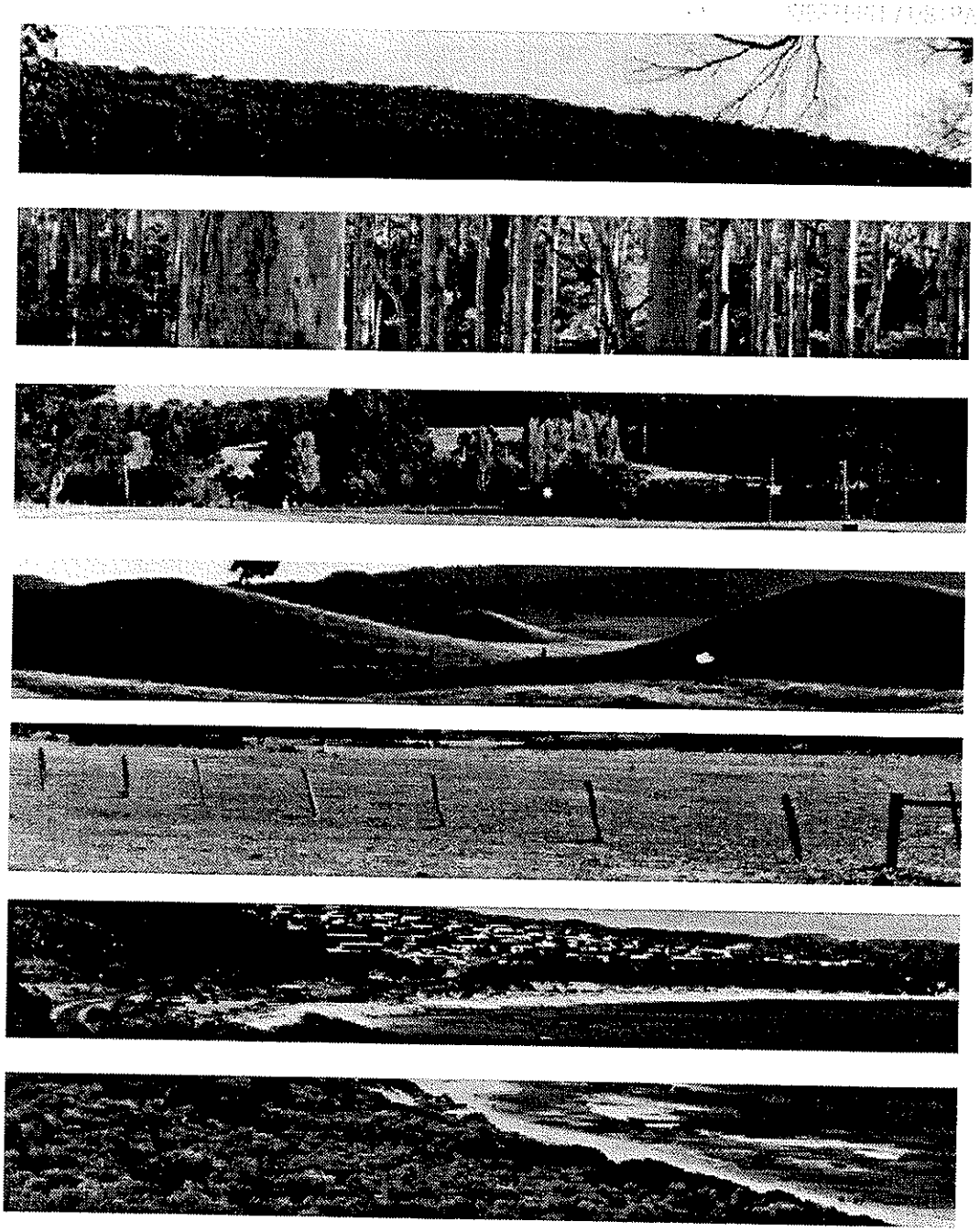

LEEUWIN - NATURALISTE LANDSCAPE ASSESSMENT STUDY

STAGE 1 REPORT

LEEUWIN - NATURALISTE RIDGE PLANNING REVIEW

1997

LEEUWIN-NATURALISTE LANDSCAPE ASSESSMENT STUDY

STAGE 1 REPORT

Prepared for the

LEEUWIN-NATURALISTE RIDGE PLANNING REVIEW

By the

Department Of Conservation and Land Management

1997

FOREWORD

The Leeuwin-Naturaliste region is well known for its rich mosaic of agricultural land uses and remnant vegetation, spectacular coastline, the dominant and dividing 'ridge', magnificent stands of karri, karst features, and coastal and inland settlements. It has a unique character and identity, it contains a high concentration of significant natural and cultural features, many of state significance, and offers outstanding opportunities for people wishing to experience the special nature of the area. The area has become one of the best known and developed tourist destinations in the state and contains the state's most visited national park.

People are attracted to the region for a variety of reasons and similarly they respond to the natural and cultural features in a variety of ways, which is reflected in the activities that they undertake and the different types and patterns of existing development. This interplay between existing natural and cultural characteristics, and the perceptions, experience and enjoyment people derive from them creates the 'landscapes' of the Leeuwin-Naturaliste region. These landscapes have been described variously as 'local character', 'features', 'identity', 'beauty', '*ambiance*', 'heritage', amenity' and 'attractiveness'. They are extremely important for maintaining the quality of life, sense of place and history, understanding of natural and cultural processes, and the way of work and recreation of all those who live in and visit the region.

The importance of landscape values in the Leeuwin-Naturaliste Ridge area has been expressed by both the local community and planning agencies in a number of ways. The need to protect landscape values was a constant theme in comments made by local people during the preparation of the Statement of Planning Policy and other planning documents before it. There is strong sentiment in the community that future developmental changes should protect existing natural and cultural characteristics by either a sensitive and sustainable response to these features or no development at all. There is concern about 'loving the area to death', that the very features that attract people to the area are being lost as development increases to cater for the growing influx of people.

As a response to this concern, local planning schemes and strategies have discussed and incorporated landscape values in various ways and have clearly demonstrated the intent of protecting these values. Planning appeals have placed considerable weight on landscape values in the course of making land use decisions. Various landscape studies have been completed in the policy area to identify landscape values and to assess individual developments, and many individual property owners have attempted to protect these values through sensitive planning and design.

For the future, there is a clear need for a consistent, comprehensive and systematic approach to landscape assessment and management across the entire Leeuwin-Naturaliste region. It is vital that landscape values are identified, understood, assessed and mapped, that impacts on them are identified, and that methods are defined for determining and sensitively managing both the values and impacts, keeping in mind other resource values of the region. These are the objectives of landscape management and the basis for this study.

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PART ONE - INTRODUCTION

Part One of the report describes how the study was initiated, its objectives, and what it covers in terms of area and values assessed. The structure of the report is also briefly outlined.

1.1 STUDY BACKGROUND

The increased popularity of the Leeuwin-Naturaliste region as a place to live and visit and the consequent competing land use demands have prompted the Western Australian Planning Commission and the Shires of Augusta-Margaret River and Busselton to prepare a Statement of Planning Policy (SPP). The purpose of the SPP is to provide the strategic planning framework for the policy area for the next 30 years and, through a vision, objectives, policy statements and land use strategy, to provide guidance and certainty to those involved in land use changes.

This landscape assessment study was requested during the preparation of the SPP, firstly, because landscape was such a prominent issue in the region and, secondly, because of the need for a consistent, comprehensive and systematic approach to landscape assessment and management across the entire Leeuwin-Naturaliste region. A number of landscape assessments have already been undertaken: broadscale Visual Resource Mapping of the entire region by CALM; the western half of the Shire of Augusta-Margaret River (James 1992); the northern section of the Caves Road environment (James 1995); the Leeuwin-Natualiste National Park (CALM 1989); the Cape Naturaliste area; and project level assessments for Bunker Bay, 'Ridgelands', Smiths Beach, Wyadup, Injidup, Prevelly Park and Hamelin Bay. These assessments have had a range of purposes and consequently, have been conducted at a range of scales, using a range of techniques, and have produced different types of results with limited direct application to the SPP.

This study commenced in early 1996, builds on the work of previous assessments, uses a procedure which is applied systematically across the study area, and provides results which apply directly to the SPP and can be used for a range of future planning purposes.

1.2 STUDY PURPOSE

The purpose of the *Leeuwin-Naturalsise Landscape Assessment Study* is to provide the information necessary to manage landscape values in the region.

Objectives for the study were:

- identify and assess landscape values;
- establish objectives for the management of these values;
- identify potential impacts on these values;
- provide a framework for assessing impacts and evaluating development proposals;
- provide a procedure for sensitively managing landscape values and development;
- provide guidelines, policies and management recommendations for land use planning, in particular for the SPP.

1.3 STUDY AREA

The study area is the same as the policy area of the Statement of Planning Policy (see Map 1). It includes 'the Ridge', as is commonly called, which is a dominant landform projecting into the Indian Ocean in the south-west corner of Western Australia, The ridge rises to over 200 metres above sea level and extends for approximately 95 kilometres, ending in Cape Leeuwin in the south and Cape Naturaliste in the north. The study area is bounded in the west by the waters of the Indian Ocean and in the east by the Bussell Highway, which in the north is approximately 30 kilometres from the west coast. Geographe Bay forms the northern boundary.

The ridge falls steeply away to the ocean on the western side, forming a rugged coastline of cliffs, dunes, beaches and heathy slopes. The area to the east of the ridge consists of a gently undulating plateau which drops away in the north to the coastal plain. A number of valley systems dissect both this plateau and the ridge, draining to the west.

Farming and agricultural activities cover a large part of the study area. There is a substantial amount of remnant vegetation extending through these rural areas and covering much of the ridge. Public land, including the Leeuwin-Naturaliste National Park, is concentrated on the ridge. There are a number of small towns scattered across the area, the major centres being Dunsborough, Margaret River and Augusta. A number of settlements on the coast provide a focus for much of the recreation use in the area. Tourism and recreation use is expanding in the region and many new developments are related to this industry.

The study area is 230 to 300 kilometres from Perth, making it quite accessible for weekend visits. This traffic disperses into the region from Busselton in the north.

1.4 SCOPE OF STUDY

Due to time constraints, the study was divided into two stages. Stage 1, presented in this report, is close to complete but leaves out some of the detailed mapping of inventory layers and significance. Assessment of significance focussed on aesthetic significance, partly due to time constraints, and partly because, in the case of historic significance, other assessments provided suitable results. Social significance requires further assessment and it is envisaged that this will be done and that results will be included in Stage 2 of the study. Stage 2 of the study will also finalise and include all detailed mapping and will respond to comments on Stage 1.

Stage 1 of the study was designed to provide sufficient information for the preparation of the SPP.

