the district between Butty Harbour, some 25 kilometres west of the town of Esperance, and Wylie Bay, 10 kilometres east of the town (see Maps 1 and 2). The aim of the plan is to guide and co-ordinate various aspects of the future use and management of this developing stretch of coastline, including urban expansion, control of coastal erosion, recreation and tourist activities, and maintenance of environmental quality. These various aspects of management are governed by different Acts of Parliament and administered by a range of State and Local authorities. An overall approach is essential if planning and management is to be effective in making the best use of coastal resources.

## Background

In July 1976 the Environmental Protection Authority (EPA) published recommendations for conservation reserves along the eastern south coast (*Conservation Reserves for Western Australia – Systems 1, 2, 3, 5*). With respect to System 3, which includes the Shire of Esperance, the EPA particularly noted the need for effective control and management of coastal lands. The Authority subsequently established a Working Group whose terms of reference were to make recommendations on the future control and management of Crown lands on the south coast within System 3.

The Esperance Shire Working Group submitted its recommendations to the EPA in September 1981, having examined vested and unvested reserves and vacant Crown land along the coast from Munglinup Estuary to Cape Arid National Park. It noted that the area between Butty Harbour and Wylie Bay is subject to a range of intensifying use and development pressures, giving rise to relatively complex management issues, and therefore proposed that:

an overall coastal management plan for the area between Butty Harbour and Wylie Bay should be prepared as a basis for detailed decisions concerning the use and management of particular reserves. Such a plan would need to relate the future purposes of the reserves to possible development on adjoining privately owned land, and to the likely urban-industrial expansion around the town of Esperance. (Working Group Report).

In addition, the Working Group listed a number of specific issues to be addressed in the management plan, namely:

- the possible impact of expansion of Esperance townsite on the coastal strip and Reserve 4180;
- the need to protect groundwater resources throughout the district west of Esperance, particularly in Reserve 24486;
- preparation of detailed planning and management proposals for beaches and recreation sites along Twilight Cove Road west to Eleven Mile Beach;
- the potential development of additional recreation/tourism facilities on public and privately owned land which will be 'opened up' by the construction of the proposed loop road system linking Twilight Cove Road to an upgraded Eleven Mile Beach Road;
- provision of access along the beach or by road between Eleven Mile Beach and Butty Harbour;
- future use and management of Reserve 34777 for off-road vehicles;
- maintenance and improvement of Esperance beaches experiencing erosion as a consequence of harbour works;
- the possible impact of the Bandy Creek fishing boat harbour on the beach between Esperance and Wylie Head;
- provision of access to Wylie Bay and along the beach to Cape le Grand once existing beach access is cut by the works at Bandy Creek;
- possible provision of day recreation facilities at Wylie Bay.

## The Study Area

For the purposes of this report it has been necessary to examine not only the coastal strip itself, but also those adjoining and nearby lands whose future use and management might affect the stability and environmental quality of the coast. Some areas inland of the coast have been examined and recommendations made because of their potential impact on future use and management; in the townsite this is largely a matter for town planning controls. Some attention has also been given to coastal waters and offshore islands, which form an important part of the landscape of the coastal zone and are the focus of commercial and recreational activity.

The study area incorporates unvested and vested Crown reserves, pockets of freehold rural land and



## INTRODUCTION

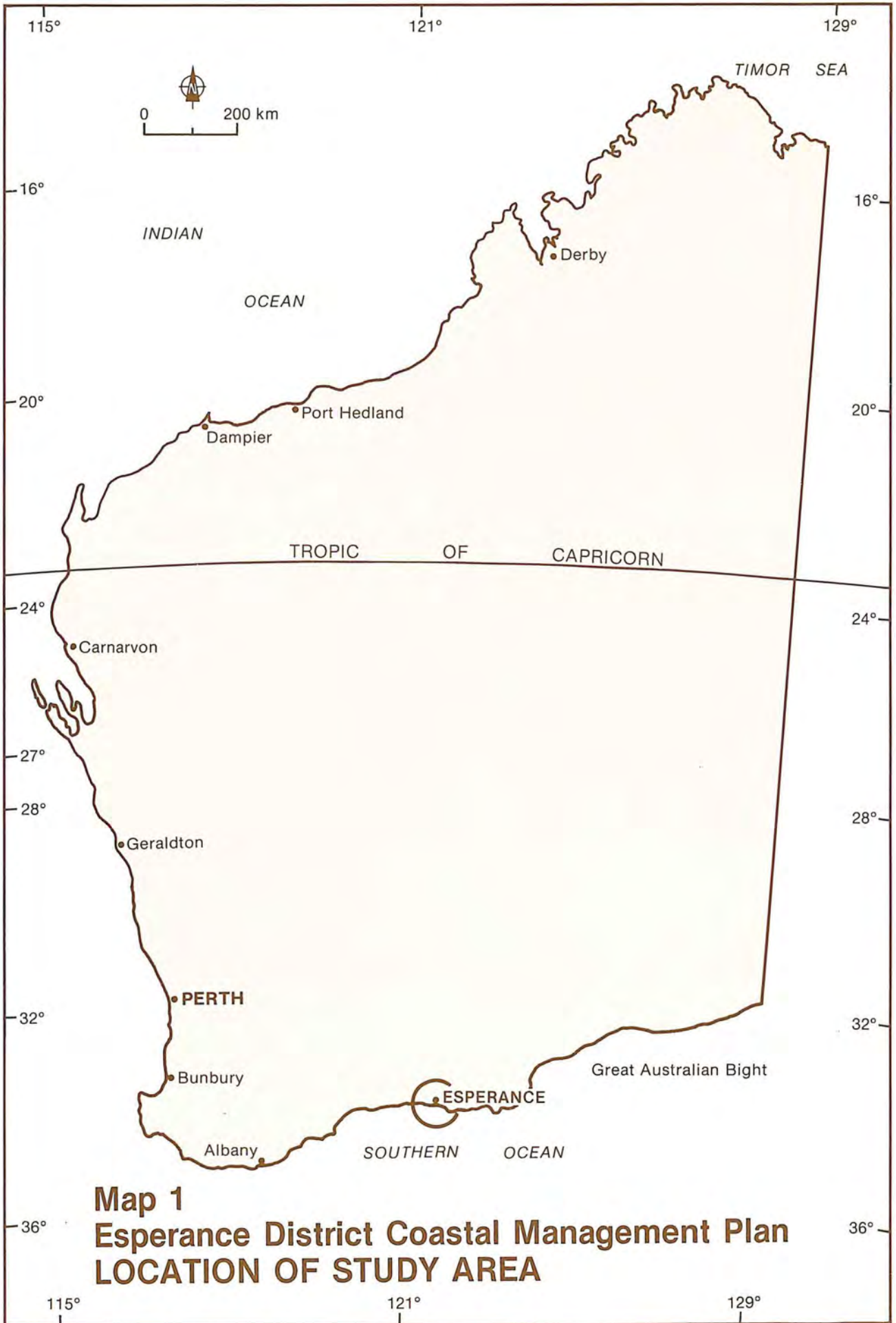
Esperance townsite with its residential, commercial, industrial and port areas (see Map 2 and Figures 1-3). The townsite and much of the reserved land to the west fall within a declared water reserve proclaimed under the Country Areas Water Supply Act. Esperance and the surrounding district currently obtain groundwater from a bore field adjacent to the townsite. The Crown reserves further west are being held in reserve to supply the future needs of the district, at which stage Reserve 24486 may be vested in the Minister for Water Supply. Crown reserves in the study area are listed in detail in Appendix A.

The Department of Lands and Surveys is responsible for unvested Crown land but has very limited resources to undertake land management. The town foreshore is managed co-operatively by the Esperance Shire Council and the Public Works Department to implement shore protection works. The Shire has also developed, and manages, a number of recreation sites along the coast west of the town within foreshore and other reserves. Nature reserves, including the islands of the Recherche Archipelago (Reserve A22796), are vested in the Western Australian Wildlife Authority which has responsibility under the Wildlife Conservation Act to prepare management plans for its reserves. Reserve 34777 was recently gazetted as a recreation reserve specifically for dune buggy and trail bike use and has been vested in the Shire, although uncontrolled off-road vehicle recreation occurs within nearby Crown reserves irrespective of gazetted purpose.

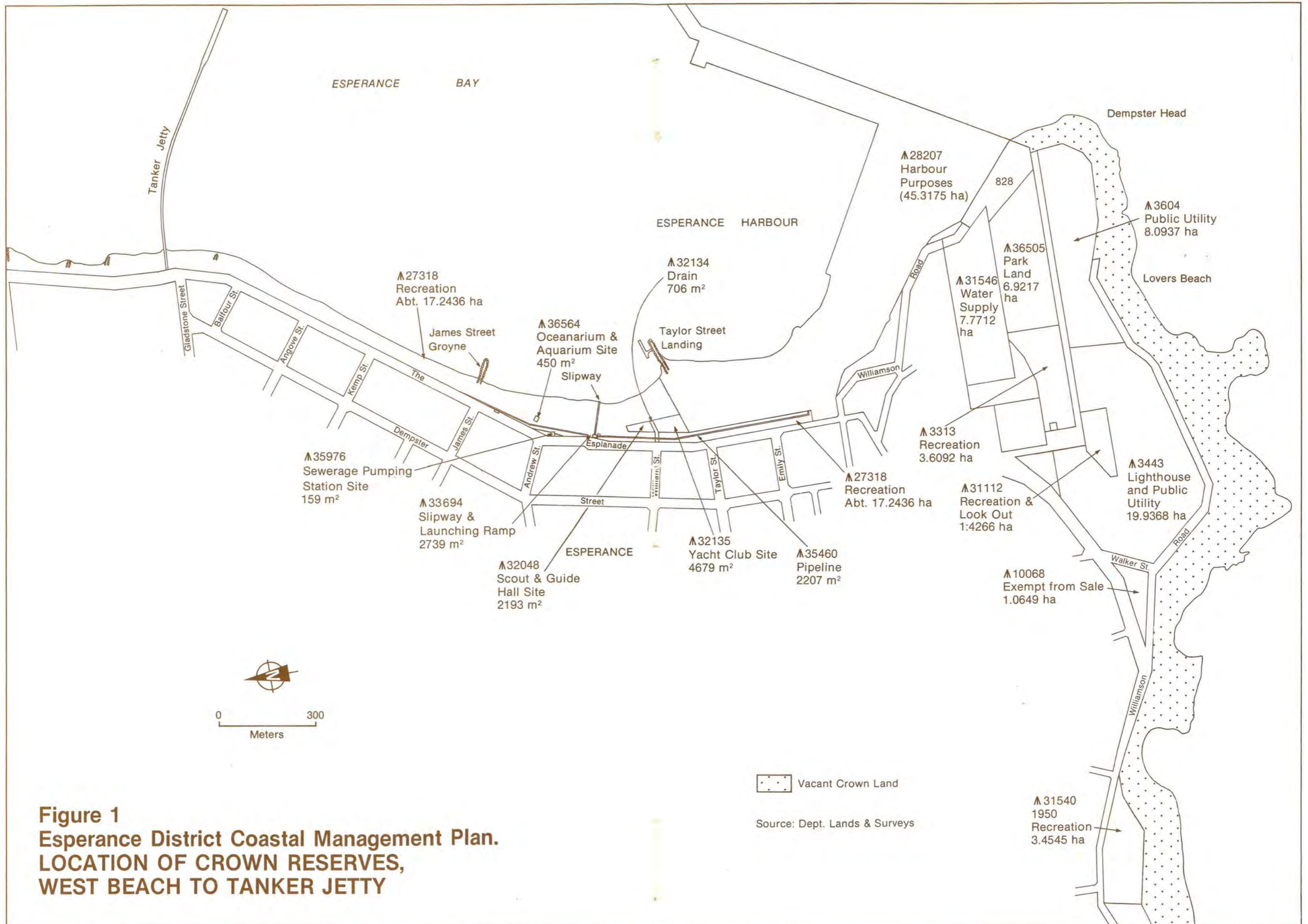
Currently some land management is undertaken by Esperance Shire Council but limited resources restrict the Shire's operations to heavily used areas along Twilight Cove Road, the town foreshore and recreation areas, as well as various roadworks. Planning controls and by-laws are also administered by the Council under the current town planning scheme (No. 16). The Esperance Port Authority manages the land and waters for which it is responsible under the Esperance Port Authority Act. In the past the Department of Agriculture has undertaken beach revegetation works and monitoring of inland dune movements.

Two large areas of freehold rural land in the study area are relevant to this report, one to the north-west of Reserve 4180 and the other east of Bandy Creek. Of these two areas, only a small pocket of land south of Pink Lake is used for pastoral purposes. A large portion of the rural land east of Bandy Creek consists of unstable mobile dunes which are used by off-road vehicles. A small pocket of naturally vegetated rural land lies between Reserve 15042 (Rifle Range), Reserve 25891 (Recreation) and the town.



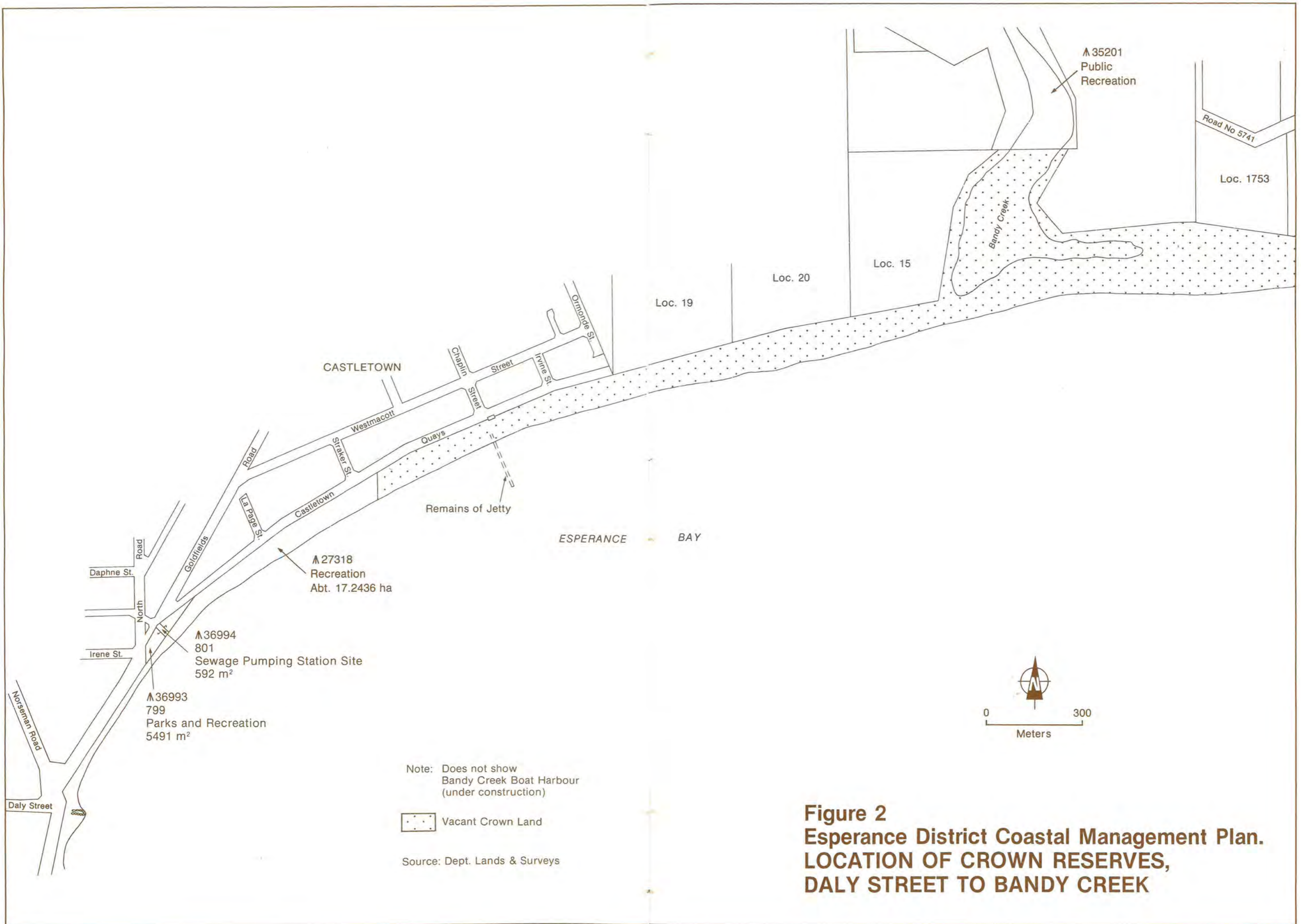






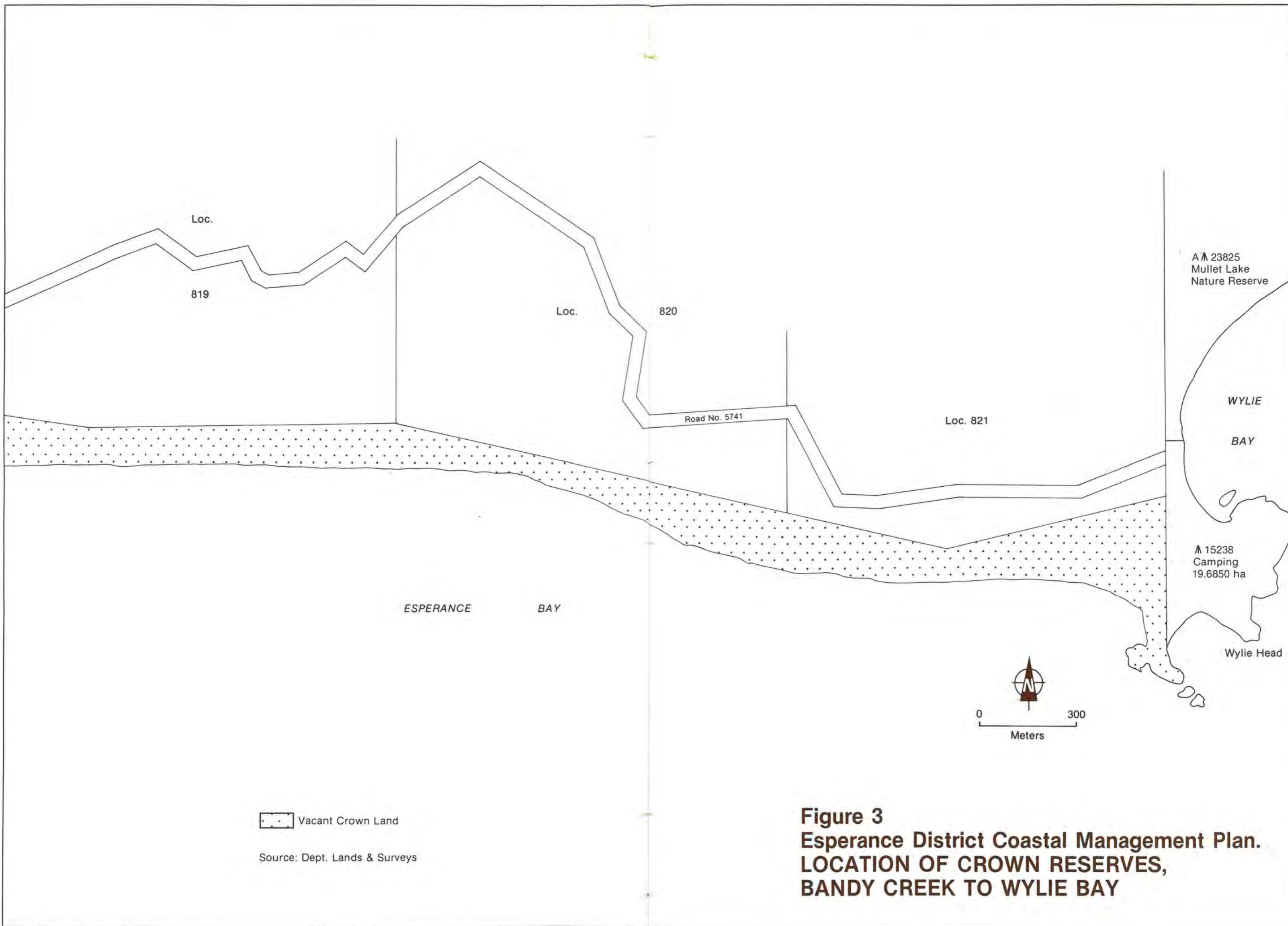
**Figure 1**  
**Esperance District Coastal Management Plan.**  
**LOCATION OF CROWN RESERVES,**  
**WEST BEACH TO TANKER JETTY**






**Figure 2**  
**Esperance District Coastal Management Plan.**  
**LOCATION OF CROWN RESERVES,**  
**DALY STREET TO BANDY CREEK**



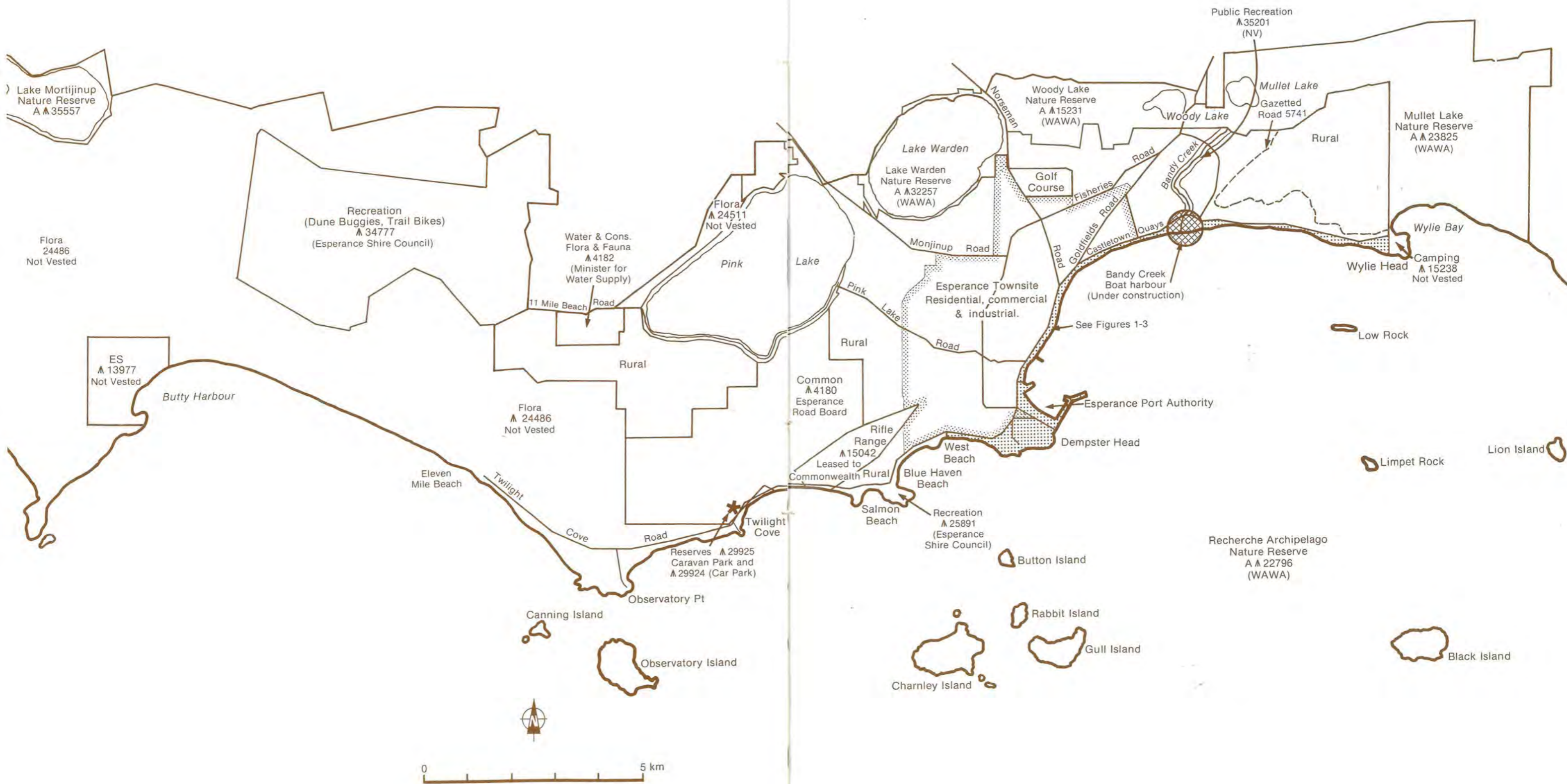


 Vacant Crown Land

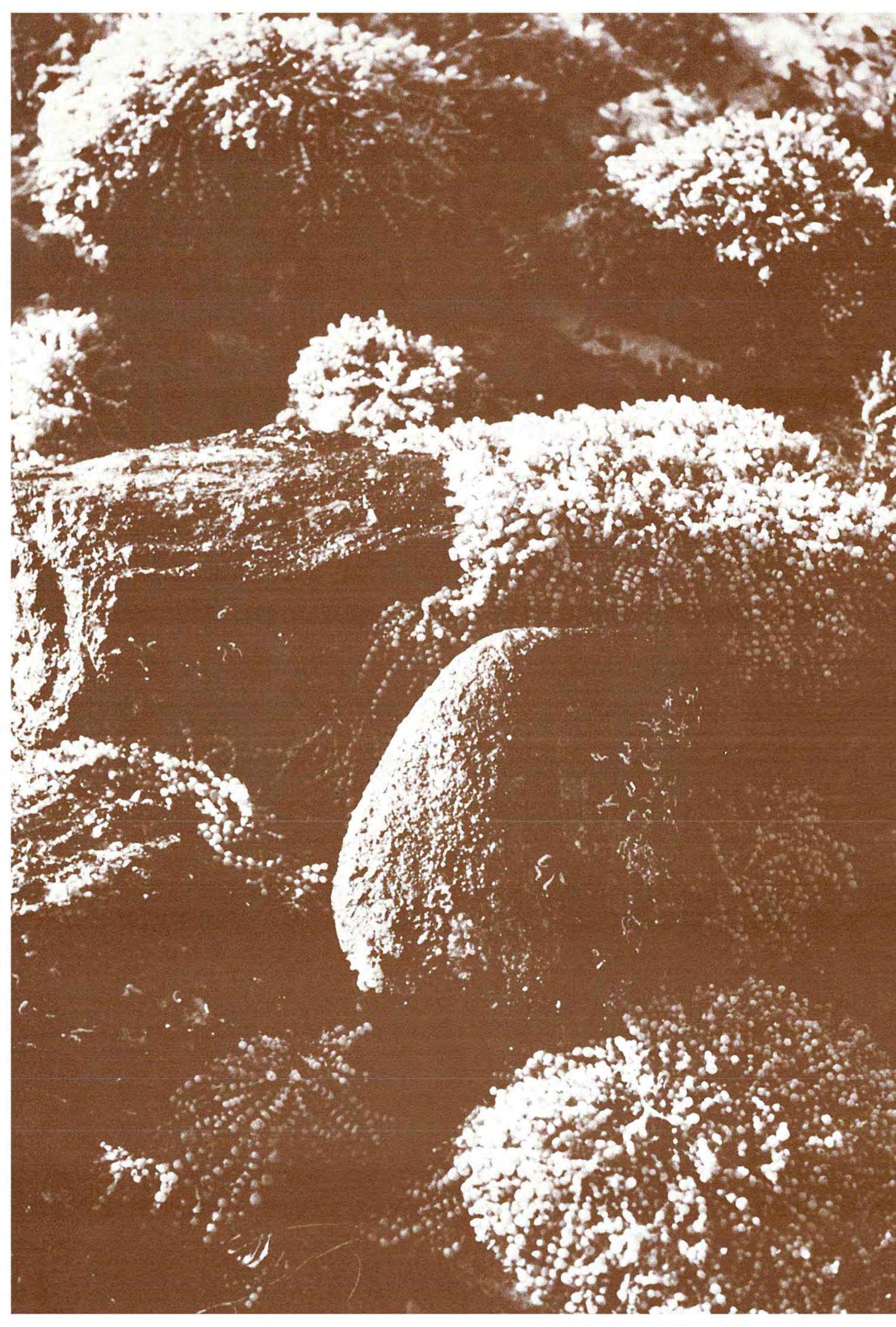
Source: Dept. Lands & Surveys

**Figure 3**  
**Esperance District Coastal Management Plan.**  
**LOCATION OF CROWN RESERVES,**  
**BANDY CREEK TO WYLIE BAY**











## Chapter 2 – NATURAL RESOURCES

### Geology and Coastal Processes

The Esperance district is characterised by Quaternary and Tertiary sediments which fill depressions in a rugged basement of Precambrian granite and metasedimentary rocks. Projections of the resistant basement rocks stand out as hills and islands while depressions have been progressively filled with younger sediments during periods of sea level change. Widespread sedimentation took place during the Miocene period (12 million years B.P.) when the sea level was at least 300 metres higher than at present. These sediments now form the flat plains behind the present coastline. During the Pleistocene period (1,000,000 - 100,000 years B.P.) the sea level dropped and the shape of the coast was largely determined by the presence of outcropping resistant basement rocks which affected swell and littoral transport direction. In bays between the headlands calcareous sands accumulated in massive dunes which over time have become cemented to form coastal limestone or eolianite. In sheltered bays backed by a low-lying hinterland Holocene sands (5,000 years B.P. to present) are accumulating as beach ridges or dunes which overlie their Pleistocene predecessors. As yet the recent Holocene sands are virtually uncemented though in most areas they are stabilised by vegetation. In the absence of binding vegetation the Holocene sands are characterised by high mobility and numerous large drifts occur throughout the study area (see Map 3).

