SHANNON AND D'ENTRECASTEAUX NATIONAL PARKS

Management Plan
Maps and Appendices

2012

Department of Environment and Conservation

Conservation Commission of Western Australia

MAP 1. MANAGEMENT PLANNING AREA

Key

- Gingilup Swamps Nature Reserve

The Planning Area

The Parks

- Shannon National Park
- D'Entrecasteaux National Park
- Section 5(1)(g) & 5(1)(h) reserves

Proposed Additions

- Cable Sands land addition
- Pastoral Lease addition
- Land to be added under the FMP 2004-2013
- Management Plan boundary
- Roads
- Lighthouse
- Shipwreck
- Granite outcrops
- Hills
- Beaches with 4WD access

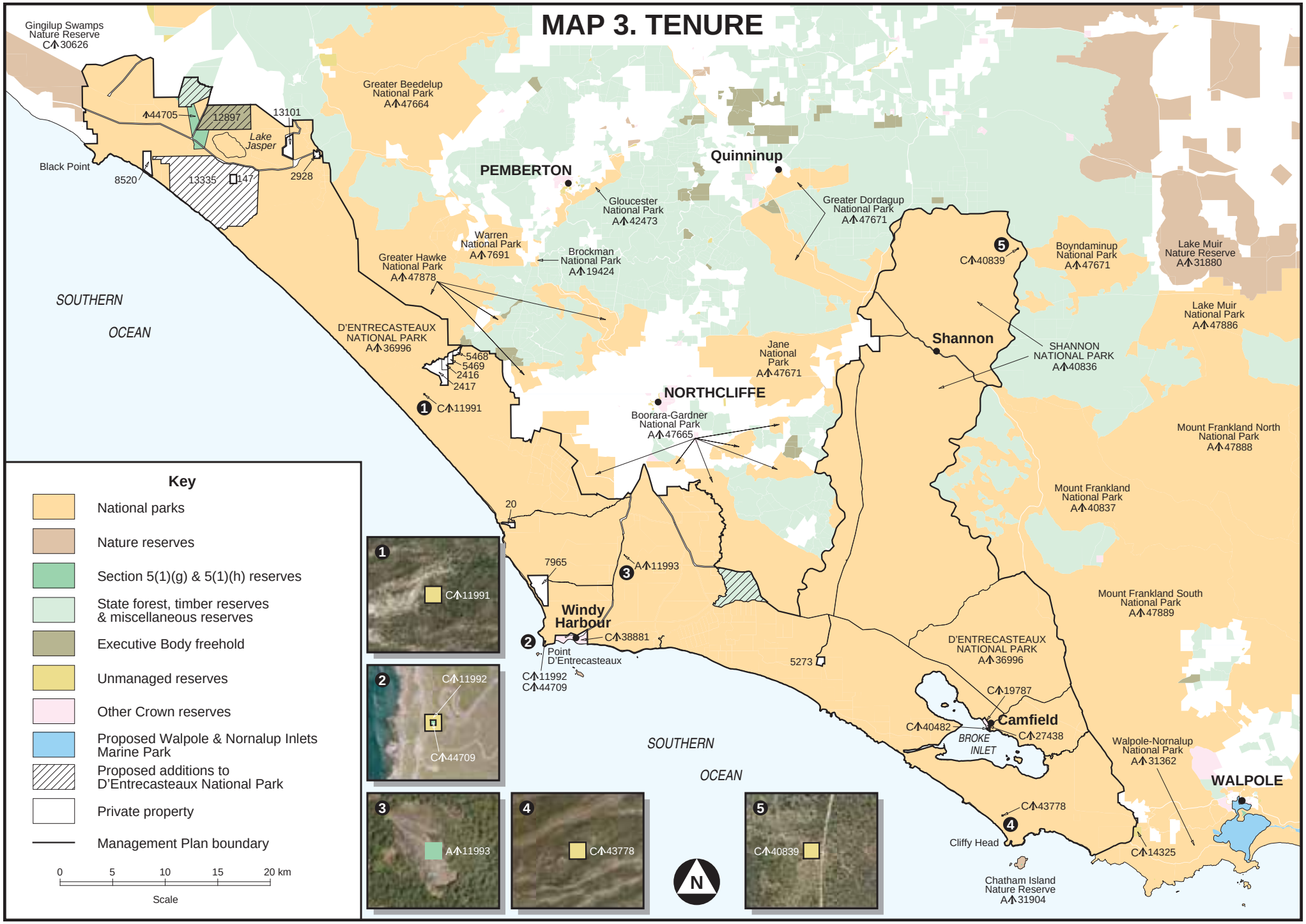
MAP 2. REGIONAL CONTEXT

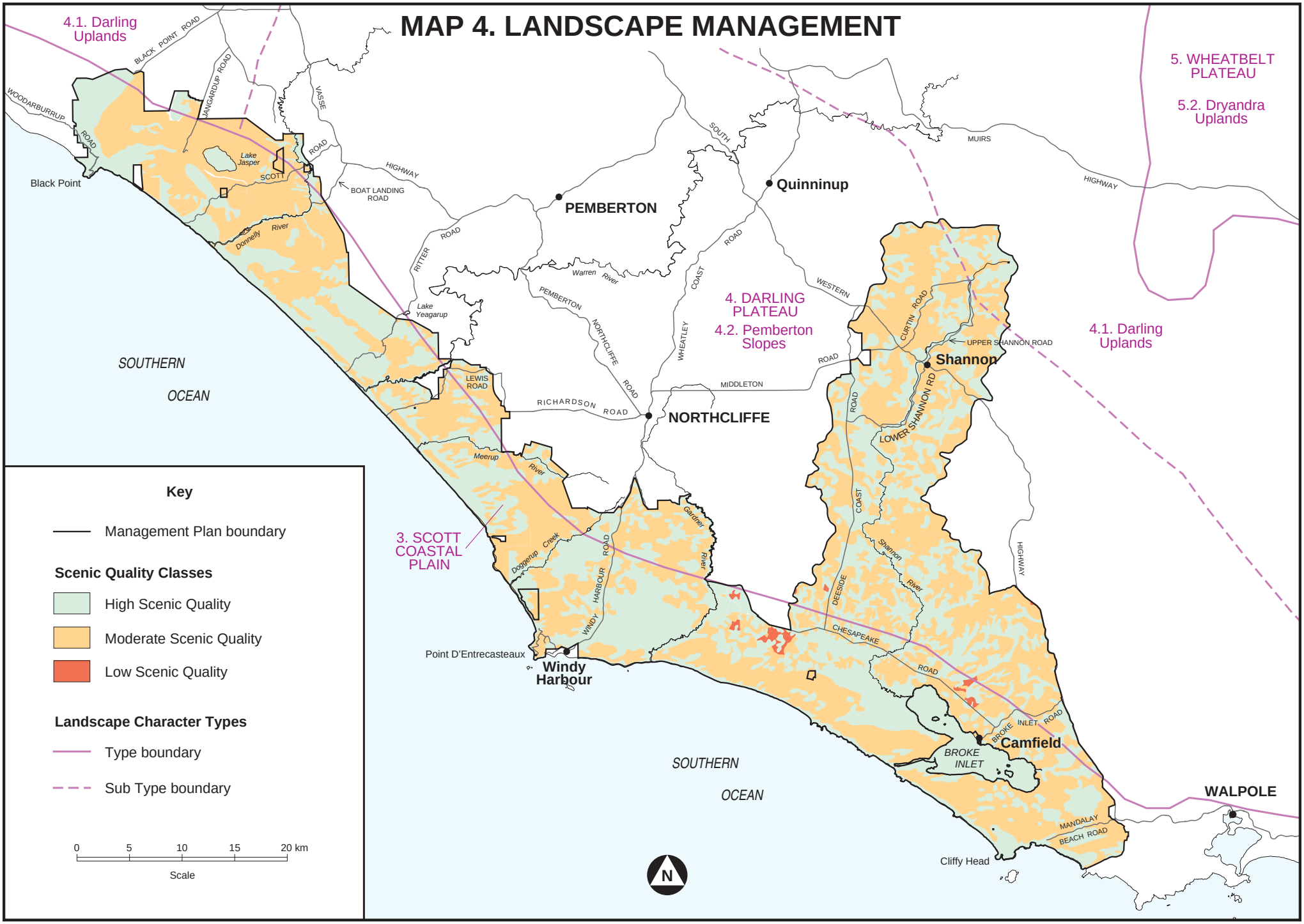
Key

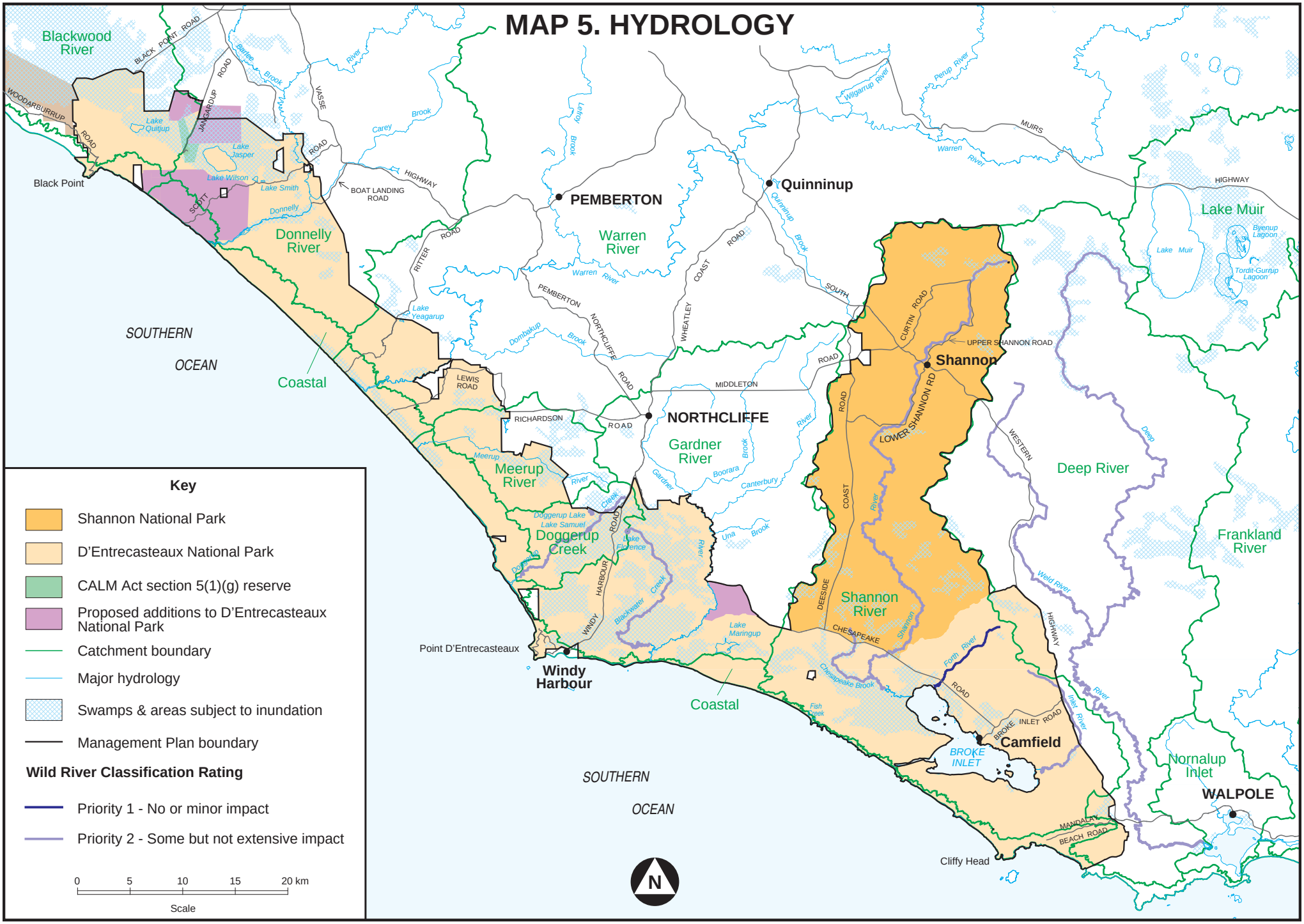
- DEC Region boundary
- DEC District boundary
- Local Government Authority boundary
- South West Planning Region boundary
- Bibbulmun Track
- Munda Biddi Trail
- Management Plan boundary
- Proposed additions to conservation estate
- Walpole Wilderness area
- National Park
- Nature Reserve
- State Forest
- Conservation Park
- Section 5(1)(g) & 5(1)(h) reserves

0 10 20 30 40 50 km

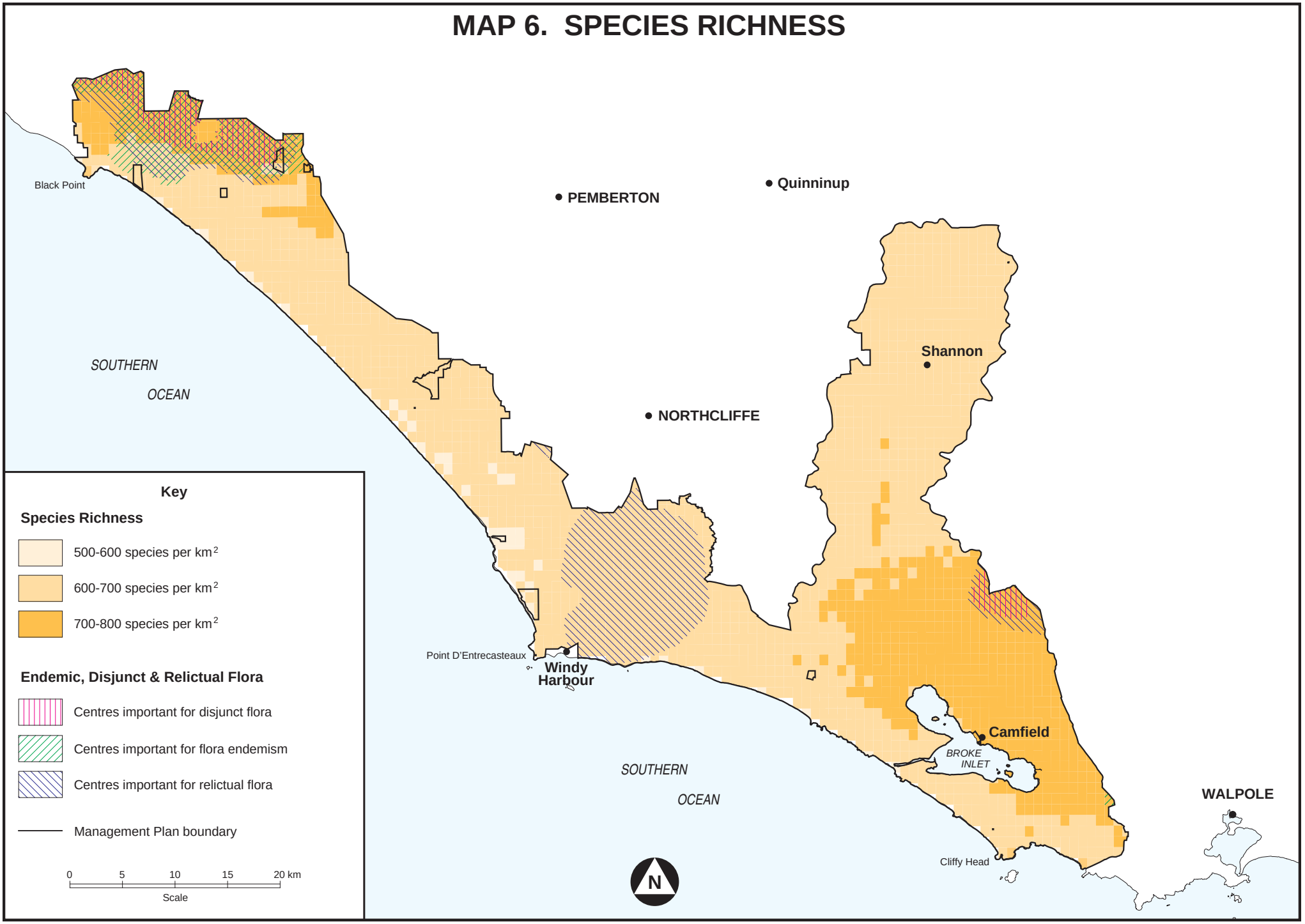
Scale


MAP 3. TENURE
Gingilup Swamps Nature Reserve C 30626
Greater Beedelup National Park A 47664
44705
12897
13101
Lake Jasper
Black Point
8520
13335