1.5 REPORT STRUCTURE

The report is divided into three parts and end matter:

- Part 1 is introductory and describes the context and nature of the study and report.
- Part 2 briefly explains the study process and presents the assessment results.
- Part 3 deals with the management of values and lists issues, guidelines, policies and actions.
- The end matter includes: an appendix of access sensitivity level criteria, a glossary and bibliography.

PART TWO - LANDSCAPE ASSESSMENT

This part of the report outlines the landscape assessment which was undertaken to identify landscape values in the policy area for the preparation of the SPP. The process is initially outlined and then each step of the process is described, from inventory of data, through the main assessment components of character classification, assessment of significance, and access and view assessment. Results are summarised in each section and requirements for further work are indicated.

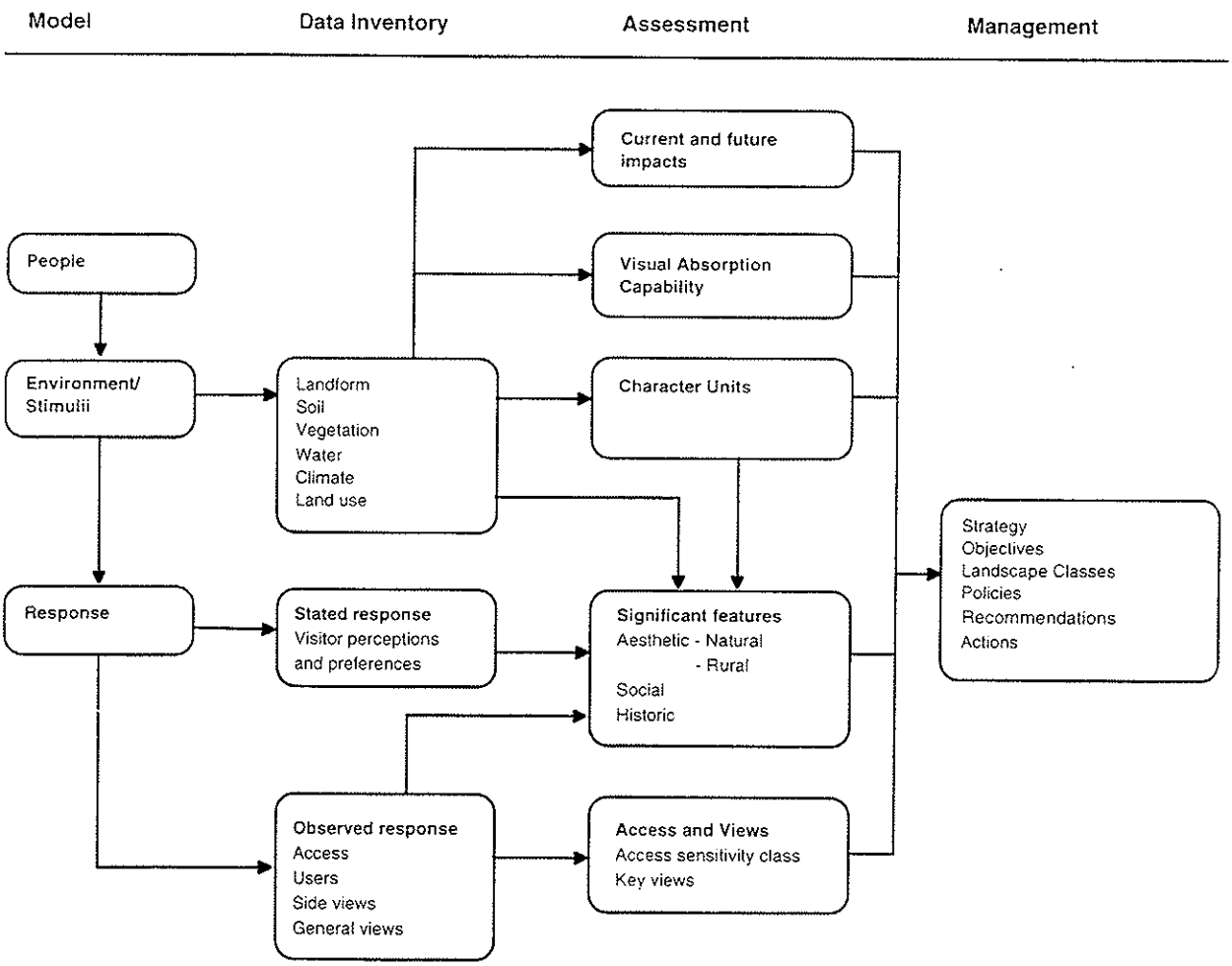
2.1 PROCESS

Landscape assessment, put simply, is a process of analysing and mapping environmental characteristics and, using known criteria, determining those which contribute most to the experience and enjoyment of people. There are four main components in the process and these are listed below with a brief description of each. Further discussion of these is in corresponding sections in this part of the report.

- **Inventory**, which involves identifying and mapping of data on characteristics relevant for the assessment.
- **Landscape character classification and description**, which identifies and describes broad patterns of characteristics.
- **Assessment of significance**, which identifies the characteristics which are most important to the experience and enjoyment of people. It is based directly on the preferences of the local community or on established criteria (aesthetic, social and historic) which have been determined by research elsewhere.
- **Access and view assessment**, which is a measure of how people experience the area. It identifies and classifies access routes and views from these access routes, according to their actual or potential contribution to the experience of people who use them.

These components fit into an overall study structure which is illustrated in Figure 1.

Figure 1 - Landscape assessment process



2.2 INVENTORY

A large inventory of characteristics was created from existing data (reports and maps), field surveys and aerial photograph interpretation. This inventory was designed to provide data for specific components of the assessment. It is listed below as either natural or human-related characteristics. Where characteristics were already largely mapped, sources are noted.

Natural characteristics:

- landform
  - contours (from CALM spatial data), slope class;
  - high points, prominent ridges, valleys and gullies;
  - catchment boundaries;
- vegetation
  - remnant vegetation (from CALM spatial data);
  - species, structural class (from Smith 1973);
- land systems
  - landform pattern, soil type (from Tille and Lantzke 1990);
- water
  - containments, rivers and streams, wetlands;
- special features
  - unusual formations such as outcrops, cliffs, caves, dunes and waterfalls;
- climate
  - exposure to ocean influences.

Human-related characteristics:

- land use
  - land tenure (from CALM spatial data);
  - town planning scheme zones (simplified, from Town Planning Scheme's);
  - existing land uses;
- recreation use
  - important recreation sites in the region (CALM data);
- access routes
  - location, width, surface, intended traffic type, user volume, user type;
- access side views
  - position, side filtering, side view distance;
- general views
  - position, angle of view, direction of view, distance seen, filtering, viewer position, subject;
- settlement patterns
  - roads, buildings, plantings;
- historic features
  - features recorded in previous reports (not included in Stage 1);
- social features
  - restricted to recreation sites (in Stage 1);
- landmarks
  - outstanding or notable features which help identify places;

2.3 LANDSCAPE CHARACTER CLASSIFICATION & DESCRIPTION

Many of the natural characteristics collected during the inventory phase (see above) were used to classify the study area into landscape character units. This classification is based on similar patterns of characteristics. It assists further description, assessment and planning by allowing consideration of broad areas rather than individual sites. The study of landscape character provides:

- an understanding of the diversity of the region from place to place, and the sense of identity of the whole region.
- a broad indication of appropriate land use.
- the basis for assessing significance by providing an inventory of characteristics and by classifying their common patterns.

The layers of information used to define landscape character were:

- landform
  - contours, slope class
  - high points, prominent ridges, valleys and gullies
  - catchment boundaries
- vegetation
  - remnant vegetation
  - species, structural class
- land systems
  - landform pattern, soil type
- water
  - containments, rivers and streams, wetlands

The classification of character units was based firstly on landform, secondly on vegetation, and thirdly on water characteristics (see Map 1).

Land use was also classified into broad categories (see Map 2). The layers of information mapped for this were:

- land tenure
- town planning scheme zones (simplified)
- existing land uses based on aerial photographs and field observations
- remnant vegetation

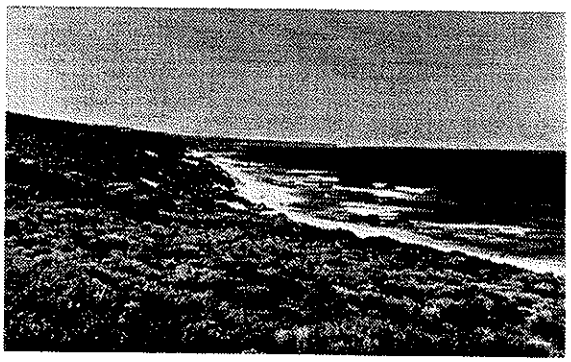
The resultant maps of generalised land use together with the natural landscape character units provide a complete representation of landscape character types in the region. These two maps allow the consideration and comparison of land uses suggested by the natural features, actual land use and proposed land use. They could be combined to produce a map of complex landscape character units indicative of both natural characteristics and land use. This combining has not been done for this study, but the two maps can easily be used together for planning to achieve a similar result.

Nine natural landscape character units and one sub-unit were identified for the region, and these are described below.

WESTERN COASTAL UNIT

Extends the length of the study area, including the western slopes and gentle crest of 'the Ridge' which runs parallel to the coast, and the western coastline.

Steep slopes rise from the water to the highest points in the study area (at 210 metres above sea level), with more gentle slopes in the valleys which dissect the ridge. There are numerous limestone outcrops and cliffs and substantial patches of parabolic dunes of calcareous sand. Otherwise the soils are deep brownish yellow siliceous sands. The coastline consists of a mix of long beaches, coves, rocky points and bays. The unit is exposed to strong winds from the ocean and supports large areas of heath, wattle and peppermint scrub and woodland. A large portion of the unit is within the Leeuwin-Naturaliste National Park with the remainder being privately owned and largely uncleared. Settlement is concentrated in the small coastal towns of Yallingup, Gracetown and Prevelly and at Smiths Beach. There is very high recreation use focusing on coast-related activities and substantial supporting tourist accommodation. There are panoramic views of the ocean, coast line and slopes from a large percentage of places within the unit.



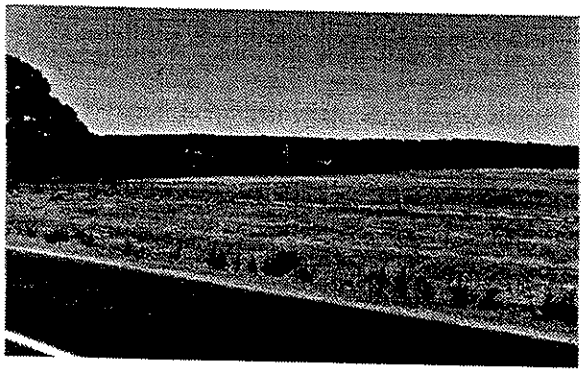
Photograph 1.