Along the Esperance coast heavy south-west swells and wind waves sweep sediments to the east leaving behind a coast of east-facing sheltered bays which are usually protected by resistant granite outcrops that alter the direction of incoming swells and waves (see Photograph 1). The process is complicated by the presence of offshore bars, reefs, islands and, in Esperance Bay, by construction of artificial barriers which have altered natural swell and wave patterns. The coastline within the study area is noted for its dangerous rips and heavy seas, and the consequent hazard to swimmers and fishermen.



*Photograph 1 Granite headlands and sandy bays typify the Esperance coastline*



## NATURAL RESOURCES

### Groundwater

Groundwater is a critical resource for Esperance and the surrounding region with storage being contained in the Quaternary coastal sands west of the townsite. The water usually occurs at less than 25 metres depth and the aquifer is replenished by winter rains. The groundwater has an average salinity level less than 1,000 ppm.

### Vegetation

The vegetation has been described in detail by Beard (1973), who divided the Esperance area into a number of vegetation systems according to particular plant communities which in turn are related to geological, pedological and/or topographic features. The study area is located entirely within Beard's Fanny Cove System which corresponds to the area of Quaternary sands, silt and clays. Two plant formations occur within the study area : coastal dune scrub and scrub heath, with the former being dominant. Table 1 is a summary of the relationship between topography and vegetation.

Although topographic, soil and climatic factors play a key role in determining the type of vegetation found in a given area (for example, salt tolerant herbaceous species on foredunes), fire is probably the single most important factor-influencing the structure and floristics of the vegetation in the Esperance coastal region. The advent of European man has resulted in gross modifications to the vegetation due to the higher incidence, intensity and spread of fires. Beard (1973) suggests that the plant formations of the Fanny Cove System seldom or never develop a mature structure. He compares the relatively undisturbed communities of the Recherche Islands and concludes that the climax would be *Callitris preissii* (Rottnest cypress) or *Melaleuca lanceolata* (Rottnest tea tree) woodland.

TABLE 1

Topographic features	Vegetation
Foredunes	<i>Scaevola crassifolia</i> scrub on the seaward side of dunes
Back Dunes	Scattered mallee, <i>Eucalyptus angulosa</i> , with a <i>Melaleuca</i> spp. understorey
Swales	<i>Eucalyptus platypus</i> var. <i>heterophylla</i> occurs as thickets and low forest
Inland Dunes	<i>Acacia</i> , <i>Melaleuca</i> and <i>Banksia</i> spp.
Coastal Plain (no dunes)	Scrub heath dominated by <i>Banksia</i> spp.
Winter-wet Areas	Heath with scattered <i>Nuytsia floribunda</i>
Swamps	<i>Melaleuca</i> spp. and <i>Banksia occidentalis</i>
Salt Lakes	Samphire communities ( <i>Arthrocnemum</i> )

With respect to marine plant species, offshore fringing limestone reefs protect large seagrass meadows (see Map 3) from the disturbance of direct ocean swell and storm waves. These seagrasses, which are marine flowering plants, play an important ecological role by providing protection and nursery areas for many juvenile fish and crustacea, including commercially valuable species. Other important functions include the formation of detritus with release of nutrients into the food chain, and prevention of erosion by binding the sediments and reducing water movement (H. Kirkman, pers. comm.). It is therefore important that the marine environment be protected from pollution and unnecessary dredging or other forms of alteration to the seabed.

### Wildlife

In their biological survey of Cape le Grand National Park and nearby areas, Kitchener, Chapman and Dell (1975) describe 11 species of mammals, 124 species of birds, three species of reptiles and six species of amphibians. In broad terms, based on habitat similarity along this section of coast, this is indicative of the diversity of fauna to be found within the study area.

The islands of the Recherche Archipelago are important breeding habitats for some species of mammals and birds which are either not common or not widespread in Western Australia. This includes the Australian sea lion and the New Zealand fur seal (restricted to islands off the southern coast), the great-



## NATURAL RESOURCES

winged petrel, fleshy-footed shearwater and the black-faced cormorant (breeding areas restricted to Middle and Lion Islands).

Local marine fauna includes numerous economically important fish and crustacean species, such as Australian salmon, shark, southern bluefin tuna, rock lobster and greenlip abalone.

### Climate

The Esperance region has a 'Mediterranean' weather pattern with wet winters and dry summers. The average annual rainfall of 600 - 700 mm is received in approximately 130 rainy days. The mean annual maximum temperature is 21C, although summer maximum temperatures can be extreme (47.2C is the highest recorded maximum). In common with the rest of the south coast, Esperance is exposed to strong southerly winds and west to south-westerly gales in winter. During summer the area experiences strong south to south-east winds (the sea breeze) as well as hot dry northerly winds. The wind regime is a critical component in the susceptibility of the area to fires.

### Landscape

The Esperance district has one of the most spectacular coastal landscapes in Western Australia. The coastline is characterised by rugged granite headlands and curving sandy bays, especially between Dempster Head and Observatory Point, where steep limestone cliffs also form part of the coastal landscape. The long sandy bay sweeping north and east from Dempster Head to Wylie Head presents a more subdued landscape dominated by the townsite. However, the ocean vista from the coast must be one of the most picturesque in the State with the scattered islands of the Recherche Archipelago to the south and the high granite peaks of Cape le Grand in the south-east. Rolling heath-covered dunes and coastal plains extend inland abutting an extensive wetland system dominated by Pink Lake and Lake Warden. Huge bare and mobile dune formations lie to the west and, on a smaller scale, to the east of Esperance.

The value of landscape as a resource should not be underestimated, although it may be impossible (or undesirable) to place a precise 'dollar value' on its worth. The interface between land and sea always attracts people and in an area with excellent scenic qualities such as Esperance this attraction has direct economic benefits. Tourism, even with its seasonal highs and lows, brings revenue into the town and the area also attracts people who wish to live in Esperance permanently, either to enjoy the physical environment and equable climate or to share in the economic opportunities of tourism.

Landscape, like any other resource which is utilised in some form, requires management to maintain its value. Landscape resources are a function of landform and human perception. Therefore, the aim of management should be to retain the stability of the landform and to maintain the visual amenity of the landscape.

### Management Implications

Although it is convenient to describe natural resources as separate items the coastal environment functions as a complex interaction of all its resource components. These interactions have important implications for the management of the coastal environment and its use.

Table 2 is a summary of those key interrelated natural resources which are essential to the environmental stability of the management area. The table describes the important features of the selected resources, the factors which can lead to instability, and the management implications for the study area.

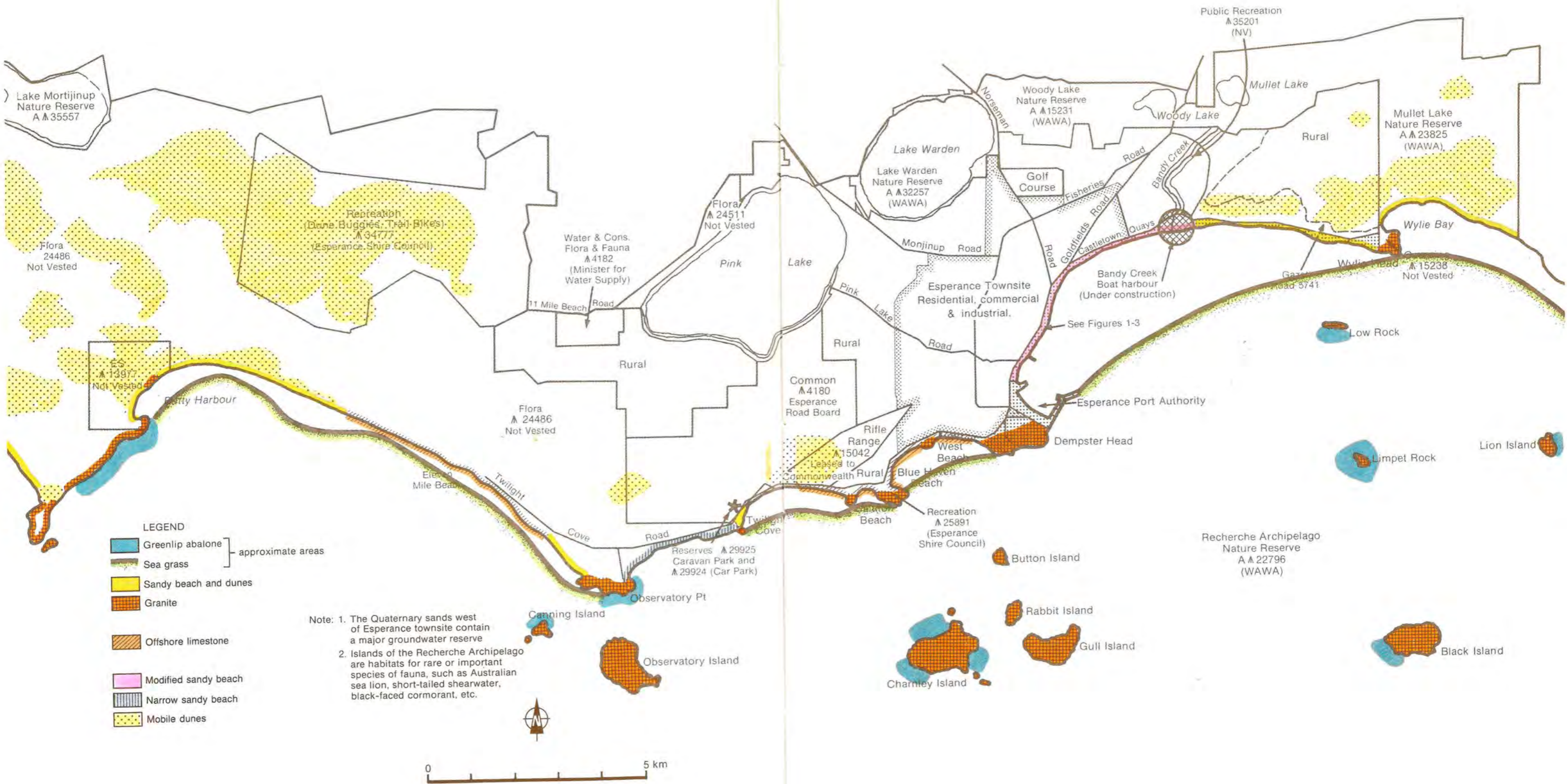


**TABLE 2: Significant Resources and their Management Implications**

Significant Resources	Important Features / Functions	Instability Factors	Management Implications
<b>Unconsolidated Sands</b>	<p><b>Beach and foreshore (fine-medium grained sands) :</b></p> <ul style="list-style-type: none"> <li>• Wind and swell generated currents move sediments along the coast (littoral drift); this process is affected by the location of headlands, islands and reefs which alter swell and wave directions, and the rates and location of sediment deposition, maintaining sedimentation in protected east-facing bays.</li> <li>• At Esperance the continental shelf narrows, moving sediments away from coast.</li> <li>• Shorelines undergo natural modification over time (from geological time scales to brief storm events) as a result of changes in sea level and/or wave swell patterns.</li> <li>• Swells deposit and wind waves erode sediment from foreshore, forming and cutting back foredunes</li> <li>• Wind mobilises excess sand to form 'blowouts'.</li> <li>• Rainfall helps bare sand areas to resist wind erosion and promotes plant growth.</li> <li>• Heavy winter rain erodes steep, bare areas.</li> </ul> <p><b>Inland dunes and coastal plain :</b></p> <ul style="list-style-type: none"> <li>• The fine-medium grained quartz sands result from early Quaternary and Tertiary deposition in periods of higher sea level.</li> <li>• Dunes block drainage lines to form swamps, lakes and wetlands.</li> <li>• Vegetation and carbonate cementation stabilise the sands (as per foreshore).</li> <li>• Large areas of bare mobile sand occur inland of Butty Harbour, Twilight Cove and Wylie Bay.</li> <li>• Resource values for man include : groundwater, agriculture (limited value), recreation (mainly off-road vehicles), landscape values.</li> </ul>	<ul style="list-style-type: none"> <li>• Alteration of littoral drift by changing the direction of incoming swells and waves results in changes in the rates and location of shoreline erosion/deposition, e.g. by constructing groynes and sea walls.</li> <li>• Construction of walls parallel to shore will deflect wave energy causing sediment erosion.</li> <li>• Artificial channelling of runoff, e.g. through roadworks, can lead to gully, sheet and beach erosion.</li> <li>• Loss of vegetation through clearing, human access, grazing, fires, off-road vehicle activity and sand mobility results in increased rates of erosion through wave action (particularly during storms), wind and rain with subsequent loss of sand from beach and dunes and/or movement of sand inland.</li> <li>• Loss of vegetation leading to increased dune mobility could alter drainage patterns and threaten important wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>• Deposition/erosion cycles should be regarded as natural processes, even storm events.</li> <li>• The fine grained sands are highly susceptible to wind erosion.</li> <li>• Vegetation should be protected and maintained.</li> <li>• Management of the unconsolidated sands must be related to management of other interacting resources and human activities.</li> <li>• Where possible existing developments and assets should be protected by methods based on natural processes, e.g. stabilisation/restoration of dunes by revegetation. Obviously in some cases engineering solutions are required.</li> <li>• Future developments should be sited and designed to permit natural processes to continue, otherwise management costs will be incurred.</li> </ul>

<b>Vegetation :</b>	<ul style="list-style-type: none"> <li>• Related to soils, geology, topography.</li> <li>• Two main plant formations occur in the study area : coastal scrub on dunes, scrub heath on coastal plain.</li> <li>• Plant growth and regeneration is dependent on climatic and topographic factors, and the existing fire regime.</li> <li>• Vegetation is a habitat for fauna.</li> <li>• It is a resource for man : prevents soil erosion, provides shelter/wind protection for recreation activities, is a source of fuel, has landscape values.</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of vegetation by clearing, fires, vehicles, etc. leads to erosion, loss of foredunes, sand mobility and further vegetation loss.</li> <li>• Increased fire incidence and intensity alters structure and floristics resulting in dominance by disturbance species (e.g. <i>Acacia</i> spp.) and invasion by exotic species.</li> <li>• Clearing, fires, etc. result in loss of endemic seed stock, fauna habitat, human resources and landscape values.</li> </ul>	<ul style="list-style-type: none"> <li>• Existing vegetation should be retained for its capacity to stabilise unconsolidated sands, its landscape values, its importance in areas of human use, as fauna habitat, and for its own intrinsic value as a local vegetation type.</li> <li>• Developments should be designed to reduce loss of vegetation; prescribed burning programmes implemented in association with fire trails, fire prevention areas specified; clearing and off-road vehicles should be controlled in priority areas.</li> <li>• Where revegetation is required local species should be used.</li> </ul>
<b>Groundwater</b>	<ul style="list-style-type: none"> <li>• In the study area Quaternary coastal sands contain the main aquifer.</li> <li>• The water has a wide range of salinity and occurs at approximately 25 m depth.</li> <li>• Winter rainfall replenishes the aquifer, fresh water accumulates at the periphery of granite outcrops and through sink hole zones.</li> <li>• The aquifer west of Esperance is used as a town water supply (less than 1,000 ppm salts).</li> <li>• Long-term expansion of groundwater use is planned.</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive groundwater removal could result in increased salinity levels due to 'up coning' effects.</li> <li>• Increased salinity could occur through the application of fertilisers.</li> <li>• Bacterial and nitrate pollution would affect groundwater quality.</li> </ul>	<ul style="list-style-type: none"> <li>• The groundwater resource should be protected through management of the groundwater reserves and control of residential development, extensive tourist developments, septic tanks, excessive use of fertilisers, monitoring of groundwater storage and quality.</li> </ul>
<b>Landscape</b>	<ul style="list-style-type: none"> <li>• A complex interaction of topography, vegetation, geology and oceanic processes.</li> <li>• Granite headlands and islands, limestone reefs and cliffs, and sandy bays characterise the Esperance coastline.</li> <li>• Heath and scrub covered dunes and coastal plain, wetlands and lakes, large bare mobile dunes, granite domes and peaks characterise the inland landscape.</li> <li>• Landscape is an important resource for man.</li> </ul>	<ul style="list-style-type: none"> <li>• Physical disturbance to landforms degrades the landscape, e.g. loss of natural vegetation, erosion.</li> <li>• Inappropriately designed and located development works can cause loss of visual amenity, particularly in important scenic areas, e.g. roads, car parks, buildings, power lines.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation and landform should be protected.</li> <li>• Important areas should be designated 'landscape priority areas'.</li> <li>• All developments, roads, car parks, signs, etc. should adhere to specified design standards and siting requirements.</li> </ul>





**Map 3**  
**Esperance District Coastal Management Plan**  
**NATURAL RESOURCES AND COASTAL FEATURES**





*Photograph 2 Eroding shoreline near the Esplanade-Norseman Road intersection.*



## Chapter 3 – COASTAL EROSION

Esperance Bay forms a long sandy crenulate-shaped beach extending from Dempster Head to Wylie Head. Before construction of the harbour breakwater the granite dome and extensive reef at Dempster Head provided shelter from waves. The beach dropped steeply to about 2.4 metres depth and then levelled off at 2.4-3.7 metres in a series of parallel ridges and troughs. Wave energy reaching the beach was reduced by breaking on the offshore shoals, with the position of troughs and ridges relating to the characteristic wave climate (PWD, 1978).

In common with many early settlements, Esperance townsite was developed with limited understanding of coastal processes, apart from the initial choice of the sheltered bay as a suitable location. Town development has encroached upon foreshore which, with hindsight, should have been left as a wide barrier in which natural cycles of erosion and deposition could occur, as well as being an area for public use. One of the earliest structures built in the new settlement was the Esplanade Road which, owing to the presence of sand dunes, was constructed adjacent to the beach. Following this precedent roads, houses and other structures were placed along the shoreline, despite the fact that foreshore protection works had to be constructed as early as 1914 and that there were records of waves reaching the houses behind the road.

Before 1958 poorly sited town developments were affected by the natural perturbations of the erosion/accretion cycle. By 1960 natural accretion of the shoreline enabled the Shire Council to level sand dunes and plant two rows of trees between the Esplanade and the sea. However, by the time the construction of the new breakwater commenced in 1958 natural recession had begun again and by 1965 virtually all improvements had disappeared.

The construction of the main breakwater and dredging of the harbour (1958-65) for the new port at Esperance altered natural swell and wave patterns with subsequent changes to the shoreline. The harbour has interrupted the northwards longshore movement of sand into Esperance Bay and waves entering the bay collect a new sediment load from sections of the town beaches, causing a net loss of beach sands.

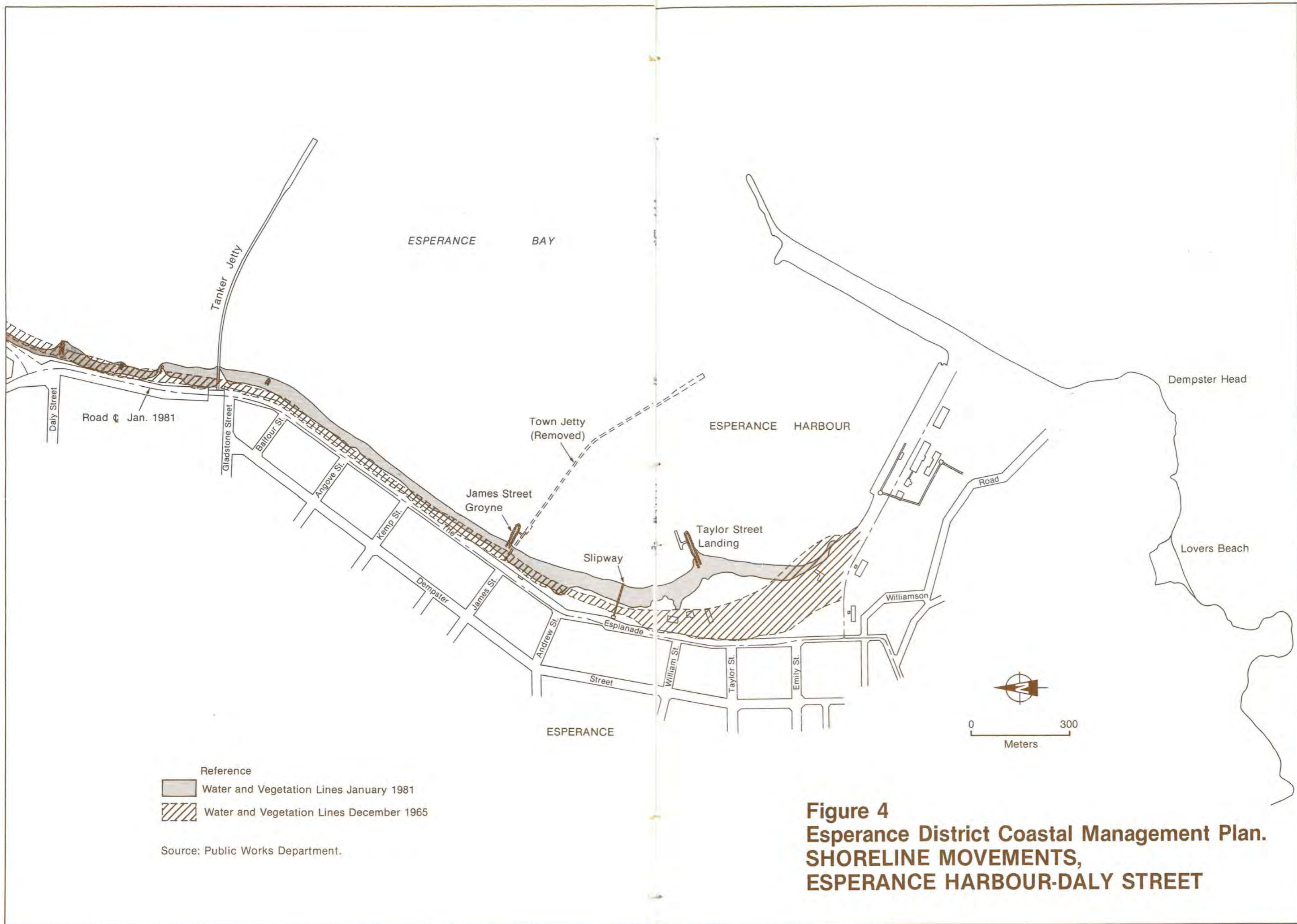
Following harbour construction, attempts were made to stabilise the shoreline culminating in 1969 in a major sand replenishment exercise using 573,000 cubic metres of harbour dredge spoil. This was placed on the beaches over a distance of 2,100 metres and a width of 91 metres. However, over the next eight years sand continued to accrete around the main harbour breakwater and erode from town beaches, although the severity of erosion varied around the bay.

In a report on beach investigations at Esperance, the Public Works Department (1978) estimated that 50% - 65% of the replenished beach width between the town and tanker jetties was lost during 1969-70. At the time the report was prepared the shoreline recession rate opposite Kemp Street was 3.3 metres per year and it was estimated that the site would return to the critical 1966 shore alignment by 1987 (see Figure 4). Erosion of the shoreline opposite the Esplanade-Norseman Road intersection has been, and continues to be, especially severe (see Photograph 2). The Public Works Department report outlined various possible measures to alleviate the erosion problem along the bay including an annual sand replenishment programme, construction of additional groynes and relocating the Esplanade Road reserve 20 - 30 metres inland adjacent to the Norseman Road intersection.

Since publication of the report foreshore protection has included an annual beach replenishment programme in key areas undertaken with the co-operation of the Esperance Port Authority and the construction of the James Street groyne (see Figure 4). It is apparent that sand replenishment will be an ongoing management requirement to maintain the town foreshore, unless an extensive and expensive system of groynes is constructed. It is anticipated that the new Bandy Creek harbour breakwater will have a stabilising influence on the shoreline, although erosion will increase downdrift between the new harbour and Wylie Head. Nevertheless, the stability of the shoreline (given the proximity of permanent developments) remains doubtful, especially in the event of major storm waves, and it is considered that further development of the foreshore should be avoided.

The alignment of the town foreshore in 1965 and 1981 is shown in Figures 4 - 6.



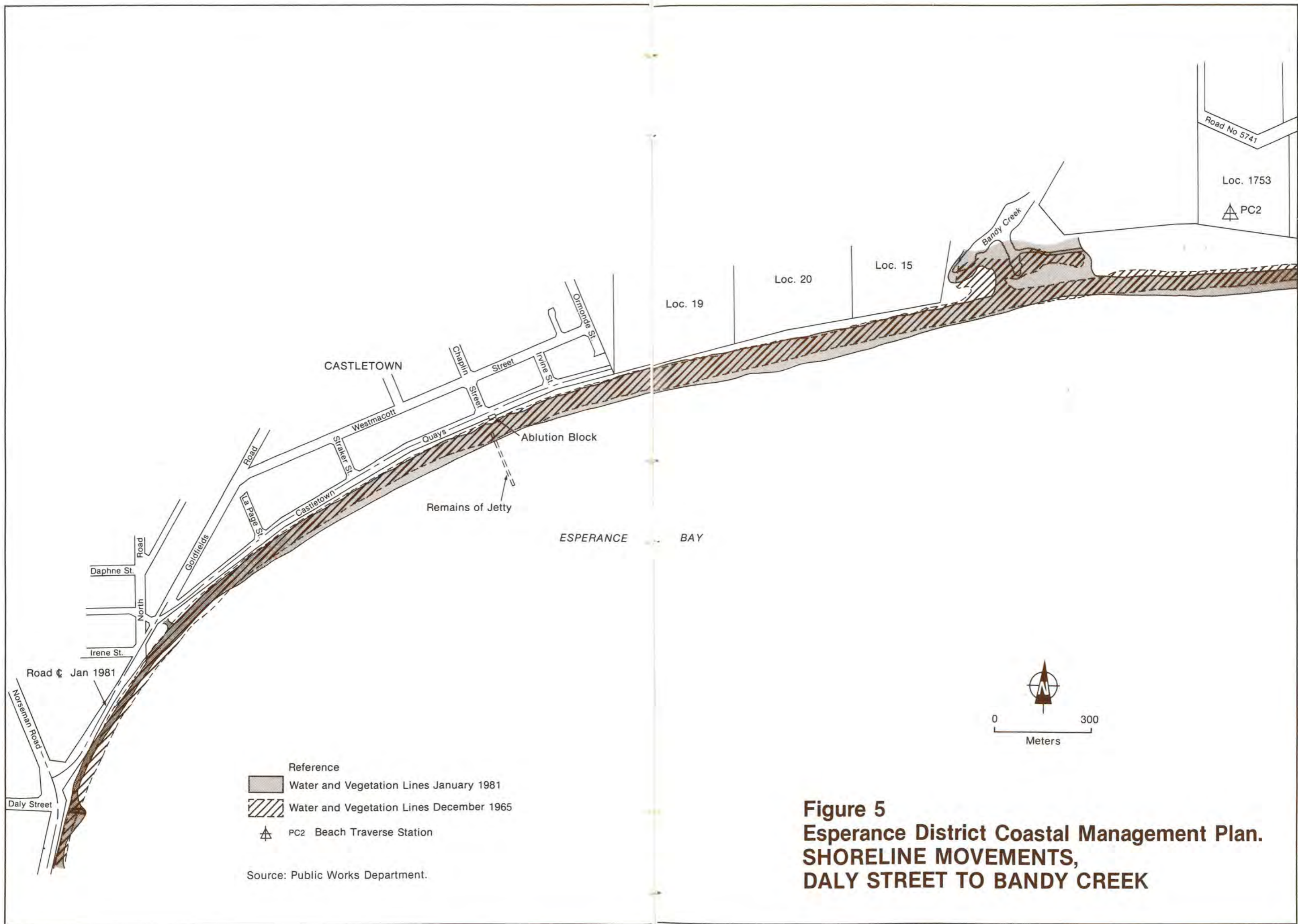


Reference  
 Water and Vegetation Lines January 1981  
 Water and Vegetation Lines December 1965

Source: Public Works Department.