147
2928
PEMBERTON
Quinninup
Gloucester National Park A 42473
Greater Dordagup National Park A 47671
Warren National Park A 7691
Brockman National Park A 19424
Greater Hawke National Park A 47878
C 40839
Boyndaminup National Park A 47671
Lake Muir Nature Reserve A 31880
Lake Muir National Park A 47886
SOUTHERN
OCEAN
D'ENTRECASTEAUX NATIONAL PARK A 36996
5468
5469
2416
2417
C 11991
Jane National Park A 47671
Shannon
SHANNON NATIONAL PARK A 40836
NORTHCLIFFE
Boorara-Gardner National Park A 47665
Mount Frankland North National Park A 47888
Mount Frankland National Park A 40837
20
7965
A 11993
Windy Harbour
C 38881
Point D'Entrecasteaux
C 11992
C 44709
5273
Mount Frankland South National Park A 47889
D'ENTRECASTEAUX NATIONAL PARK A 36996
C 19787
Camfield
C 40482
C 27438
BROKE INLET
Walpole-Nornalup National Park A 31362
WALPOLE
SOUTHERN
OCEAN
C 43778
Cliffy Head
C 14325
Chatham Island Nature Reserve A 31904
Key
National parks
Nature reserves
Section 5(1)(g) & 5(1)(h) reserves
State forest, timber reserves & miscellaneous reserves
Executive Body freehold
Unmanaged reserves
Other Crown reserves
Proposed Walpole & Nornalup Inlets Marine Park
Proposed additions to D'Entrecasteaux National Park
Private property
Management Plan boundary
0 5 10 15 20 km
Scale
1
C 11991
2
C 11992
C 44709
3
A 11993
4
C 43778
5
C 40839
N