Western Coastal Unit

The Western Coastal Unit is typified by steep slopes, heathy vegetation and ocean influences.

EASTERN SLOPES UNIT

Also extends the length of the study area, including the eastern slopes of 'the Ridge' which runs parallel to the coast. Slopes tend to be moderately steep with gently inclined footslopes around Boranup and a mix of both steep and gentle slopes in the valleys which dissect the ridge. The soils are deep brownish yellow siliceous sands. The unit is protected from strong winds from the ocean and supports peppermint and jarrah/marri woodland with patches of karri particularly on the southern footslopes. A large portion of the unit is within the Leeuwin-Naturaliste National Park with the remainder being privately owned and largely uncleared. Settlement consists of dispersed 'rural housing' and patches of 'rural residential' near Prevelly and Augusta. Recreation use focuses on forest drives and caves and a large volume of recreation traffic traverses the unit to gain access to the coast. Views of the country to the east, the dissecting valleys, and even the ocean, can be had at a number of vantage points, particularly from the roads and cleared blocks.



Photograph 2

Eastern Slopes Unit

Looking west from Caves Road towards the eastern slopes of the ridge. The ridge with its extensive vegetation cover is the backdrop to many views in the study area.

PLATEAU UNIT

The largest unit in the study area, extending from near Dunsborough in the north to near Kudardup in the south. Consists of gently undulating plains, dissected by valleys (of the Valleys Unit) with some areas of poor drainage. Soils are yellow-brown, gravelly duplex and pale grey mottled. There are patches of jarrah/marri forest and woodland but otherwise the unit has been extensively cleared and is prone to strong winds. Land use is primarily grazing with a few small plantations. In addition to farming settlement, small towns exist at Karridale, Witchcliffe and Cowaramup. Recreation and tourism use is low although many of the unit's roads carry recreation and tourist traffic *en route* to other places. The open nature of the unit allows long distance views, many including 'the Ridge' as a backdrop.

Photograph 3

Plateau Unit

Some parts of the Plateau Unit are quite flat and devoid of trees.

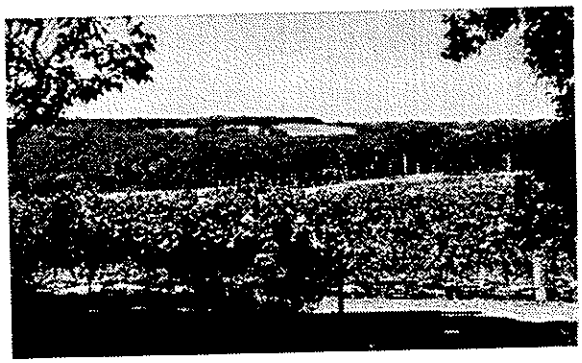
VALLEYS UNIT

Several valley systems which dissect the plateau and the coastal ridge. Rounded, rolling slopes of gentle to moderate grades. Soils are mainly yellow-brown gravelly duplex and red-brown gravelly gradational. Remnant vegetation is mainly marri and jarrah with patches of karri (sub-unit). Land use is a mix of grazing and remnant vegetation with viticulture prevalent in the Gunyulgup, Boodjidup and Willyabrup valleys. The town of Margaret River and substantial areas of rural residential development are located within the Margaret River Valley. Recreation use is low but there is high tourism use associated with the wineries and town. There are good views across the valleys highlighting the topographic and land cover diversity.

Photograph 4

Valleys Unit

Typical Valleys Unit with steep slopes, enclosed views, timbered ridge and well defined watercourse.



Photograph 5

Timbered Ridges

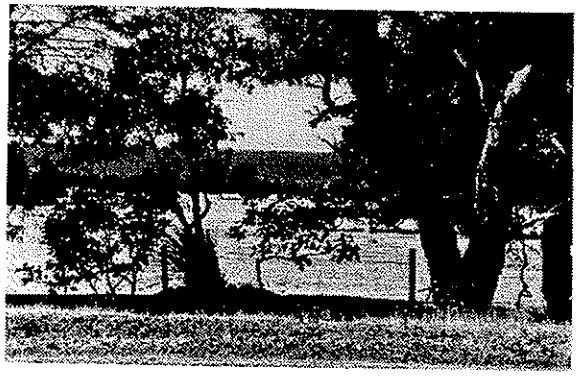
Backdrops of ridges with unbroken lines of tree cover help characterise the study area.

SCARP UNIT

The edge of the Plateau Unit where it drops down to the coastal plain in the north. A relatively even, moderate to steep angled slope, aligned in a north-south direction, heavily dissected by small valleys. Dominant soils are yellow-brown gravelly duplex, more shallow in the north with granitic and lateritic outcrops. Good stands of jarrah/marri forest. Land use is a mix of grazing, remnant vegetation, viticulture and rural residential (particularly in the north). There is low recreation use but some tourism use. Good views exist across and down the valleys and across the coastal plain. The scarp is the backdrop to easterly views on the coastal plain.

GEOGRAPHE SLOPES UNIT

Includes the slopes between 'the Ridge' and Geographe Bay, north of the Scarp Unit and excluding the headwaters of Jingarmup Brook. It includes well defined valleys and broad slopes typical of the Scarp Unit and the Plateau Unit but which relate directly to Geographe Bay. Moderate angled slopes are dissected by a number of low-order stream valleys which drain directly into Geographe Bay. Soils are yellow-brown, gravelly duplex, red-brown gravelly gradational and pale grey mottled. Remnant vegetation is mainly marri and jarrah woodland in patches, with large blocks in Meelup Reserve and to the north-west of Eagle Bay. Land use in the unit is primarily grazing with rural residential on the north-west side of Dunsborough and includes residential development at Eagle Bay and part of Dunsborough. Recreation and tourism use is high and focuses on the coast. There are good views down timbered and cleared slopes to the coast and panoramic views along the coast.



Photograph 6

Geographe Slopes Unit

Filtered views through roadside vegetation, looking north across broad slopes to Geographe Bay. The unit has a strong coastal focus but is sheltered from adverse weather compared to the west coast.

COASTAL WETLANDS UNIT

A narrow strip including the Geographe Bay coastline and related, adjoining areas of the coastal plain. It is generally very low-lying with a low foredune system and gentle ridges and flats. Soils are mainly calcareous sands and support primarily peppermint woodland with some paperbark and tea-tree. An estuary and swamp areas adjoin Toby Inlet. Land use consists of substantial blocks of natural areas around the estuary and to the west of the Bussell Highway/Caves Road intersection, with the remainder dominated by residential development and some grazing. The unit includes the coastal parts of Dunsborough. There is high recreation use focusing on Geographe Bay and considerable tourist accommodation. Caves Road traverses the length of the unit and offers some views to the south across the plain and glimpses of the Bay along the drains (views partially obstructed by gantries). Panoramic, ocean-ward views are gained from the beach, and views to the west include the slopes of the Geographe Slopes and Scarp Units as a backdrop.

COASTAL PLAIN UNIT

This comprises the extensive level to gently undulating plain between the Coastal Wetland Unit and the Plateau Unit. There is a mix of soils but sandy grey-brown gradational and duplex dominate. There are depressions and flats which are poorly drained and become waterlogged. Most of the original vegetation has been removed but some patches of marri/jarrah woodland still remain together with small areas of paperbark, often in roadside strips. Drains have been installed to improve the flow of natural watercourses. The unit is predominantly used for grazing, with some horticulture near Carbunup and small plantations in the middle of the plain. Recreation and tourism use is largely confined to many of the area's roads carrying traffic headed for other destinations. There are extensive views across the open plains.

AUGUSTA SLOPES UNIT

Includes the gentle slopes between 'the Ridge' and Hardy Inlet, south of Kudardup and is typical of the Plateau Unit except that it relates closely to the Hardy Inlet and coast. Soils are yellow-brown, gravelly duplex, red-brown gravelly gradational and pale grey mottled. Remnant vegetation is marri and jarrah woodland and karri forest in patches. Land use in the unit is primarily

grazing, contains the town of Augusta, with rural residential on its north-west side. Recreation and tourism use is high and focuses on the coast. There are good views down timbered and cleared slopes to the coast and panoramic views along the coast.

Photograph 7

Augusta Slopes Unit.

Looking east from the footslopes of the ridge towards the Hardy Inlet. Scattered mature peppermint are in the foreground. The area has a strong coastal focus but is quite sheltered compared to the west coast.

KARRI SUB-UNIT

Areas within other units where substantial stands of karri create a character distinctive from areas within the unit with other types of vegetation. They are located on the slopes of 'the Ridge' behind Augusta and Boranup and in the valleys of Boodjidup and Ellen Brooks and Margaret River.

Photograph 8

Karri Sub Unit

Karri is an important vegetation feature of the area. Karri creates a strong contrast in character with other vegetation in the area.