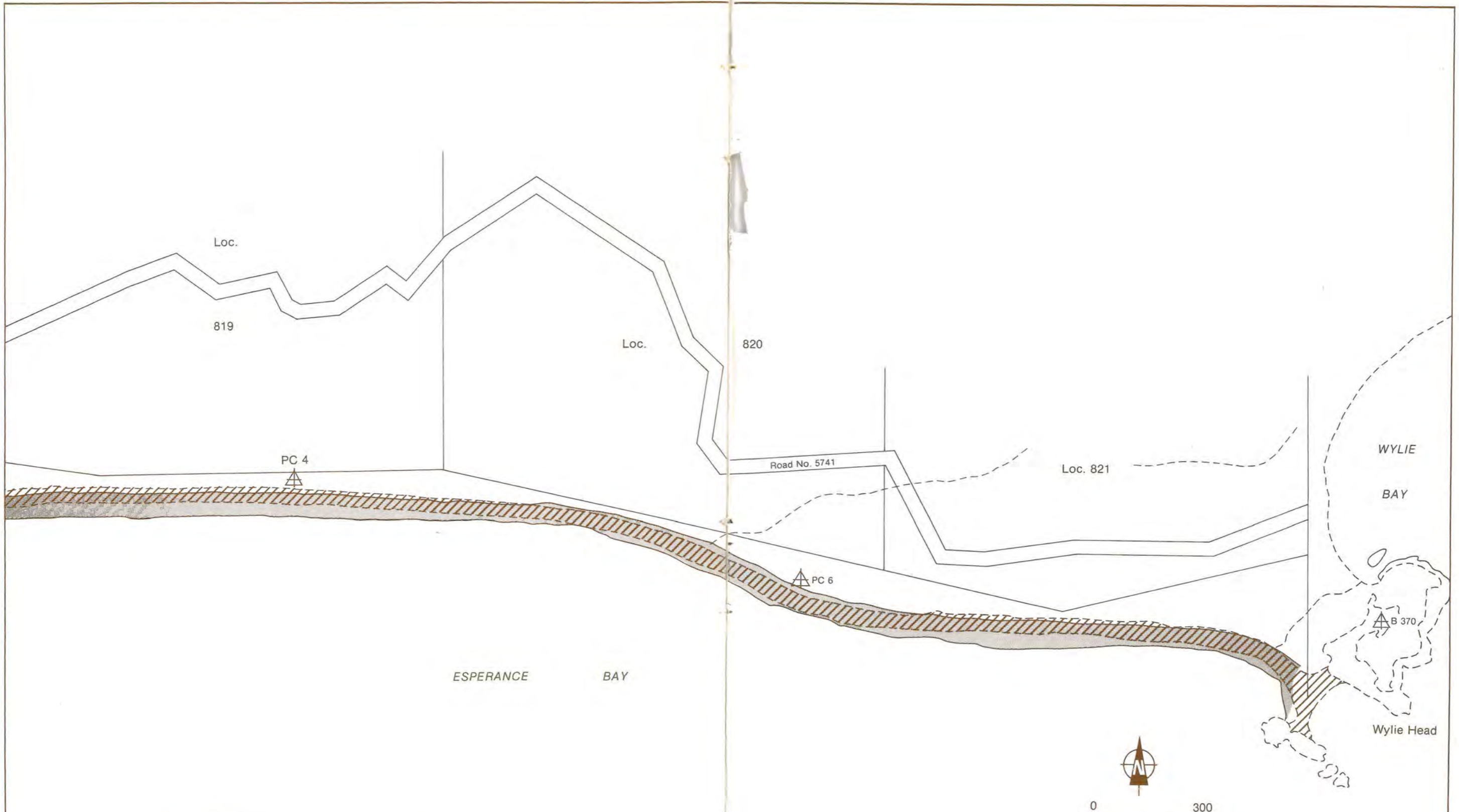
**Figure 4**  
**Esperance District Coastal Management Plan.**  
**SHORELINE MOVEMENTS,**  
**ESPERANCE HARBOUR-DALY STREET**





**Figure 5**  
**Esperance District Coastal Management Plan.**  
**SHORELINE MOVEMENTS,**  
**DALY STREET TO BANDY CREEK**



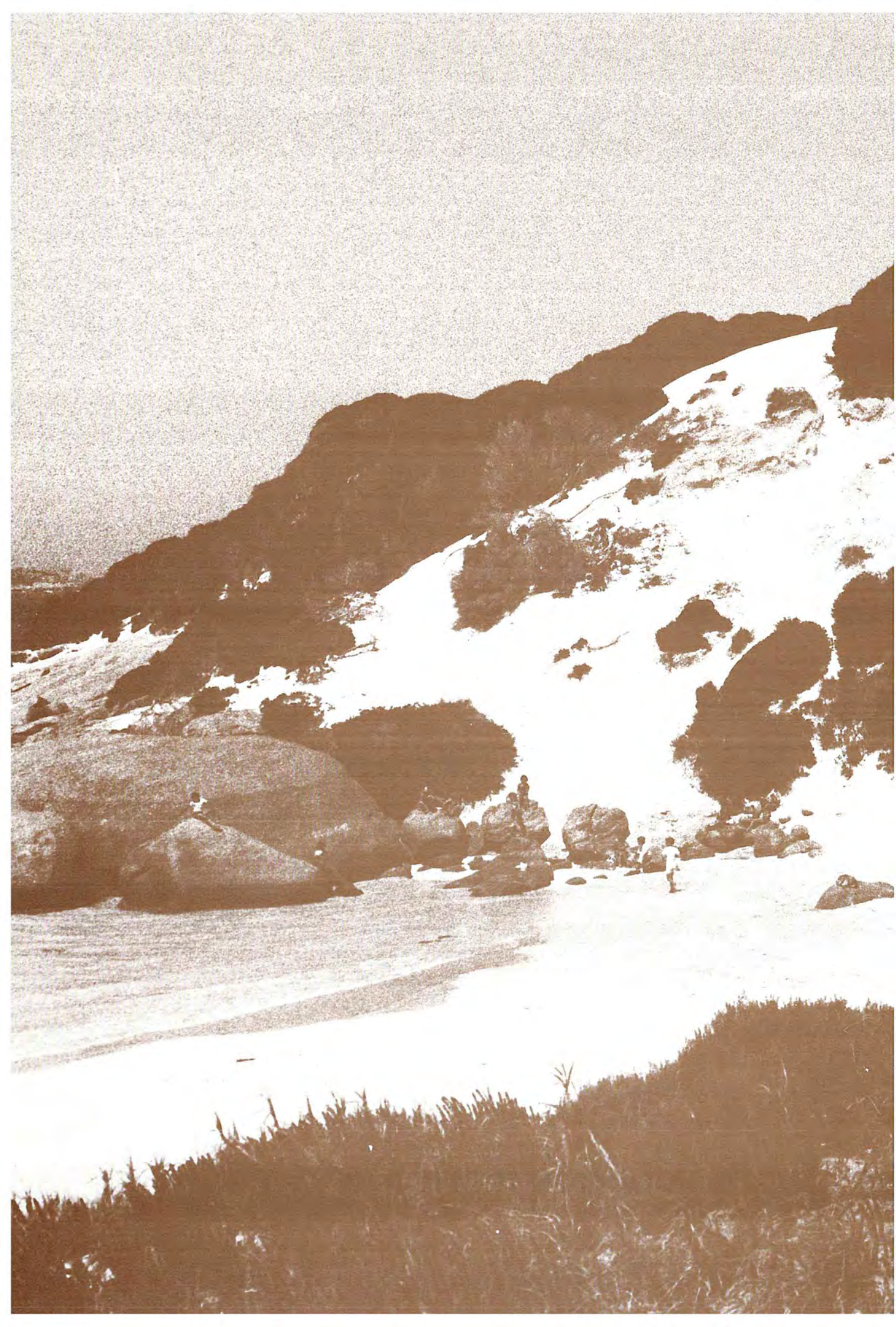


- Reference
- Water and Vegetation Lines January 1981
  - Water and Vegetation Lines December 1965
  - ▲ PC 4 Beach Traverse Station

Source: Public Works Department.

**Figure 6**  
**Esperance District Coastal Management Plan.**  
**SHORELINE MOVEMENTS,**  
**BANDY CREEK TO WYLIE HEAD**





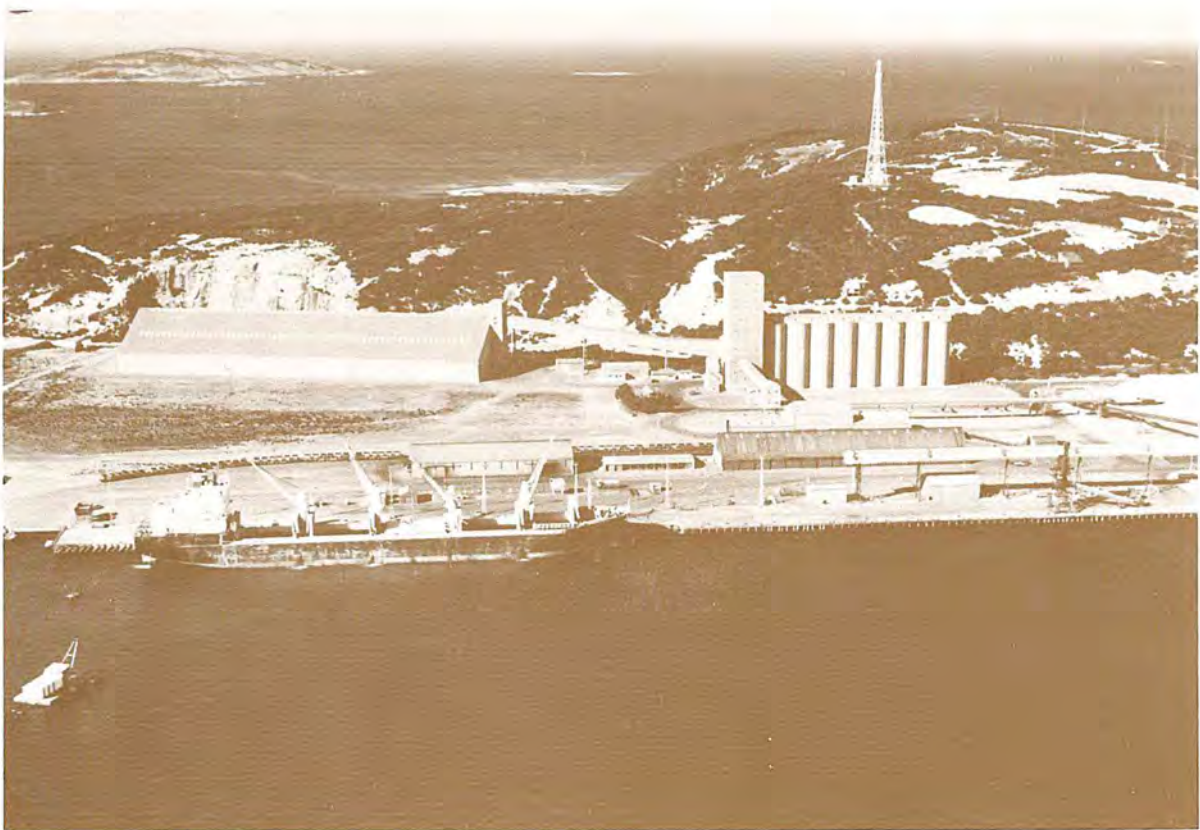


## Chapter 4 – USE PRESSURES

### Port Facilities and Industrial Development

Esperance has been operating as a port since 1895, although it was the large scale pastoral and mining development of the hinterland over the past 25 years which led to the construction of the modern harbour and Taylor Street groyne. Port facilities are extensive and include a main grain handling terminal (see Photograph 3). Ore loading facilities also exist at the town to handle the 50,000 tonnes of nickel ore railed annually, as well as salt shipments and other minerals, from the Norseman area.

Currently there is no demand to expand the port for shipping purposes. However, it should be recognised that there may be future needs beyond the life of this management plan. For example, if further industrial development takes place at Esperance, such as development of regional coal reserves, there may be repercussions for the coastal environment. Such repercussions could occur through the demand for coastal land and waters for industrial purposes and/or through an increase in the local population with further pressures on recreational resources and residential land. In particular, there may be a need to provide for additional port-related industrial development at Esperance.



Photograph 3 Port facilities at Esperance.

### Commercial Fishing

Commercial fishing at Esperance has expanded rapidly in recent years and 50 - 60 vessels operate from the town at some time during the year. The growth in the industry has been brought about by the improved jetty facilities at Taylor Street and the development of new fisheries, such as southern bluefin tuna. There is a possibility that the industry will expand to include pilchard and squid. Other valuable fisheries include shark, rock lobster and greenlip abalone.

The increased fishing activity has highlighted the inadequacy of the Taylor Street jetty for unloading catches and berthing vessels and in August 1978 the South Coast Fisheries Parliamentary Study Committee reported on the need for a fishing boat harbour at Esperance. The Public Works Department (1979) carried out investigations into the suitability of a number of locations for a small boat harbour. The criteria for suitability were the provision of :

- sufficient land and protected water areas made available for considerable future expansion of the fishing industry;



## USE PRESSURES

- sufficient berths and permanent moorings for a range of fishing vessels up to a defined maximum size;
- fish handling and processing sites;
- heavy duty slipway and fleet maintenance facilities.

Six sites were examined between Esperance Harbour and Wylie Bay. Following the completion of the Public Works Department investigations and deliberation by Esperance Shire Council, the mouth of Bandy Creek was selected as the site for the boat harbour. To date, construction of the access road from Fisheries Road and the harbour breakwaters has been completed and work on the land site commenced (see Photograph 4). When the harbour is completed commercial boating pressure will be taken off the Taylor Street jetty area. However, the boat harbour will become a new focal point on the coast for various uses as well as affecting established use patterns, such as beach access to Wylie Bay and beyond. The construction of the harbour and breakwater at Bandy Creek will also affect the existing wave regime and littoral drift which, in all probability, will result in an accreting shoreline to the west of the harbour and an eroding one east to Wylie Head. This in turn may have further repercussions on the use of the shoreline for recreation.



*Photograph 4 Construction of the new boat harbour at Bandy Creek (October 1983).*

### Urban Growth

The growth of residential areas is currently controlled by Town Planning Scheme No. 16 (Zoning Scheme). The continuing development of the residential zone extending west of Dempster Head to the eastern boundary of Reserve 15042 (Rifle Range) on the northern side of Twilight Cove Road will have an increasing impact upon the landscape of this section of coast. Although residential land in close proximity to the coastline, especially on high ground, is regarded as desirable real estate and usually commands substantial prices, the overall cost-benefit to the community in such cases should be evaluated before development proceeds. The gain of a relatively small part of the community in terms of views and land values should be weighed against the loss or devaluation of an important scenic asset to the community as a whole.

The most significant landscape resource in the study area is the length of coastline between Dempster Head and Eleven Mile Beach. This was apparent from the response to a question in the *Esperance Visitor*



## USE PRESSURES

*Survey 1975-76* (Department of Tourism, 1976) concerning the perceived value or importance of various locations in and around Esperance. The scenic drive along Twilight Cove Road was rated good to excellent by 75% of respondents. At present residential development extends as far as West Beach with houses abutting Twilight Cove Road. The existing housing and aerial power lines along this section of road considerably detract from the scenic amenity of the coastal drive (see Photograph 5).

A proposed extension of urban zoning in the area between the existing eastern limit of Castletown and Bandy Creek is the subject of a draft Guided Development Scheme (No. 19) which has been prepared. If the Scheme is implemented, new pressures will be generated on the coastline between Castletown Quays and Bandy Creek due to increased access to the foreshore and, in some instances, alienation of the back dune area from general public use. One aspect which must be considered is the integration of the new Bandy Creek harbour with residential and tourist development proposed in the Scheme. Management of Bandy Creek (Reserve 35201, Public Recreation) will be needed as use pressures increase from the residential, special rural and other development areas which will abut the western side of the creek. The new access road to the harbour which crosses over and runs parallel to the eastern side of the creek will also necessitate management action to protect the reserve.



*Photograph 5* Aerial power lines, housing and bare roadside west of Dempster Head detract from the coastal landscape.

### **Tourism**

Tourism plays a major role in the economy of the Esperance district, with provision of accommodation especially important. In 1975-76 the Department of Tourism carried out a visitor survey and it is estimated that 46,000 people visited Esperance in 1975 and spent in excess of \$1 million. The survey indicated that 83% of people came to Esperance for holiday/pleasure purposes and most arrived in the spring and summer months (see Figure 7). Recent assessments of visitor arrivals indicate that the number of tourists visiting Esperance has remained relatively constant over the last six years.



## USE PRESSURES

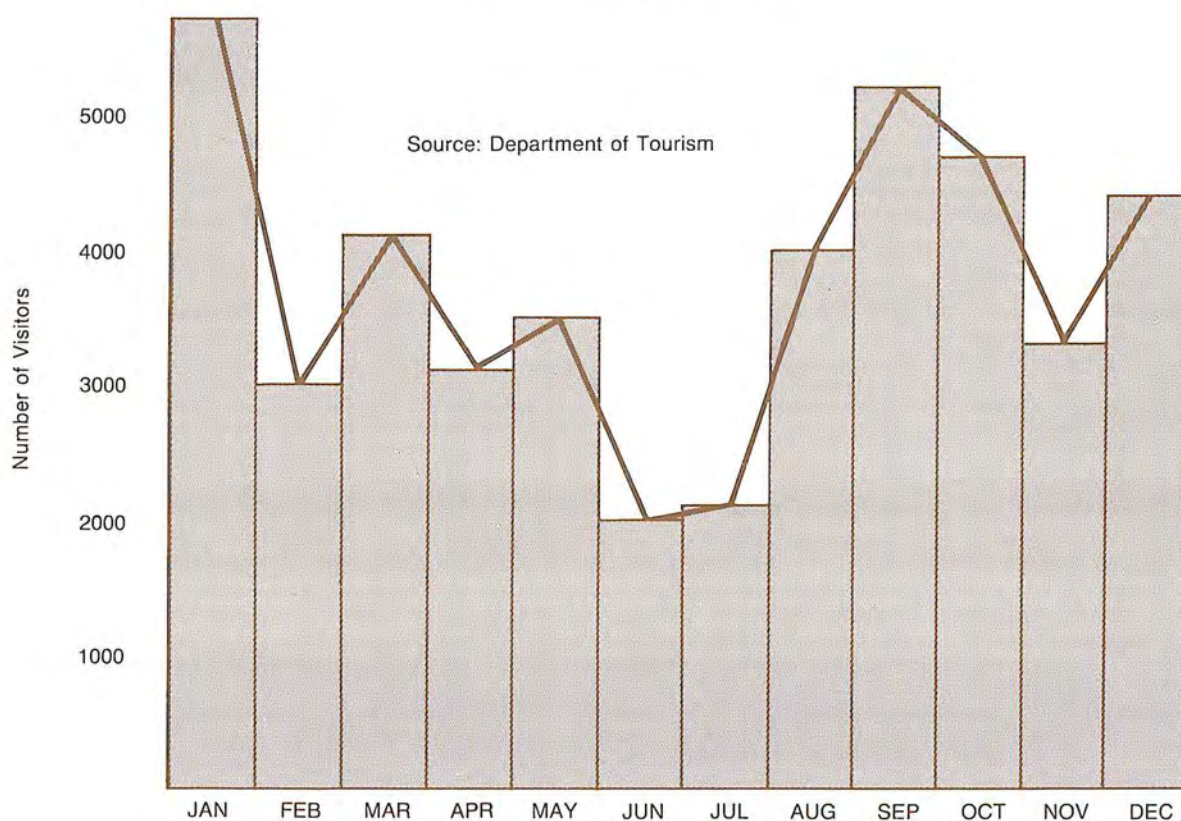


FIGURE 7: ESPERANCE VISITOR DISTRIBUTION

### Beach Usage

Recreation activities at Esperance are centred mainly on the coastline. There are few beaches suitable for swimming, despite the profusion of sandy bays. The prevalence of dangerous rips and heavy seas restricts full beach use to a few specific locations. The main swimming recreation beaches are those fronting the townsite in Esperance Bay and Twilight Cove, approximately 8 kilometres west of the town along Twilight Cove Road. Other beaches, such as West Beach (see Map 2), are used by surfers throughout the year. These areas receive intense use during the warm months and the general lack of use control has resulted in loss of vegetation and erosion in some locations.



Photograph 6 Fishing is a popular activity at Esperance.



## USE PRESSURES

### Fishing

Fishing is a popular recreational, as well as commercial, activity at Esperance and numerous informal tracks to good fishing locations dissect the coastline, especially west of the town to Butty Harbour. Braiding of these tracks occurs as they become impassable due to continual traffic through unconsolidated sands. The recent controversy over the illegal formation of an access track through Reserves 24487 and 13977 to Butty Harbour has emphasised the need to recognise the pressure on coastal resources by this type of activity and to provide for controlled access.

### Recreational Boating

Recreational boating also creates major pressure at Esperance. A recent study into recreation boating in Western Australia carried out by PA Australia (1981) revealed that most users of facilities come from the Goldfields and Great Southern regions. According to the survey, percentage use from local and adjacent catchment areas ranges from 79% for launching facilities to 100% for both mooring and berthing facilities. The Shire Council estimates that 465 power boats and 83 yacht club vessels are based at Esperance.

At the moment the only boat launching facility available is the concrete ramp (which also incorporates a 20 tonne slipway) between the Taylor Street jetty and the James Street groyne (see Figure 4 and Photograph 7). The firm beach between the jetty and the ramp is also used for launching on a 50/50 basis by the Esperance Bay Yacht Club and the general public. However, according to Esperance Shire Council, use of the ramp and slipway is dominated by the fishing industry, especially in the tuna season. The Esperance Port Authority has free public swing moorings at Taylor Street which can accommodate up to 60 boats to a maximum 20 metres length and 4 metres draft. The PA Australia study reports that there is a waiting list of boat owners who wish to use the moorings. Again, moorings are mainly used by fishing boats.



*Photograph 7 Taylor Street Jetty, Esperance Bay Yacht Club, 20 tonne slipway and launching ramp.*



## USE PRESSURES

The yacht club also has swing moorings, covered dry storage and open storage to accommodate 80 boats. Both club and Port Authority moorings are relatively unprotected and dangerous in heavy weather. Berthing facilities are available at the Taylor Street jetty and maximum berthings are 20 per day in peak season. Although the jetty is normally open to the public, use is again dominated by the fishing industry.

The proposed plan for the Bandy Creek boat harbour has recognised the need for additional recreation boating facilities, particularly pen moorings and launching ramps, as well as fishing industry requirements. The anticipated removal of fishing pressures from the existing jetty, slipway and launching ramp close to town will also result in increased recreational use of these facilities and it may be possible to increase rock protection and construct pennage near the yacht club (PA Australia, 1981).

The controversial track formation referred to above has also highlighted the importance of Butty Harbour as a safe haven for small craft. The harbour is recorded in *Australia Pilot* (Vol.1, No. 13) as suitable for small coasting vessels with a good landing in the south-west corner.

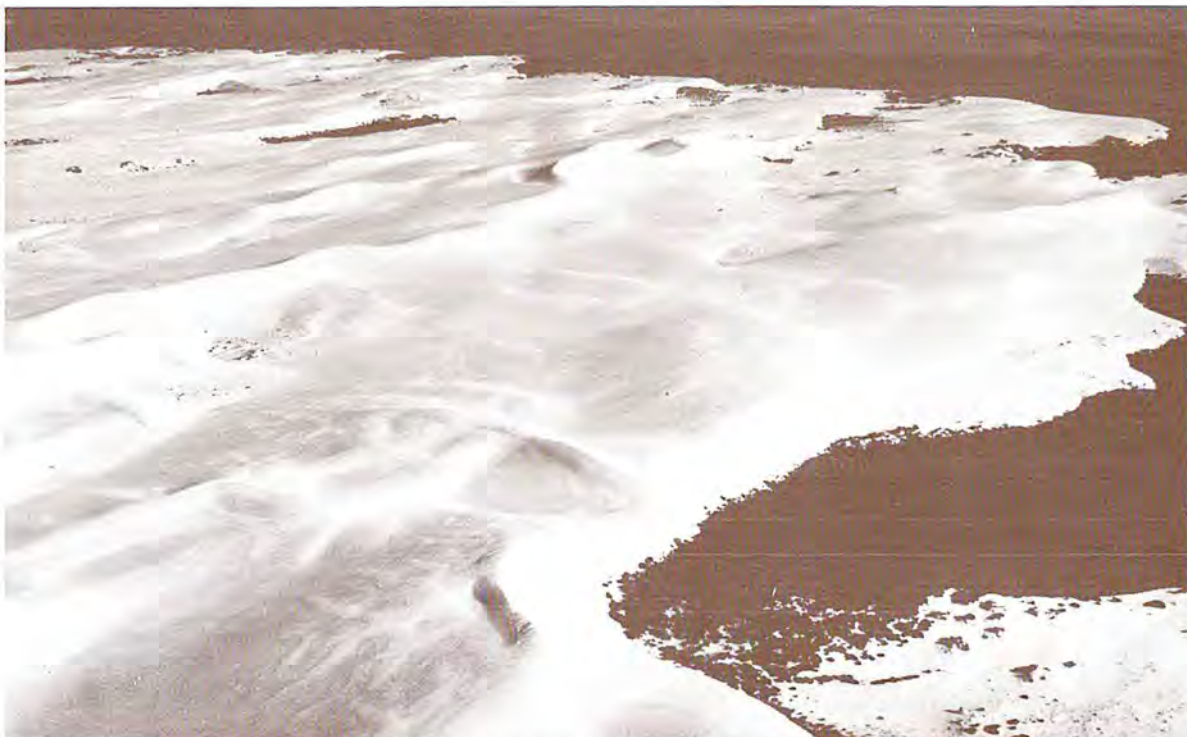
### Off-road Vehicles

Off-road vehicle use is widespread throughout the study area, both on the coastline and in the large areas of dunes and bushland within Crown reserves and freehold land. Off-road vehicle use falls into two categories, road registered vehicles and recreation machines such as dune buggies. Reserve 34777, with its large mobile dunes (see Photograph 8), has been especially set aside for recreation off-road vehicle use although it is uncertain how many people actually use the reserve. It is unlikely that users confine themselves within the unmarked boundaries of the reserve. Many people drive along the wide beaches in summer to reach Butty Harbour in the west and Wylie Bay and Cape le Grand in the east.

Twilight Cove Road is currently being extended west and will eventually link with an upgraded Eleven Mile Beach Road (via Pink Lake). New pressures may be generated when the loop road is completed, permitting easier access into the bushland and foreshore of Reserve 24486.

### Hang Gliding

As well as the more traditional recreational uses, Esperance also caters for hang gliding enthusiasts. The high limestone cliffs east of Observatory Point are used for this activity during the summer months, although no precise use numbers are available.