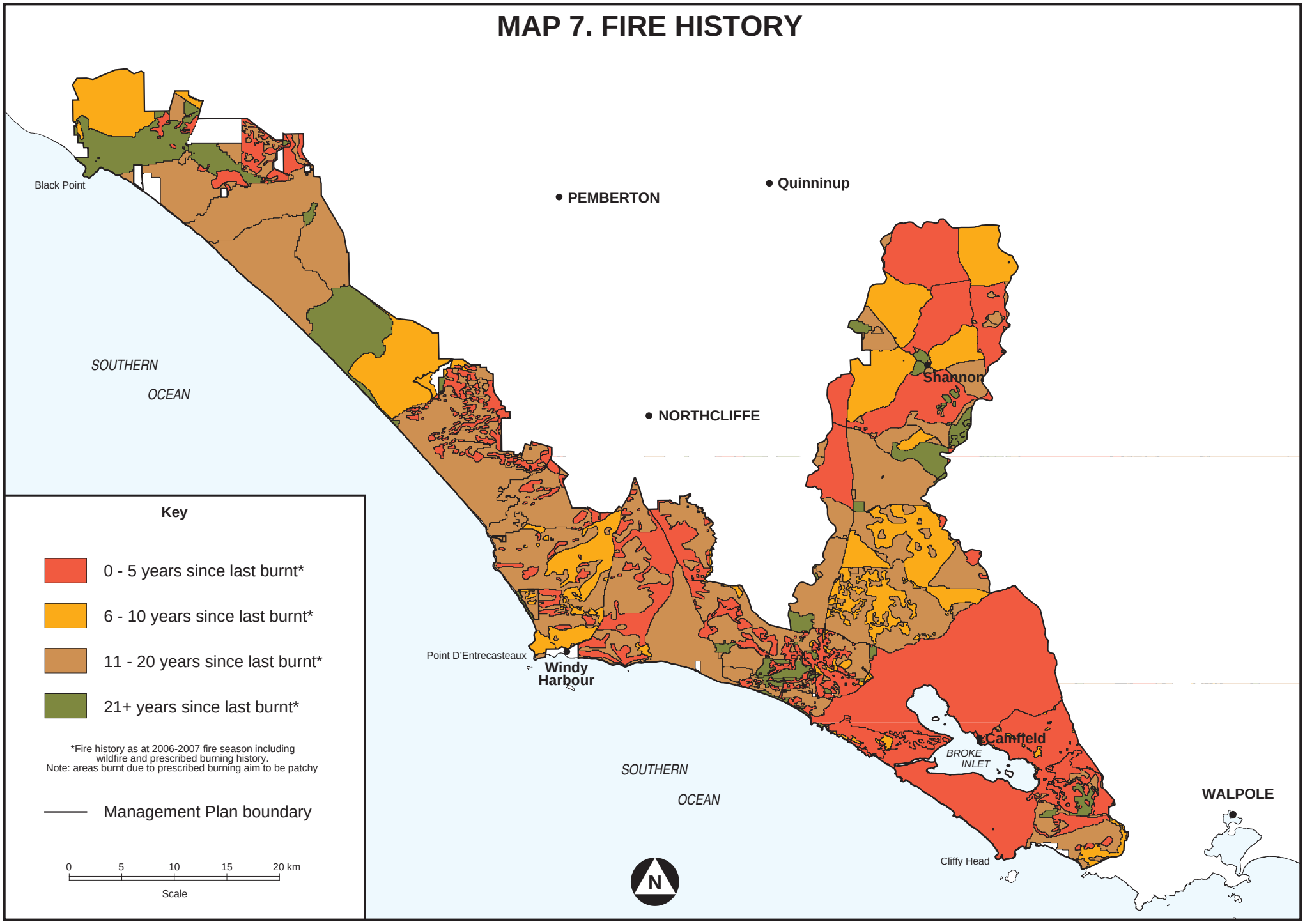

MAP 4. LANDSCAPE MANAGEMENT
4.1. Darling Uplands
5. WHEATBELT PLATEAU
5.2. Dryandra Uplands
4. DARLING PLATEAU
4.2. Pemberton Slopes
4.1. Darling Uplands
3. SCOTT COASTAL PLAIN
Black Point
PEMBERTON
Quinninup
NORTHCLIFFE
Shannon
Windy Harbour
Point D'Entrecasteaux
Camfield
WALPOLE
Cliffy Head
SOUTHERN OCEAN
SOUTHERN OCEAN
Lake Jasper
Lake Yeagarup
Warren River
Donnelly River
Meerup River
Gardner River
Shannon River
Doggerup Creek
BROKE INLET
BLACK POINT ROAD
WOODARBURRUP ROAD
JANGARDUP ROAD
VASSE HIGHWAY
SOUTH WESTERN HIGHWAY
MUIRS HIGHWAY
BOAT LANDING ROAD
RITTER ROAD
COAST ROAD
PEMBERTON NORTHCLIFFE ROAD
WHEATLEY COAST ROAD
CURTIN ROAD
UPPER SHANNON ROAD
LOWER SHANNON RD
LEWIS ROAD
RICHARDSON ROAD
MIDDLETON ROAD
DEESIDE ROAD
CHESAPEAKE ROAD
WINDY HARBOUR ROAD
BROKE INLET ROAD
MANDALAY BEACH ROAD
Key
Management Plan boundary
Scenic Quality Classes
High Scenic Quality
Moderate Scenic Quality
Low Scenic Quality
Landscape Character Types
Type boundary
Sub Type boundary
0 5 10 15 20 km
Scale
N


MAP 5. HYDROLOGY
Blackwood River
Black Point
Donnelly River
Coastal
SOUTHERN OCEAN
PEMBERTON
Warren River
Quinninup
Lake Muir
Shannon
NORTHCLIFFE
Gardner River
Meerup River
Doggerup Creek
Deep River
Frankland River
Shannon River
Point D'Entrecasteaux
Windy Harbour
Coastal
Camfield
BROKE INLET
Nornalup Inlet
WALPOLE
Cliffy Head
SOUTHERN OCEAN
Key
Shannon National Park
D'Entrecasteaux National Park
CALM Act section 5(1)(g) reserve
Proposed additions to D'Entrecasteaux National Park
Catchment boundary
Major hydrology
Swamps & areas subject to inundation
Management Plan boundary
Wild River Classification Rating
Priority 1 - No or minor impact
Priority 2 - Some but not extensive impact
0 5 10 15 20 km
Scale
N

MAP 6. SPECIES RICHNESS



MAP 7. FIRE HISTORY



MAP 8. FIRE LANDSCAPE CONSERVATION UNITS

Key

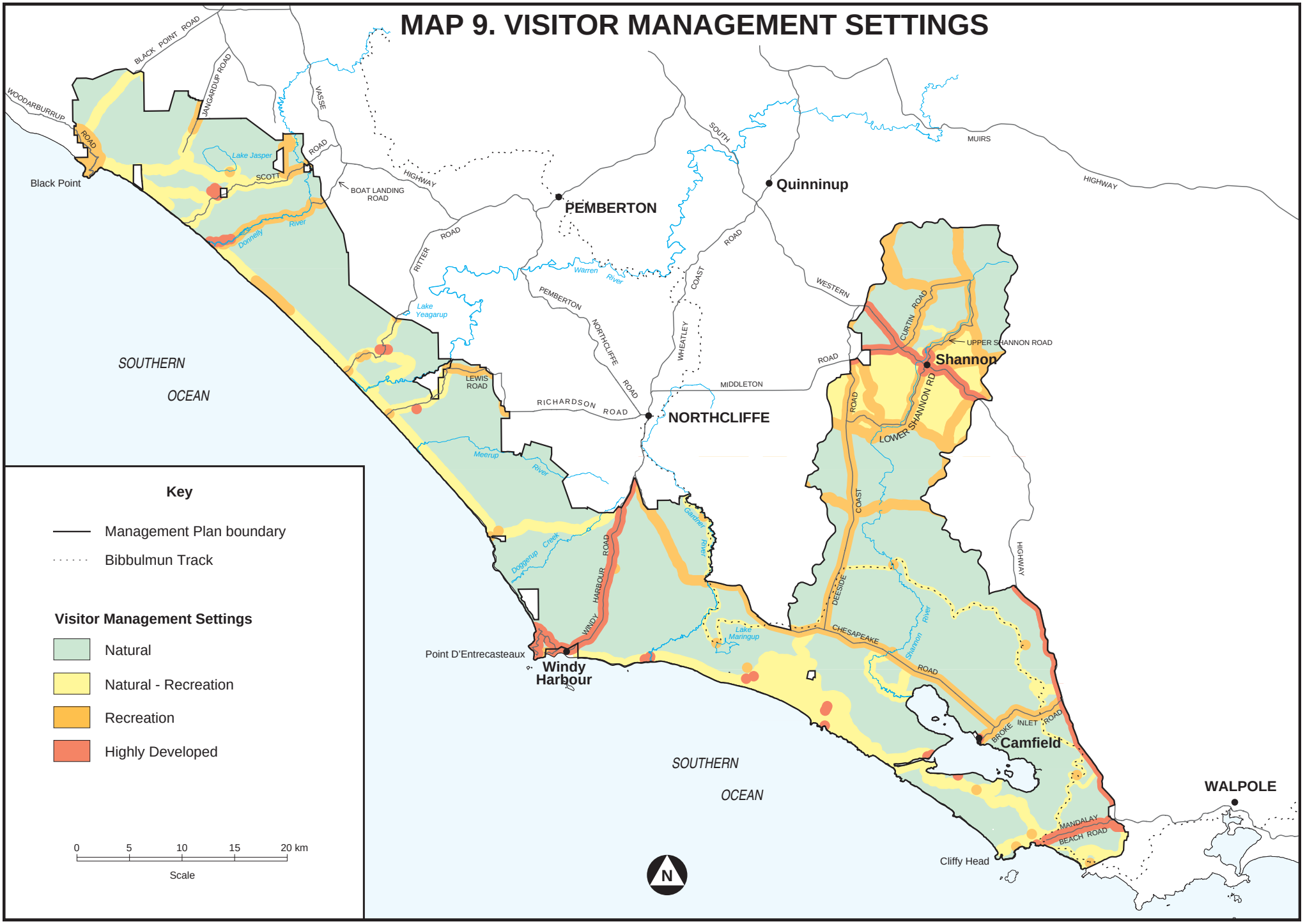
Fire Landscape Conservation Units within the Planning Area