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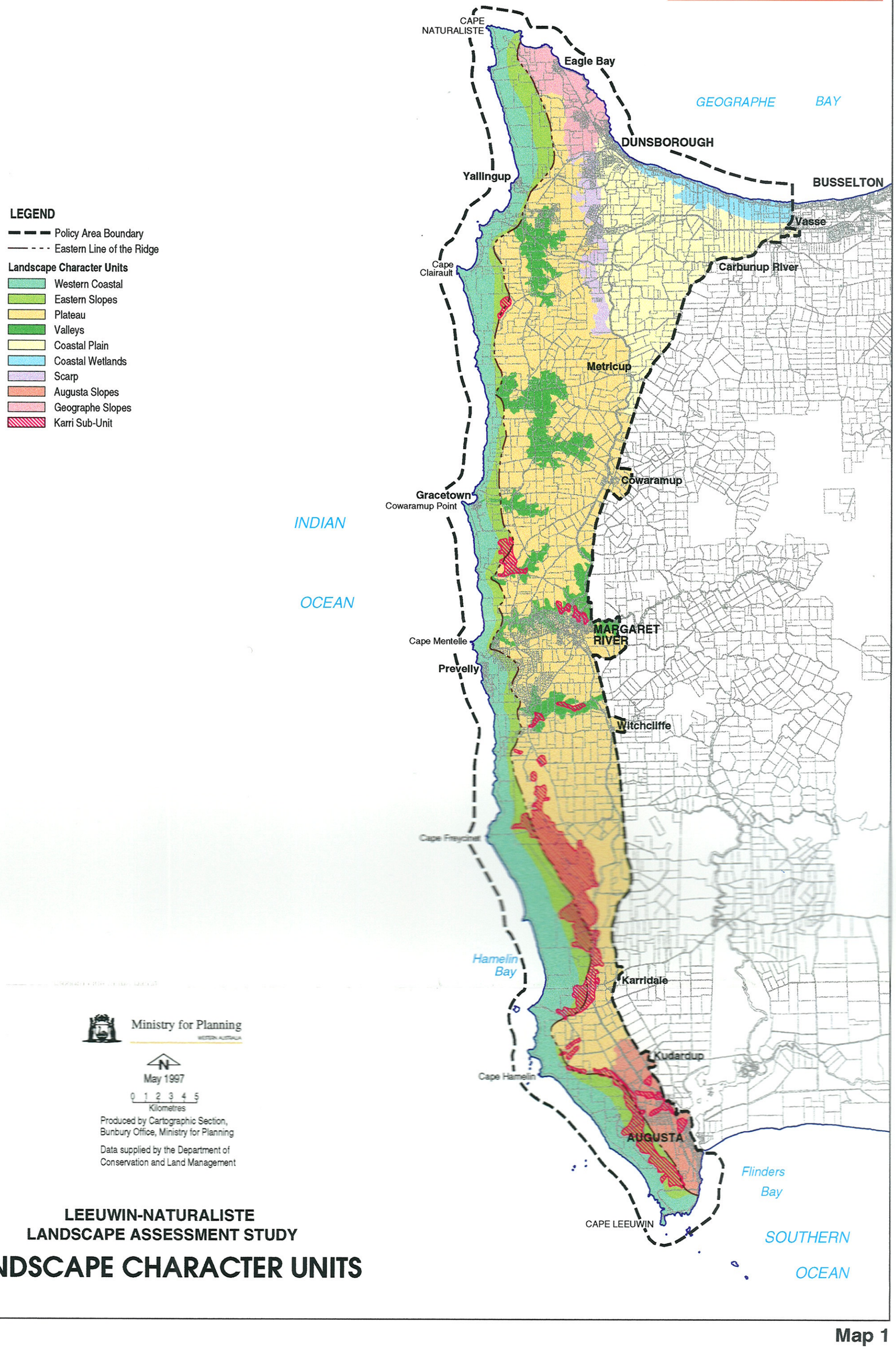

LEGEND

- Policy Area Boundary
- Eastern Line of the Ridge

Landscape Character Units

- Western Coastal
- Eastern Slopes
- Plateau
- Valleys
- Coastal Plain
- Coastal Wetlands
- Scarp
- Augusta Slopes
- Geographe Slopes
- Karri Sub-Unit

Ministry for Planning
WESTERN AUSTRALIA

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May 1997

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Bunbury Office, Ministry for Planning

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Conservation and Land Management

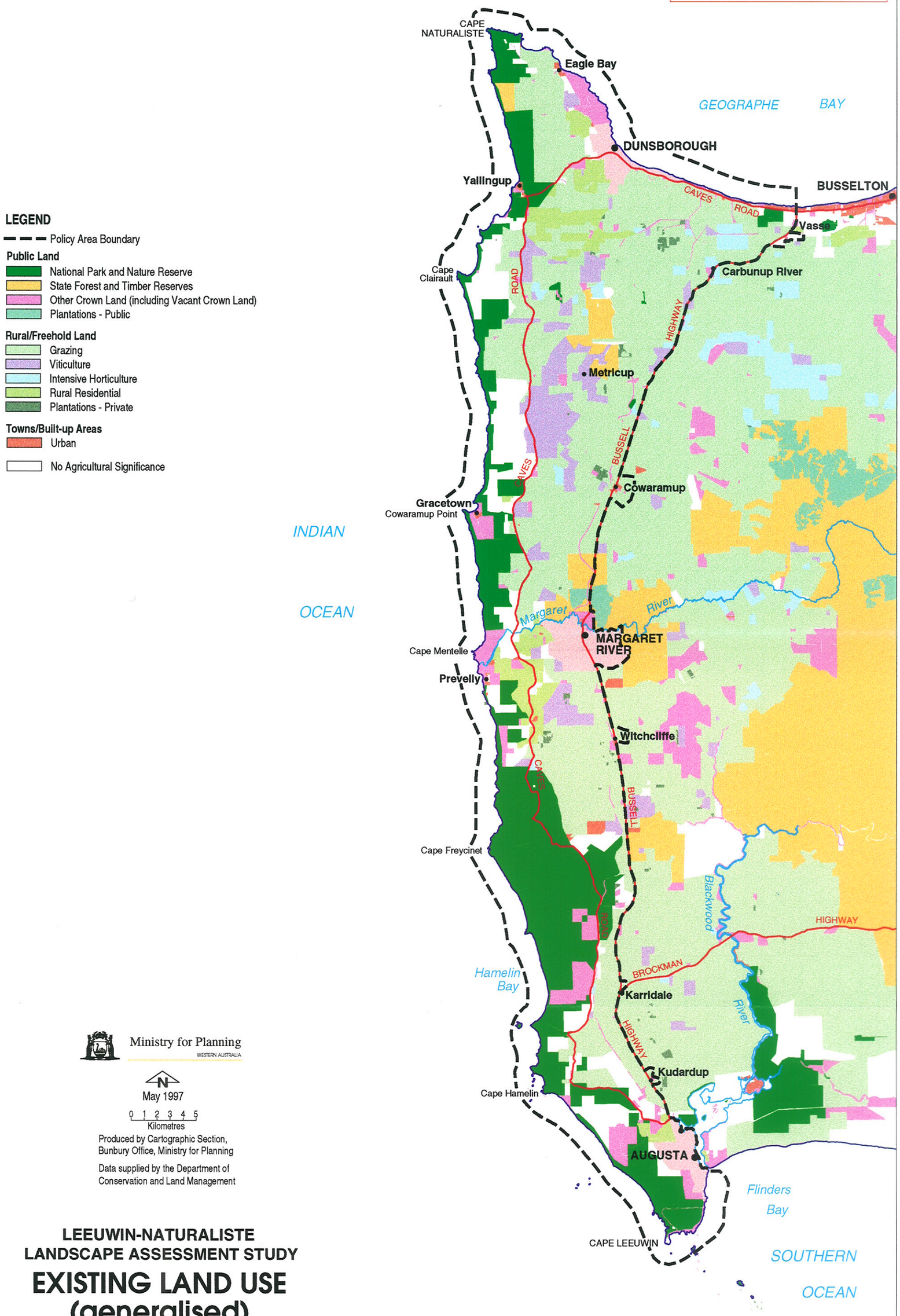
LEEUWIN-NATURALISTE
LANDSCAPE ASSESSMENT STUDY

LANDSCAPE CHARACTER UNITS

Map 1

Map 1

FOR PUBLIC COMMENT



LEGEND

- Policy Area Boundary

Public Land

- National Park and Nature Reserve
- State Forest and Timber Reserves
- Other Crown Land (including Vacant Crown Land)
- Plantations - Public

Rural/Freehold Land

- Grazing
- Viticulture
- Intensive Horticulture
- Rural Residential
- Plantations - Private

Towns/Built-up Areas

- Urban
- No Agricultural Significance

Ministry for Planning
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LEEUWIN-NATURALISTE
LANDSCAPE ASSESSMENT STUDY

EXISTING LAND USE (generalised)

Map 2

Map 2

2.4 ASSESSMENT OF SIGNIFICANCE

The assessment of landscape significance, the second main component of the assessment process, identifies the features that are most important to the experience and enjoyment of people. For landscape purposes, characteristics are normally assessed in the following three categories of significance (see Blair & Truscott 1989):

Aesthetic - based on the sensory perception of a place by the community.

Social - based on the association between community (including Aboriginal people) and place.

Historic - based on a connection with an historic figure, event, phase, or activity.

These categories are discussed further below.

AESTHETIC SIGNIFICANCE

Aesthetic significance was assessed using visual criteria based on assumptions drawn from preference research in Australia and overseas and from formal aesthetic theory (See Anderson et al 1976, Zube et al 1974, Williamson and Chalmers 1982). While it is recognised that other aesthetic values often play an important role in people's landscape experience, assessment of these was beyond the scope of this study. It was assumed that visual aesthetic significance increases with:

- increased topographic ruggedness
- increased naturalism
- increased land use compatibility
- increased presence of water forms and extent of water area and edge
- increased presence of outstanding natural features
- increased legibility of features
- increased spatial definition
- increased sympathy in land use response to natural features
- increased pattern and texture in rural uses

These assumptions formed the basis for criteria to assess natural and rural-use characteristics. Built form and towns were not assessed for aesthetic significance in this study.

The assessment criteria for these two significance types and the corresponding assessment results are listed below.

Natural Characteristics

Criteria:

Vegetation	-	Diversity - obvious transitions between contrasting structures or species, riparian
	-	Features - species or specimens of impressive size, colour or form
Landform	-	High points and prominent ridge crests
	-	Steep slopes greater than 10 percent
	-	Pronounced gullies
	-	Features - very flat plains or plateaux, rock outcrops, cliffs, caves and sand formations
Water	-	Major permanent or rocky, semi-permanent water features, rivers, estuaries, waterfalls
Coast	-	Indented shoreline, coves, short beaches with rock ends
	-	Gently curved shoreline with steep natural slopes as backdrop or very wide tidal zone

The areas assessed as significant have been mapped both in detail and as a broad category (see Map 3).

Photograph 9

Landform and Vegetation Features

An obvious example of significant rock and vegetation features.

Summary remarks are:

There was a high occurrence of significant natural characteristics across most of the study area. Most of the significance related to vegetated areas on steep slopes or high points and ridges, or high vegetation diversity.

The highest occurrence of significance was in the Eastern Slopes and Western Coastal Units (ie. the coast and 'the Ridge') and the north-west corner of the study area, which includes the Gunyulgup Valley, the Scarp Unit and the Geographe Slopes Unit. The ridge and coast had more than 70 percent of the area assessed as significant, due to the presence of vegetation diversity, steep slopes and high points. The entire Karri Sub-unit was assessed as significant due to vegetation features. The north-west area had between thirty and fifty percent of the area assessed as significant, due mainly to the presence of steep slopes.

The Valleys Unit contained a substantial area of vegetative (riparian) diversity. The Margaret River and the ocean were the main significant water features, although there were some waterfalls recorded (eg. Meekadaribee, Quininup). Other significant landform features included the cliffs at Willyabrup, Wallcliffe and the Turner Brook, and various sand formation areas, mainly within the Western Coastal Unit. The remaining areas had little natural landscape significance relative to other natural areas in the study area.