Photograph 8 The large area of mobile dunes within Reserve 34777.



## Chapter 5 – MANAGEMENT STRATEGY

### Management Aims

The purpose of management planning in the study area is to achieve a systematic or co-ordinated approach to management and development within the coastal zone which takes cognisance of natural processes and resource characteristics as well as human uses and needs. Management aims for the study area should be to :

- maintain natural ecosystems (aquatic and terrestrial), landscapes, and coastal processes wherever possible;
- protect and maintain groundwater resources;
- undertake beach erosion prevention or repair works where necessary;
- provide opportunities for a wide range of recreational use of natural resources consistent with protection of those resources, such as beach recreation, fishing, off-road vehicle use, boating, etc.;
- provide for properly designed and located urban development;
- provide for suitably designed and located tourist facilities;
- facilitate suitably integrated (with the natural environment and other land uses) commercial/industrial development of the coast where appropriate, including commercial fishing requirements.

### Opportunities and Constraints

The study area has the following significant resources :

- a diverse coastal landscape with high scenic and recreational values;
- a large groundwater reserve contained in unconsolidated sands;
- a major scenic road and associated coastal recreation areas;
- the Esperance townsite and port with associated facilities and road network.

Important resource use constraints include :

- the unconsolidated sands which characterise the study area rely on vegetation cover for stability;
- large areas of unstable, mobile dune sands;
- periods of high fire danger;
- the susceptibility of groundwater reserves to pollution;
- the prevalence of dangerous currents and heavy seas along the coast;
- the susceptibility of significant sections of shoreline to erosion through alteration of swell and wave patterns;
- an open landscape easily degraded by obtrusive or poorly sited development.

The allocation of compatible uses to appropriate resources is an essential step in the preparation of management plans. If this step is not taken degradation of resources will occur which will result in significant increases in management costs and loss of amenity to users. In general terms, existing and historic use of natural resources in the Esperance district has taken place without the application of this management planning principle. As a result high management costs are being, or will be, incurred to maintain important natural and man-made resources. One example is the cost of groyne construction and sand replenishment in Esperance Bay to protect the shoreline, roads and other developments from oceanic processes. At a smaller scale, examples include the need for increased management input required to control use and repair damage to vegetation and dunes at various locations along the coastline.

Another key factor is the capacity of the Shire and other agencies to undertake management, since required management input is directly related to the level of use of a given area. For example, intensively used recreation areas at Twilight Cove and the town beaches in Esperance Bay require intensive management in terms of cost, infrastructure and manpower, whereas the area to the west of Eleven Mile Beach can be adequately managed with relatively low cost broadacre management techniques.

### Proposed Structure Plan

Map 4 shows, in general terms, the proposed future pattern of land use and access in coastal areas. The Structure Plan is based on the assessed capability of resources to sustain particular uses and takes into account basic management principles such as the design of access to control use patterns, since the use objective for a given area determines the type or level of access provided. The proposals contained in the plan are presented as guidelines which can be used to assess the suitability of particular uses,



## MANAGEMENT STRATEGY

both existing and proposed. A 'best use for best resource' approach has been taken and proposed uses apply to units of land regardless of existing tenure and cadastral boundaries.

The Working Group Report identified a number of specific issues to be addressed by the management plan. The main issues are discussed below, together with other key elements of the Structure Plan.

- **Expansion of townsite - effect on coastal strips and Reserve 4180**

As discussed in Chapter 4 the westward expansion of the residential zone defined in the current Town Planning Zoning Scheme will have a major impact on the scenic values of the eastern end of Twilight Cove Road. It is considered that it would be of value to the Esperance community to restrict further westward expansion of housing development within this section of the residential zone, at least adjacent to the road (see page 45 for management recommendations). The amendment of the Shire's Zoning Scheme to permit the planning and implementation of draft Guided Development Scheme No. 19 will affect use of the foreshore and the Bandy Creek reserve but this can be overcome through appropriate planning in order to develop opportunities rather than create management problems.

The uses proposed for the area that includes Reserve 4180 complement the Zoning Scheme, which specifies the general area of Crown reserves for recreation purposes. Reserve 4180 also forms part of the groundwater recharge area, placing a constraint on the level of use which should be permitted. Furthermore, it is proposed that the reserve should be amalgamated with Reserve 24486 to form a large reserve for Water and Conservation of Flora and Fauna purposes (see Chapter 7).

- **Protection of groundwater resources**

This is a major objective for the use and management of all land west of Esperance town, therefore existing and future uses must be consistent with this purpose. Public Works Department advises that low key recreation use and scattered nodal development would not affect the quality and quantity of groundwater supplies. However, widespread urban development and/or intensive agriculture would jeopardise the functioning of the groundwater system.

- **Potential development of recreation/tourism facilities on public and privately owned land**

The construction of the road to link the existing Twilight Cove and Eleven Mile Beach Roads will be a positive step in the use and management of an important section of the study area. The proposed loop road will link key resource areas, in particular the coastline, Pink Lake and the townsite, forming an extension of the highly used Twilight Cove scenic road, and will facilitate recreation and tourist development along some sections of its route.

The freehold and Crown reserve land which will be contained within the loop road may be suitable for recreational activities such as bushwalking and horse riding, as well as recreation/tourism developments (for example, chalet accommodation, caravan parks, riding centres, boat hire on Pink Lake). Such uses and developments could be permitted provided that they are not within the landscape protection area (see Map 4), that they follow surveyed and delineated routes and, in the case of structures, are subject to acceptable siting and design standards. They should also be managed in sympathy with surrounding or adjacent reserves and meet Shire planning and building requirements.

- **Provision of access along the beach or by road between Eleven Mile Beach and Butty Harbour**

In the short to medium term the existing low level of use within Reserve 24486 west of Eleven Mile Beach should be maintained. The main activities carried out in the area are off-road vehicle recreation on the tracks and large mobile dunes, and fishing along the coastline. Established tracks enter the area from the current terminus of Twilight Cove Road and traverse Reserves 24486 and 13977 to Butty Harbour (see Photograph 9). Access is also gained into the inland dune areas from tracks entering Reserve 34777 off Eleven Mile Beach Road.

From the management point of view it would be desirable to maintain the present level of use and limit access to existing tracks in order to protect vegetation and the overall stability of the area (see Chapter 6). It would be inadvisable to consider the construction of a sealed road to Butty Harbour at this stage. The high cost of building a road through unstable dune areas could not be justified by expected levels of use, nor by the additional expense required to initiate a new management programme. However, in view of the importance of Butty Harbour as a safe haven for small coastal vessels it would be advisable to maintain a single access track to 4WD standard through Reserves 24486 and 13977.

- **Future use and management of Reserve 34777 for off-road vehicles**

Reserve 34777 (see Map 2) was gazetted in 1977 as a recreation reserve specifically for dune buggy and trail bike use. Although the concept of prescribed areas for off-road vehicles is basically sound,



## MANAGEMENT STRATEGY

*Photograph 9  
Braiding tracks traverse  
bushland and mobile dunes  
within Reserve 24486 to  
reach Butty Harbour, west  
of the town.*



the management of such areas is often a difficult task and this reserve is no exception. With existing restraints on staffing and the prohibitive expense of fencing such a vast unstable area, it is considered that a flexible approach should be taken to off-road vehicle activities within Crown reserve land west of the proposed loop road.

Since it is unlikely that use pressures will increase for some time, and bearing in mind the difficulty of policing Reserve 34777, off-road vehicle use should be permitted throughout the interior dune system, whether or not it is within the gazetted reserve. This should be subject to protection of Lake Mortijinup Nature Reserve (A35557), restricting off-road vehicle use to existing tracks in vegetated areas and monitoring the general stability of the area over time, especially near the coastline.

### • **Provision of access to, and day recreation facilities at, Wylie Bay**

Existing use of Wylie Bay (see Photograph 10) is limited to fishing and vehicle access along the beach to Cape le Grand. Off-road vehicle use of bare sand dunes also takes place on freehold land inland from the coast between Bandy Creek and the bay. Present access to Wylie Bay is along the beach from the end of Castletown Quays. However, this access route will be cut off when the Bandy Creek boat harbour is constructed. Additionally, changes in swell and wave patterns resulting from construction of the harbour breakwaters may affect littoral drift and cause shoreline erosion east of the harbour, although the degree of change is uncertain at this stage. Therefore consideration needs to be given to future access to Wylie Bay and beyond.

A gazetted road reserve (see Map 2) traverses the freehold land to the west of Wylie Bay where it terminates at Reserve 15238 (Camping). However the level of use to which Wylie Bay is subjected would not justify the cost of constructing a road from Fisheries Road to the reserve. Furthermore, the quality of the resource is not sufficient to justify the development of day recreation facilities at this point in time, particularly when related to the cost of the road needed to provide access. Other parts of the study area, such as the recreation nodes along the coast west of Esperance and the town beaches, should be given higher priority in terms of planning, management funding and potential use.

It is considered that the present level and type of use should be maintained and that an entry point should be provided for access onto the beach on the eastern side of the new harbour. This is subject to management of the foredunes and assessment of the degree of shoreline erosion and dune movement resulting from the harbour construction. If these factors are affected adversely by continued use, access along the beach should be prevented until stabilisation takes place, in which case consideration may have to be given to grading a carefully aligned access track to Wylie Bay behind the primary dunes.

The question of co-operative management of the Wylie Bay foreshore in relation to Reserve A23825 is discussed in Chapter 6.

### • **Town Foreshore**

The town foreshore is a modified and intensively used section of the Esperance coastline requiring a high degree of management. Existing recreation uses should continue and, in some instances, be upgraded. Pedestrian and vehicle access needs to be carefully controlled. Any future commercial, industrial or residential development should be set back from the foreshore and integrated with existing land use. A separate local management plan has been recommended for this important area (see Chapter 6).



## MANAGEMENT STRATEGY



*Photograph 10  
The granite dome which  
forms Wylie Head, with  
Esperance Bay to the left  
and Wylie Bay to the right.*

### • **Twilight Cove Road**

The value of this section of coastline for a range of recreation and tourist activities has been highlighted in Chapter 4. The Structure Plan proposes continuing use and development of intensive recreation sites, such as Twilight Cove, as well as maintenance of the scenic amenity of the road itself. Relatively high management input will be required at intensively used sites and pedestrian and vehicle access should be controlled. Recommendations for the long term management of this area are contained in Chapter 6 (also see Appendix B).

### • **Bandy Creek (Reserve 35201)**

The existing reservation of the foreshore and waters of Bandy Creek for public recreation provides an opportunity to integrate an essentially natural waterway with eastward expansion of urban development and the new boat harbour. Within this reserve activities ranging from nature study to canoeing could be developed which would be compatible with protection of the natural environment. Controlled access is essential, especially from nearby urban, semi-rural (horse riding) and harbour areas.

### • **Coastal waters and islands**

The proposed Structure Plan focuses on use and access within the mainland coastal zone, as few changes are envisaged for the use of offshore waters and islands. The coastal waters are important for both commercial and recreational fishermen and the improvement of boating facilities at Esperance may result in increased use of this resource. The islands of the Recherche Archipelago (Reserve A22796) must continue to be managed as an important nature reserve. However, there may be scope to enhance their value to tourism by expanding the existing island cruise service with an emphasis on nature interpretation.

## **Public Awareness**

Public education or awareness programmes play an important role in the management of natural areas which are subject to varying degrees of human use, although the extent and intensity to which such programmes are implemented depends on the resource being managed. For example, in major national parks and nature reserves it may be appropriate to implement an intensive public interpretation/extension programme which can include high capital infrastructure such as nature study centres, nature trails and publications. Although it is neither practical nor essential to undertake such an expensive and detailed education programme within the coastal reserve at Esperance the general principle of creating positive public awareness is none the less valid. The value to management can be summarised as :

- increasing public perception of the value of the coastal environment, its resources, landscape, history, etc.;
- increasing public understanding of management needs and actions which are enforced in order to maintain natural resources/processes and, in some instances, public safety;
- reducing the need for law enforcement and maintenance as a result of increased public understanding.

At Esperance these goals can be achieved through the implementation of a relatively simple public awareness programme at moderate cost, particularly if it is carried out in conjunction with other management strategies. Fundamental to such a programme is the erection of high quality signs at key locations to inform the public of :



## MANAGEMENT STRATEGY

- location and direction, for example : 'Twilight Cove', 'To Beach', 'Lookout';
- the nature of management requirements or activities, for example, 'Dune Stabilisation', 'Protect Vegetation', 'No Fires', 'Swimming Permitted' ;
- nature interpretation; for example, an informative sign showing the geology of the coastline could be located at the Rotary lookout and scenic walk on Dempster Head;
- information on historic and other sites of special interest, such as the Observatory Point lookout and the Tanker Jetty.



*Photograph 11  
Poor quality fencing and sign-posting detracts from the coastal landscape and often encourages misuse of the resource.*

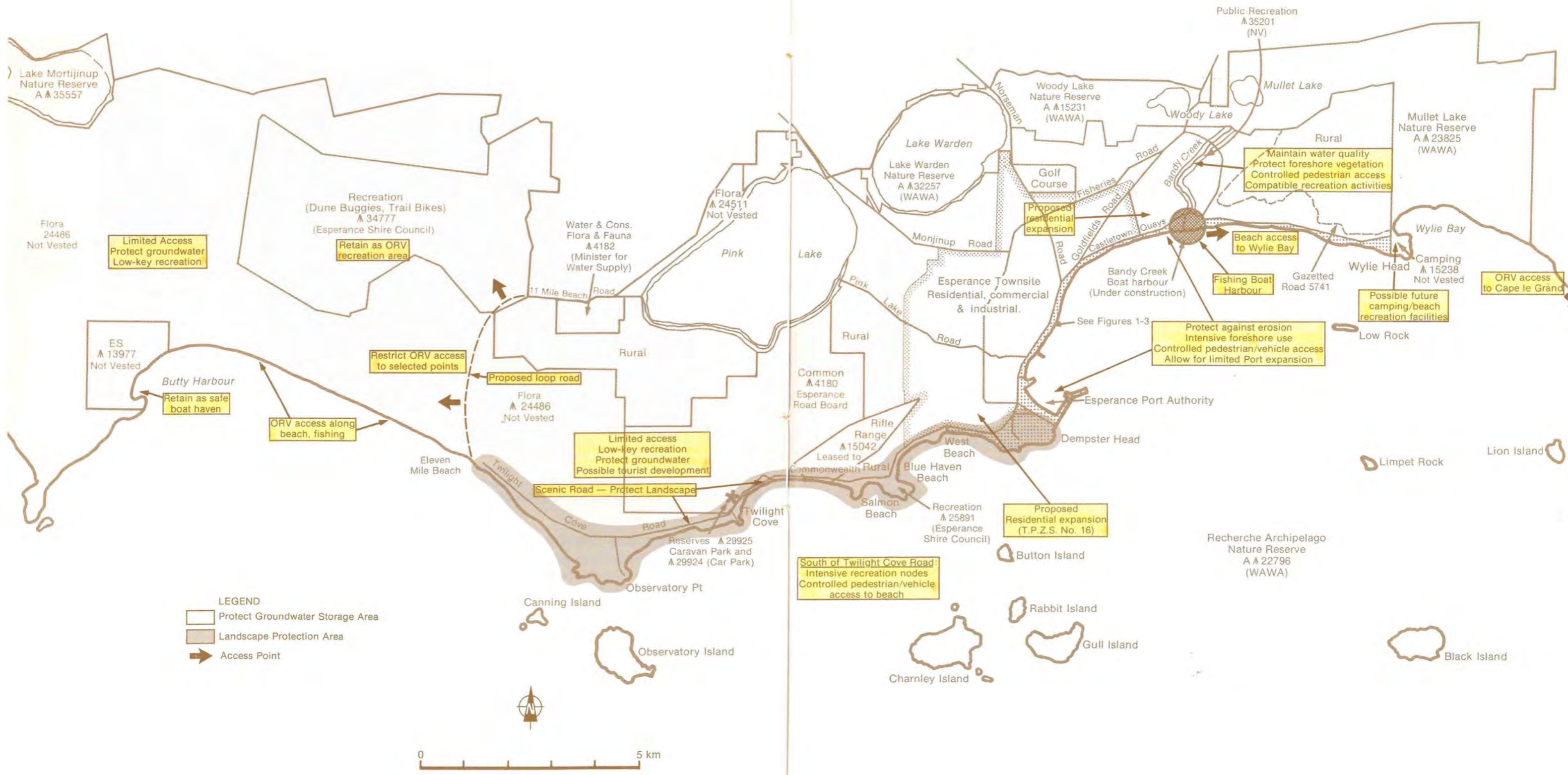
The Esperance Shire Council should also consider the preparation of simple brochures to increase public appreciation and understanding of coastal resources and processes. One brochure could be directed at tourists, showing the coastline from Wylie Bay in the east to the end of the scenic road in the west as well as important inland features such as Pink Lake. The 'tourist' brochure would identify swimming beaches, picnic and recreation spots, lookouts, historic sites, and safe fishing locations. A second brochure could be produced with an emphasis on use of the coast by the local community. This brochure would contain basic information, presented in a simple but interesting manner, on coastal processes and on the need to control use of the coast to protect property and maintain recreation values, and to reduce the expenditure of public funds on repair works.

### **Siting and Design Considerations**

Another aspect of management which is related to public awareness is the need to maintain a 'managed appearance' in areas used by the public, since a visually well managed area does not attract the misuse and vandalism which is prevalent in locations where a management presence is lacking. This can be achieved by :

- replacing ugly, rusting metal signs with routed, stained hardwood signs and siting them where they blend in with the landscape (see Appendix C);
- installing a unified system of quality, well maintained furniture and other utilities at locations used by the public; for example, rubbish containers, fireplaces, vehicle and pedestrian barriers, and fencing (see Appendix D);
- designing and siting access roads and car parks to protect people, dunes and vegetation;
- unobtrusively siting essential facilities such as toilets, with provision for landscaping and continuing maintenance;
- constructing and maintaining pathways and walking trails to direct people through susceptible areas, provide easy access to scenic locations, control drainage and prevent erosion in areas subject to heavy traffic (see Appendix E for design details);
- constructing vehicle access points to beaches in those areas where vehicles are permitted onto the beach, as at Castletown Quays and Wylie Bay;
- following site amelioration procedures in areas where development works are carried out; this includes stockpiling of topsoil, preventing excessive runoff, replacing the topsoil on completion of works and, where necessary, tying down unstable areas with brush and/or sowing with cereal grasses (this has been used successfully at various locations along the Twilight Cove Road extension).





**Map 4  
Esperance District Coastal Management Plan  
PROPOSED STRUCTURE PLAN**



## Chapter 6 – MANAGEMENT AREA RECOMMENDATIONS

### Proposed Management Areas

Whereas the proposed Structure Plan outlines the future pattern of use and access in general terms, there is a need to specify detailed management objectives for the coastal zone. The management areas shown on Map 5 are based on existing land use and structural features, topographic and landscape features, as well as the Structure Plan.

Where management areas include freehold land recommendations should be seen as advisory. However, freehold land and Crown reserves should be managed in sympathy with one another, especially such aspects as fire hazard reduction, control of noxious weeds, and erosion control. Council by-laws, the Town Planning Scheme and statutory controls (for example, the Soil Conservation Act) should be used to implement management objectives where appropriate, as well as consultation with private land owners.

### Management Area A - Butty Harbour

**Recommendation A1** Permit general off-road vehicle use on dunes, beach and established tracks, as well as other low key recreation activities including bushwalking, fishing, horse riding.

**Recommendation A2** Direct and control access into Area A from the proposed Twilight Cove - Eleven Mile Beach loop road by providing two clearly sign-posted access points, one into Reserve 34777 (Recreation - Dune Buggies and Trail Bikes) and the other into Reserve 24486 along the recently 'upgraded' track to Butty Harbour (see Photograph 12). This track should be retained for 4WD access and inspected periodically to ensure serviceability and to monitor use of the surrounding reserve. Formation of new tracks should be prevented unless authorised, in which case controls on design, route alignment and maintenance should be enforced.

**Recommendation A3** Maintain Butty Harbour as a safe haven for small boats. The harbour should not become the exclusive domain of an individual or group of individuals engaged in purely commercial fishing operations.

**Recommendation A4** Control fires where they threaten life or property on adjoining freehold land. Prevent fires from entering Management Area C. Preparation of the brochure on community use of the coastal zone (see page 39) should include information on the need to refrain from driving, riding or even walking through recently burnt areas. The scrub/heath vegetation can regenerate relatively quickly if the substrate is not disturbed. However, vehicle movement or other disturbances can break up the thin surface layer of the soil and initiate wind erosion of the largely unconsolidated Pleistocene sands. A summary of this information could be included on informative/directive signs placed at the two designated access points on the proposed loop road.

**Recommendation A5** Monitor the environmental stability of Area A on a regular basis (for example, through airphoto interpretation) to assess : the effect of off-road vehicle use on vegetation and the coastline; movement of existing mobile sand dunes; extent and frequency of bushfires.



Photograph 12 Formation of tracks can cause extensive damage to vegetation.



## MANAGEMENT AREA RECOMMENDATIONS

### Management Area B - North Twilight Cove Road

**Recommendation B1** Permit recreation oriented uses and developments consistent with Recommendation B3. These include bushwalking, horse riding and off-road vehicle use *on existing tracks*. Off-road vehicle use should be on a trial basis only and should not be permitted on the large dune area north-east of Twilight Cove Beach.

**Recommendation B2** Permit recreation/tourist development on freehold land which complies with appropriate siting and design criteria to reduce impact on the environment, including site amelioration procedures after works (for example, stockpiling and stabilising of topsoil, tying down exposed slopes, revegetating with local plant species).

**Recommendation B3** Maintain and, especially in the case of the recent road extension, encourage growth of roadside vegetation along Twilight Cove Road. This includes, wherever possible, preventing the burning of roadside vegetation to protect the landscape and Management Area C. Access into Area B from Twilight Cove Road should not be permitted within the landscape corridor shown on Map 4. Similarly, no developments should be permitted within the viewshed of the landscape corridor. Although the extent of the viewshed varies along the length of the road according to the topography, in general terms it can be defined as the area between the road and the highest inland ridge visible from it.

**Recommendation B4** Prohibit residential and other uses which could pollute groundwater or inhibit its extraction.

**Recommendation B5** Maintain the natural fire regime, control and prevent fires only where they threaten life and property in adjoining areas. Maintain existing tracks as firebreaks. Wherever possible do not use bulldozers to put out fires or create new firebreaks without careful alignment to protect the stability of dune sands.

**Recommendation B6** Prohibit use of burned areas until vegetation regenerates (see Recommendation A4).

**Recommendation B7** Monitor the rate of movement of the unstable dune north-east of Twilight Cove and prepare a stabilisation programme to protect residential land if necessary.

**Recommendation B8** Reserve 4180 (Common) may contain limestone. However, mining should be avoided. If other sources of limestone cannot be economically obtained, an Environmental Review and Management Programme should be prepared for any quarry proposal, with particular reference to siting, access roads, rehabilitation and impact on groundwater resources.

**Recommendation B9** Any existing grazing rights should be examined by the Department of Agriculture to determine the viability of grazing and the ability of vegetation to sustain this use.



Photograph 13 *Observatory Point lies within Management Area C, while the bushland and dunes north of Twilight Cove Road are part of the proposed Management Area B.*



## MANAGEMENT AREA RECOMMENDATIONS

### Management Area C - South Twilight Cove Road

As discussed in previous chapters the coastline between Dempster Head and Eleven Mile Beach represents the most valuable landscape, tourist and recreational resource in the study area. The Esperance Shire Council has had to increase its management input to maintain the intensive recreation sites scattered along its length, even though most of them are located in unvested Crown reserves. Consideration of these aspects has led to the proposal to formalise Management Area C as a Regional Coastal Park, and this is discussed in Chapter 7.

**Recommendation C1** Amend Part 4 of Esperance Town Planning Scheme No. 16 (Zoning Scheme) to include the coastal landscape between Dempster Head and Eleven Mile Beach (Area C) within the Schedule of areas of natural beauty and buildings/objects of historic, architectural or scientific interest to be preserved or conserved.

**Recommendation C2** Permit and encourage beach recreation, swimming at designated safe beaches, fishing, hiking, pleasure driving, and hang gliding (subject to safety procedures and protection of the environment). Undertake suitably designed and located recreation orientated development as required, such as car parks, access roads and other facilities.

**Recommendation C3** Upgrade recreation nodes, such as Twilight Cove, by carrying out management and development works. Concept plans for five locations which have been identified as needing priority management works are contained in Appendix B. The aim of the concept plans is to recommend management and development works which will have a twofold purpose: firstly, to facilitate continuing recreational use of the areas and secondly, to protect the resource base which supports and/or attracts the respective uses. Cost estimates have been included to assist in management planning and allocation of funds for works. The plan for Twilight Cove has been prepared in more detail than those for other sites as works have already commenced under the provision of the Department of Conservation and Environment's beach management grant scheme.



*Photograph 14 Commencement of management works at Twilight Cove (note the wind erosion and loss of vegetation).*

A further site requiring detailed planning of management works as a matter of priority is the Rotary lookout and scenic walk on Dempster Head. The walk follows an interesting route and performs an important role in encouraging public appreciation of the coastal environment. However, if substantial costs are to be avoided in the future it will be necessary to undertake minor management works to upgrade the walking path now. Such works include the construction of steps with associated fill and drainage control, compacted limestone gravel in some sandy sections, revegetation of bare areas, barrier fencing in key locations and erection of informative signs. The estimated cost of bringing the area into managed condition is \$1500.



## MANAGEMENT AREA RECOMMENDATIONS

**Recommendation C4** Undertake a vegetation study to determine whether a prescribed burning programme needs to be implemented to maintain the viability of plant communities (such aspects as regeneration, flowering frequency, etc). In the interim a policy of fire suppression should be implemented within the management area, at least until an ecologically based fire and vegetation management programme is formulated. Access into burnt areas should be strictly prohibited.

**Recommendation C5** Prepare a public awareness programme to encourage public appreciation of the value of this coastline and co-operation in managing the area. This would involve erection of informative and directive signs at key locations and preparation of a brochure showing recreation areas, fishing spots, lookout points, hazards, notes on history, etc.

**Recommendation C6** Restrict vehicle and pedestrian access to designated access points, roads and paths. Provide suitably designed and sited car parks and access roads along the recently completed and proposed extension of Twilight Cove Road.

**Recommendation C7** Improve drainage on existing roads and car parks to control erosion (for example, at West Beach, Nine Mile Beach and Observatory Point); include adequate drainage on new roads and car parks to prevent erosion.



*Photograph 15 Severe gully erosion caused by poor drainage control at Nine Mile Beach.*

**Recommendation C8** Close off and revegetate old tracks and bare areas, especially those adjacent to the recently constructed extension to Twilight Cove Road.

**Recommendation C9** Monitor the area used by hang gliders to assess the number of users and frequency of use and take management action (if necessary) to maintain vegetation and soil stability.

**Recommendation C10** Prepare a working plan for the proposed Regional Park (see Chapter 7).

### **Management Area D - West Dempster Head**

Although this management area consists mainly of freehold urban and rural zoned land it is considered of prime importance in the management of Area C and protection of the Twilight Cove Road landscape corridor. As discussed in Chapter 4, existing urban development, with power lines and houses flanking the northern side of the road, has considerably detracted from the scenic values of this part of the coast.



## MANAGEMENT AREA RECOMMENDATIONS



*Photograph 16 Expanding residential development west of Dempster Head.*

The following recommendations, although more applicable to the as yet undeveloped land, are aimed at both ameliorating and preventing this impact.

**Recommendation D1** Amend Town Planning Scheme No. 16 (Zoning Scheme) to limit the westward extent of the residential zone to the area currently committed for development (that is, with roads and other infrastructure), if only within the viewshed of Twilight Cove Road.

**Recommendation D2** If the Scheme is not amended any future development should be subject to conditions which will reduce its impact on the environment, including underground power, screen planting of vegetation along Twilight Cove Road and rear access to blocks.