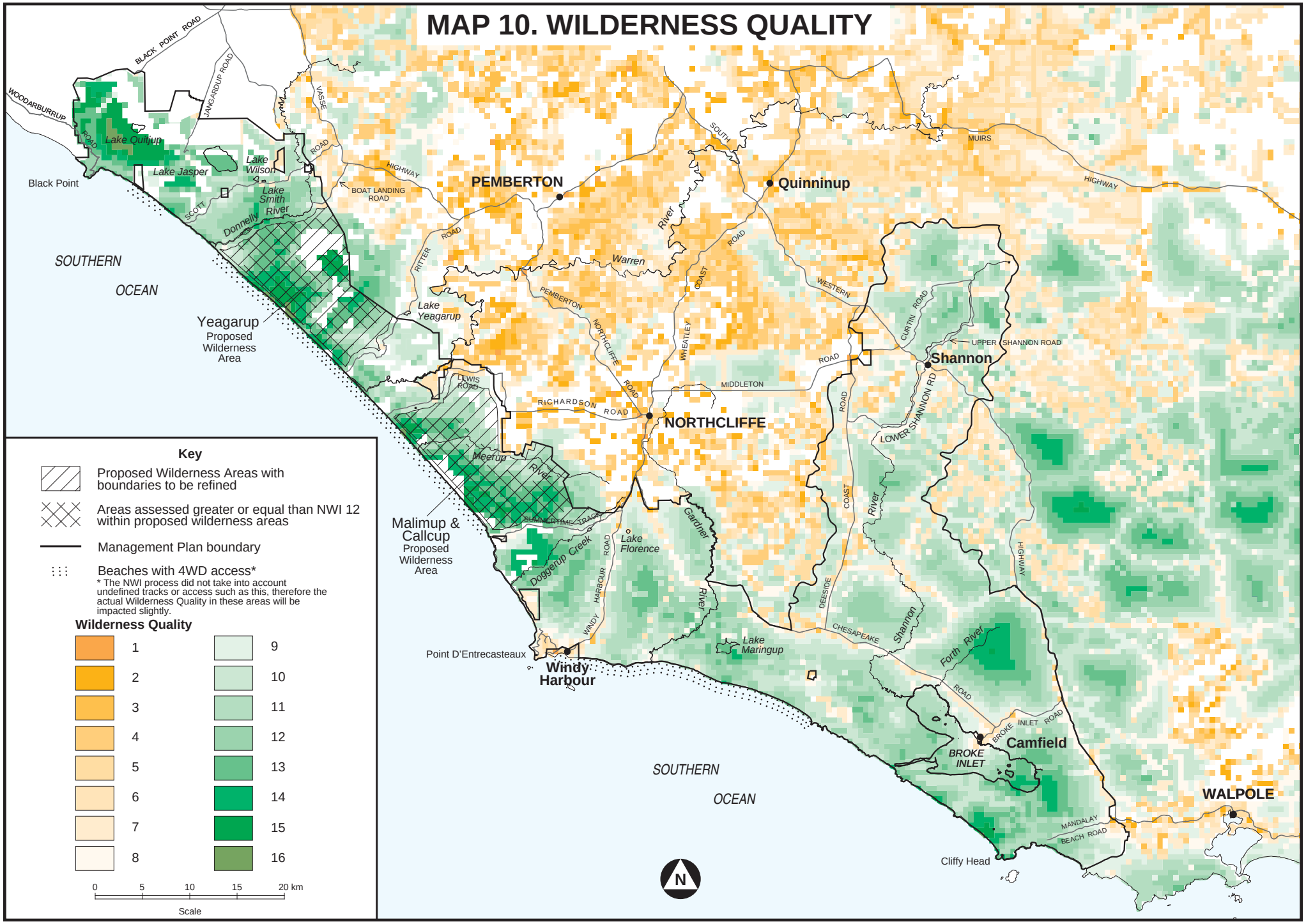
- **BP** — **Blackwood Plateau** — Shallow valleys and uplands
- **BSP** — **Blackwood Scott Plains** — Uplands, shallow valleys and alluvial soils
- **CK** — **Central Karri** — Plateau remnants, sandy deposits, shallow valley slopes
- **NK** — **Northern Karri** — Mildly incised valleys, slopes and uplands of plateau, with swampy and sandy deposits
- **SCJ** — **Strachan Cataminup Jigsaw** — Strachan mosaic of incised river valleys, linear sedimentary deposits and remnants
- **SD** — **Southern Dunes** — Stable and unstable dunes with associated valley systems
- **SK** — **Southern Karri** — Swampy plains and deposits, lateritic uplands, together with minor valleys and depressions
- **SHT** — **Southern Hilly Terrain** — Hills and enclosed swamps in the south coast hinterland
- **SSP** — **Southern Swampy Plains** — Swampy plains. Swamps, uplands rising above swampy plains