Rural-Use Characteristics

Criteria:

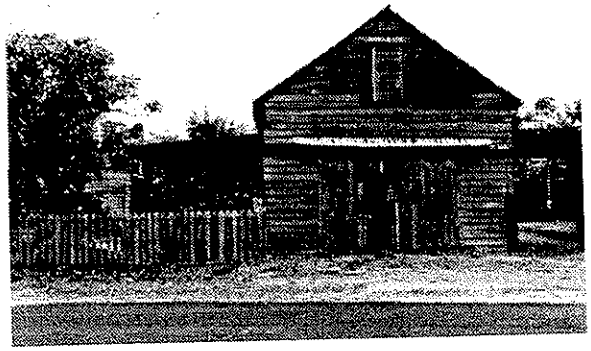
Texture	-	Areas with strongly textured patterns for at least half the year.
Spatial definition	-	Areas which include native vegetation enclosure on two-thirds of the boundary and have a maximum size of 25 hectares.
	-	Edges of blocks of remnant vegetation adjacent to spatial definition areas.
Avenue vegetation	-	Remnant or introduced planting of large trees in rows with consistent density and, where adjacent to roads, dominant trunks and canopies to road edges on both sides of the road.
Remnant vegetation	-	Paddock tree canopy cover of greater than ten percent.
	-	Continuous streamside vegetation strips with trees.
Water	-	Large dams with natural edges.

The areas assessed as significant have been mapped both in detail and as a broad category (see Map 3).

Photograph 10

Avenue Vegetation

This is a great example of significant avenue vegetation. Dominant trunks and closed canopy create a strong character and focus on the road.



Photograph 11

Built Form

Built form has not been assessed in Stage 1 of the study but has a high impact on landscape values.

Summary remarks are:

There was a high occurrence of significant rural-use characteristics across most of the study area. Most of the significance related to spatial definition and steep slopes with a lesser area relating to texture.

Areas with significant enclosure were dispersed and occurred moderately across most of the rural areas with a high concentration in the vicinity of the Gunyulgup Valley, the Metricup Scarp and the Geographe Slopes Unit. High concentrations of steep slopes were in the Valleys and Scarp Units. Textural significance was found in the viticulture and horticulture areas. There was a low occurrence of streamlining and paddock trees and these were dispersed in small areas across the study area. Although there was a large occurrence of roadside vegetation, there were few areas with avenue significance. There was little rural landscape significance of any kind in the Coastal Plain Unit.

Photograph 12

Significant Landform Features

This group of hillocks north of the Cosy Corner Road is one of the most extraordinary landform features on rural-use land in the study area. Clearing of vegetation allows good views to these features but increases erosion potential on the steep slopes.

Photograph 13

Rural Significance

Steep Slopes, spatial enclosure, vegetated watercourses and water features all contribute to rural significance. The loading race and crush add interest.

SOCIAL SIGNIFICANCE

As noted in the introduction, the study was divided into two stages due to time constraints. Assessment of social significance in this Stage 1 report was confined to the natural land use type and places which met the following criterion:

- Places which are a recognised recreation site (based on CALM inventory).

Most of the recreation sites were along the coastline with a small number to the east of 'the Ridge' focusing on the forest and caves. These have been mapped and will be combined and presented with other data in Stage 2 of the study.

Social significance requires further assessment and it is envisaged that this will be done and that results will be included in Stage 2 of the study. A Stage 2 assessment should cover the other land use types (towns and rural-use) and include the following criteria:

- Places which obviously demonstrate a strong association with people;
- Places which are frequently listed by visitors in surveys and for reasons rather than visual attractiveness or interest; and
- Places which have been previously documented as having a strong association with people.

Significance in this study means simply that values exist: no comparative analysis has been undertaken to weight the significance. Some of the recreation sites are supported by Access Sensitivity Level assessment (see later in this report) where they are linked with a travel route. More detailed assessment may need to be undertaken if the listed significance will be affected by management decisions.

HISTORIC SIGNIFICANCE

It is intended that historic places be mapped in Stage 2 of this assessment and that this mapping will be primarily based on lists derived from previous documentation of historic significance, supported by the inventory of features with historic characteristics.

SUMMARY OF SIGNIFICANCE

High concentrations of aesthetic significance were found on:

- 'the Ridge' (Eastern Slopes and Western Coastal Units, including the Karri Sub-unit) (mainly natural significance);
- Geographe Slopes Unit (a mix of natural and rural-use significance);
- the area including the Gunyulgup Valley and Scarp Units (a mix of natural and rural-use significance); and
- Valleys Unit (a mix of natural and rural-use significance).

2.5 ACCESS AND VIEW ASSESSMENT

The assessment of access and views, the third main component of the assessment process, provides an indication of how people experience the area. Assessment of this experience in this study is based on the importance and nature of travel routes and the ability of people to read (see and identify) areas adjacent to these routes.

The steps in the assessment process were as follows:

- public access routes were identified and mapped;
- field surveys were undertaken to record data for four sub-components (except user characteristics which was researched using management agency data):
  - access characteristics;
  - user characteristics;
  - access route side views; and
  - general views.
- access and user characteristics were combined to classify the access routes into sensitivity levels using established criteria;
- general views were classified as either key views or non-key views using criteria which relate to the importance of the view.

These steps in the process are discussed further below.

ACCESS CHARACTERISTICS

Travel routes were identified and mapped and then surveyed in the field using the variables and alternatives listed below. These provide an indication of the importance of travel routes based on their physical characteristics. This information, together with user characteristics, was used to classify travel routes into sensitivity levels (see below).

- Location - mapped position;
- Class - pedestrian path, single vehicle lane, double vehicle lane, dual carriage way;
- Surface - paved, gravel, local soil;
- Markings - lines, no lines;
- Intended traffic type - pedestrian, vehicles.

USER CHARACTERISTICS

The importance of travel routes was also determined by the characteristics of the travel route users. The variables and corresponding alternatives used for the survey and of user characteristics are listed below. This information was also used to classify travel routes into sensitivity levels (see below).

- Volume - vehicle or pedestrian counts over time;
- Type - pedestrian, vehicles, designated scenic route, recreational, general access, management access.

ACCESS ROUTE SENSITIVITY LEVEL

The access and user data collected (as described above) was combined to classify all the travel routes (general water access was not assessed but obvious conclusions can be made regarding its characteristics) according to importance based on established criteria (see Appendix). The following travel routes were classified as Sensitivity Level 1 and 2 (see Appendix) and form the basis for the travel route corridor landscape class on Map 3:

Biddles Rd
Biljedup Rd (to 3rd bend)
Boodjidup Rd
Boranup Dve
Bushby (Karridale) Rd
Bussell Hwy
Canal Rocks Rd
Cape to Cape walking track
Carters Rd
Caves Rd
Clairault Rd
Commonage Rd
Conto Rd
Cosy Corner Rd
Cowaramup Bay Rd (Bussell Hwy to Cowaramup)
Eagle Bay Rd
Ellensbrook Rd (west of Caves Rd)
Gnarabup Beach Rd (to Marmaduke Point)
Hamelin Bay Rd
Hillview Rd
Marybrook Rd
Meelup Beach Rd
Metricup Rd
Moses Rock Rd
Redgate Rd (Bussell Hwy to coast)
Skippy Rock Rd
Sugarloaf Rd reserve
Vasse to Augusta railway
Vasse Yallingup Rd
Vlam Rd
Wallcliffe Rd (Margaret River town to river mouth)
Wildwood Rd
Wyadup Rd
Yallingup Rd

ACCESS ROUTE SIDE VIEWS

The assessment of access and views also included mapping of a number of variables relating to side views. These variables were considered to provide a good indication of the ability of people to read (see and identify) areas adjacent to the travel routes as well as providing information on the nature of the immediate road environment. The field survey identified data for the following variables:

- Position - distance along the access route;
- Side filtering - blocked, heavy filtered, light filtered, open;
- Side view distance - foreground (0-300m), middleground (300m-3km), background (>3km).

This information is not intended for the Leeuwin-Naturaliste Ridge Planning Review and mapping has not been included in this report. It is intended that this data be used at a local level by planners to:

- manage the composition of roadside vegetation and the views that it provides; and
- gauge the likely visibility of roadside development; and
- provide the basis for seen area mapping when detailed impact assessment is required for developments.

The mapping shows that there is a diverse mix of both side view filtering and distance. Views are blocked in few places and, apart from areas with adjacent blocks of remnant vegetation, it is usually possible to see to foreground or middleground distances. Background views are not so common but can be obtained from many positions on 'the Ridge', the Scarp and a number of locations along Bussell Highway. Views in the Valleys Unit are mostly restricted to foreground or middleground by topography whereas on the Plateau Unit it is usually vegetation which causes restriction. The Cape to Cape walking route has long stretches with open, background views to the ocean and along the coast. Views along the Bussell Highway and on the Coastal Plain Unit are the least restricted with relatively flat topography and little vegetation.

Photograph 14

Roadside Filtering

Side vegetation has a large influence on the travel route experience and is the main variable affecting the ability of people to read adjoining areas.

GENERAL VIEWS

In addition to the mapping of side views as described above, the assessment of access and views also included an assessment of general views to determine the most important views in the region. The variables and alternatives recorded and mapped for general views were:

- position - distance along the access route;
- angle of view - degrees;
- direction of view - to the nearest 22.5 degrees;
- distance seen - foreground (0-300m), middleground (300m-3km), background (>3km);
- filtering - percentage of total panorama;
- viewer position - superior, normal, inferior;
- subject - landmark, focus, other.

Given that the assessment aim was to identify views of greatest importance (key views), the criteria for the latter were used in the field to ensure that the survey work was focussed on the target category. The criteria for key views were:

- Where both middleground and background distances are seen -
  - view contains at least 90 degrees, with the angle encompassing the direction of travel; or
  - view is at least 30 degree angle of view and contains a focal point, significant feature or landmark;
- Where both foreground and middleground distance are seen -
  - view contains at least 90 degree angle of view, with the angle encompassing the direction of travel and contains a focal point, significant feature or landmark.

Once again, this information is not intended for the Leeuwin-Naturaliste Ridge Planning Review and mapping has not been included in this report. It is intended that this data be used by planners at a local level to:

- gauge the likely visibility of development;
- provide the basis for seen area mapping when detailed impact assessment is required for developments; and
- provide some of the basis for managing scenic views, particularly on tourist and recreation roads.

Mapping shows a very high concentration of key views located on travel routes near the coast. It can be assumed that key views also exist from all the beaches and from the water (although these were not assessed). There was a relatively high number of key views on the eastern side of 'the Ridge' (Eastern Slopes Unit), the Scarp Unit, Geographe Slopes Unit, Bussell Highway, and the Coastal Plain. Key views to the west in the south of the study area were dominated by 'the Ridge'.