**Recommendation D3** The pocket of rural land between the existing urban zone and Reserve 15042 (Rifle Range) should be retained in its bushland condition and managed in sympathy with Area C. If necessary soil conservation controls could be implemented under the Soil Conservation Act to protect the stability of the area. Similarly, town planning controls should be used to restrict development proposals and protect the landscape corridor along the coast, including retention of a wide swathe of vegetation inland from the road (at least 100 metres).

**Recommendation D4** Implement a vegetation planting programme along the established residential section of Twilight Cove Road, to 'soften' the existing harsh urban - coastal landscape interface. This should include verge planting by Esperance Shire Council as well as garden planting by land owners. Council could consider an incentive scheme whereby, for example, land owners are given a certain number of free or cheap plants to encourage landscaping.

### **Management Area E - Town Coastline**

As discussed in Chapter 3, the Esperance town foreshore has already been the subject of a detailed report by the Public Works Department concerning the key issues of beach erosion. That report put forward various possible courses of action designed to protect against further shoreline recession and a consequent threat to the Esplanade Road. Action has already been taken to replace the Town Jetty with a groyne, construct additional groynes north of the Tanker Jetty (see Figure 5) and initiate an annual beach replenishment programme. It is clear, however, that possible future engineering works need to be considered as part of an overall approach aimed not only at preventing and/or restoring erosion



## MANAGEMENT AREA RECOMMENDATIONS



*Photograph 17 In some areas inappropriately located car parks, poor access and obtrusive developments detract from the recreational and visual amenity of the town foreshore.*

damage, but also at maintaining and enhancing the recreational and visual amenity of the foreshore, and at safeguarding the important economic role of the port facilities.

**Recommendation E1** A local coastal management plan should be prepared for the Esperance town coast between Dempster Head and Bandy Creek to examine in more detail the following issues:

- the feasibility of relocating the Esplanade Road carriageway west of the Tanker Jetty some 20 - 30 metres further inland (see Photograph 18), thus obviating the need for the existing groyne field and permitting restoration of a recreational beach and landscaped foreshore reserve;
- evaluation of available options for stabilising the Castletown foreshore, including the desirability and cost-benefit implications of constructing a new groyne field, especially in view of the likely changes in shoreline movement resulting from the construction of the new boat harbour breakwaters;
- possible alternatives to Castletown Quays as the main road access to proposed urban development to the east (draft Guided Development Scheme No. 19);
- preparation of a foreshore management programme for the area affected;
- the future of the Tanker Jetty;
- possible long term needs for development of the industrial land north-west of the Tanker Jetty, and desirable alternative uses of the area (for example, retention of the high vegetated dunes as a scenic amenity);
- formulation of detailed management and (re)development proposals to improve the amenity of the foreshore between No. 1 Berth and the Town Jetty, including defined vehicle and pedestrian access, protection and restoration of vegetation, removal of rubbish, old fences, etc.;
- control of vehicular access to the beach and foreshore reserve along the entire town coastline;
- rationalisation of the substantial number of separate foreshore reserves and preparation of a single working plan in accordance with the recent amendments to the Land Act (see Chapter 7).

**Recommendation E2** The local coastal management plan should be prepared by the Esperance Shire Council, Esperance Port Authority and Public Works Department, in consultation with the Department of Conservation and Environment and, where appropriate, other State agencies.



## MANAGEMENT AREA RECOMMENDATIONS



*Photograph 18 Relocation of the Esplanade-Dempster Street intersection further inland would increase the potential for recreational development of the foreshore adjacent to the historic Tanker Jetty.*

**Recommendation E3** No new coastal engineering work or programmes should be initiated until the local coastal management plan has been completed and discussed amongst all those concerned.

**Recommendation E4** The area of foreshore reserve permanently set aside for car parking should be kept to a minimum. Consideration should be given to the use of defined grassed areas for summer overflow parking.

**Recommendation E5** Apart from carefully sited and designed amenity blocks there should be no additional permanent structures within the foreshore reserve north of the Taylor Street groyne.

**Recommendation E6** The existing foredune should be maintained and wherever possible enlarged. Low cost management programmes should be implemented to this end, including fencing, brushing, revegetation, etc.

### **Management Area F - Bandy Creek**

**Recommendation F1** A working plan should be prepared for Reserve 35201 (Public Recreation, foreshore and waters of Bandy Creek) as a condition of vesting the reserve in Esperance Shire Council. The plan should provide for the following :

- integration of the new boat harbour with Reserve 35201, with particular reference to water quality control (for example, the functioning and maintenance of the proposed weir to control water levels in the creek), vehicle and pedestrian access from the recreational and commercial fishing areas (including the harbour access road), rubbish disposal and prevention of littering, fire breaks, etc;
- integration of the reserve with surrounding rural and semi-rural land, the race course, existing and future tourist developments, and future residential development on the western side of the creek;
- development and management of the reserve to both protect the environmental quality of the waterway and foreshore, and develop its potential for recreational use, including canoeing, bushwalking, nature study, etc.;
- examination of the feasibility of widening the existing reserve, especially on the eastern side of Bandy Creek, to include a more extensive area and facilitate further recreation orientated development.



## MANAGEMENT AREA RECOMMENDATIONS

**Recommendation F2** The reserve working plan should be prepared by the Esperance Shire Council in consultation with the Public Works Department, Department of Fisheries and Wildlife (Bandy Creek links with Reserve A23825, see Map 2), Department of Conservation and Environment, and other agencies as required.

### Management Area G - East Bandy Creek

This area includes the narrow vacant Crown foreshore (see Figures 2-3) between Bandy Creek and Reserve 15238 (Camping), part of Reserve A23825 (Mullet Lake Nature Reserve) and freehold rural land. As discussed in Chapter 5, the foreshore within this management area is an important recreation and transit area for people using the beach as a means of vehicle access to Wylie Bay and Cape le Grand. The Wylie Bay foreshore within Reserve A23825 should be managed co-operatively by Esperance Shire Council and the Western Australian Wildlife Authority for both recreation use and nature conservation. It should not be necessary for a section of the reserve to be arbitrarily excised for recreation purposes especially when the existing Camping Reserve has a suitable area for development of facilities if required at some future time, provided that areas of responsibility are agreed to by both parties.

**Recommendation G1** Permit recreation activities compatible with protection of the foredune, including beach recreation and fishing.

**Recommendation G2** Due to the unstable nature of the inland dunes, development or intensive grazing on freehold land within the management area should be prohibited (see Photograph 19). Soil conservation controls should be implemented if required.

**Recommendation G3** Permit beach access to Wylie Bay to continue. On completion of the Bandy Creek boat harbour provide vehicle beach access on the east side of the harbour, at least on a trial basis until the extent and rate of change to the shoreline is known. A sign-posted and, where appropriate, fenced route should be defined for vehicles between the Esperance Bay foreshore and Wylie Bay to prevent further braiding of tracks and consequent loss of vegetation and erosion of dune areas.

**Recommendation G4** The Public Works Department should maintain its programme of monitoring shoreline movement and foredune stability between the new harbour and Wylie Head.

**Recommendation G5** If rapid erosion of the shoreline necessitates an alternative route to the bay Esperance Shire Council could examine the feasibility of grading an access road to Wylie Bay inland of the coast which would avoid unstable dunes.

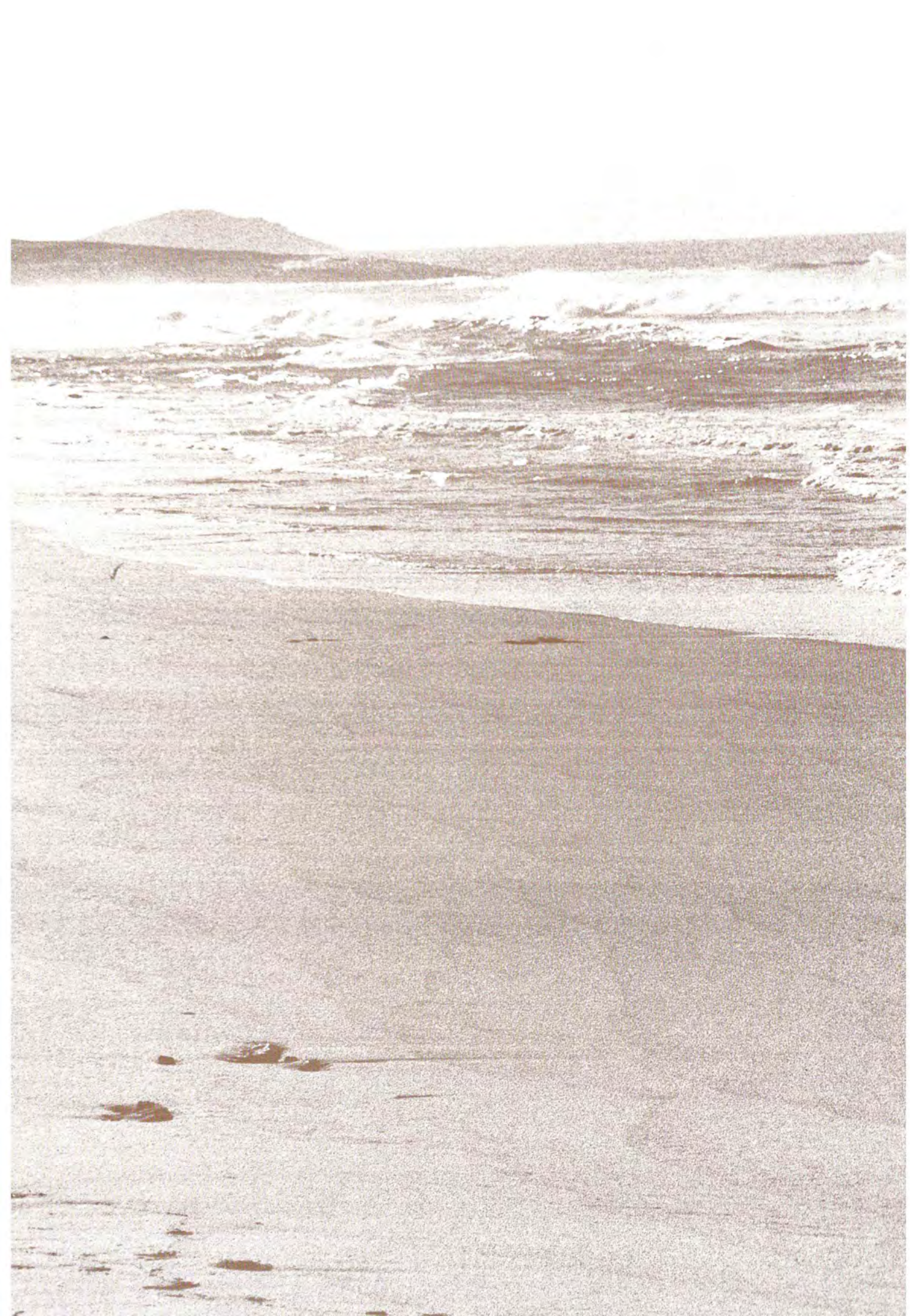


*Photograph 19 Unstable inland dunes between Bandy Creek and Wylie Bay.*











## Chapter 7 – IMPLEMENTATION

### Introduction

The first step in implementing a comprehensive coastal management programme for the study area is the adoption of the foregoing Structure Plan and recommendations for the seven management areas. These lay the groundwork for interim and future management and perform the following functions:

- they define agreed objectives for respective areas - both public and management staff are aware of the use and management objectives for various units of land;
- they assist orderly development - the plan acts as a framework in which the validity and desirability of development proposals can be determined;
- they assist with budgeting and obtaining funds - the Government may be more inclined to provide funds for the management of an area when a plan has been adopted;
- they assist in establishing development and management priorities and long term budgeting.

Implementation of a management programme will enable a co-ordinated and active approach to coastal management rather than a problem-specific and reactive one, which can result in higher management costs. In this regard, it will be necessary to consider three critical aspects which relate to the long term management of the study area and are essential to the adoption of the Structure Plan, namely:

- rationalisation of reserve management, including reserve boundaries and purpose, and areas of responsibility of existing and/or suitable management authorities;
- sources of funds to facilitate ongoing development and management in accordance with the management recommendations;
- management expenditure priorities.

The balance of this chapter considers these issues, including a proposed staging for works and a broad assessment of costs.

### The State Government and Coastal Management

In October 1982 the State Government announced its intention to form a Coastal Management Co-ordinating Committee as a major initiative in developing a coherent and co-ordinated approach to coastal management in Western Australia. It is expected that the Committee will provide a focal point for local government authorities to make submissions on their own coastal management needs and in turn receive co-ordinated advice from State Government departments. The terms of reference require the Committee to:

- oversee the preparation and implementation of coastal management plans at both regional and local levels;
- co-ordinate departmental activities on the coast through exchange of information and views, and review of expenditure programmes and priorities;
- advise Government on coastal management policies, legislation and administrative arrangements.

Recent amendments to the Land Act, in particular those concerning Part III - Reserves, also affect coastal management. The Minister for Lands is now empowered to selectively require (depending on the attributes of the reserve) existing or prospective vestees to submit management plans for reserves. Three reserve management, or working, plans have been recommended as a condition of vesting reserves in Esperance Shire Council in the study area. An outline of the format and content of reserve working plans is contained in Appendix F.

Working plans should be seen, on the one hand, as a statement of intent by which the Department of Lands and Surveys can, at some future date, evaluate management of the reserve by the controlling authority. On the other hand, the plans provide vestees with the opportunity to appreciate what is involved in reserve management and plan work programmes and funding accordingly, especially with regard to any development which may be proposed. This in turn may facilitate appropriate funding through various Government grants.

Technical assistance in the preparation of reserve working plans can be obtained from the Department of Conservation and Environment, as well as other Government departments which are able to provide specialist expertise, such as the Departments of Agriculture, Fisheries and Wildlife, Lands and Surveys, and Public Works.

### The Role of Local Government Authorities in Coastal Management

In some areas local authorities can fulfill an important role in the management of coastal lands, provided



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that they are given technical advice and financial incentives. This role may be relatively low key, since many areas only require low cost broadacre management techniques, but it should be sufficient to respond to existing and future uses.

In many instances local authorities have become de facto caretakers of Crown reserves, even to the extent of incurring substantial management costs. Such is the case at Esperance where the Shire carries out management works, for example, in the coastal sections of Reserves 24486, 15042 and foreshore vacant Crown land, as well as those reserves over which it has the vesting. The following recommendations on management arrangements for reserves within the study area emphasise a more active and recognised management role for the Esperance Shire Council. There are a number of advantages in formalising the Shire's role, including:

- the Shire is in a position to be responsive to local needs and use pressures;
- it can respond to local natural events (for example, fires, road washouts, coastal erosion);
- it has the necessary plant, equipment and expertise to undertake day to day works;
- it has an established administration to co-ordinate and support management programmes;
- it has existing liaison with relevant Government departments (for example, Public Works, Main Roads, Tourism, Agriculture);
- management works provide employment to the local community.

### **Rationalisation of Reserve Management**

As noted in Chapter 1, the study area contains a large number of unvested and vested Crown reserves of various sizes and gazetted purposes. Many of these reserves could be amalgamated to form coherent management units. It is also necessary to consider the ongoing and future management of the reserved land with regard to areas of responsibility and possible vesting arrangements. The purpose in rationalising the existing reserve structure is to relate resource management to statutory control. Map 6 presents a new reserve management system based on the following recommendations.

#### **Proposed Water Reserve**

Presently four unvested and four vested Crown reserves (excluding those on Dempster Head) exist to the west of Esperance townsite, ranging from the large Flora Reserve (24486) to the small Car Park Reserve (29924) near Twilight Cove. It is recommended that most of these reserves should be amalgamated (see Map 6 and Appendix A) to facilitate future management.

The overriding resource management objective for much of the undeveloped land west of Esperance is the protection of groundwater, in conjunction with the need to maintain stability of the Quaternary dunes. Therefore, it is proposed that Reserves 4180 (Common), 29925 (Caravan Park), 29924 (Car Park) and 13977 (vacant Crown land, exempt from sale) should be amalgamated with 24486 (Flora) to form a reserve for Water and Conservation of Flora and Fauna. This would not affect recreational or other low key developments which are both compatible with groundwater protection (see Chapter 5) and in accordance with the Structure Plan. The Department of Lands and Surveys could give consideration to vesting the reserve in the Esperance Shire Council for, say, 10 years as a means of ensuring interim management prior to development of water resources, at which time vesting could be transferred to the appropriate authority. If water resources were not developed at the end of the specified vesting period then the Shire's vesting could be renewed.

Those areas which may be suitable for recreation or tourist developments (see Map 4) could be progressively excised and leased pursuant to Section 116 of the Land Act, following detailed surveys and the application of the conditions referred to on pages 36 and 43.

#### **Proposed Regional Coastal Park**

Discussion in preceding sections of this report has highlighted the value of the coastline between Dempster Head and Eleven Mile Beach as a unique landscape feature and an important recreation resource. Due to its special value this area requires separate consideration in planning for interim and future management.

The recent *System 6 Study Report* (Department of Conservation and Environment, 1981) emphasises the need for a network of regional parks outside the metropolitan area to formalise the protection of areas which have regional, as well as local, recreational and landscape significance, but which are not suitable for national parks or nature reserves. Management Area C (see Map 5) is one such area of regional significance, having the prerequisites of:

- proximity to an urban centre;



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- spectacular coastal scenery of State, if not national, significance;
- important natural ecosystems;
- suitability for a range of recreation activities;
- developed recreation and other sites;
- high use of resources by people outside the immediate Esperance district.

In its discussion of regional parks the *System 6 Study Report* states that 'there is no (planning) machinery for setting aside land for regional open space beyond the Metropolitan Region...' (p. 29). However, the lack of a planning mechanism is not relevant in the present case since agreement can be reached between the Department of Lands and Surveys and Esperance Shire Council on the necessary form of reservation with regard to purpose, administration and management. It is considered that administration and management of this area of regional significance can be successfully undertaken by the Shire provided that technical and financial support is forthcoming from appropriate State authorities. It is therefore recommended that the area south of Twilight Cove Road between Dempster Head and Eleven Mile Beach be reserved as a Regional Coastal Park (see Map 6). This would necessitate the amalgamation of numerous Crown reserves on the southern side of Twilight Cove Road (see Appendix A) into a new reserve which should be gazetted under the Land Act as the Esperance Regional Coastal Park and vested in the Esperance Shire Council. Vesting in the Council should be subject to the preparation of a detailed reserve working plan which conforms to the general guidelines and incorporates the specific management proposals presented in this report. The formation of a Regional Park for coastal management and recreation purposes has the following advantages:

- it places a manageable unit of land within the one reserve (as opposed to the present fragmentation) and relates to the other reserve proposals;
- it provides for proper management; funding can be allocated to the reserve, rather than continuing the present method where the true overall management cost is hidden in a range of activity management expenses which are paid for in other accounts (for example, rubbish collection);
- it provides for the Council to co-operate with Government agencies to obtain specialist advice and funding for the management of coastal resources (for example, Departments of Tourism, Youth and Sport and Recreation, Conservation and Environment);
- it formalises the management and development of an important natural resource in public ownership;
- it provides opportunities for encouraging public use and understanding of the coastal environment which in turn can reflect favourably on the Esperance Shire Council.

It is essential that State agencies actively support the implementation of the reserve working plan if the Regional Park concept is to succeed.

### **Town Foreshore**

The foreshore reserves between Dempster Head and Bandy Creek, with the exception of Reserves 28207 (Harbour Purposes) and 33694 (Slipway and Launching Ramp), should be amalgamated into Reserve 27318 (Recreation) and vested in Esperance Shire Council (see Appendix A and Figures 1-3). The purpose of the expanded Reserve 27318 should be changed to Recreation and Foreshore Management. New leases for the current uses on the existing reserves should be approved by the Minister for Lands within the one reserve. As discussed in Chapter 6 a local coastal management plan should be prepared for this important section of coastline to rationalise existing and future access, use and development, landscape protection and overall management. The extended Reserve 27318 will abut the new Bandy Creek harbour reserve, the boundaries of which are unavailable at the time of writing.

### **Bandy Creek**

Reserve 35201 (Public Recreation) should be vested in the Esperance Shire Council and a reserve working plan prepared (see Chapter 6).

### **Bandy Creek to Wylie Bay**

The existing vacant Crown foreshore reserve between Bandy Creek and Reserve 15238 (Camping) should be gazetted as a new reserve with the amended purpose of 'Recreation and Foreshore Management' and vested in Esperance Shire Council. Reserve 15238 should be vested in the Shire for its gazetted purpose. The Wylie Bay foreshore is part of Reserve A23825 (Mullet Lake Nature Reserve) and must remain vested in the Western Australia Wildlife Authority (WAWA). However, as recommended in Chapter 6, the foreshore area which is subjected to recreation uses could be managed co-operatively by WAWA and the Shire.



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### Funding

In the present economic climate, funding for land management programmes should be directed first to those areas which are subjected to heavy use or modification. Management costs are directly related to the resource type and degree of stability, intensity of use, and the complexity of management required. Fortunately a large proportion of the study area, in particular the large water reserve and the vegetated areas of the proposed Regional Park, can be managed using low cost broadacre management which is usually confined to access control, litter collection, fire trail construction and road maintenance on the periphery of the reserve. Areas which will need relatively high management input include the recreation sites within the proposed Regional Park and the town foreshore, while the Bandy Creek reserve can be expected to require a moderate to high management cost as the surrounding land use changes.

The question of who pays for management of natural resources which lie within the boundaries of local authorities is a vexed one, especially when the resources are of regional or State significance. Again, the System 6 Study draws attention to the need for a broad based review of funding and staffing needs in relation to open space resources throughout the State. The Study has recommended a State policy for co-ordinating open space planning and development, including the provision of finance. It is hoped that the new Coastal Management Co-ordinating Committee will be able to co-ordinate the application of funds through the various State Government agencies operating in the coastal zone.

However, the general question is unlikely to be resolved immediately and the initiatives regarding changes to reserves, vestings and the Regional Park which have been proposed in this report should proceed. The existing system of Shire management funding for areas within its control, if supplemented by appropriate State departmental grants, will be sufficient to provide for initial management and modest development in key areas. Government grants which could be used to assist in management and development, especially in the proposed Regional Park, include Tourism Development Grants, the Department for Youth, Sport and Recreation's Community Sporting and Recreation Facilities Fund, Main Roads Department Tourist Road Grants, and the Department of Conservation and Environment Beach Management Grants. Management of the town foreshore is already aided by the Public Works Department's 3:1 funding scheme for coastal protection works.

### Summary

This plan provides a framework for a comprehensive and co-ordinated approach to coastal planning and management within the study area. If this goal is to be achieved it is essential that the various proposals and recommendations contained in the plan are implemented by Esperance Shire Council and affected Government departments, especially those relating to:

- formation of the proposed Regional Park;
- preparation of detailed reserve working plans;
- preparation of a management plan for the town foreshore; and
- undertaking management and development works throughout the study area (see Table 3).

Although the management plan is a non-statutory document, many of its recommendations necessitate statutory changes. It is intended that the recently formed Coastal Management Co-ordinating Committee will provide a link between Esperance Shire Council and Government departments for the purpose of implementing this plan, including the provision of technical assistance which may be required for detailed management planning. It is also anticipated that the Esperance Regional Advisory Planning Committee will play an important role in implementation of the plan by providing a co-ordinating mechanism at the local level.

### Duration of the Plan

It is recommended that the Esperance District Coastal Management Plan be reviewed after 31 December 1988. The review will provide an opportunity to assess the implementation and applicability of the proposals contained in the plan. It is likely that some amendments may be required before that, in which case any changes should be made after consultation between Esperance Shire Council, the Department of Conservation and Environment, and other interested parties.

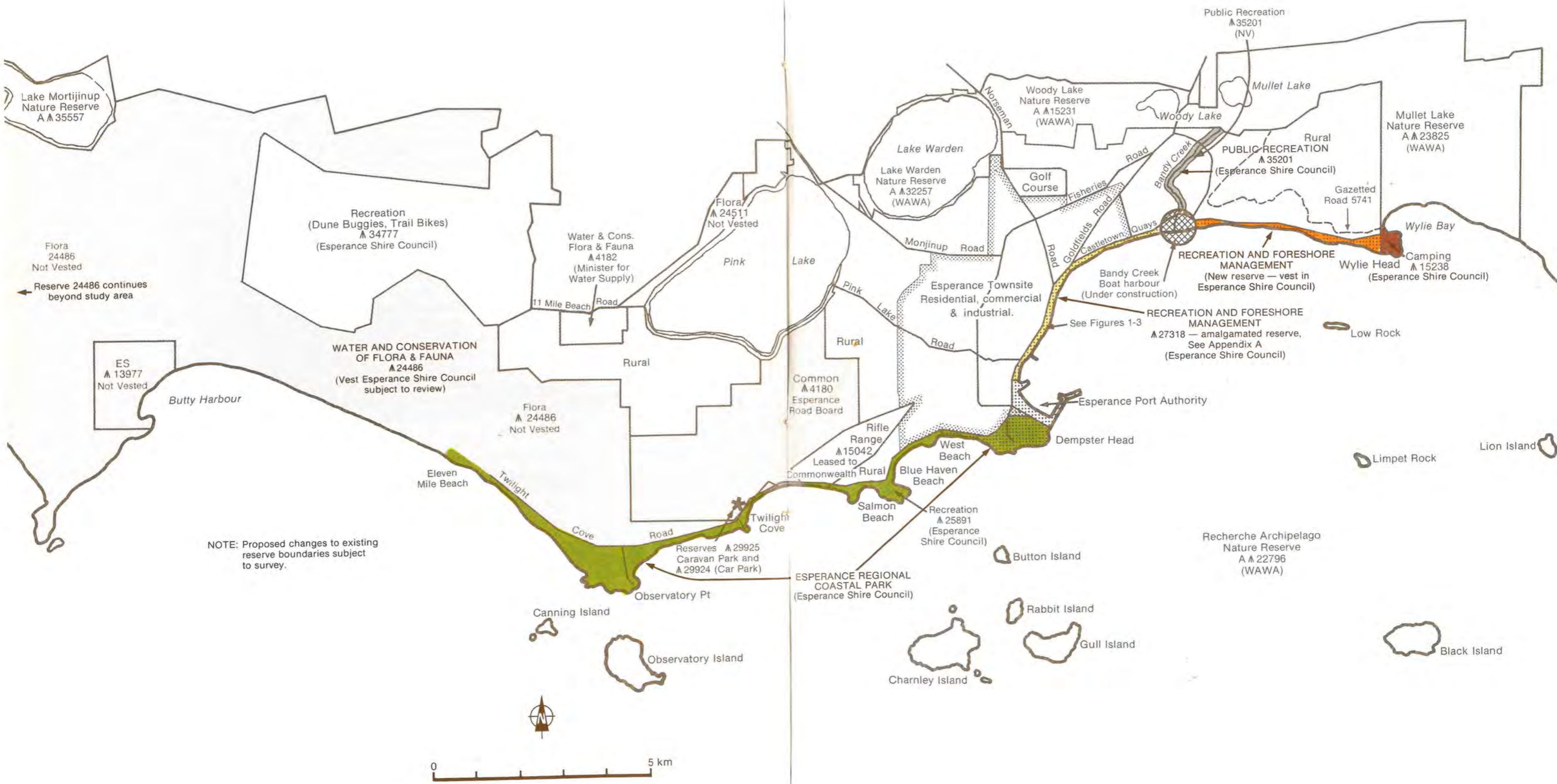


**TABLE 3 : Management Programme**

Priority	Location	Works/Developments	Planning	Purpose	Approximate Cost
A	Twilight Cove (see Appendix B)	Fencing, vehicle barriers, path construction, erosion control, landscaping, signs		Beach access control, repair of unstable areas, landscaping.	\$4000
A	West Beach (see Appendix B)	Drainage and erosion control, path construction, vehicle and pedestrian barriers, signs.		Control erosion at car parks, direct beach access, close off unstable access tracks.	\$4500 (3 areas)
A	Dempster Head (Rotary Scenic Walk)	Repair walking path (fill, sleepers, drainage control), replace existing signs.	Prepare interpretative signs for key points along walk.	Upgrade scenic walk, improve public use.	\$1500
A	Observatory Point (see Appendix B)	Drainage works, vehicle and pedestrian barriers, signs.		Control erosion along access road and car park, direct pedestrian access.	\$1000
C	Observatory Point	Construct stepped walking path from car park to beach.		Facilitate public access to beach, protect steep slope from further erosion.	\$4000
A	Salmon Beach (see Appendix B)	Vehicle and pedestrian barriers, fencing, signs.		Direct beach access, control vehicular access, formalise car park, fence and repair dune.	\$1000
A	Blue Haven (see Appendix B)	Grade and fill sections of access road and carpark, upgrade path to beach, signs, fencing.		Control vehicle access, improve road, car park and beach access, protect vegetation from vehicles and removal for firewood.	\$1500
A	Bandy Creek Reserve		Prepare a management plan.	Facilitate management and use of the reserve during and after development of residential areas and the boat harbour.	* N/K
B	Eleven Mile Beach – Pink Lake	Extend Twilight Cove Road to Eleven Mile Beach Road to form scenic loop road.	Identify fishing locations and vista points to facilitate car parking and beach access control.	Extend public use of the existing scenic road.	N/K
C	Reserve 24486	Maintain a single 4WD access track to Butty Harbour.	Monitor movement of large mobile dunes and ORV use.	Maintain Butty Harbour as a safe boat haven. Determine extent of dune movement towards freehold land and Lake Mortijinup, assess any ORV damage to vegetation.	N/K
C	North Twilight Cove (existing Reserves 4180 and 15042)		Monitor movement of large dune.	Assess extent and direction of dune movement to determine necessity of protecting residential area to north-east.	N/K
A	Town Foreshore	Fence and revegetate areas as required. Construct vehicle and pedestrian access, rationalise parking areas. Remove old fences, rubbish, etc.	Prepare management plan.	Improve management and (re)development of the town foreshore.	N/K
A	Foreshore from Bandy Creek to Wylie Head		Monitor effect of boat harbour construction on shoreline movements.	Assess degree of shoreline change to facilitate future management action. Determine viability of continuing use of the beach for vehicle access to Wylie Bay on completion of boat harbour.	N/K
A	Esperance Bay to Wylie Bay	Fence foredune, install signs, construct barrier fencing to define track through Reserve 15238 to Wylie Bay.		Control vehicle movement between Esperance Bay and Wylie Bay; protect foredune, especially in A 23825.	\$2,000-\$4,000 depending on the type and extent of fencing.
D	Foreshore from Bandy Creek to Wylie Bay.		Determine feasibility of constructing a road to Reserve 15238.	Not recommended in the short to medium term, possible future development and use of Reserve 15238.	N/K