Management Plan boundary

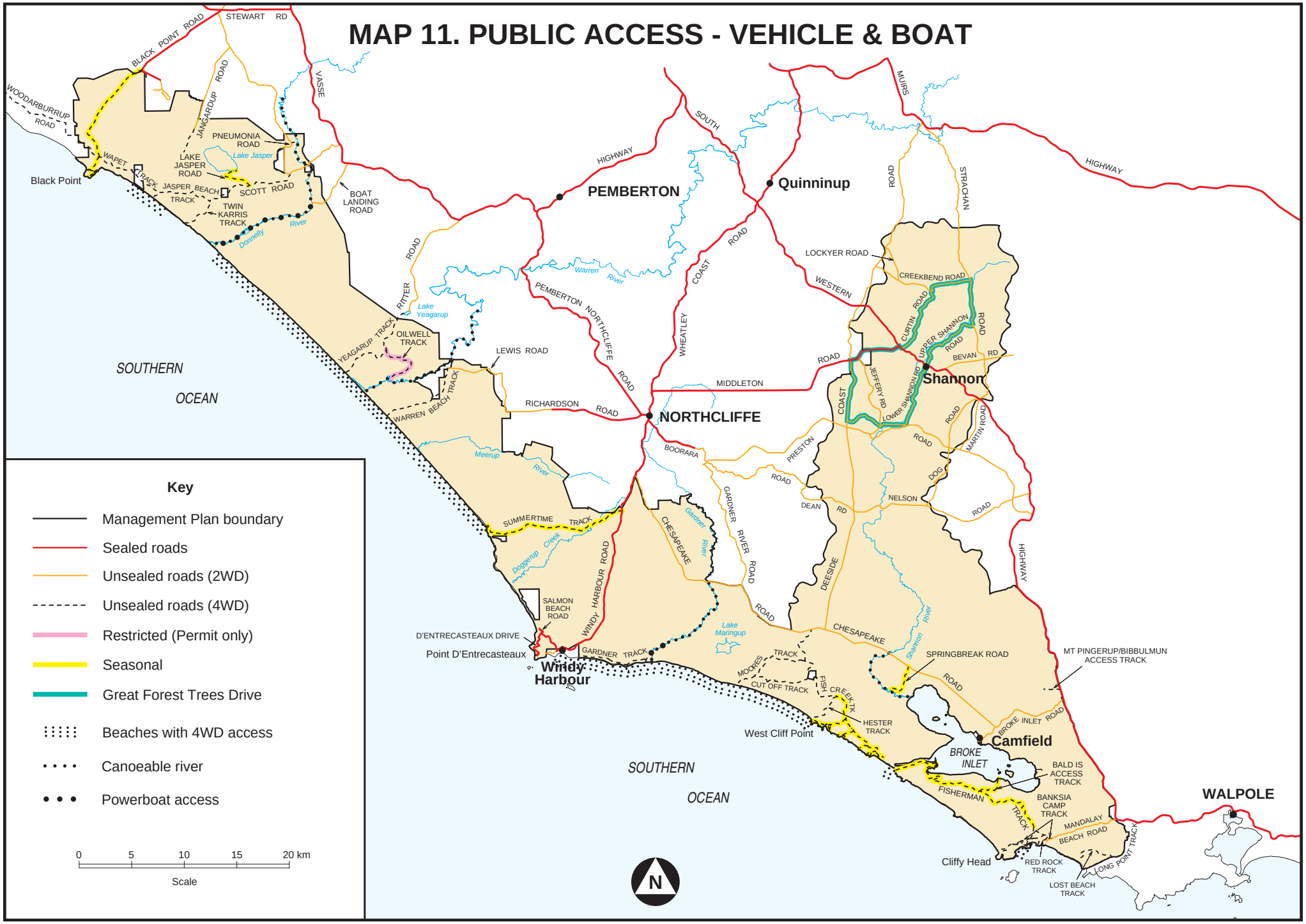
Fire Exclusion Reference Areas

MAP 9. VISITOR MANAGEMENT SETTINGS

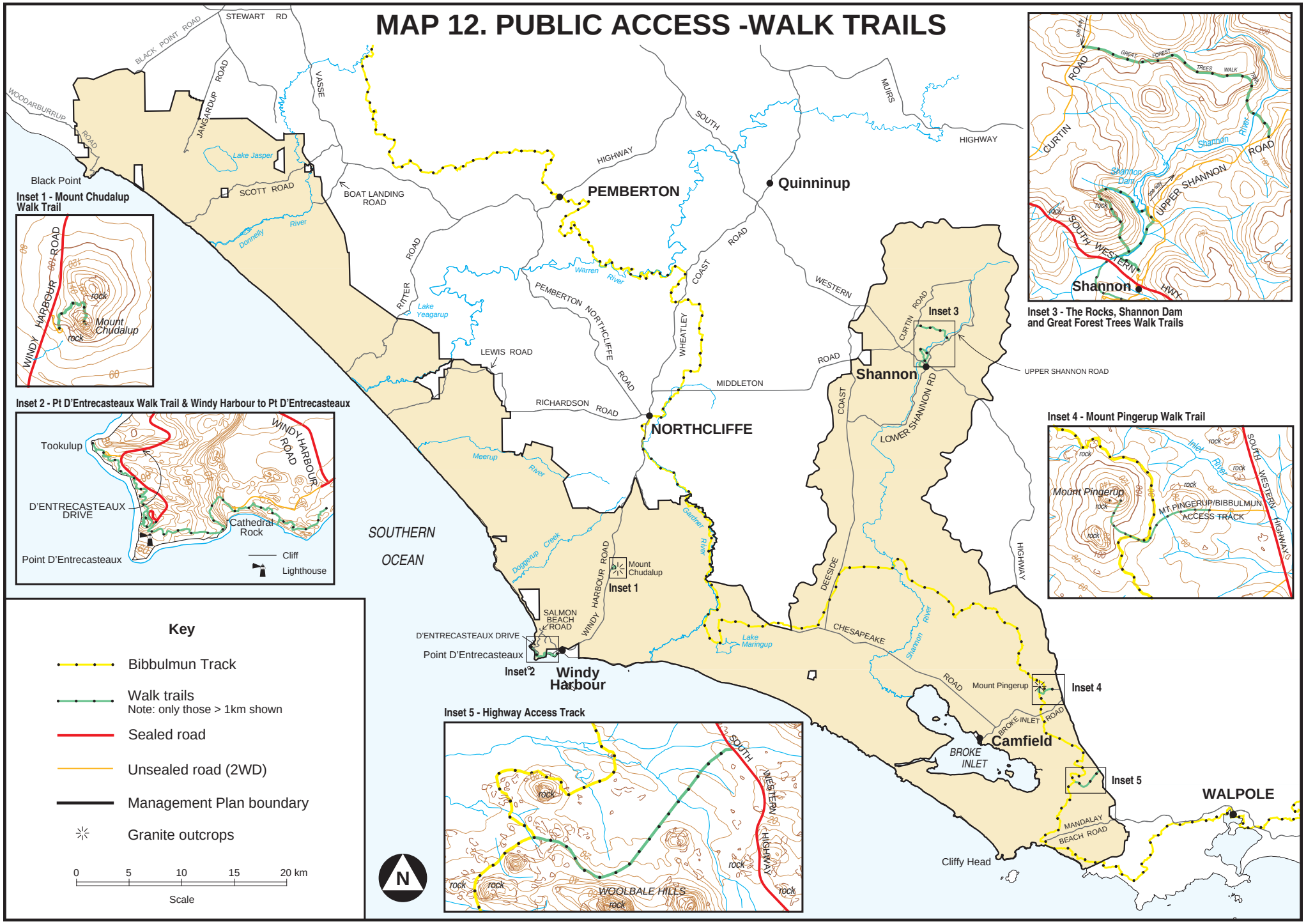



MAP 10. WILDERNESS QUALITY
Key
Proposed Wilderness Areas with boundaries to be refined
Areas assessed greater or equal than NWI 12 within proposed wilderness areas
Management Plan boundary
Beaches with 4WD access*
* The NWI process did not take into account undefined tracks or access such as this, therefore the actual Wilderness Quality in these areas will be impacted slightly.
Wilderness Quality
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
0 5 10 15 20 km
Scale
N
PEMBERTON
Quinninup
NORTHCLIFFE
Shannon
Windy Harbour
Camfield
WALPOLE
Black Point
Yeagarup
Proposed Wilderness Area
Malimup & Callcup
Proposed Wilderness Area
Point D'Entrecasteaux
Cliffy Head
SOUTHERN OCEAN
SOUTHERN OCEAN
Lake Quilup
Lake Jasper
Lake Wilson
Lake Smith
Lake Yeagarup
Lake Florence
Lake Maringup
Warren River
Meerup River
Doggerup Creek
Gardner River
Shannon River
Forth River
BROKE INLET
BLACK POINT ROAD
WOODARBURRUP ROAD
JANGARDUP ROAD
VASSE HIGHWAY
BOAT LANDING ROAD
SOUTH WESTERN HIGHWAY
MUIRS HIGHWAY
RITTER ROAD
PEMBERTON NORTHCLIFFE ROAD
WHEATLEY COAST ROAD
CURTIN ROAD
UPPER SHANNON ROAD
LOWER SHANNON RD
RICHARDSON ROAD
MIDDLETON ROAD
LEWIS ROAD
SUMMERTIME TRACK
COAST ROAD
DEESIDE ROAD
CHESAPEAKE ROAD
HARBOUR ROAD
WINDY INLET ROAD
BROKE INLET ROAD
MANDALAY BEACH ROAD
SCOTT ROAD
Donnelly River

MAP 11. PUBLIC ACCESS - VEHICLE & BOAT



MAP 12. PUBLIC ACCESS -WALK TRAILS



MAP 13. EXISTING RECREATION USE

Key

- Ranger station
- Information
- Radio guided drive
- Built accommodation
- Day use facilities
- Vista point
- Toilet
- Wheelchair access
- Camping
- Boating
- Swimming
- Surfing
- Walking
- Fishing
- Caravanning

Management Plan boundary

Management Plan area

Visitor Facilities

- Major recreation sites
- Medium recreation sites
- Minor recreation sites

Malimup Beach Camp — Recreation site with beach camping available

APPENDICES

APPENDIX 1. SUMMARY OF TENURE RECOMMENDATIONS

Tenure Summary Key Points (see Section 3 Management Plan Area)

- The *Forest Management Plan 2004-2013* has recommended the addition of two State forest areas to D'Entrecasteaux National Park.
- Land excised from D'Entrecasteaux National Park and a private property were combined to create a section 5(1)(g) reserve to facilitate mining.
- Quannup pastoral lease, which expires in 2015, remains within the boundary of D'Entrecasteaux National Park.
- There are 12 private properties within the boundaries of the parks.
- There are a number of unused road reserves within the parks that are unnecessary—in particular the 20 kilometre extension to Woodarburrup Road to connect to Scott Road.

The objective is to incorporate appropriate lands and waters within the parks where possible to consolidate the parks, preserve and enhance the values of the parks and extend the national reserve system.

This will be achieved by:

1. Incorporating the section 5(1)(g) reserve near Lake Jasper back into D'Entrecasteaux National Park .
2. Purchasing the Quannup pastoral lease prior to 2015 or having the land vested in the Conservation Commission at the cessation of the lease in 2015 (see Section 11 Biogeography).
3. Implementing the recommendations in the *Forest Management Plan 2004-2013* to have 1600 hectares of State forest added to D'Entrecasteaux National Park (see Section 11 Biogeography).
4. Purchasing private property within the parks when it becomes available according to conservation value of the areas and as funds allow and adding it to the parks (see Section 11 Biogeography).
5. Negotiating with the relevant State agencies and local authorities to add important conservation and recreation reserves under their control to the parks (see Section 11 Biogeography).
6. Negotiating with private property owners, Main Roads Western Australia and local authorities to ensure that road reserves to park enclaves are best located to protect environmental and landscape values of the parks and satisfy owners access requirements (see Section 26 Visitor Access).
7. Negotiating to cancel unnecessary road reserves within the parks and adding these to the national parks (see Section 26 Visitor Access).
8. Acquire, by purchase, exchange or other means when opportunities arise and funds are available, any other areas that adjoin the parks that have significant conservation or recreational values, management benefits or that could protect areas with these values within the parks and contribute to the national reserve system (see Section 11 Biogeography).
9. Extending the boundaries of the D'Entrecasteaux National Park to include the Gardner River estuary (see Section 15 Catchment Protection).
10. Promoting compatible management of Broke Inlet with the purposes and management of D'Entrecasteaux National Park and supporting the creation of a Broke Inlet Marine Park (see Section 15 Catchment Protection).

APPENDIX 2. PERFORMANCE ASSESSMENT

Key Performance Indicators for the Parks

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
Part C Managing the Natural Environment	Section 14. Landscape Quality			
❖ Intact and varied natural landscapes and high scenic quality	To protect and enhance the parks visual landscape qualities	14.1 Changes to areas of high scenic quality	14.1 No permanent or long-term loss of high quality scenic areas within the parks	5-yearly
	Section 15. Catchment Protection			
❖ Reservation of almost an entire water catchment	To protect and conserve the quality and quantity of soil and water within the parks, particularly the wetland systems, the rivers and estuaries and the coastline	15.1. The area of eroded soil within the parks	15.1 No increase as a result of human activities	5-yearly
❖ Sites of outstanding geoheritage, important for research and for understanding the formation of landscape and environment		15.2. Water quality and quantity in wetlands and rivers within the parks	15.2 No significant adverse change to water quality or quantity in the Jasper Wetland System, *Reedia* Swamps threatened ecological community, or Warren or Donnelly rivers	Annually
	Section 17. Native Animals and Habitats			
❖ Extensive areas of intact fauna habitat and populations of rare and priority fauna	To protect and conserve the diversity and distribution of the native fauna and habitats within the parks	17.1 Changes in the range and population size of critical weight range mammals	17.1 The successful maintenance, or where appropriate increase, of self-sustaining populations subject to natural variations	Annually or as per recovery plans if applicable
	Section 18. Species and Communities of Special Conservation Significance			
❖ Extensive, varied, unique and nationally significant wetland systems that provide habitat for a range of endemic flora and fauna	To protect species and communities of conservation significance	18.1 Population numbers of threatened or restricted flora, and the number of individuals within populations	Remains stable or increases from 2012 levels subject to natural variations	3-yearly or as per recovery plans if applicable
❖ A rich mosaic of vegetation complexes representing riparian, wetland, woodland and forest ecosystems protecting restricted vegetation communities and conservation significant flora populations		18.2 The range and population numbers of threatened and specially protected fauna	Maintained or increased subject to natural variations	3-yearly or as per recovery plans if applicable
		18.3 Species composition and structure within granite outcrops	Maintained subject to natural variations	3-yearly
		18.4 The number and condition of all occurrences of threatened ecological communities within the parks	Status of threatened ecological communities remain stable or improve	3-yearly or as per recovery plan as applicable
❖ Extensive areas of intact fauna habitat and populations of conservation significant fauna		18.5 Translocated populations	Successfully established and evidence of second generation progeny	3-yearly

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
	Section 19. Environmental Weeds			
	To minimise the impact of environmental weeds on park values	19.1 The number and cover of environmental weed species	Decreasing the number and the area covered by environmental weed species rated as 'high' priority over the life of the plan	5-yearly
		19.2 The populations of species and communities of conservation significance	No decrease as a result of weed invasion	5-yearly
	Section 20. Introduced and Problem Animals			
	To minimise the impact of introduced and other problem animals, as well as associated control programs, on the key values of the parks	20.1 Threat to native species and communities by problem animal species over the life of the plan	No increase in the level of impact on the *Reedia* swamps threatened ecological community from feral pigs No loss of populations of critical weight range mammals attributable to foxes	5-yearly
	Section 21. Diseases			
	To prevent introducing plant and animal diseases into disease-free areas and minimise the spread or impact where they are already present	21.1 Protectable areas within the parks	No new human-assisted infestations of disease caused by *P. cinnamomi* in protectable areas	5-yearly
	Section 22. Fire			
	To protect and maintain conservation values while protecting people, property, heritage and recreation assets in and near the parks	22.1 The fuel age distribution within the Landscape Conservation Units	Match the defined frequency distribution model for each unit	Annually
		22.2 The impact on human life or significant community assets	No loss of human life or significant community assets, or serious injury attributable to the Department's fire management	Annually
		22.3 The area of adjacent land that is affected by wildfire emanating from the parks	A reduction in the number of fires originating from the parks that affect private property during the life of the plan as compared to the previous 5-year period	5-yearly