PART THREE - MANAGING LANDSCAPE VALUES

This part of the report deals with the management of landscape values given that there is a good knowledge base regarding values resulting from the assessment. The main threats to values are discussed, a strategy and objectives are outlined, and a number of principles, policies, recommendations and actions are detailed. A procedure for planning and evaluating development proposals is also provided.

3.1 ISSUES CONFRONTING THE REGION

Some of the key issues which confront the region and which impact on landscape values are:

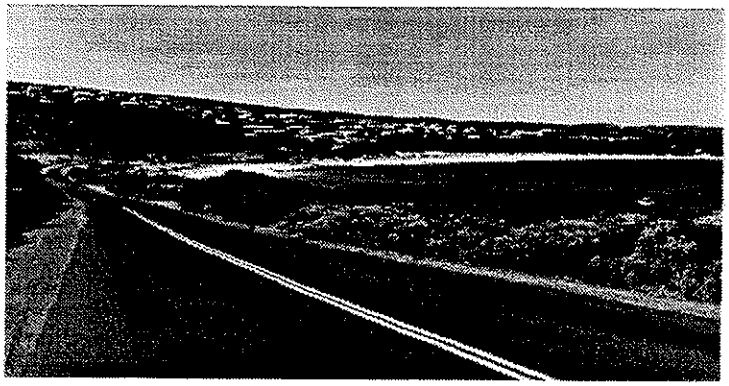
- a high rate of population increase with a corresponding rate of development;
- changes in land use, particularly from rural to residential, resulting in the loss of traditional agricultural areas and rural character;
- new developments in towns which pay little respect to existing local character and settlement patterns;
- the increasing commercial character associated with rural enterprises which is evident on many of the priority travel routes;
- the demand for development on the ridge and coast, areas which have high landscape and natural values and low land capability for various types of development;
- the loss of remnant vegetation;
- the loss of areas perceived as being natural;
- the loss of values in the National Park due to adjacent development;
- the inefficiency and character of existing rural residential subdivision design;
- upgrading of roads resulting in loss of remnant vegetation and landscape values;
- the provision of services and infrastructure.

3.2 LAND USE CHANGES

There is a large number of land use activities or developments which can have a dramatic effect on landscape values. In summary these include:

- agricultural use;
- boat mooring, ramps;
- buildings, structures, fencing;
- communication towers;
- dams;
- fire;
- mining and extractive industries;
- recreation facilities;
- roads, paths, parking;

- roads, paths, parking;
- services (electricity, gas, water, sewerage, telephone);
- signs;
- timber harvesting;
- vegetation clearing;
- vegetation planting;
- weeds.



Photograph 15

Coastal Settlements

Development on the coast can be highly visible due to low heath vegetation and the available panoramic views. Buildings and roads such as these create a strong contrast in character with the surrounding natural area. It is most important that the impact of these changes be confined to the smallest viewshed possible. In this case houses have been kept off the ridge, giving the impression that the settlement is contained within the one valley.

Photograph 16

Roadside Signs

The proliferation of roadside signs along some of the main roads is creating a strong commercial character in rural-use areas. Controls are needed to reduce the dominance of these signs.

3.3 MANAGING CHANGE

There is a strong community desire (and need) to retain the existing natural environmental values, the landscape values and the character of the towns of the Leeuwin-Naturaliste area. Despite this, it is inevitable that the region will change. Even if major development was restricted, minor development, including maintenance and upgrades, will slowly and incrementally bring noticeable changes to these values.

As the area continues to be developed, a realistic aim is to ensure that there are areas of no development protecting the most important values and that where development does occur it is in way which reflects the local characteristics. Broadscale (strategic) and site level planning should ensure that:

- there is a conservation estate of sufficient size and distribution to adequately protect representative samples and the most important of the area's landscape and natural values;
- development protects and enhances landscape and natural values in all areas;
- development is appropriate because it is the most suitable use for local natural values, reflects them in its design, and is consistent with the traditional settlement patterns of the area.

In addition, there are a number of design precedents, traditions and approaches that have clearly demonstrated that change can: meet landscape, environmental, functional, cost and personal preference requirements; reinforce the unique regional character; and respect the sense of place of individual sites.

3.4 LANDSCAPE MANAGEMENT STRATEGY

This strategy has been developed to provide the broadscale planning context for managing landscape values. The strategy highlights key points about the values and their regional and state wide context, existing and proposed use, and the long-term management aims and direction.

The key points of the landscape management strategy for Leeuwin-Naturaliste region, listed under these three main topics, are as follows:

VALUES

- The region contains an unusually high concentration of landscape values.
- There is a rich mosaic of varied landscape character, with each unit reasonably well represented.
- There is a very high occurrence and a diverse mix of significant values.
- There is a high occurrence of significant values related to natural areas in 'the Ridge' and coast area, the valleys and the north-west corner of the study area. The remaining areas had relatively little natural, area-related significance.
- There was a high occurrence of significant values related to rural areas across most of the study area. There was little rural landscape significance of any kind in the Coastal Plain Unit.

- The social values associated with the holiday and general recreational use of the area are very high.
- There is very good access to most areas with use being very high.
- There is an diverse mix of roadside views with a relatively high amount of roadside vegetation.
- The visibility along the coast is very high.

USE

- Recreation and holiday use of the area is intense and is expected to increase.
- The Leeuwin-Naturaliste National Park is the State's most visited national park.
- There is high demand for rural residential living.
- There is very high demand for blocks in the coastal settlements.
- Viticulture is increasing in area.
- Natural areas are gradually being depleted.
- Human activities are having a much greater impact on landscape values than natural processes.

MANAGEMENT

- The area is such a unique and concentrated collection of landscape values that sensitive management is warranted to ensure the long term protection of these values.
- Natural landscape values are under severe threat from a range of developments. They should be treated as the baseline in any development and should have priority over development.
- Very little of the significant natural values of the Valleys Unit are protected by conservation status.
- A large proportion of the significant natural values of 'the Ridge' is protected by the National Park.
- Rural landscape values are under threat, mostly from rural residential development and need to be protected.
- The aim of management in the long term is to ensure that the existing character, significant aesthetic, social and historic values are maintained and if possible enhanced.
- All developments can be modified to reduce their impact on landscape values.

Further management direction is provided in the landscape objectives, principles, policies and general land use recommendations.

3.5 OBJECTIVES

Landscape management objectives determine a simple, net result in terms of landscape character, landscape significance, and access and views. The objectives for managing landscape values are:

- protect the natural character of the Leeuwin-Natualiste Ridge and adjoining remnant vegetation and marine areas;
- maintain the mosaic of land uses evident in existing agricultural areas;
- protect significant features in natural and rural areas;
- maintain the range of opportunities to access and experience the region.

3.6 PLANNING PRINCIPLES

GENERAL PLANNING PRINCIPLES

There are a number of general land use planning principles which provide a broad basis for landscape planning. These include that development should:

- be an efficient, suitable, and sustainable use of the land;
- contribute to the prosperity of the area;
- adequately protect natural and cultural values;
- balance the needs of the individual with the needs of the wider community; and
- provide for continuing enjoyment of the area.

GENERAL LANDSCAPE PRINCIPLES

The protection of landscape values can largely be achieved if a number of general landscape planning principles are adopted. These principles are:

- the most important values should be protected within a conservation reserve or have similar conservation status;
- conservation practices should be adopted for all land, rural or natural;
- the existing patterns of vegetation should be protected;
- development should reflect and emulate existing patterns of characteristics;
- development should be kept away from natural areas, water courses, steep and high places, and main travel routes;
- siting should be the primary method to reduce the impact of development;
- structures should adopt sensitive, low-impact design.

3.7 DEFINITION OF LANDSCAPE CLASSES

The mosaic of landscape values mapped during the assessment has been simplified into classes which are pertinent to management (see Map 3). These classes are listed below and relate directly to the management policies. The intersection of travel route corridor and landscape significance classes are also shown on the map and indicates where both these classes exist.

NATURAL LANDSCAPE SIGNIFICANCE

Areas containing significant landscape values based on natural characteristics.

RURAL LANDSCAPE SIGNIFICANCE

Areas containing significant landscape values based on rural-use characteristics.

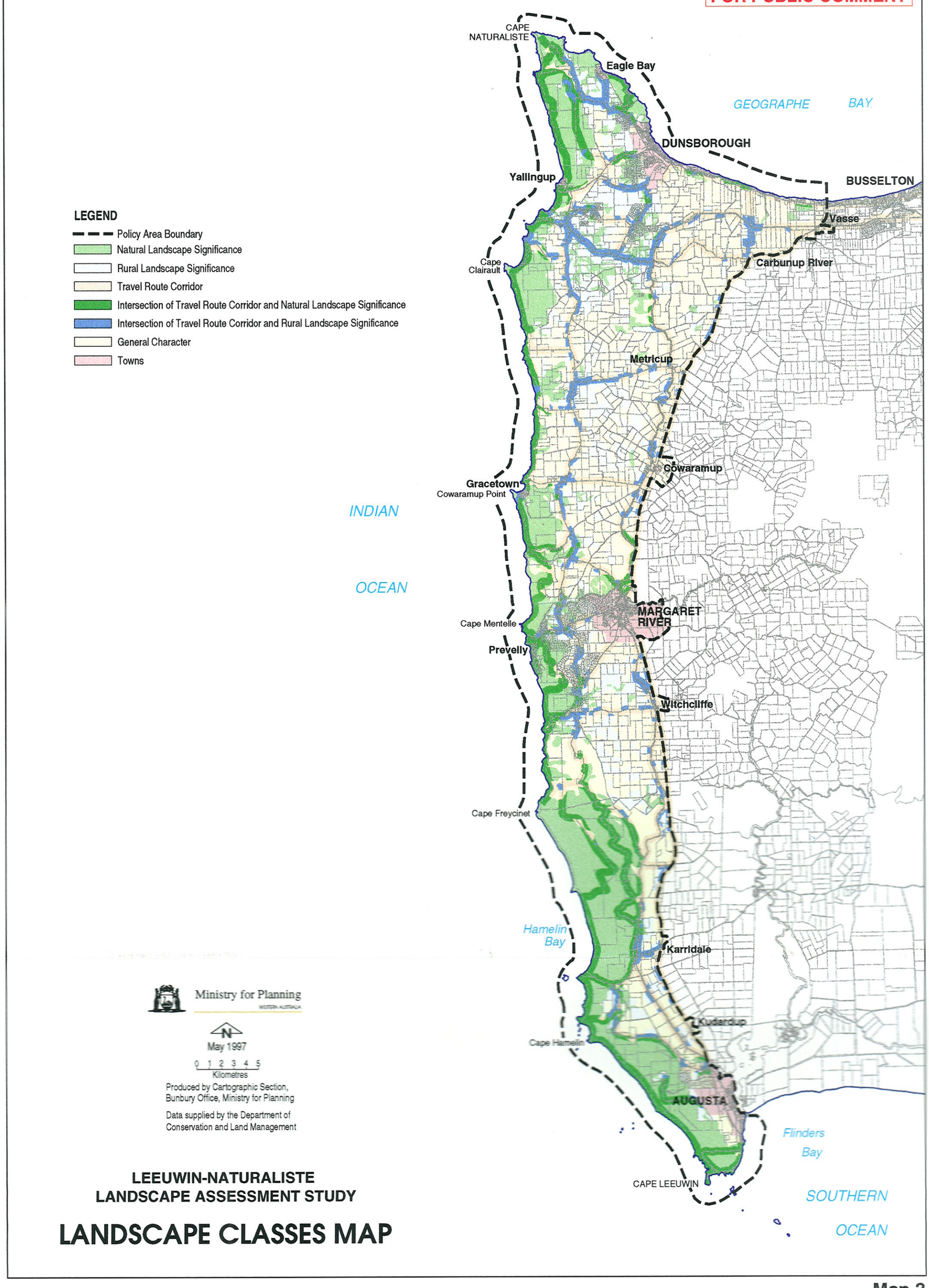
TRAVEL ROUTE CORRIDOR

Key areas for people to access and experience the region and consist of a 600 metre wide corridor along all Level 1 and 2 travel routes. It may also include areas where rural or natural significance has been identified.