\* NOT KNOWN





**Map 6**  
**Esperance District Coastal Management Plan**  
**PROPOSED RESERVE MANAGEMENT STRUCTURE**



## REFERENCES

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

Department of Conservation and Environment (1981), *The Darling System, Western Australia — The System 6 Study Report, Report No. 8, Western Australia.*

Department of Tourism (1976), *Esperance Visitor Survey 1975-76, 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.*

Morgan H. and Peers, R. (1973), *Esperance and Mondrain Island, Western Australia, Geological Survey of Western Australia.*

PA Australia (1981), *A Study into Recreational Boating Facilities, Vols. I and II.*

Public Works Department (1978), *Esperance Beach Investigations, Report No. C.I.S. 78/2, Western Australia.*

Public Works Department (1979), *Esperance Small Boat Harbour Investigations, Report No. C.I.S. 79/2, Western Australia.*



## **APPENDICES**



## APPENDIX A : Crown Reserves within the Study Area

Reserves	Purpose	Vested	Comments	Recommendations
24486	Flora	Not vested (NV)	<ul style="list-style-type: none"> <li>• Approximately 13 000 hectares of predominantly natural bushland and mobile dunes, extends west of study area boundary.</li> <li>• Forms major part of the Esperance Water Reserve proclaimed under the Country Areas Water Supply Act.</li> </ul>	<ul style="list-style-type: none"> <li>• Amalgamate with Reserves 13977 (ES), 4180 (Common), 29924 (Car Park), 29925 (Caravan Park) to form expanded Reserve 24486 for Water and Conservation of Flora and Fauna (see Map 5).</li> <li>• Vest in Esperance Shire for 5 - 10 years, review water resource development requirements and re-vest in Shire or other appropriate authority.</li> <li>• Excise part of reserve south of Twilight Cove Road to form proposed Regional Park.</li> </ul>
13977	Excepted from Sale	NV	<ul style="list-style-type: none"> <li>• Surrounds Butty Harbour, a safe mooring and landing for small coastal vessels.</li> <li>• Contains mobile sand dunes.</li> </ul>	Amalgamate with Reserve 24486.
34777	Recreation (Dune Buggies, Trail Bikes)	Esperance Shire	<ul style="list-style-type: none"> <li>• Landform is predominately huge mobile dunes.</li> <li>• There is difficulty in confining the permitted uses within the reserve due to its large size and the relative inaccessibility of the boundaries to any ranger staff.</li> </ul>	No change to purpose and vesting.
4180	Common	Esperance Road Board	<ul style="list-style-type: none"> <li>• Predominantly natural bushland with a large sand dune extending north from Twilight Cove Road.</li> <li>• The reserve may contain limestone (subject to quarrying areas from Mines Dept.) and rights to graze are involved.</li> </ul>	<ul style="list-style-type: none"> <li>• Amalgamate with Reserve 24486.</li> <li>• Excise area south of Twilight Cove Road to form proposed Regional Park.</li> </ul>
15042	Rifle Range	NV-Leased to the Commonwealth	<ul style="list-style-type: none"> <li>• Extends across Twilight Cove Road to low water mark.</li> <li>• The range is still being used.</li> </ul>	<ul style="list-style-type: none"> <li>• Retain as a separate reserve but land management must be in accord with adjacent Crown reserves (proposed Regional Park and expanded Reserve 24486).</li> <li>• Terminate boundary on north side of Twilight Cove Road in order to include area to south of road in proposed Regional Park.</li> </ul>
29924	Car Park	NV		Amalgamate with Reserve 24486.
29925	Caravan Park and Chalets	Esperance Shire wpl for 50 years	<ul style="list-style-type: none"> <li>• Gazetted purpose an inappropriate use at this location.</li> <li>• Proposed development not carried out by lessee.</li> </ul>	<ul style="list-style-type: none"> <li>• Revoke lease.</li> <li>• Amalgamate with Reserve 24486.</li> </ul>
25891 31540 10068	Recreation Recreation Excepted from Sale	Esperance Shire NV NV		

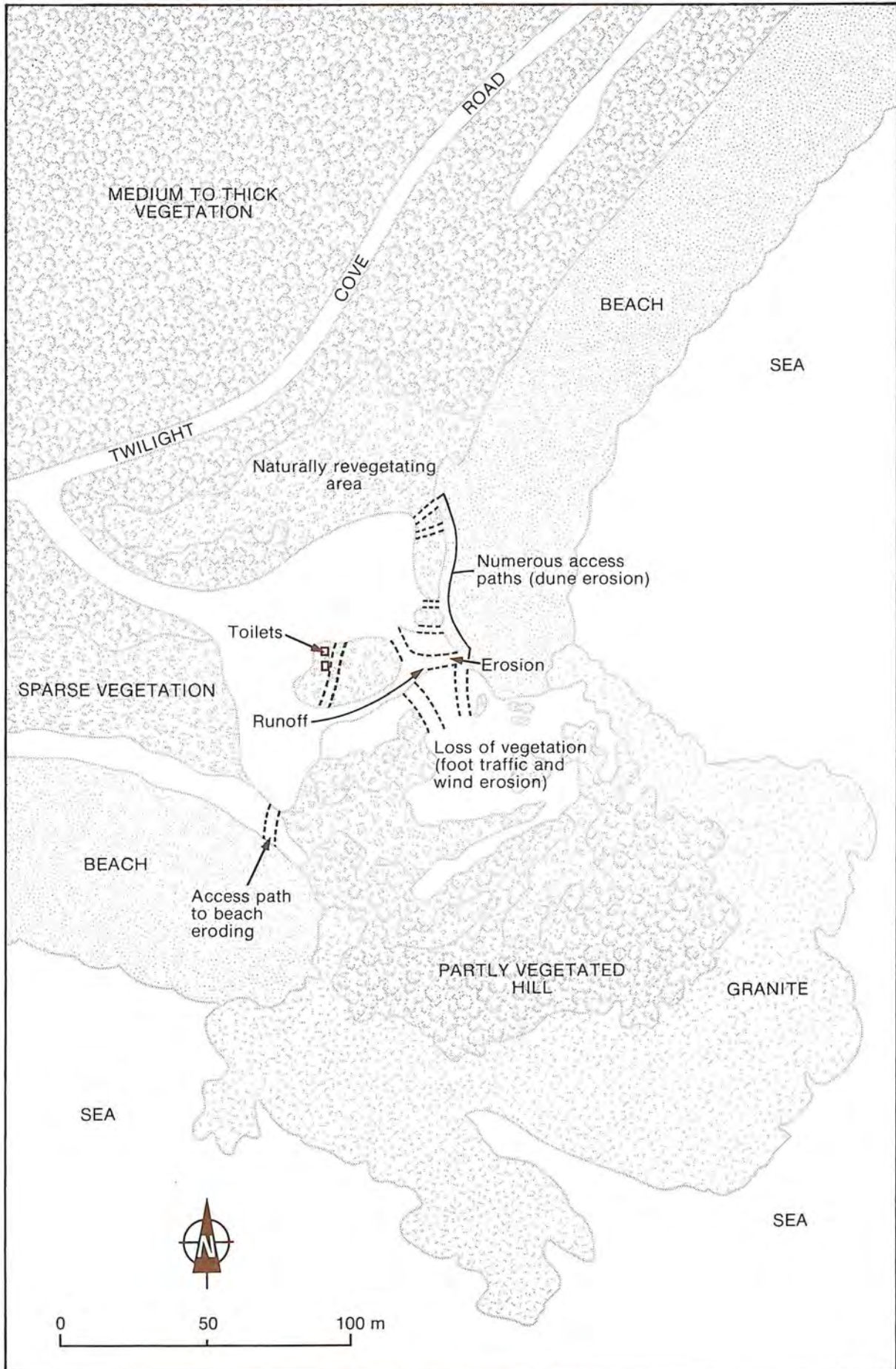


vacant Crown Land		See figure 1		
3443	Public Utility (Lighthouse)	NV	If lighthouse is required in the future a portion of the new reserve could be excised.	Amalgamate into proposed Regional Park (with portions of Reserves 24486, 4180 and 15042) and vest in Esperance Shire (subject to preparation of reserve working plan).
31112	Recreation and Lookout	Esperance Shire wpl for 21 years		
3313	Recreation	Esperance Shire		
36505	Parkland	NV		
3604	Public Utility	NV		
Roads	(a) Williamson Road  (b) McCarthy Street (c) Walker Road		Whole of road reserve, inappropriate location. Revoke unused portion. Whole of road Reserve, inappropriate location.	
28207	Harbour Purposes	Esperance Port Authority		No change.
27318	Recreation	Esperance Shire		<ul style="list-style-type: none"> <li>Amalgamate with other foreshore reserves and vacant Crown land (see below) to form new reserve (Recreation-Foreshore Management) between 28207 and Bandy Creek.</li> <li>Vest in Esperance Shire subject to preparation of reserve working plan.</li> </ul>
32135	Yacht Club Site 21 years	Esperance Shire wpl		
32048	Scout and Guide Hall Site	Esperance Shire wpl 21 years		
36564	Oceanarium and Aquatic Site	Esperance Shire wpl 21 years		<ul style="list-style-type: none"> <li>Amalgamate with Reserve 27318</li> </ul>
36993	Parks and Recreation	Esperance Shire	Small area (549lm2) between road and foreshore	
33694	Slipway and Launching Ramp	Minister for Works	Operated under control of Esperance Port Authority	No change but must be included in overall working plan for 27318 in order to rationalise existing access roads/paths and car parks.
36994	Sewerage Pumping Station	Minister for Water Supply	Site may be subject to sea erosion.	Move site elsewhere and amalgamate reserve into 27318.
Vacant Crown Land	Foreshore Reserve	NV	See Figures 2-3	<ul style="list-style-type: none"> <li>Between Reserve 27318 and Bandy Creek (future harbour reserve) amalgamate with 27318.</li> <li>Between Bandy Creek and Reserve 15238 create a new reserve for Recreation and Foreshore Management and vest in Esperance Shire.</li> </ul>
35201	Public Recreation	NV	Foreshore and waters of Bandy Creek.	Vest in Esperance Shire subject to management plan.
15238	Camping	NV		Vest in Esperance Shire.
A23825	Conservation of Flora and Fauna	WAWA	Includes Wylie Bay foreshore	<ul style="list-style-type: none"> <li>No change to vesting.</li> <li>Shire and WAWA to manage foreshore co-operatively.</li> </ul>



# APPENDIX B : Priority Management Sites

## 1. Twilight Cove

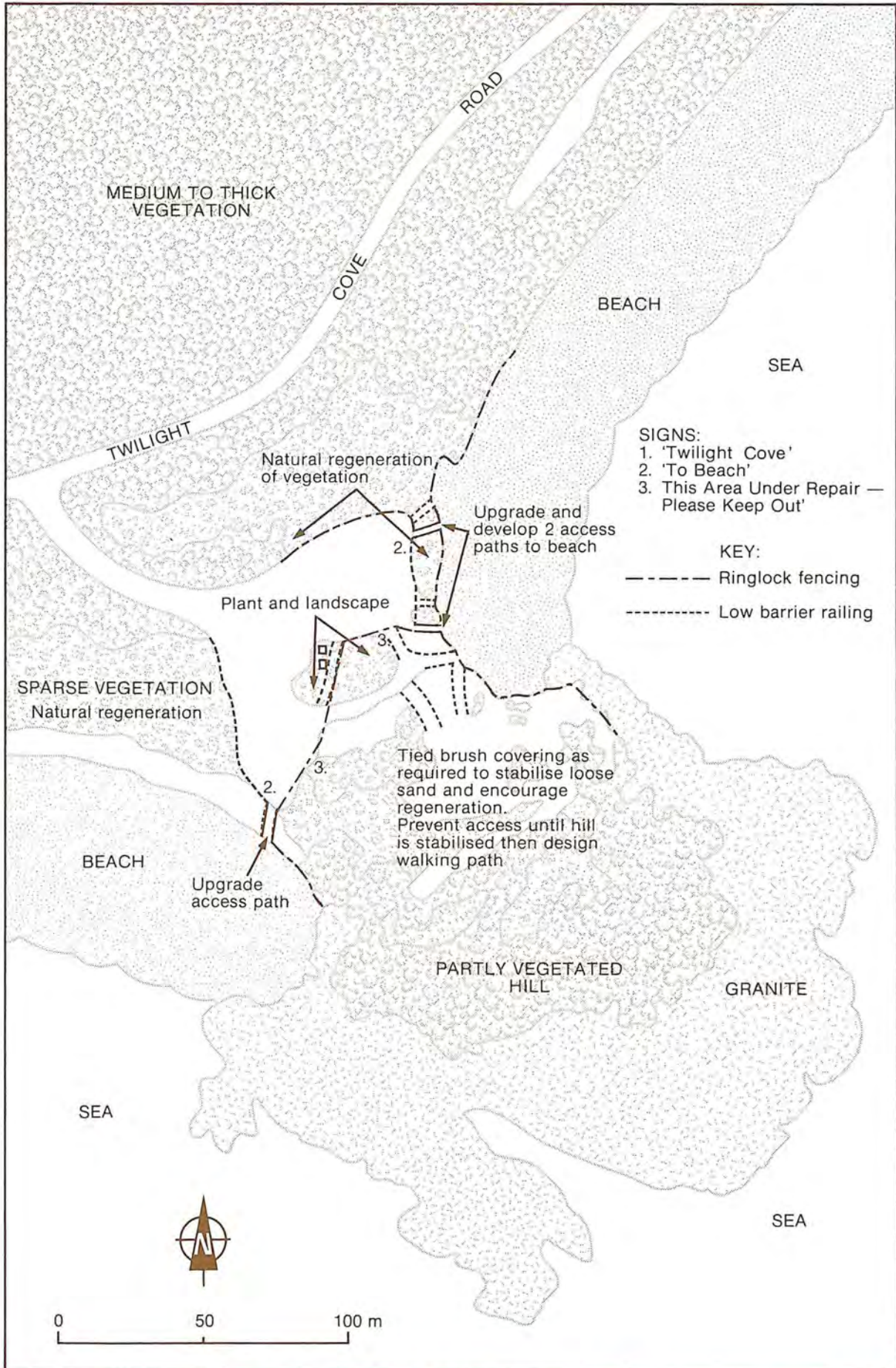


### MANAGEMENT ISSUES



# APPENDIX B : Priority Management Sites

## 1. Twilight Cove



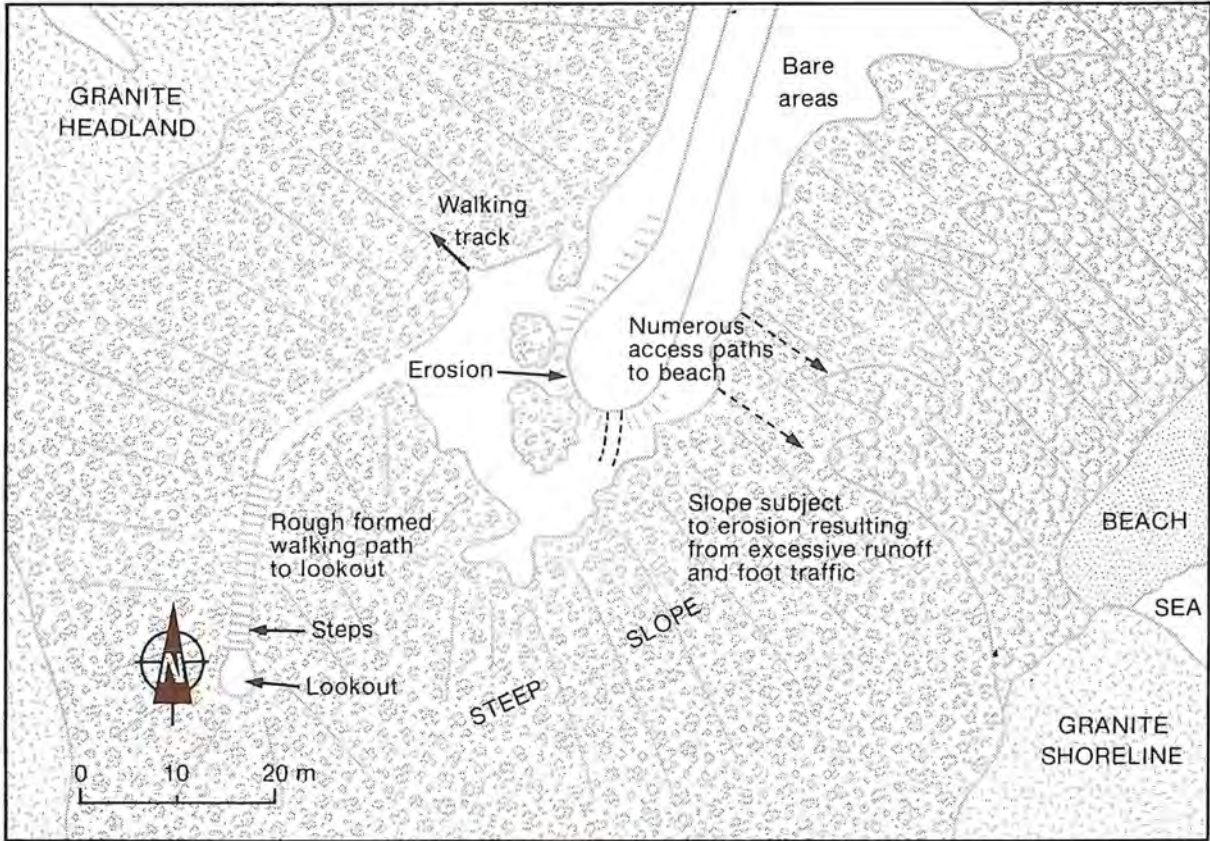
### MANAGEMENT RECOMMENDATIONS

Estimated Cost: \$4000

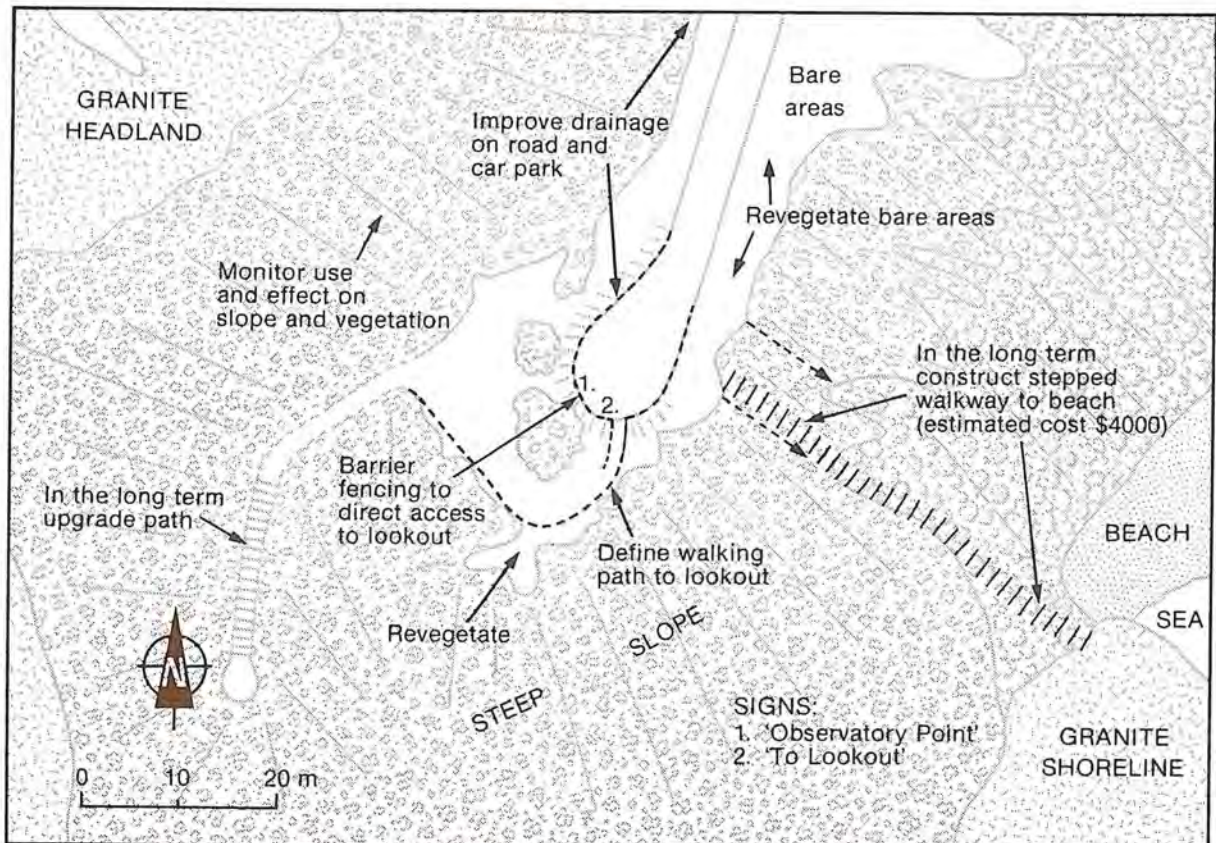


## APPENDIX B : Priority Management Sites (cont.)

### 2. Observatory Point



#### MANAGEMENT ISSUES



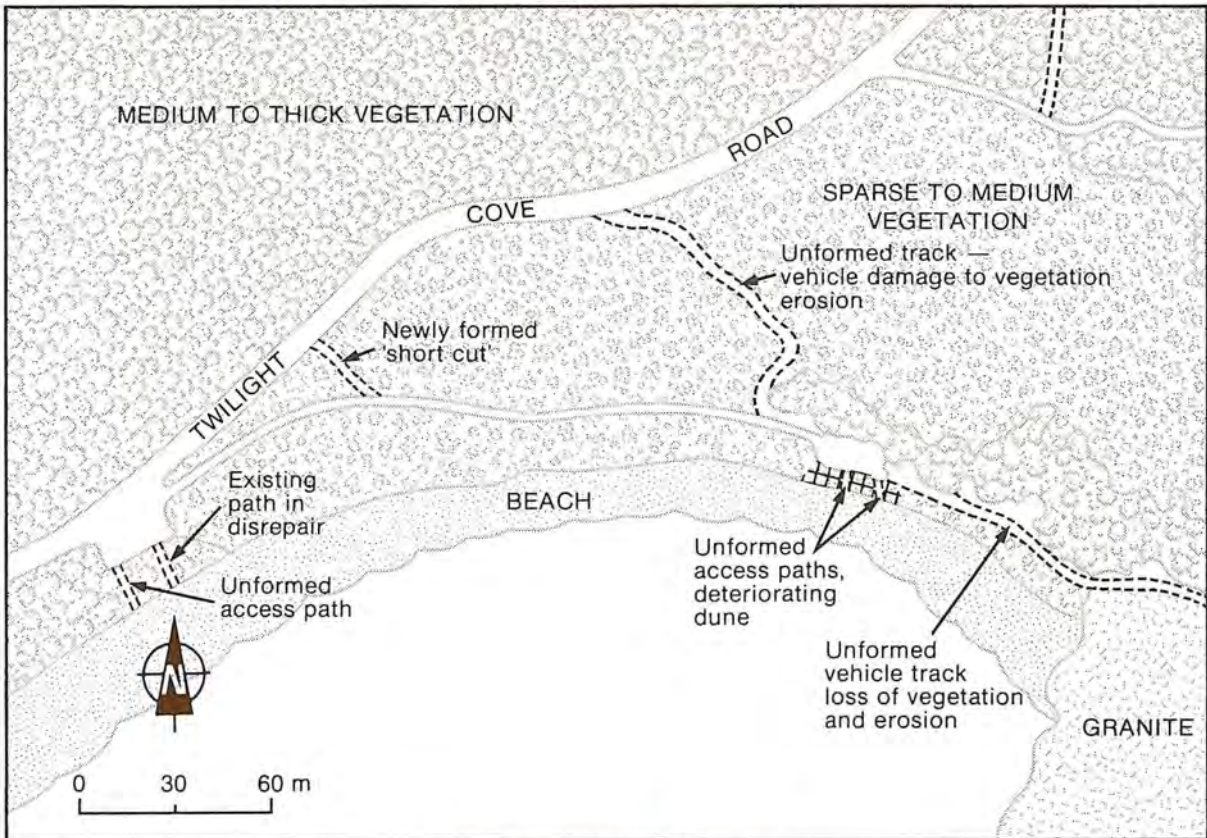
#### MANAGEMENT RECOMMENDATIONS

Estimated Cost: \$1000

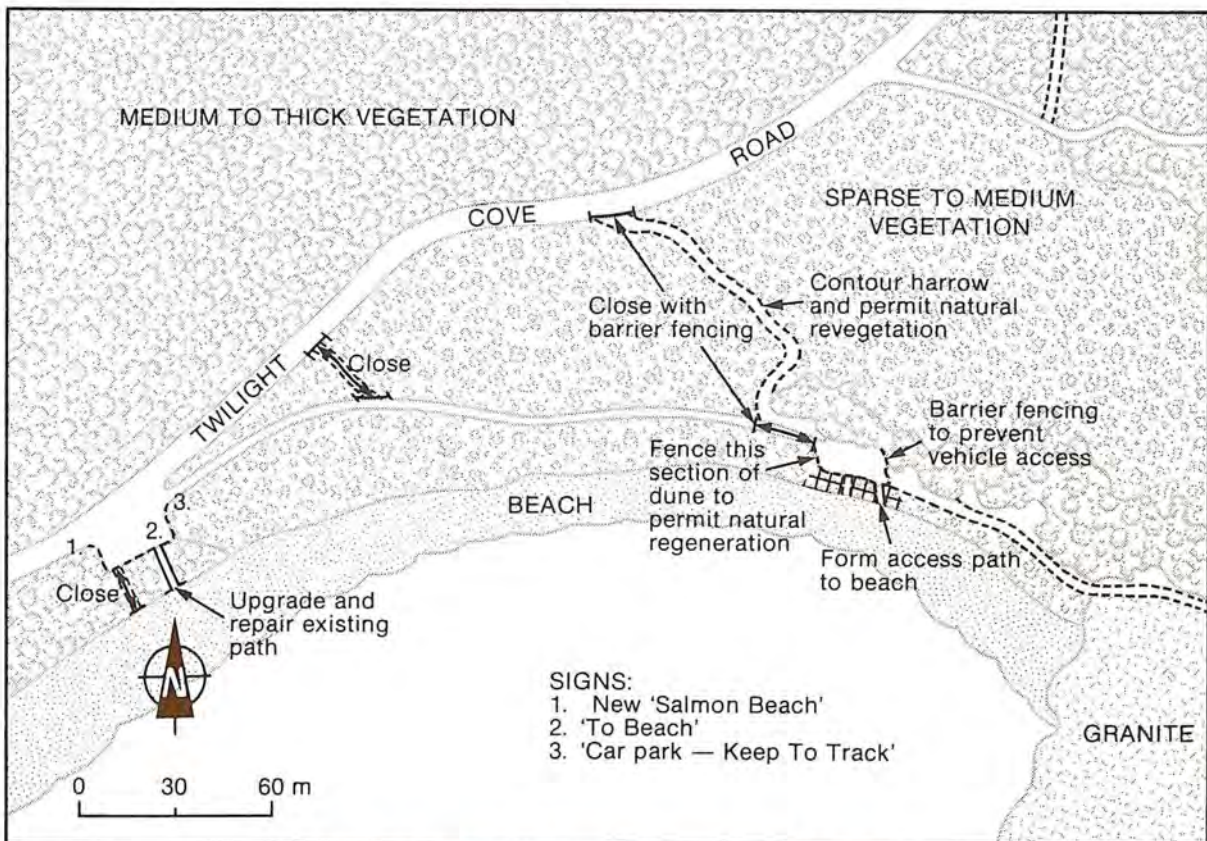


## APPENDIX B : Priority Management Sites (cont.)

### 3. Salmon Beach



**MANAGEMENT ISSUES**



- SIGNS:**  
 1. New 'Salmon Beach'  
 2. 'To Beach'  
 3. 'Car park — Keep To Track'