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
		22.4 The condition of nominated fire sensitive habitats and communities (e.g. granite outcrops, wetlands, *Reedia* Swamp communities)	Fire sensitive habitats and communities maintained	5-yearly
		22.5 The persistence of fire sensitive species within the parks (e.g. *Banksia verticillata*, *B. seminuda* or *Melaleuca viminea*)	Nominated populations of species maintained	5-yearly
Part D Managing our Cultural Heritage	Section 23. Indigenous Heritage			
❖ Aboriginal sites and landscapes of mythological, ceremonial, cultural and spiritual significance ❖ Sites, landscapes and stories of cultural and ceremonial significance to non-Indigenous people	To protect and conserve the Aboriginal cultural heritage and cultural resources within the parks	23.1 Protection of registered heritage sites	No disturbance without formal approval	3-yearly
		23.2 Involvement of Aboriginal people in management	Increased level of Aboriginal involvement in management of the parks	3-yearly
Part E Managing Visitor Use	Section 25. Recreational Opportunities			
❖ Remote areas of wilderness ❖ A terrestrial environment that provides opportunities for a wide range of nature-based recreational opportunities including recreational driving, bushwalking, picnicking, camping and fishing ❖ Coastal day use opportunities for local communities of the lower south-west	To provide visitors with a range of sustainable nature-based experiences to facilitate their understanding of the natural values of the area	25.1 The range of visitor management settings over the life of the plan	No reduction in the area of wilderness, natural or natural-recreation visitor management settings	5-yearly
		25.2 Visitor satisfaction levels of nature-based experiences within the parks over the life of the plan	Maintained or increased	3-yearly

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
	Section 26. Visitor Access			
A terrestrial environment that provides opportunities for a wide range of nature-based recreational opportunities including recreational driving, bushwalking, picnicking, camping, fishing and wildlife interaction	To provide and maintain a range of safe access types that do not adversely impact on conservation or other values of the parks and facilitate the visitor's appreciation of the parks' natural values	26.1 Condition of four-wheel drive tracks designated for seasonal closure or permit only access and protection of values at the destination	Track/destination condition is maintained or improved from 2009 levels	Annually
	Section 27. Recreational Use			
Nature-based tourism opportunities for commercial tour operators, focusing on the parks' wide range of natural and cultural values	To provide opportunities for recreational driving within the parks that do not conflict with other users, damage the environment or cause damage or injury to visitors and their vehicles	27.1 Incidence of inappropriate recreational driving	Number of incidents decrease from 2012 levels	Annually
	To provide horse-riding opportunities in the parks that minimise the impact on the environment and on other values	27.2 Condition of landscapes used for commercial horse-riding	Landscape condition is maintained	5-yearly
	To provide for boating recreation activities that are compatible with protecting and maintaining conservation values and without impairing other recreation activities	27.3 Condition of the navigable reaches of Donnelly and Gardner rivers	Shoreline condition maintained or improved	5-yearly
	To provide a range of quality camping opportunities in the parks whilst minimising environmental impacts and conflict between users	27.4 Tree condition at selected camp sites	Less than 10% of trees with damage Less than 10% of trees with root exposure	Annually
		27.5 Cleanliness at selected camp sites	Minor levels of or no litter present	Annually
	To reduce the impact of campfires on the parks' environment	27.6 Coarse woody debris	Quantities are not diminished by human usage from predetermined baseline at selected sites	Annually
	Section 29. Visitor Safety			
	To minimise risks to public safety associated with visiting areas managed by the Department while maintaining a range of visitor	29.1 Incidents reported to the Department	The number of incidents reported remain stable or decreases from 2012 levels	Annually

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
	experiences wherever possible			
Part F. Managing Resource Use	Section 37. Rehabilitation			
	To restore degraded areas to as near a natural state as possible	37.1 Area of rehabilitation	All areas subject to mechanical disturbance related to wildfire suppression are rehabilitated within 12 months All disturbances related to recreation development are rehabilitated within 12 months of project completion All exhausted gravel pits are rehabilitated within 2 years Disturbances related to mining are rehabilitated according to permit conditions	Annually from second year of commencement of management plan
Part G. Involving the Community	Section 41. Information, Education and Interpretation			
An extensive range of community educational and interpretation opportunities to describe the native flora and fauna, Aboriginal and Non-Indigenous cultural heritage, fire management and ecology of the south-west and the Department's management of the area	To promote community understanding and awareness of the conservation values of the parks and engender support for effective management of the parks	41.1 The level of participation in Departmental education programs	An increase from 2012 levels	Annually
		41.2 Visitor compliance with regulations and policies within the parks	An increase from 2012 levels	Annually
	Section 42. Working with the Community			
	To facilitate effective community involvement in management of the national parks	42.1 The number of registered volunteers and the level of volunteer hours contributed over the life of the plan	An increase from 2012 levels	Annually

KEY VALUES	OBJECTIVE	KEY PERFORMANCE INDICATOR		
		Performance Measure	Target	Reporting*
Part H. Monitoring and Implementing the Plan	Section 44. Research and Monitoring			
❖ A rich diversity of relatively intact natural landscapes providing opportunities for biological and earth sciences research ❖ Extensive traces of Aboriginal use of the parks providing opportunities for investigations	To increase knowledge and understanding of flora, fauna, natural processes and visitor use to provide for better management of the parks and to measure the performance of this management plan	44.1 Research within the parks according to Departmental priorities and Government initiatives	Departmental research conducted within the parks is consistent with the priorities identified in this management plan	Annually

* At the time of reporting to the Conservation Commission, any target shortfall will be investigated and any further action required by the Department will be presented to the Conservation Commission.

APPENDIX 3. GEOHERITAGE

Sites and Features of Geoheritage within the Parks

Description	Significance	Management Issues
Pre-cambrian Terrains Tors and Granite Domes		
❖ Mt Chudalup – Archaean granulites ❖ Shannon Rock ❖ Little Chudalup	❖ Examples of different forms of granite. Mt Chudalup is recognised by Geological Survey of WA and Geological Society of Australia as a Significant Geological Feature.	❖ The mineralisation of soils and micro-climates created by these tors and granitic domes often give rise to unique or restricted flora and fauna communities. ❖ Moss swards and vegetation assemblages on granite outcrops are very sensitive to disturbance. ❖ Impacts caused by human access such as tracks or redirection of run-off can have severe impacts in a short space of time. ❖ Fixing of boardwalks or fences using metal or concrete can cause damage due to chemicals contained in run-off such as the pH changes from concrete footings on Mt Frankland. ❖ These tors and domes are often steep and may pose visitor risk problems.
Pre-cambrian Terrains		
❖ Windy Harbour Granulites ❖ Windy Harbour ❖ Malimup/Dogger up (Black Head)	❖ North South trending granulites adjacent to east west regional trend. ❖ Represents possible archaean granulite belt caught up in Albany Fraser event. ❖ Unconformity with Limestone.	❖ There is potential to interpret this feature to show how the Albany Mobile Belt skews from east/west to north/south where it meets the darling fault. ❖ The area has been and will probably continue to be used as a study site and liaison may be required with relevant universities.
Quaternary Terrains		
❖ Malimup Bench (8 metres Above Height Datum)	❖ Pleistocene peats, unusual landforms.	❖ The Malimup Bench area contains some unusual and very sensitive landforms. ❖ There are large areas of peaty soil and extensive ‘wet’ areas and freshwater streams flowing into the ocean. ❖ This area is easily disturbed and even low levels of foot traffic have significant impact. ❖ The vegetation and fauna populations in this area are worthy of closer study. ❖ Management actions are required to ensure current and increased levels of use do not degrade this area. ❖ Fire management in this area needs to consider the organic soils present.
❖ Point D’Entrecasteaux (see also caves and karst below) ❖ Quaternary eolianites on Archaean granulites ❖ Caves, high cliffs, fossils	❖ Recognised by Geological Survey of WA and Geological Society of Australia as a Significant Geological Feature.	❖ See caves and karst, and palynology and palaeontology below.

Description	Significance	Management Issues
Bunbury Basalt		
❖ Black Point and Cape Beaufort ❖ Yeagarup Lake ❖ Donnelly River estuary	❖ Cretaceous columnar basalt. ❖ Recognised by Geological Survey of WA and Geological Society of Australia as a Significant Geological Feature.	❖ These areas of Bunbury Basalt have a high potential for interpretation (particularly Black Point). The columnar formations at Black Point are a visitor attraction in their own right. ❖ Even at the current relatively low level of visitation impacts are occurring due to inappropriately located walktrails and viewing points, particularly at Cape Beaufort. ❖ Relocation of walking tracks and hardening is required. Some of these locations are regularly used as study sites and liaison with tertiary institutions is required. They are also used as research sites. ❖ At Black Point there are significant visitor risks associated with viewing some of the Basalt formations (steep drops and large swells). ❖ Sites such as the Basalt Cave at Black Point require protection to avoid further degradation.
Palynology and Palaeontology		
❖ Pt D'Entrecasteaux	❖ Fossils of extinct land snails. ❖ New species of marine fossils, fossil molluscs outside present living range.	❖ Sites of these fossils need to be recorded and protected from recreation development and other impacts.
Caves and Karst		
❖ Cape Beaufort Cave, Black Point	❖ Sea cave in basalt, just above sea level. ❖ Possibly a volcanic dyke into which limestone has intruded. ❖ Exposed decoration outside entrance. ❖ Entrance covered in TUFA formation. ❖ Extensive flowstone decoration on walls. ❖ Cave features unique in the south-west. ❖ Straw stalactites and other calcite decorations.	❖ This cave was assessed by Hancock (1994) as having high natural value, low to moderate human use (high conservation classification). ❖ Hancock (1994) recommends signposting the entrance of the cave to highlight its high conservation values. ❖ If impacts occur gating may be required. ❖ The significance of the TUFA at the entrance needs to be determined and further special management considerations/actions may be required. ❖ The position of the cave (at sea level) poses potential visitor risk issues as wave surge often enters the cave. ❖ Periodic monitoring of the cave is required to assess condition and visitor impacts.
❖ Black Point elevated overhang/Surfers Cave	❖ Potential archaeological site. ❖ Low natural value, moderate to high human use, Hancock (1994) ❖ There are other similar caves/overhangs in the area	❖ Surfers and others use this cave for shelter and camping. ❖ Although the cave itself has low conservation values the tracks to and from the cave have the potential to cause significant erosion if not stabilised. ❖ Users have carried out some rudimentary stabilisation of paths. ❖ Visitor risk issues have been identified by Gordon (1998b). ❖ Activities associated with camping such as fires and firewood collection, rubbish and human waste are an increasing problem in this area.
❖ Point	❖ Pleistocene coastal	❖ Part of the karst area contains a limestone quarry