GENERAL CHARACTER

Areas in this class are outside, and provide the 'backdrop' to significant landscapes and travel route corridor areas.

FOR PUBLIC COMMENT



Ministry for Planning
WESTERN AUSTRALIA

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May 1997

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Produced by Cartographic Section,
Bunbury Office, Ministry for Planning

Data supplied by the Department of
Conservation and Land Management

LEEUWIN-NATURALISTE
LANDSCAPE ASSESSMENT STUDY

LANDSCAPE CLASSES MAP

Map 3

Map 3

3.8 POLICIES

The following policies have been prepared for the Leeuwin Natualiste Ridge Statement of Planning Policy. They should also be considered in any local land use strategies.

1. The Landscape Classes map, the Landscape Character Units map, and the Access and Views assessment will be used as the basis for landscape evaluation of new development.
2. Development will ensure that public experience and enjoyment of the region is maintained through appropriate management of landscape character, significance, and access and views.
3. In areas with natural landscape significance, the significant characteristics must be protected.
4. In all natural areas:
   i) the natural character must be protected;
   ii) development must be temporary or unseen from Level 1 and 2 travel routes, except public recreation or safety facilities which may be seen in the foreground.
5. In areas with rural landscape significance:
   i) the configuration of significant characteristics may be changed providing significance is maintained and character is protected;
   ii) properties must be no less than 20 hectares and the primary use must be directly related to agriculture.
6. In rural-use areas with general character, character can be changed but use should be rural-related in seen areas, with non-rural-related use permitted in unseen areas.
7. Social and historic significance will be protected in all areas.
8. In travel route corridors within rural-use areas:
   i) Properties must be no less than 20 hectares and the primary use must be directly related to agriculture;
   ii) Buildings and structures must have a minimum 100m setback;
   iii) Plantations of non-indigenous species of greater than 1 hectare or 10 percent property cover will not be permitted.
9. In all travel route corridors:
   i) Property access points and signs must be the minimum size and number necessary and will generally be restricted to one for each property and should be at no less than 500 metre intervals in natural areas;
   ii) Commercial and road signs should be restricted to one per lot or no less than 500 metre intervals. Local governments are encouraged to develop design guidelines for signage including limits on size, number and location.
   iii) Public side access roads will not be permitted at less than 1 kilometre intervals.

10. Development must adopt low impact design, reflect local values and be compatible with the natural characteristics and traditional settlement patterns of the area..
11. Notwithstanding other restrictions, the removal of remnant vegetation will only be allowed where the pattern of vegetation remains the same as seen from travel routes except paddock trees may be removed for intensive agriculture providing the equivalent number are planted in adjacent areas.
12. Development is to have due regard to the landscape integrity and will not breach 'the Ridge' skyline when viewed from the coastline, Geographe Bay or Level 1 or 2 roads. Drainage lines will be acknowledged in design, and remnant vegetation and/or revegetation connections will be protected and enhanced.
13. Residential and tourism development in the Western Coastal Unit will be restricted to designated Coastal and Tourist Nodes.
14. Development should not be permitted on the steep and higher slopes of the Eastern Slopes Unit.
15. Development on the lower slopes of the Eastern Slopes Unit will be permitted if landscape and environmental values are protected and a sustainable bushfire protection plan, which does not compromise the management of the adjoining Conservation Reserves, can be implemented.
16. The environmental integrity and natural landscape values will be given primacy in land use control in both the Western Coastal Unit and the Eastern Slopes Unit.
17. Local government will adopt local landscape management strategies, incorporating development guidelines as outlined in this report.

3.9 GENERAL LAND USE RECOMMENDATIONS

The following recommendations are aimed at the Land Use Strategy of the Leeuwin-Natualiste Ridge Statement of Planning Policy. They should also be considered in any local land use strategies.

1. The landscape character units (see Map 1), which represent patterns of natural characteristics, should be used to determine appropriate land use;
2. The areas with landscape significance (see Map 3) should be considered for land use category and have some form of protection status;
3. Development should be severely restricted on 'the Ridge' (Western Coastal and Eastern Slopes Units) and should generally be restricted to existing coastal settlements;
4. Development should be severely restricted in the vicinity of the Gunyulgup Valley, Margaret River Valley, the Scarp and the Geographe Valleys Unit. Existing rural residential development in these areas has generally brought major changes to landscape values and any future development should be carefully planned and designed to avoid impacts on landscape values;
5. Rural residential development should not be permitted on The Scarp, south of the existing development of this type;
6. The focus for rural residential development should shift from areas of significant landscape values to areas of general landscape character;
7. Significant landscape areas within the Western Coastal and Eastern Slopes Units should have conservation status and should be considered for inclusion in the National Park;
8. Rural areas with significant landscape values adjacent to the National Park should be protected by statutory conservation status;
9. Substantial blocks with significant natural values in the Valleys Unit should be protected by statutory conservation status;
10. New development should be severely restricted in areas having multiple overlays of significance;
11. Ensure that the number of spur roads linking new subdivisions to existing public roads are kept to a minimum;
12. Vegetation corridors or increased planting densities should be facilitated between Yelverton Forest and the Gunyulgup Valley, along the Margaret River Valley, and between the Boranup Forest and the Blackwood River Valley (south of Warner Glen Road);
13. The swamps and estuary south of Toby Inlet should be highlighted by additional planting and signs;
14. 'Landcare' should be promoted, particularly on the Coastal Plain where remnant vegetation coverage has been severely depleted;
15. A roadside revegetation program should be initiated for the Bussell Highway as part of a wider roadside vegetation management plan;
16. The disused Vasse to Augusta railway reserve should be developed as a multi-use trail;
17. The guidelines listed in this report should be adopted in any future land use plans.

3.10 ACTIONS

State and local planning agencies should undertake the following actions.

1. Prepare a road side vegetation management plan.
2. Provide guidelines to ensure that there is a consistent approach and standards in the preparation and evaluation of development proposals.
3. Provide siting and design guidelines to assist property owners and developers in preparing proposals. These guidelines should encourage:
   a) planting of indigenous species and protective fencing along watercourses and around water bodies or soaks;
   b) planting of shelter belts, paddock trees and blocks of indigenous species in general character areas which have little tree cover or spatial enclosure;
   c) shelterbelt establishment in viticulture areas;
   d) building design which reflects local, traditional built form or natural characteristics.

3.11 PLANNING AND EVALUATING PROPOSALS

The assessment maps, guidelines and policies in this report are intended to be used in the planning of new developments and the rehabilitation of existing impacts. The following guidelines outline how this information is used in the procedure for planning and evaluating development proposals.

Basic Information

There are a number of layers of basic information which need to be available to evaluate proposals and these are outlined as follows.

1. A plan (or plans) of the development proposal indicating:
    - existing conditions including topography, soil, vegetation, water and built features; and
    - type, size, location and description of the proposed development.
2. A summary of landscape values which should include:

    2.2 Landscape character-
    - the landscape character unit as defined on Map 1;
    - the broad description corresponding to the unit;
    - a description of the land use, categorised as either natural, rural or town;
    - supplementary description relating directly to the site.

    2.2 Landscape significance-
    - the relevant landscape class or classes as indicated on the Landscape Classes map;
    - detail of the values (aesthetic (natural or rural), social, historic) which can be found on the detailed significance maps;
    - supplementary comment regarding these values using the list of criteria for assessment of significance as a checklist.

    2.3 Information on access and views-
    - the location and sensitivity level of roads near the site;
    - likely views of the site from roads or vantage points, which are indicated on the detailed maps of side views and key views.

Impact assessment

3. Determine the degree of physical changes to the site (changes to vegetation and built form are very common).
4. Determine the degree of visibility of the development area and any development, particularly from Level 1 and 2 travel routes. The best tools for this purpose are transects and representations of the development on photographs from the main surrounding vantage points. The degree of visibility can be determined by the magnitude, contrast and duration of the subject.

5. Determine the impact the physical and visual changes will have on the values of the area (ie. landscape character, significance and access and views) (Examples: the development, in an otherwise natural area, clearly visible from major lookouts, will permanently remove the natural character; the development results in the permanent removal of a significant vegetation feature; the development will temporarily block views.).

Evaluation

6. Determine whether the assessed impacts comply with the policies relevant to assessed values. Summarise which policies are relevant, which are met, and which are not met.
7. If the relevant policies are not met, assess whether the development can be modified to comply. Modification should focus firstly on location (to take advantage of topography, aspect, vegetation and areas of lesser landscape value), and secondly on low impact design of the development's elements.
8. Review other planning considerations to qualify feasibility of the proposal.
9. Approval, modification or rejection of the proposal.

APPENDIX - ACCESS SENSITIVITY LEVEL CRITERIA

The sensitivity levels of travel routes are an indication of the importance of those routes to the experience of people and are established on the volume of people using the area and an understanding of their preferences. Classification of sensitivity levels is based on criteria used in the Visual Management System (VMS)(Williamson & Calder 1979). These criteria are:

Level 1 - High Sensitivity

1. Freeways and state highways with more than 500 vehicles/day.
2. Classified tourist roads.
3. Main sealed roads with more than 75 vehicles/day.
4. Recreation, cultural or scenic sites and viewpoints of national or interstate significance.
5. Walking tracks of national significance.
6. Residential areas with high degrees of scenic concern.
7. Interstate passenger rail lines with daily daylight service.
8. Rail lines of cultural, historic or scenic significance.
9. Navigable rivers, lakes and reservoirs of national recreation significance.