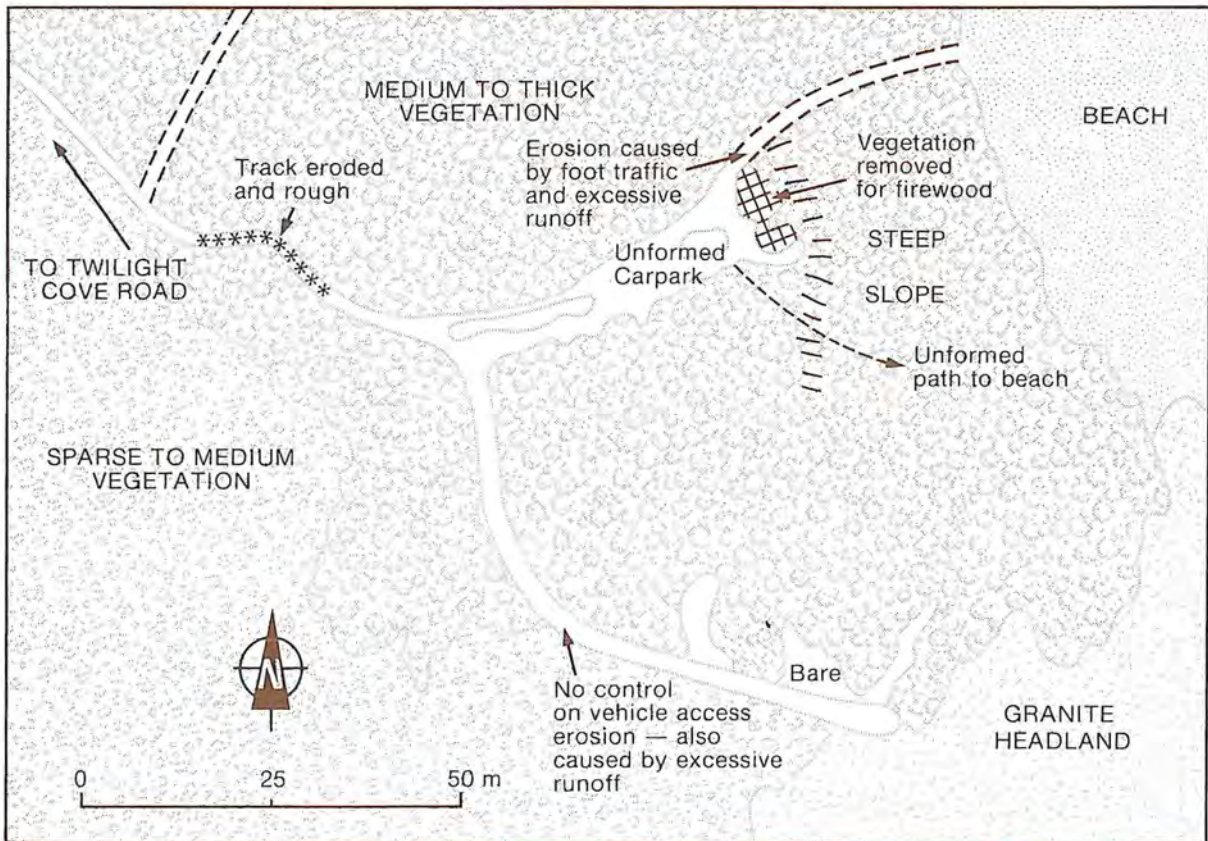
**MANAGEMENT RECOMMENDATIONS**

Estimated Cost: \$1000

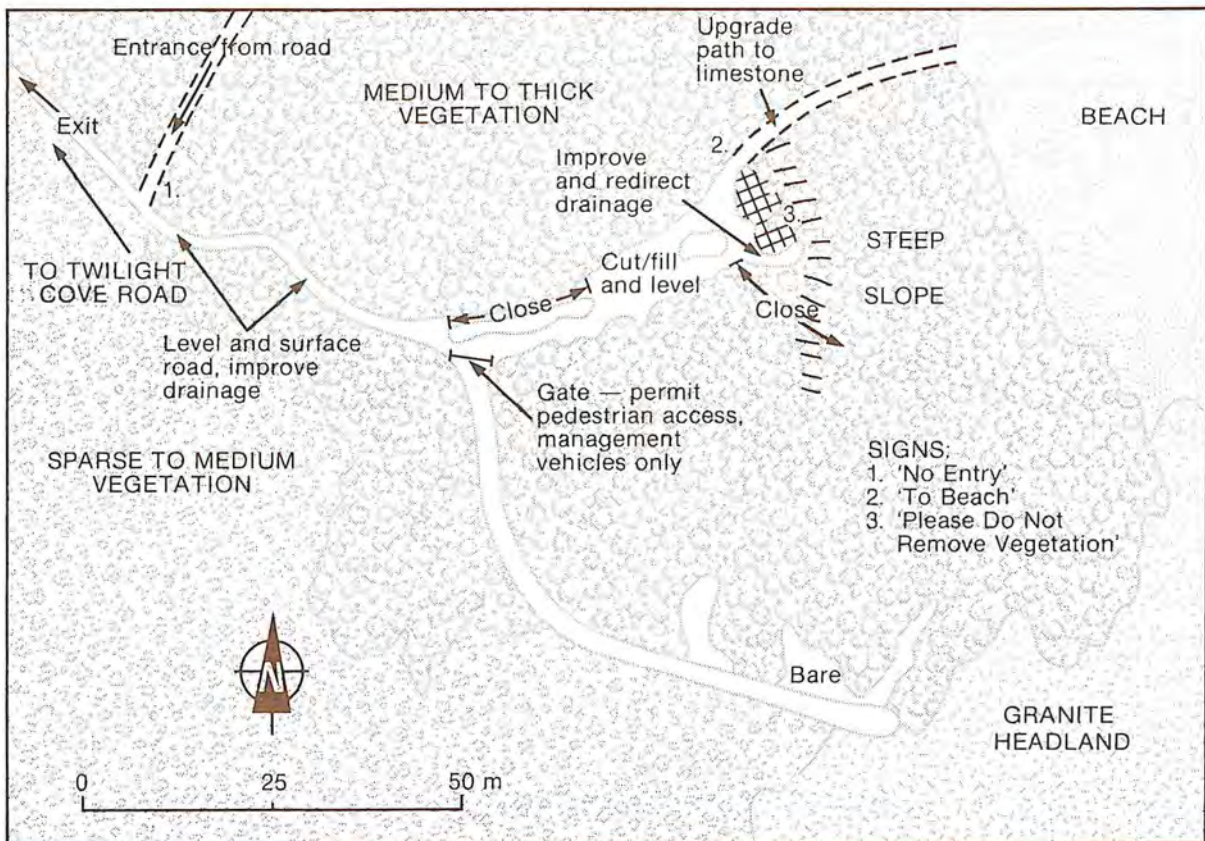


# APPENDIX B : Priority Management Sites (cont.)

## 4. Blue Haven Beach



**MANAGEMENT ISSUES**



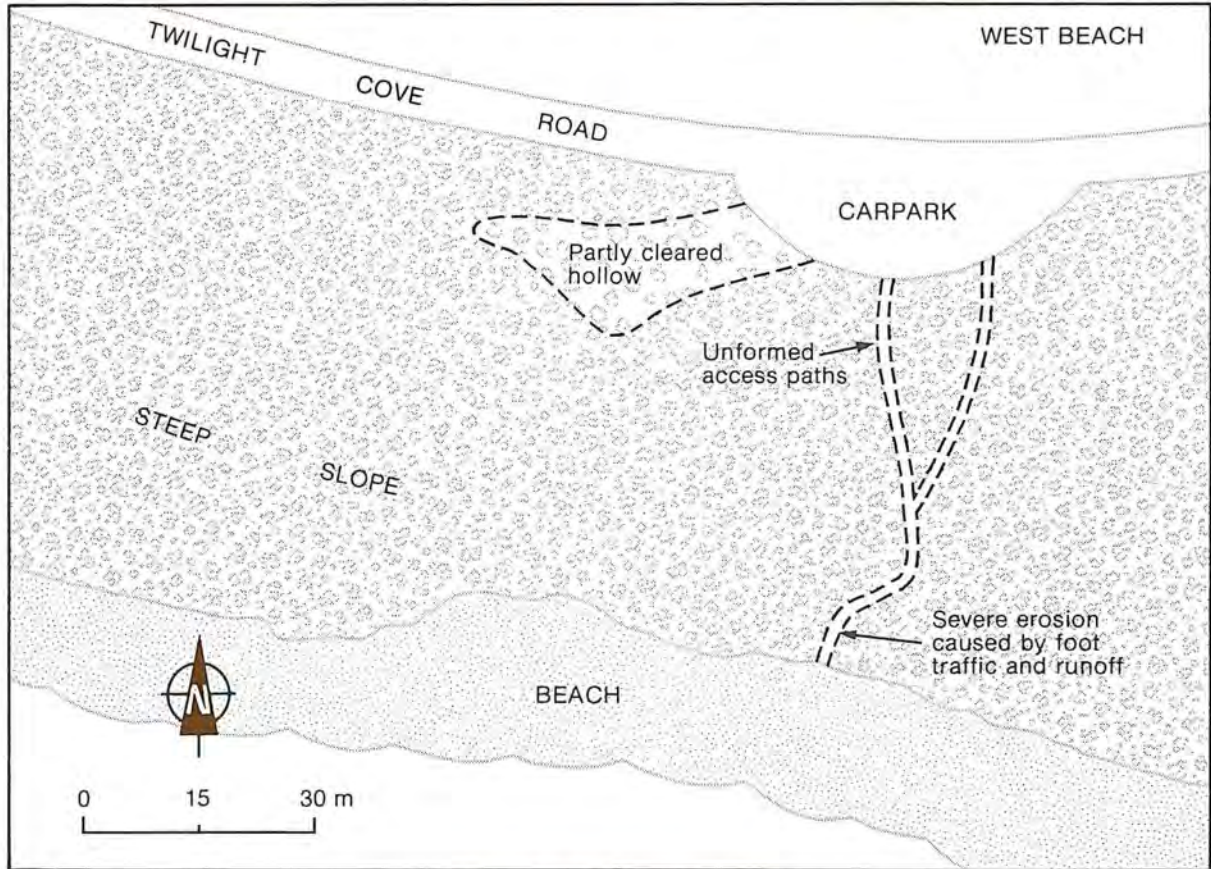
**MANAGEMENT RECOMMENDATIONS**

Estimated Cost: \$1500

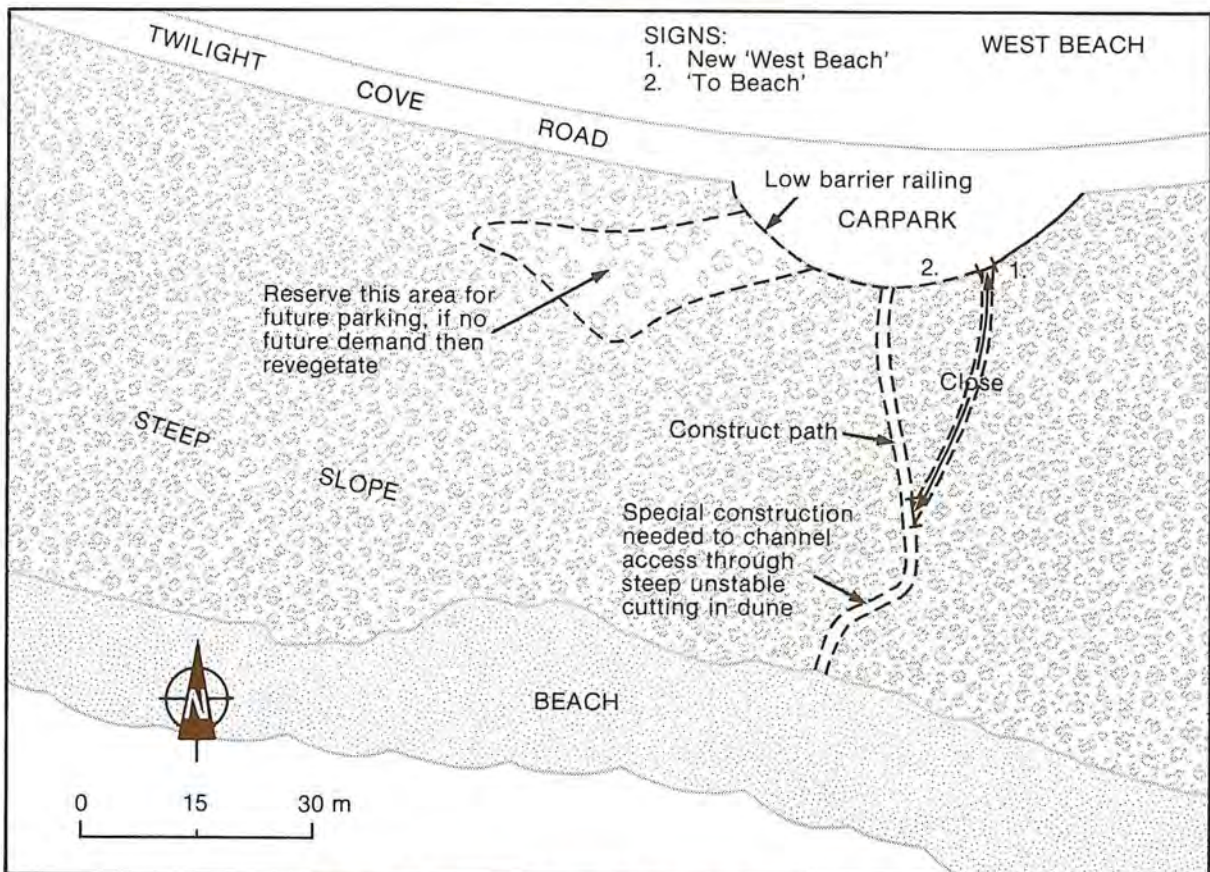


## APPENDIX B : Priority Management Sites (cont.)

### 5. West Beach



#### MANAGEMENT ISSUES



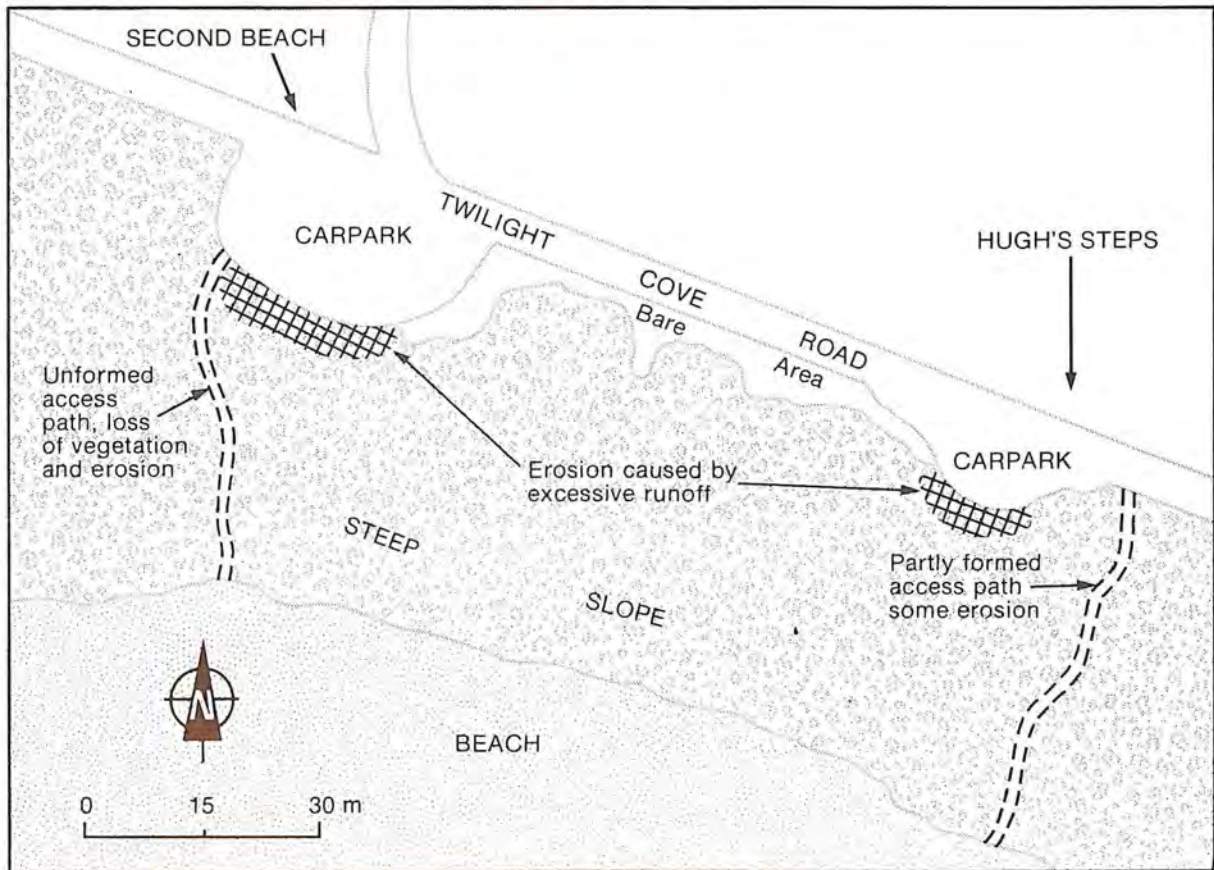
#### MANAGEMENT RECOMMENDATIONS

Estimated Cost: \$2500

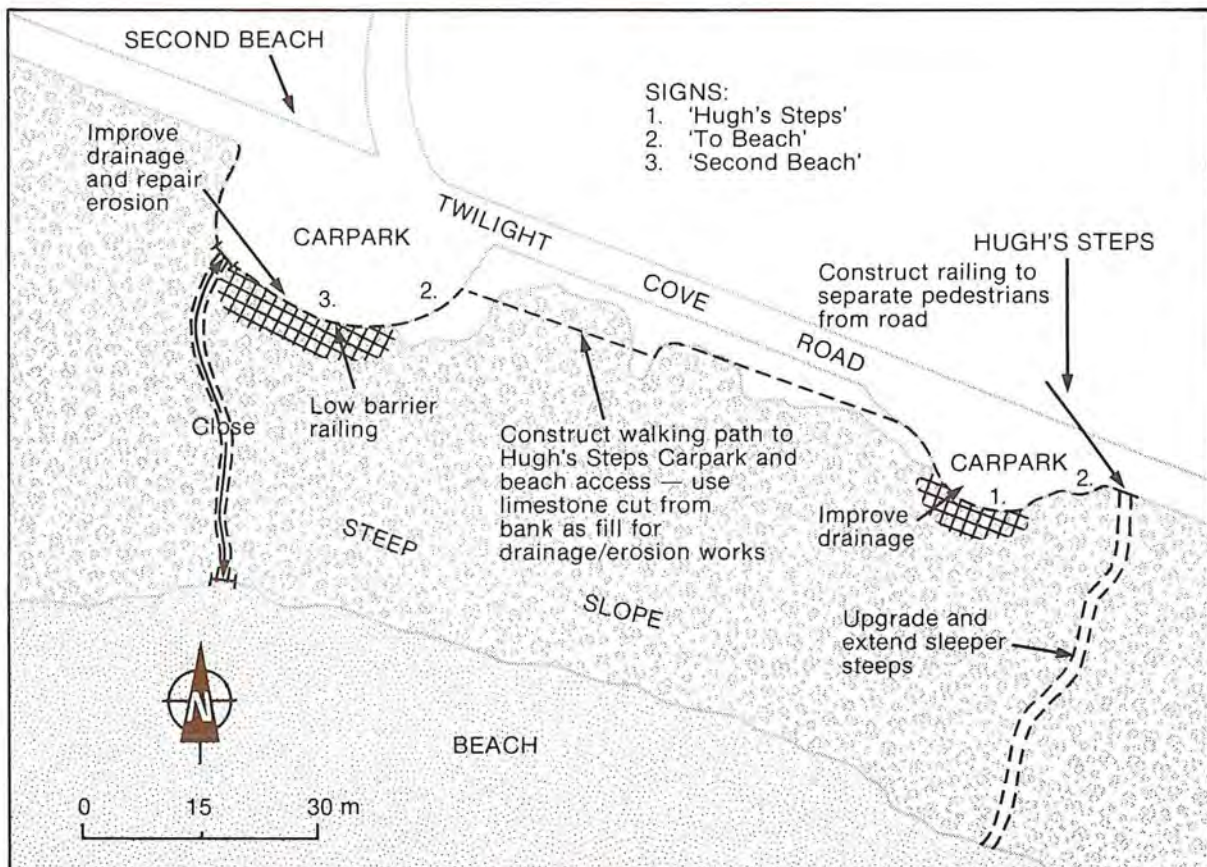


## APPENDIX B : Priority Management Sites (cont.)

### 6. Second Beach



#### MANAGEMENT ISSUES

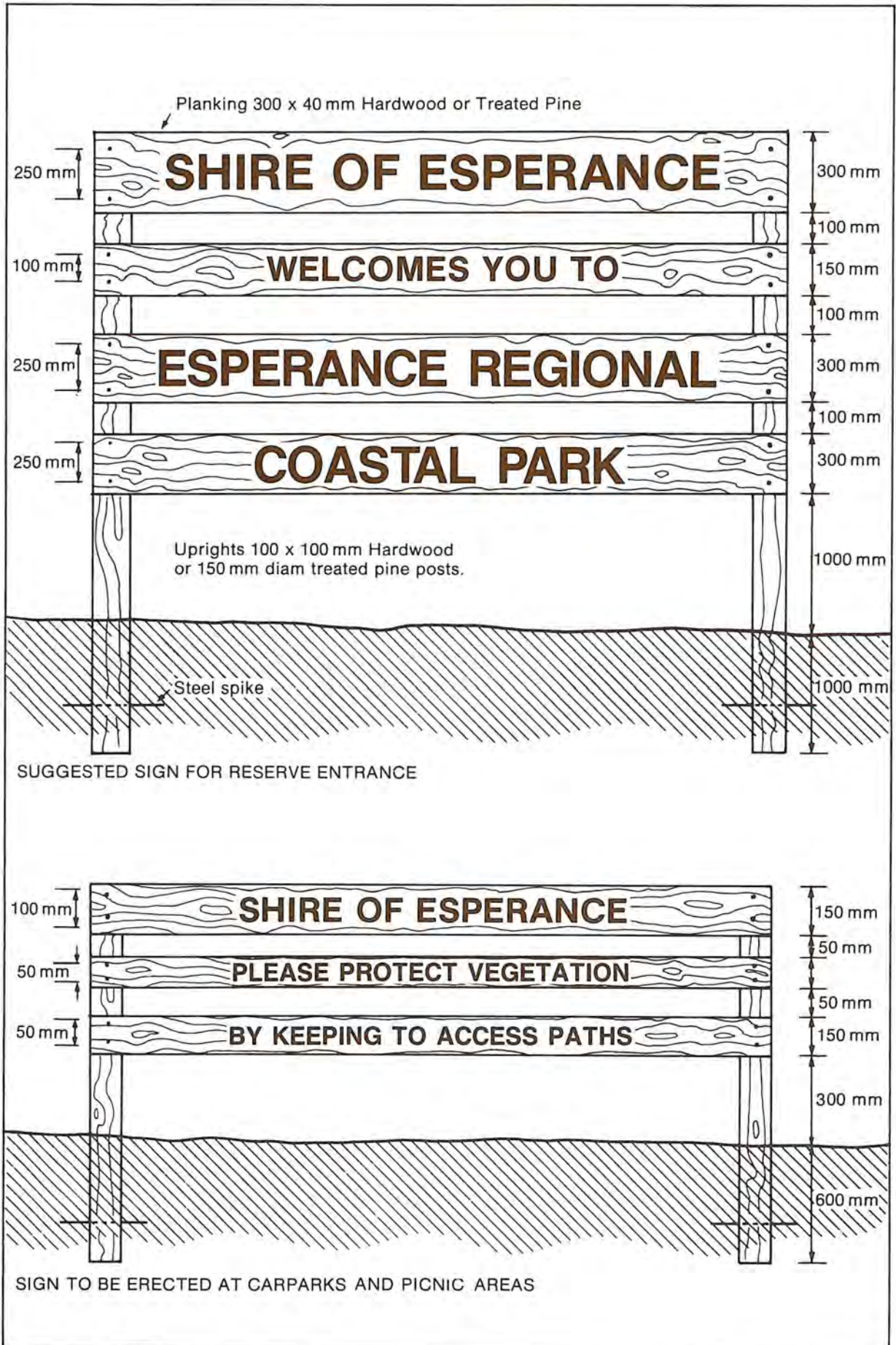


#### MANAGEMENT RECOMMENDATIONS

Estimated Cost: \$2000

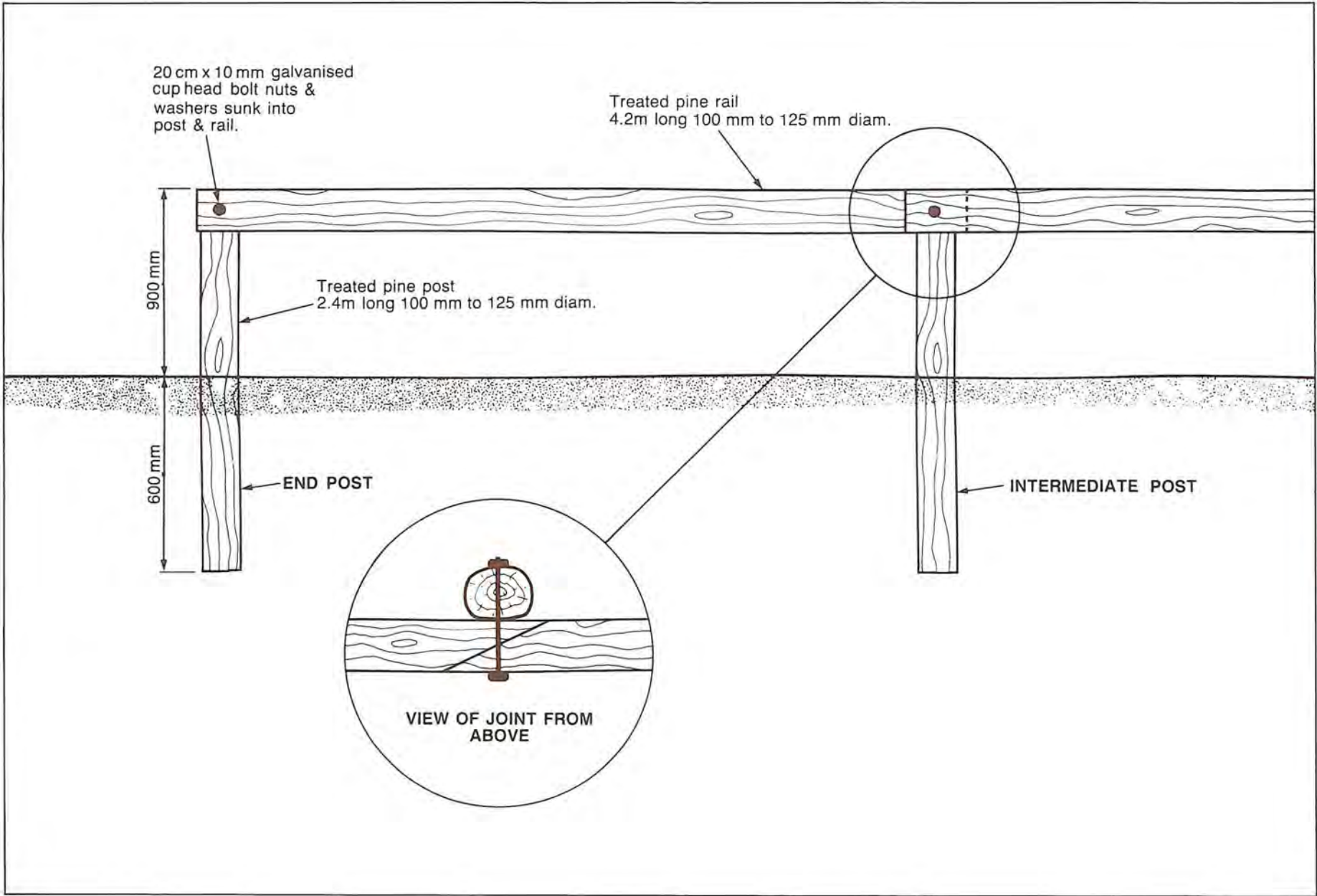


## APPENDIX C : Signs



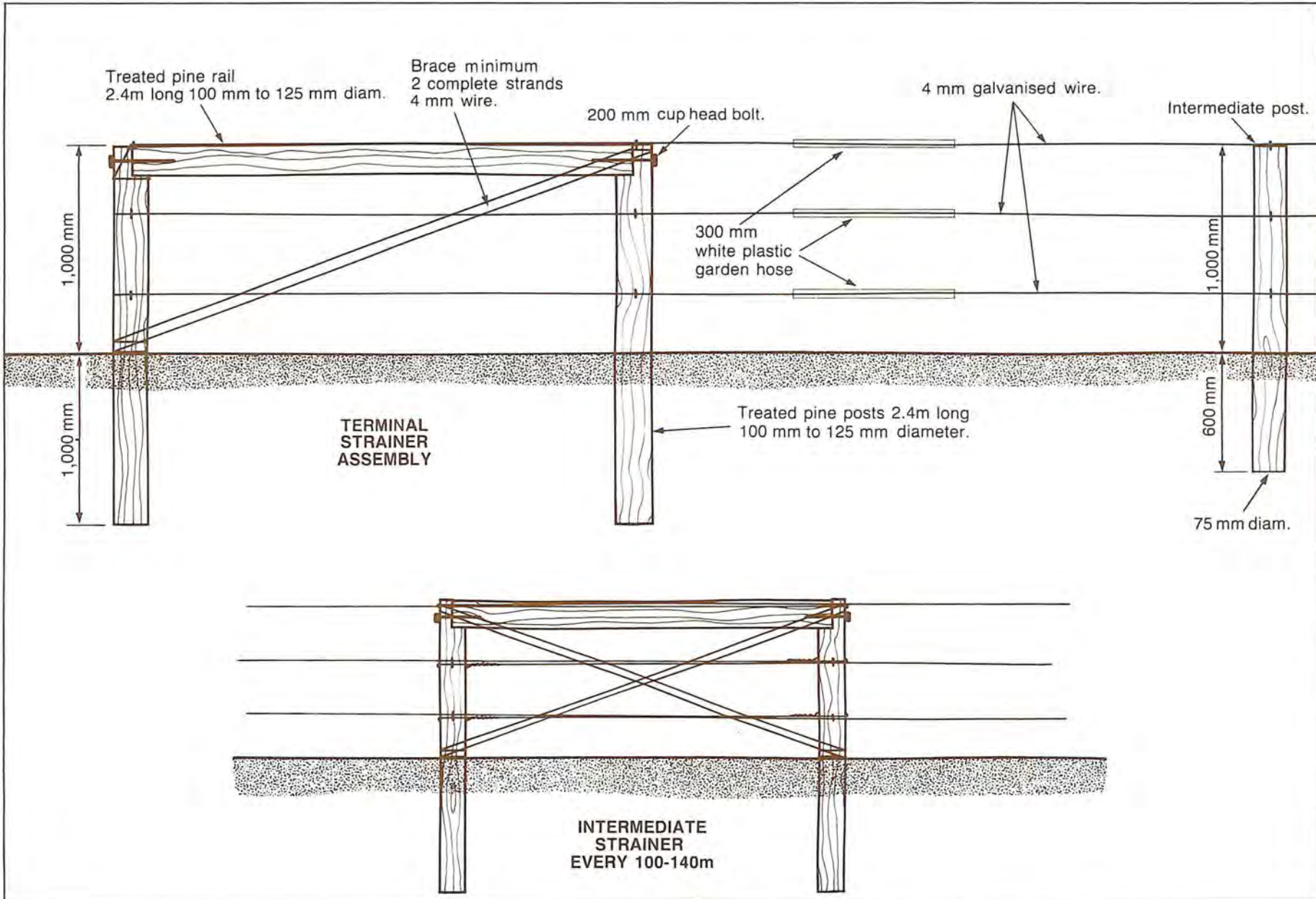


**APPENDIX D1 : Post and Rail Fence**

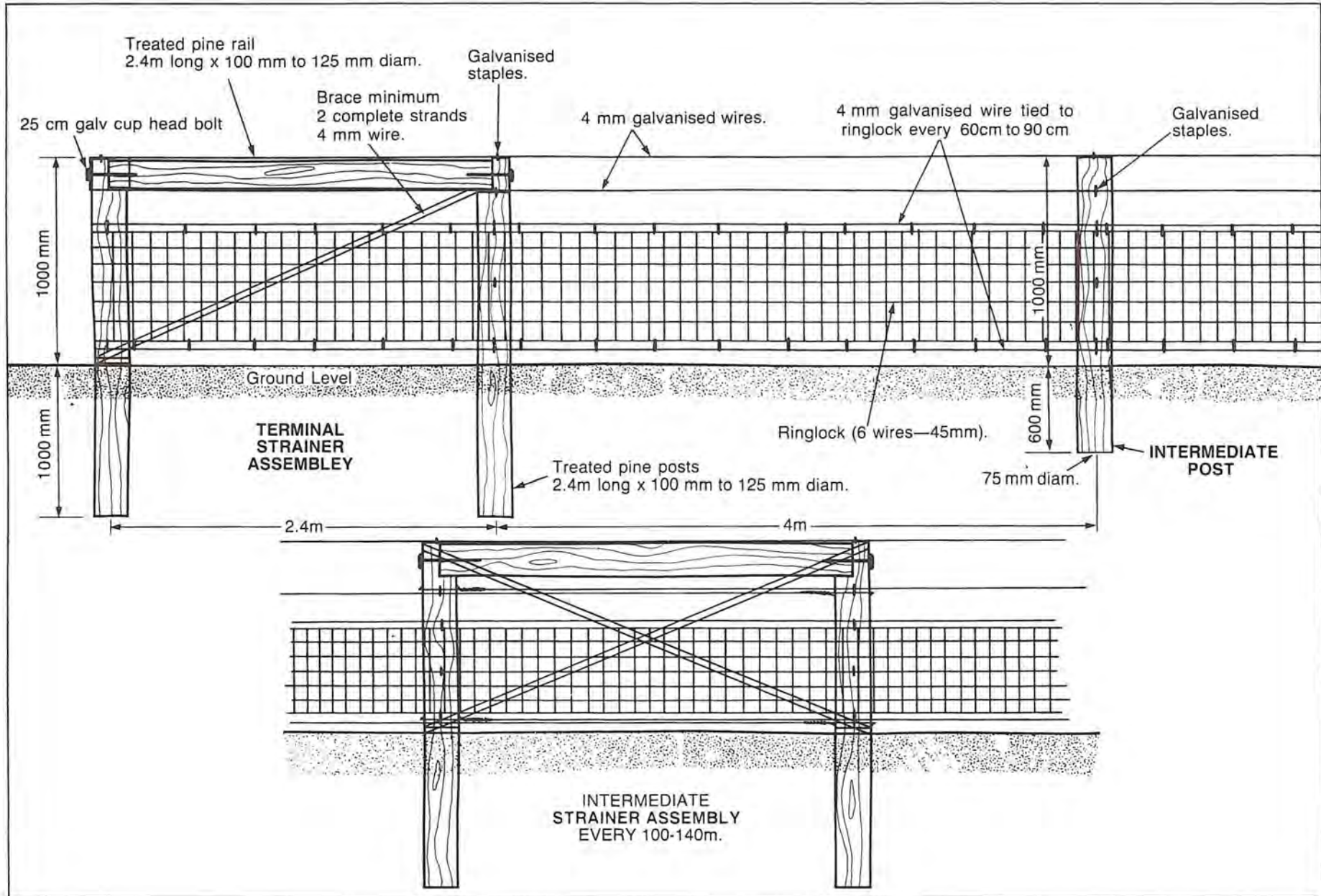




**APPENDIX D2 : Post and Wire Fence**

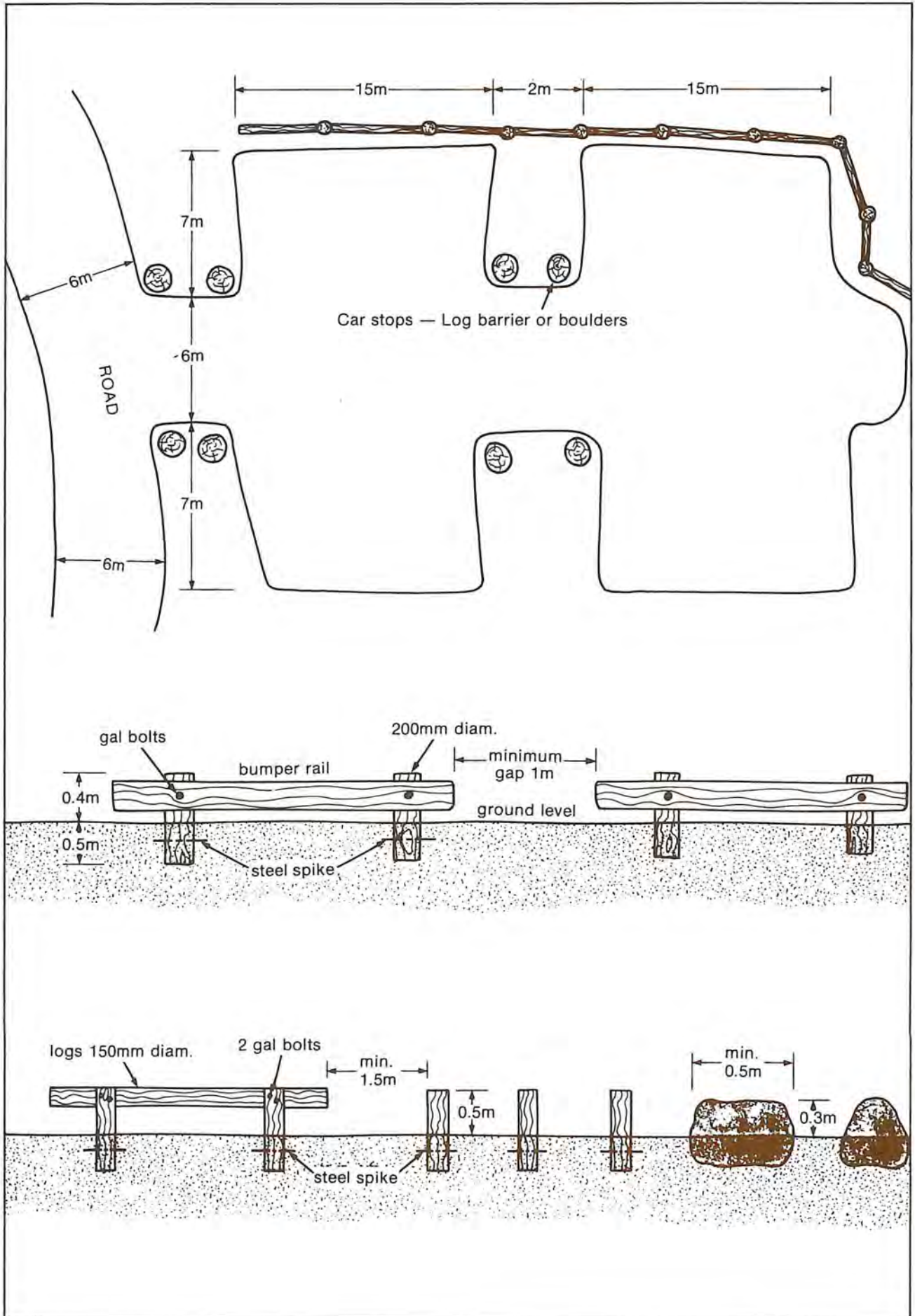






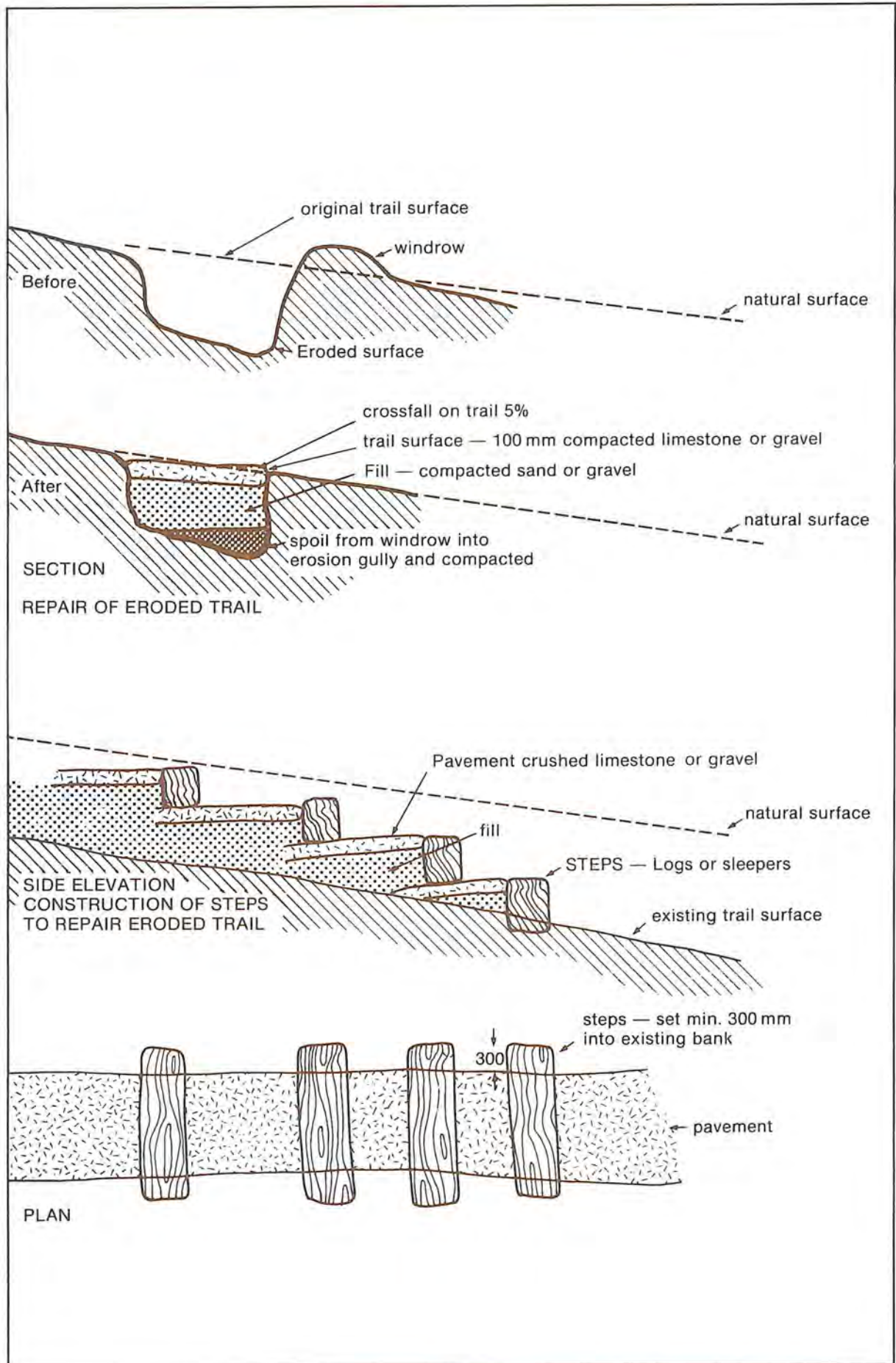


# APPENDIX D4 : Vehicle Barriers



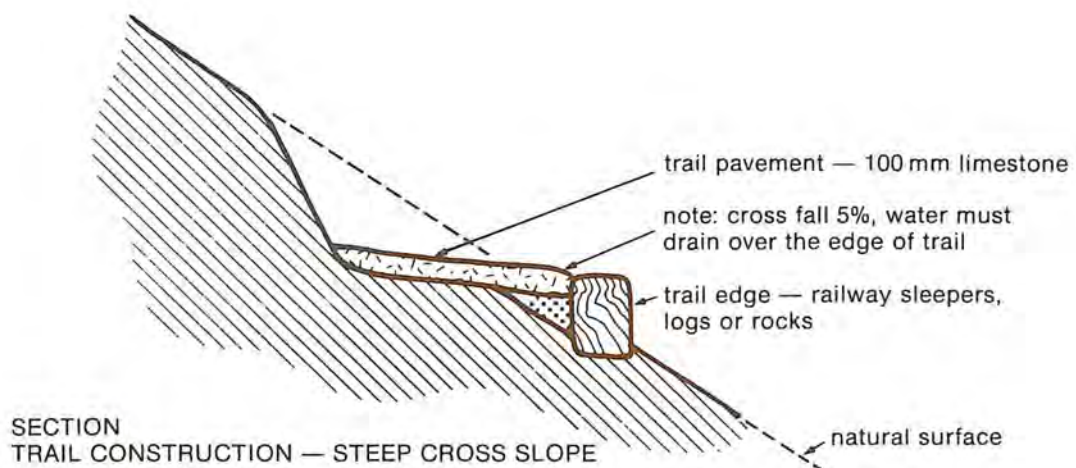
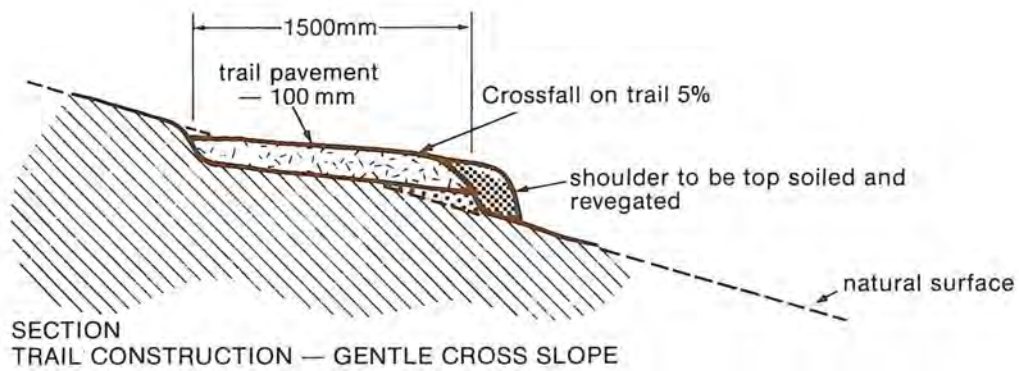
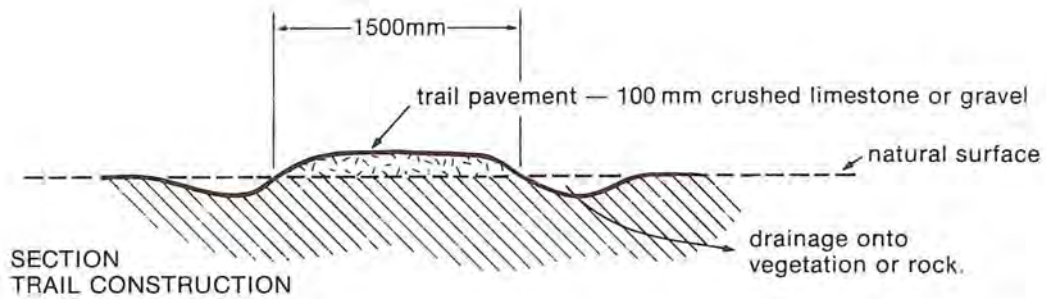


## APPENDIX E : Trail Construction



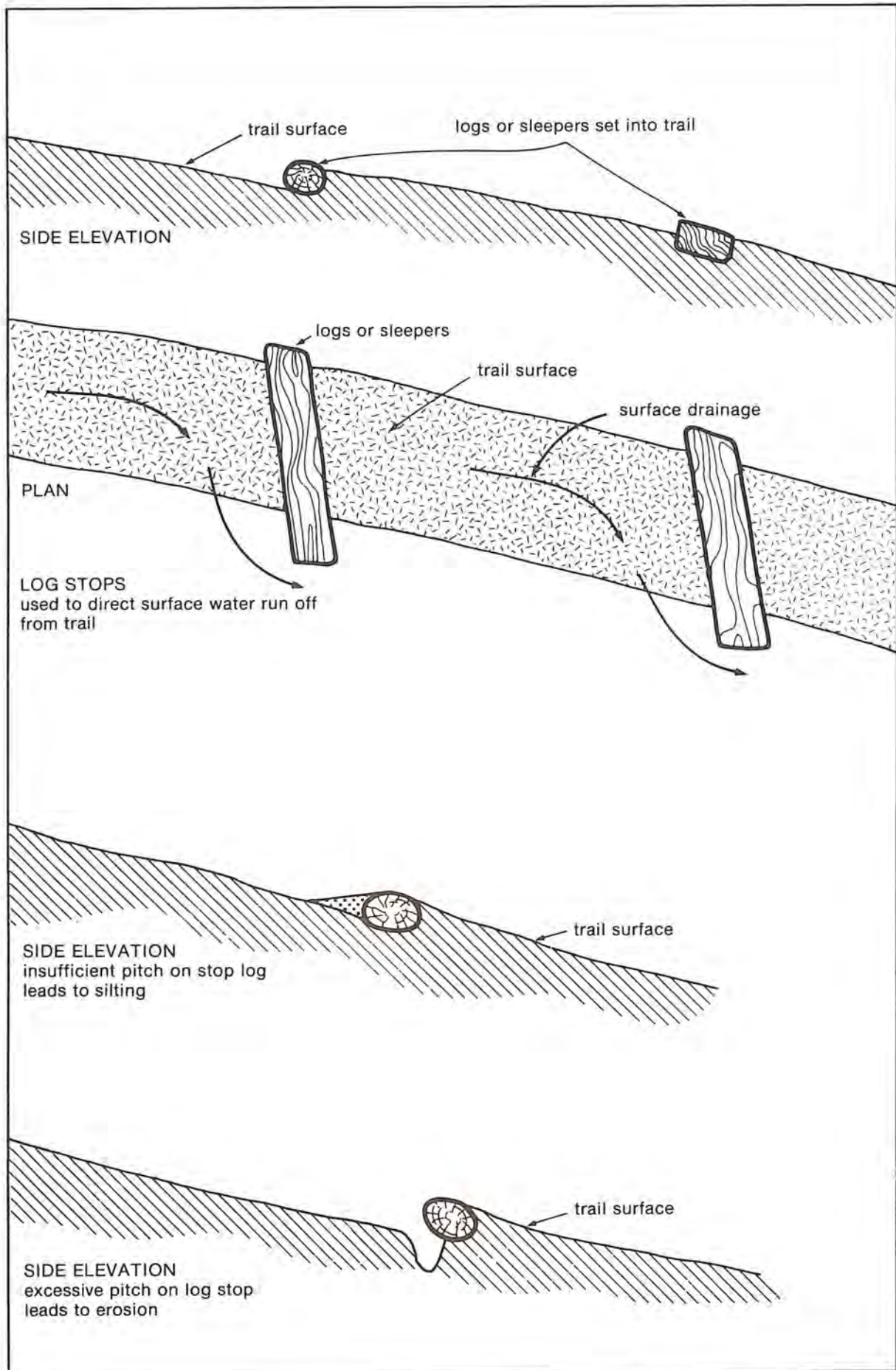


## APPENDIX E : Trail Construction (cont.)





## APPENDIX E : Trail Construction (cont.)





## **APPENDIX F: Outline for Reserve Working Plan**

### **1. INTRODUCTION**

Name/Location/Area of Reserve

Purpose of Reservation/Date/Management Authority

Characteristics of Boundaries/Tenure and Management of Adjoining Land

### **2. NATURAL RESOURCES OF THE RESERVE**

Topography/Natural Drainage/Waterways

Geology and Soils (including dunes, beaches, etc)

Climate

Vegetation (including fire history, disease, noxious weeds, etc)