Description	Significance	Management Issues
D'Entrecasteaux karst from southern point of Salmon Beach, west for 2.5 km then south to Windy Harbour	limestone consisting of cemented Aeolian calcarenite and beds of kankar and leached quartz sand. The limestone is exposed along the coast where it has formed massive sea cliffs. ❖ Further inland is an inland cliff thought to be a remnant of a past shoreline. ❖ Karst area classified as of high conservation value by Hancock (1994). One cave is large (by comparison to others in the region) and contains convergent bedding planes, existence of extensive bone material and interesting cave ecosystem.	(1.25 ha) and the quarry has substantially reduced the areas aesthetic values. There is potential for this impact to be extreme as the lease area extends to a highly visible zone along the inland cliffs. ❖ The large cave has high conservation value and has the potential to be highly impacted by recreation. ❖ Hancock (1994) recommends monitoring and signage of the large cave and protection of some fragile areas from trampling. ❖ Visitor risks in this area are very high due to the nature and extent of the sea cliffs. These risks have been assessed and are described in reports by Gordon (1998a and 1999). ❖ Hancock (1994) suggests that fire regimes should take account of the potential impact of fire on the karst landscape.
❖ Fish Creek karst	❖ High limestone cliffs of Aeolian calcarenite (similar to Point D'Entrecasteaux).	❖ The 'Fish Creek' coast is difficult to access. Access to the coast in most areas is by rough four-wheel drive tracks only. Visitor risks occur due to the nature and extent of the high limestone cliffs and proposed remedial actions have been documented by Gordon (1997a, 1997b and 2000). ❖ The location of the reported cave in this area should be further investigated.
❖ Malimup Cave	❖ Limestone cave in vicinity of significant archaeological deposits.	❖ No assessment/survey of the cave has been conducted to assess its heritage and conservation values.
Coastal Geomorphology		
❖ Yeagarup Dunes	❖ Megaripples, mobile dunes. Possibly the largest mobile dunefield in the south-west.	❖ The Yeagarup Dunes are the main open dune field in the park accessible by visitors. Vehicle use on the dunes can destabilise vegetation and hence increase dune movement. ❖ Main vehicle access to dunes is quickly being closed by dune movement. ❖ Potential for wetlands close to dune edge to be covered.
❖ Meerup Dunes	❖ Large open dune field	❖ Limited access – maintaining no vehicle access.

APPENDIX 4 GUIDELINES FOR LANDSCAPE MANAGEMENT

High Quality Scenic Landscapes

- Alterations to the naturally established landscape character should be subtle, remaining subordinate to natural elements by borrowing extensively from form, line, colour, texture and scale found commonly in the surrounding landscape.
- Alterations should achieve a visually inevident condition within one year of project completion resulting in little more than natural change.
- Site specific visual landscape factors should be carefully identified and evaluated prior to any management activities such as developing new recreation sites, access tracks or conducting burning regimes.
- Facilities and activities which utilise and yet disturb very little of the natural environment should be encouraged such as walking tracks and small day use areas.
- Land uses and developments that do not require particularly scenic environments should be excluded, this includes mining/quarries, large recreation sites, large car parks, roads, telecommunication towers and powerlines.
- Roads, recreation sites and walking tracks should focus views onto distinctive features by selecting optimum siting and alignment, for example Mt Chudalup trail, Point D'Entrecasteaux lookout and Black Point day uses areas.
- Road design and construction should remain subordinate to landscape elements by utilising minimum design standards, limited cuts and fill, minimum clearing widths, undulating edges, sensitive alignment consistent with road user safety requirements. The Great Forest Trees Drive is an excellent example of this, whereas Chesapeake Road shows the high visual impact of insensitive alignment selection.
- Interpretive and explanatory signing should be utilised before and during operations which alter landscape character such as new recreation site development, control burning adjacent to travel routes and walking trails.
- Where structures are required they should be sympathetic in design, materials and colour to complement surrounding landscape elements and be carefully sited away from major natural focal points, out of viewer sight-lines and where vegetation or landform screening can be used such as at Snake Gully lookouts.
- Essential firebreaks should follow natural landform, vegetation, or land use patterns/lines in the landscape consistent with fire management standards for fire fighter safety.
- Prescribed burning should be carried out employing prescriptions that minimise impact on landscape values.
- Previously disturbed areas within high scenic quality areas should be given the highest priority for rehabilitation until the desired standard of scenic quality is attained (e.g. access tracks in the Yeagarup dunes area).

Moderate Quality Scenic Landscapes

- Alterations to the naturally established landscape character should borrow form, line, colour, texture and scale from natural elements and may result in an apparent but not dominant impact found commonly in the surrounding landscape.

Low Quality Scenic Landscapes

- Essential but visually depreciative facilities not requiring areas of scenic amenity should be accommodated in these areas first where possible such as gravel pits, quarries, mines, transmission and towers, powerlines.
- Enhancement of scenic quality through rehabilitation works should be considered to upgrade areas to a higher amenity standard (e.g. Lake Jasper camp sites and degraded four-wheel drive tracks).
- Views to disturbed landscapes may require landform and vegetation screening.

APPENDIX 5. NATIVE FAUNA

Below is a list of native fauna (vertebrates only) compiled from a number of sources. If the habitats and vegetation complexes within the parks were used to predict what may occur then the list would be more extensive. However, for the purposes of this management plan only known occurrences (surveys and sightings) as per the reference list below were used.

Common Name	Scientific Name	Cons Code*			Park		Ref
		WA	EBPC	Other			
Mammals (20)							
New Zealand fur-seal	*Arctocephalus forsteri*	SP(S4)		CITES		DE	8, 11
Western grey kangaroo	*Macropus fuliginosus*				S	DE	1, 2, 8, 10
Quokka	*Setonix brachyurus*	En, T(S1)	VU	T(VU)	S	DE	1, 2, 8, 10
Woylie (brush-tailed bettong)	*Bettongia penicillata ogilbyi*	T(S1)		T(EN), CITES	S		8, 9
Tammar wallaby	*Macropus eugenii derbianus*	P5		LR(nt)	S		9
Brush-tailed possum	*Trichosurus vulpecula vulpecula*				S		8
Western pygmy possum	*Cercartetus concinnus*					DE	1, 2, 10
Honey possum	*Tarsipes rostratus*	En		LR(lc)	S	DE	2, 8, 10
Quenda (southern brown bandicoot)	*Isoodon obesulus fusciventer*	P5		LR(nt)	S	DE	1, 2, 4, 8, 10
Mardo (yellow footed antechinus)	*Antechinus flavipes leucogaster*			LR(lc)		DE	1, 2, 8, 10
Chuditch (western quoll)	*Dasyurus geoffroii*	T(S1)	VU	T(VU)	S		10, 11
Wambenger (southern brush-tailed phascogale)	*Phascogale tapoatafa tapoatafa*	T(S1)		T(VU)	S	DE	10
Gilbert's dunnart	*Sminthopsis gilberti*	En		LR(lc)	S	DE	1, 2, 4, 8
Bush rat	*Rattus fuscipes*				S	DE	1, 2, 4, 8, 10
Water rat	*Hydromys chrysogaster*	P4			S	DE	1, 2
Greater long eared bat	*Nyctophilus timoriensis timoriensis*			LR(lc)		DE	1, 2, 10
Lesser long eared bat	*Nyctophilus geoffroyi*			LR(lc)		DE	1, 2
Chocolate wattled bat	*Chalinolobus morio*			LR(lc)	S		1, 2, 10
Western false pipistrelle	*Falsistrellus mackenziei* (previously identified as Great pipistrelle *Pipistrellus tasmaniensis*)	En, P4		LR(nt)		DE	1, 2, 10
Southern forest bat	*Vespadelus regulus* (previously King River eptesicus *Eptesicus regulus*)			LR(lc)	S	DE	1, 2, 10
Birds (120)							
Emu	*Dromaius novaehollandiae*				S	DE	1, 2
Hoary headed grebe	*Poliocephalus poliocephalus*				S		1, 2
Australasian grebe	*Tachybaptus novaehollandiae*					DE	1, 2
Huttons shearwater	*Puffinus huttoni*					DE	1, 2
Shy Albatross	*Diomedea cauta*	T(S1)	VU	T(VU), BC		DE	8
Australian pelican	*Pelicanus conspicillatus*					DE	1, 2, 8
Darter	*Anhinga melanogaster*				S		1, 2
Great cormorant	*Phalacrocorax carbo*				S	DE	1, 2
Pied cormorant	*Phalacrocorax varius*				S	DE	1, 2
Little pied cormorant	*Phalacrocorax melanoleucos*				S	DE	1, 2
Little black cormorant	*Phalacrocorax sulcirostris*					DE	3
Pacific heron	*Ardea pacifica*					DE	1, 2
White faced heron	*Ardea novaehollandiae*				S	DE	1, 2
Great egret	*Ardea* (prev. *Egretta*) *alba*			J, C		DE	1, 2
Rufus night heron	*Nycticorax calandonicus*					DE	1, 2
Australasian bittern	*Botaurus poiciloptilus*	T(S1)		T(VU)		DE	1, 2
Little bittern	*Ixobrychus minutus dubius*	P4				DE	3
Sacred ibis	*Threskiornis aethiopica*					DE	1, 2