Level 2 - Moderate Sensitivity

1. Main sealed roads with more than 50 vehicles/day.
2. Bush access and other roads with more than 35 vehicles/day.
3. Roads with less than 35 vehicles/day, but planned for recreation promotion within 5 years.
4. Recreation, cultural or scenic sites of state significance,
5. Walking tracks of state or high local significance.
6. Residential areas with moderate degrees of scenic concern.
7. State passenger rail lines with daily rural town service.
8. Navigable rivers, lakes and reservoirs of state recreation significance.

Level 3 - Low Sensitivity

1. Utility roads with occasional recreation traffic up to 10 vehicles/day.
2. Walking tracks of low local significance.
3. State passenger rail lines with less than daily rural town service.

Level 4 - Very Low Sensitivity

1. Bush tracks with infrequent recreation traffic less than 3 vehicles/day.

GLOSSARY

Analysis is the process by which the landscape is broken down into components.

Assessment is a process of synthesis. It is the expression of a composite value based on the value of individual components.

Character see Landscape Character.

Characteristics define distinctive or individual objects. The alternatives of variables used to measure objects.

Classification is the organisation of descriptive information so as to identify a range of homogeneous types or units.

Comparative analysis involves making judgements between places based on the components of those places.

Cultural is used to describe features or settings and is ambiguous, commonly referring to significantly human-modified features or places as well as any feature or place (including natural) which has social significance (eg. places sacred to Aboriginal people). *Human-modified features* and *social significance* can be used to describe these two usages.

Cultural landscape is most often used to describe environments with social and/or historic values. The Burra Charter (Australia ICOMOS) has a very broad definition of cultural significance: aesthetic, historic, scientific or social value for past, present and future generations. *Landscape* (see below) is essentially a cultural construct and the term *cultural landscape* could be interchanged with *landscape*.

Evaluation is the process where assessment results are examined and used to make decisions about alternative futures.

Feature is often used to describe a dominant, easily defined or significant characteristic or combination of characteristics.

Holistic Approach is based on the popular maxim that the whole is greater than the sum of the parts. Similar to intrinsic value in recognising that the environment cannot be judged by an assessment of its components.

Intrinsic value does not acknowledge that comparisons can be made or the environment fragmented in order to make judgements of its value. For example, wilderness exists on the basis of its intrinsic value.

Inventory refers to the identification and collection of data such as land use, slope or topography. Inventory is without value judgements.

Landscape is used by many different people for a variety of purposes, making it a rather ambiguous term. There are three main usages of the term: the first refers to a scene (as in a landscape painting); the second refers to an area which has a common pattern of bio-physical features (as in a landscape ecology); and the third usage refers to the interaction and experience of the physical and biological features of the environment by people (the landscape as we know it). Landscape management, to a certain extent uses all definitions but specialises on an understanding of the latter.

Landscape Approach delineates homogeneous land units based on similarities of landform, soil, and vegetation characteristics (Brown et al 1979).

Landscape Class is a synthesis of assessment results which provides broad categories of landscapes usually based on their importance.

Landscape Character is the combination of natural and cultural characteristics which allow people to differentiate one place from another.

Natural Landscape Significance is significance based on natural landscape characteristics.

Parametric assessment involves measuring or rating the parameters of a landscape component (ie. measuring slope for landform)

Public value can involve direct input from the public into decision making or can be indirect by including research findings on public preferences into assessment procedures.

Qualitative judgements normally express results using criteria which are not themselves readily reduced to simple or precise numerical values. Most landscape assessment requiring judgement is qualitative even if results are expressed numerically (Litton 1979).

Quality, used with words such as landscape, visual or scenic, can refer to either the characteristics (qualities) of a place or the degree of excellence.

Quantitative procedures measure such things as relative relief, areas of vegetation types, or numbers and coverage of water bodies. The results of such measurement are most useful in drawing systematic comparisons between different landscape components, but their ranking to visual value still calls for qualitative judgement (Litton 1979).

Relative value results from making judgements between places on the basis of some shared criteria.

Rural Landscape Significance is significance based on rural landscape characteristics.

Sensitivity Level of travel routes is a measure of how important that route is to people's experience.

Valuation is providing a value based on professional judgement, public preference, economics etc.

Values are derived from the process of valuation.

Visual Absorption Capability is a rating of an area's ability to visually absorb or sustain change based on variables such as landform, vegetation.

BIBLIOGRAPHY

Anderson, T.W., Zube, E.H. & MacConnel, W.P. 1976, 'Predicting scenic resource values', *Studies in landscape perception*, Pub. No. R-76-1, Inst. for Man & Environ., University of Mass., Massachusetts.

Armstrong, A. 1989, 'Cultural landscapes - managing for change', *Historic Environment,* vol. 7, no. 2.

Arthur, L.M., Daniel, T.C. & Boster, R.S. 1977, 'Scenic assessment: an overview', *Landscape Planning,* 4:109:129, Elselvier Scientific Publish. Co., Amsterdam.

Australia ICOMOS 1988, *The Australia ICOMOS Charter for the conservation of places of cultural significance (The Burra Charter).*

Australian Heritage Commission, 1990, *What do we want to pass on to future generations? An overview of criteria and assessment procedures for the Register of the National Estate.*

Blair, S. & Truscott, M. 1989, 'Cultural landscapes - their scope and their recognition', *Historic Environment,* vol. 7, no. 2.

Brown, T.J. & Itami, M.I. 1979, *Landscape principles study, Upper Yarra Valley & Dandenong Ranges, vol. 2, Procedures for Landscape Assessment and Management* , UYVDRA, Victoria.

Castledine, G. & Herrick R. 1995, Subdivision: Assessment of Landscaped [sic] Value and Public Interest', *Australian Environmental Law News*, Issue no. 2.

Craik, K.H. & Fiemer N.R., 1979, 'Setting technical standards for Visual Assessment procedures', *Proceedings of Our National Landscape, A Conference on Applied Techniques for Analysis and Management of the Visual Resource,* PSW Forest and Range Experiment Station, USDA Forest Service, Berkeley, California.

Craik, K.H. 1977, 'Multiple scientific paradigms in environmental psychology', *International Journal of Psychology,* 12, pp147-157.

Department of CALM 1994, *Reading The Remote. Landscape Characters Of Western Australia.*

Department of Conservation and Land Management, 1987, *Leeuwin-Naturaliste National Park Draft Management Plan,* Perth, WA.

Department of Conservation and Land Management, 1989, *Leeuwin-Naturaliste National Park Management Plan 1989-1999,* Perth, WA.

Department of Conservation and Land Management, 1994, *Reading the Remote,* Perth, WA.

Department of Conservation and Land Management, 1997, *Leeuwin-Naturaliste Landscape Assessment Study,* Perth, WA.

Fabos, J.G. & McGregor, A. 1979, Assessment of visual/aesthetic landscape qualities, Centre For Environmental Studies, University of Melbourne.

James B. 1992, 'Visual Resource Assessment', *Rural Strategy,* Shire of Augusta-Margaret River, WA.

James B. 1995, *Caves Road Visual Management Study,* Shire of Busselton, WA

Johnston, C. 1989, 'Whose views count?: Achieving community support for landscape conservation', *Historic Environment,* vol. 7, no. 2.

Land Use Consultants, 1971, *A planning classification of Scottish landscape resource,* Countryside Commission for Scotland, Perth.

Landvision, 1996, *Urban Settlements Study,* Ministry for Planning, Perth, WA.

Leonard, L. & Hammond, R. 1983, *Landscape character types of Victoria,* Forests Commission, Victoria.

Lewis, P.M. 1964, 'Quality corridors for Wisconsin', *Landscape Architecture Quarterly,* January, pp100-107.

Linton, D.L. 1968, 'The assessment of scenery as a natural resource', *Scottish Geographical Magazine,* 84, pp219-239.

Litton, R.B. 1979, 'Descriptive approaches to landscape analysis', *Proceedings of our national landscape, A conference on applied techniques for analysis and management of the visual resource,* PSW Forest and Range Experiment Station, USDA Forest Service, Berkeley, California.

Lowenthal, D. 1978, *Finding valued landscapes, Environmental perception research working paper no.4,* Inst. Environ. Stud., University of Toronto, Toronto.

McCloskey, M. 1979, Litigation and landscape esthetics [sic], *Proceedings of our national landscape, A conference on applied techniques for analysis and management of the visual resource,* PSW Forest and Range Experiment Station, USDA Forest Service, Berkeley, California.

McHarg, I. 1969, *Design with nature,* Natural History Press, Garden City, N.Y..

Meinig, D.W. 1979, *The Interpretation of Ordinary Landscapes, Geographical Essays,* ed D.W. Meinig, Oxford University Press, New York.

Shire of Augusta-Margaret River (n.d.), *Heritage Inventory Nominations.*

Shire of Augusta-Margaret River 1992 *Rural Strategy,* Margaret River, WA.

Shire of Busselton, (n.d.), *Heritage Inventory - List of Heritage Places*

Shire of Busselton, 1995, *Yallingup Special Character Area Policy - Preliminary Draft.*

Smith, F.G. 1973, *Vegetation Survey of Western Australia - Vegetation Map of Busselton and Augusta.* Perth, Western Australian Department of Agriculture WA.

State Planning Commission, 1988, *Leeuwin-Naturaliste Region Plan: Stage 2 (Draft),* Perth, WA.

State Planning Commission, 1994, *Leeuwin-Naturaliste Ridge Interim Statement of Planning Principles.* Perth, WA.

Taylor, K. 1989, 'Conservation and interpretation study of the rural heritage landscape of the Lanyon-Lambridge area, ACT', *Historic Environment,* vol. 7, no. 2.

Tille P.F. & Lantzke N.C. 1990, *Busselton, Margaret River, Augusta Land Capability, Land Resource, Series No. 5,* Department of Agriculture, WA.

Western Australian Planning Commission, 1995, *Issues, Opportunities and Directions: Discussion Paper for Public Comment.* Perth, WA.

Western Australian Planning Commission, 1996, *Report of Social Assessment Survey,* Perth, WA.

Williamson, D.N. & Calder, S.W. 1979, 'Visual resource management of Victoria's forests: a new concept for Australia', *Landscape Planning,* 6:313-341, Elselvier Scientific Publish. Co., Amsterdam.

Williamson, D.N. & Chalmers, J.A. 1982, *Perceptions of forest scenic quality in northeast Victoria: a technical report of phases 1 & 11,* Forests Commission, Victoria.

Zube, E.H., Pitt, D.W. & Anderson, T.W. 1974, *Perception and measurement of scenic resource values in the Southern Connecticut River Valley,* University of Massachusetts, Massachusetts.