Wildlife (fauna, avifauna, pests, etc)

Water Resources

Minerals and Construction Materials

### **3. EXISTING USE AND MANAGEMENT**

Past and Present Uses/Facilities

Access (to and within the Reserve, including use of off-road vehicles)

Current Management Controls and Programmes (including outstanding proposals for improvements, staffing, etc)

### **4. ASSESSMENT OF MANAGEMENT NEEDS**

Pressures for Future Use (further development of existing uses plus possible new uses)

Identification of Sensitive/Robust Areas (ability of the reserve to cope with intensified usage without severe environmental damage, and the need for management to prevent such damage).

(Large reserves only) Division of the Reserve into Management Units (areas with similar landscape characteristics and/or ability to cope with likely usage)

Adequacy of Existing Management (need for additional controls, resources, etc.)

### **5. MANAGEMENT PROPOSALS**

Goals and objectives

(Larger reserves only) Structure Plan (identifying the overall pattern of proposed uses/facilities/improvements/access and parking)

Proposed Uses and Facilities

Proposed Pattern of Access (roads, parking areas, footpaths, ORV tracks, etc)

Fire Management

Soil Conservation/Erosion Control

Management of Wildlife and Vegetation

Landscape Protection/Rehabilitation

Reserve Maintenance (including inspection, litter control, etc)

Visitor Services (information, etc)

### **6. IMPLEMENTATION**

Priority Works/Management Programmes (5 years)

Proposals for Staffing/Expert Assistance

Proposed Sources of Funding

Proposed By-Laws/Regulations/Lease Conditions, etc

### **MAPS AND DIAGRAMS**

A. Location/Boundary/Key Features of Reserve

B. Management Units (where applicable)

C. Structure Plan (where applicable)

D. Concept Plans for Key Areas/Sites (including preliminary works drawings where applicable)