Common Name	Scientific Name	Cons Code*			Park		Ref
		WA	EBPC	Other			
Straw necked ibis	*Threskiornis spinicollis*					DE	1, 2
Black swan	*Cygnus atratus*				S		1, 2
Freckled duck	*Strictonetta naevosa*					DE	1, 2
Australian shelduck	*Tadorna tadornoides*				S		1, 2
Pacific black duck	*Anas superciliosa*				S	DE	1, 2
Grey teal	*Anas gibberifrons*					DE	1, 2
Australasian shoveller	*Anas rhynchotis*					DE	1, 2
Blue billed duck	*Oxyura australis*					DE	1, 2
Musk duck	*Biziura lobata*				S	DE	1, 2
Osprey	*Pandion haliaetus*		Mig	BC, CITES	S	DE	1, 2
Square tailed kite	*Lophoictinia isura*			CITES		DE	1, 2
Whistling kite	*Heliastur sphenurus*					DE	1, 2
Brown goshawk	*Accipter fasciatus*					DE	1, 2
White bellied sea eagle	*Haliaeetus leucogaster*			C, CITES	S	DE	1, 2
Wedge tailed eagle	*Aquila audax*			CITES	S	DE	1, 2
Little eagle	*Aquila morphnoides*						8
Spotted harrier	*Circus assimilis*			CITES		DE	1, 2
Marsh harrier	*Circus aeruginosus*				S		1, 2
Peregrine falcon	*Falco peregrinus*	SP(S4)		CITES		DE	1, 2
Australian hobby	*Falco longipennis*			CITES		DE	1, 2
Brown falcon	*Falco berigora*			CITES	S	DE	1, 2
Nankeen kestrel	*Falco cenchroides*			CITES		DE	1, 2
Malleefowl	*Leipoa ocellata*	T (S1)	VU	T(VU)	S	DE	8, 10
Stubble quail	*Coturnix novaezelandiae*				S		1, 2
Spotless crake	*Porzana tabuenis*					DE	1, 2
Purple swamphen	*Porphyrio porphyrio*			CITES	S	DE	1, 2
Eurasian coot	*Fulica atra*				S	DE	1, 2
Banded lapwing	*Vanellus tricolor*					DE	1, 2
Red capped plover	*Charadrius ruficapillus*				S	DE	1, 2
Hooded plover	*Thinornis rubricollis*	P4		LR(nt)			8
Curlew sandpiper	*Caladris ferruginea*		Mig	J, C, R	S	DE	1, 2
Silver gull	*Larus novaehollandiae*				S	DE	1, 2
Pacific gull	*Larus pacificus*				S	DE	1, 2
Caspian tern	*Sterna caspia*				S	DE	1, 2
Crested tern	*Sterna bergii*			J	S	DE	1, 2
Fairy tern	*Sterna nerveis*					DE	8
Common bronzewing	*Phaps chalcoptera*					DE	1, 2
Brush bronzewing	*Phaps elegans*				S	DE	1, 2
Forest red-tailed black cockatoo	*Calyptorhynchus banksii naso* (prev. *magnificus*)	T(S1)		T(VU), CITES	S	DE	1, 2, 10
Baudin's (long-billed) black cockatoo	*Calyptorhynchus baudinii*	T(S1), En	VU	T(EN), CITES	S	DE	1, 2
Carnaby's black cockatoo	*Calyptorhynchus latirostris*	T(S1)	EN	T(EN)	S	DE	10
Purple-crowned lorikeet	*Glossopsitta porphyrocephala*			CITES	S	DE	1, 2
Red-capped parrot	*Purpureicephalus spurius*+	En		CITES	S	DE	1, 2, 10
Western rosella	*Platycercus icterotis*			CITES	S	DE	1, 2
Australian ringneck (ring-necked parrot)	*Platycercus zonarius*				S	DE	10
Port Lincoln ringneck (twenty eight)	*Barnardius zonarius*			CITES	S	DE	1, 2
Elegant parrot	*Neophema elegans*			CITES		DE	1, 2
Rock parrot	*Neophema petrophila*			CITES		DE	1, 2
Pallid cuckoo	*Cuculus pallidus*				S	DE	1, 2
Fan-tailed cuckoo	*Cuculus phyrrophanus*				S	DE	1, 2
Horsefields bronze-cuckoo	*Chrysococcyx basalis*					DE	1, 2
Shining bronze-cuckoo	*Chrysococcyx lucidus*				S		1, 2
Southern boobook	*Ninox novaeseelandiae*			CITES		DE	1, 2
Tawny frogmouth	*Podargus strigoides*				S	DE	1, 2
Australian owlet-nightjar	*Aegotheles cristatus*				S	DE	1, 2
Sacred kingfisher	*Halcyon sancta*				S	DE	1, 2

Common Name	Scientific Name	Cons Code*			Park		Ref
		WA	EBPC	Other			
Welcome swallow	*Hirundo neoxena*				S	DE	1, 2
Tree martin	*Cecropis nigricans*				S	DE	1, 2
Richard's pipit	*Anthus novaeseelandiae*				S	DE	1, 2
Black-faced cuckoo-shrike	*Coracina novaehollandiae*				S	DE	1, 2
Scarlet robin	*Petroica multicolor*				S	DE	1, 2
White breasted robin	*Eopsaltria georgiana*	En			S	DE	1, 2
Western yellow robin	*Eopsaltria griseogulgaris*					DE	1, 2
Crested shrike-tit	*Falcunculus frontalus leucogaster*	P4		LR(nt)	S	DE	1, 2, 10
Golden whistler	*Pachycephala pectoralis*				S	DE	1, 2
Grey shrike-thrush	*Colluricincla harmonica*					DE	1, 2
Restless flycatcher	*Myiagra inequieta*				S	DE	1, 2
Grey fantail	*Rhipidura fuliginosa*				S	DE	1, 2
Willie wagtail	*Rhipidura leucophrys*					DE	1, 2
Red-eared firetail	*Stagonopleura* (prev. *Emblema*) *oculata*	En			S	DE	1, 2, 10
Brown quail	*Coturnix ypsilophora*					DE	10
White browed babbler	*Pomatostomus superciliosus*				S	DE	1, 2
Clamorous reed-warbler	*Acrocephalus stentoreus*					DE	1, 2
Little grassbird	*Megalurus gramineus*					DE	1, 2
Splendid fairy wren	*Malurus splendens*				S	DE	1, 2
Red-winged fairy wren	*Malurus elegans*	En			S	DE	1, 2
Southern emu-wren	*Stipituris malachurus*					DE	1, 2
White-browed scrub-wren	*Sericornis frontalis*				S	DE	1, 2
Western gerygone	*Gerygone fusca*					DE	1, 2
Inland thornbill (broad-tailed)	*Acanthiza apicalis*				S	DE	1, 2, 5
Western thornbill	*Acanthiza inornata*				S	DE	1, 2
Yellow-rumped thornbill	*Acanthiza chrysorrhoa*				S	DE	1, 2
Varied sitella	*Daphoenositta chrysoptera*				S	DE	1, 2
Rufous treecreeper	*Climacteris rufa*				S	DE	1, 2
Red wattlebird	*Anthochaera carunculata*				S	DE	1, 2
Little wattlebird	*Anthochaera chrysoptera*				S	DE	1, 2
Yellow-throated minor	*Manorina flavigula*					DE	1, 2
White-naped honeyeater	*Melithreptus lunatus*				S	DE	1, 2
Brown honeyeater	*Lichmera indistincta*					DE	1, 2
New Holland honeyeater	*Phylidonyris novaehollandiae*				S	DE	1, 2
White cheeked honeyeater	*Phylidonyris nigra*					DE	1, 2
Tawny-crowned honeyeater	*Phylidonyris melanops*				S	DE	1, 2
Western spinebill	*Acanthorhynchus superciliosus*				S	DE	1, 2
Spotted pardalote	*Pardalotus punctatus*				S	DE	1, 2
Striated pardalote	*Pardalotus striatus*					DE	1, 2
Silvereye	*Zosterops lateralis*				S	DE	1, 2
Australian magpie-lark	*Grallina cyanoleuca*				S	DE	1, 2
Dusky woodswallow	*Artamus cyanopterus*				S	DE	1, 2
Grey butcherbird	*Cracticus torquatus*					DE	1, 2
Australian magpie	*Gymnorhina tibicen*				S	DE	1, 2
Grey currawong	*Strepera versicolor*				S	DE	1, 2
Australian raven	*Corvus coronoides*				S	DE	1, 2
Reptiles (28)							
Dugite	*Pseudonaja affinis affinis*				S	DE	1, 2, 10
Tiger snake	*Notechis scutatus* (prev. *ater occidentalis*)				S	DE	1, 2, 10
Crowned snake	*Elapognathus coronatus* (prev. *Drysdalia coronata*)				S	DE	1,2,10
Short-nosed snake	*Elapognathus minor*	En, P2			S		2, 10
Square-nosed snake (Mueller's snake)	*Rhinoplocephalus bicolor*	En			S	DE	1, 2, 10
Southern blind snake	*Ramphotyphlops australis*					DE	10
Marbled gecko	*Christinus marmoratus*				S	DE	1, 2, 8, 10
Fraser's scale-footed (legless) lizard	*Delma fraseri*					DE	1, 2

Common Name	Scientific Name	Cons Code*			Park		Ref
		WA	EBPC	Other			
Marbled-faced delma	*Delma australis*				S		10
Common scaly-foot	*Pygopus lepidopodus*				S	DE	2, 10
Bobtail	*Tiliqua rugosa rugosa*					DE	1, 2, 10
Mourning skink	*Egernia luctuosa*					DE	1, 2
Smith's skink	*Egernia napoleonis*	En				DE	1, 2, 10
King's skink	*Egernia kingii*					DE	1, 2, 10
Fry's skink	*Egernia pulchra pulchra*	En				DE	1, 2, 10
Red-legged skink	*Ctenotus labillardieri*	En				DE	1, 2, 10
Chain-striped skink	*Ctenotus catenifer*					DE	10
-	*Hemiergis initialis initialis*					DE	1, 2
Burrowing skink	*Hemiergis peronii peronii*	En				DE	1, 2, 10
Southwestern mulch skink	*Glaphyromorphus gracilipes*					DE	10
Slippery skink	*Lerista microtis microtis*	En			S	DE	1, 10
-	*Sphenomorphus australis*	En				DE	2
New Holland skink	*Acritoscincus trilineatum*	En				DE	1, 2, 10
Sandhill skink	*Morethia lineoocellata*	En				DE	1, 2, 10
Dark litter skink	*Morethia obscura*					DE	1, 2, 8
Gould's monitor	*Varanus gouldii*			CITES		DE	1, 2
Southern heath monitor	*Varanus rosenbergi*			CITES		DE	1, 2
Long necked tortoise	*Chelodina oblonga*				S	DE	1, 2, 10
Amphibians (15)							
Slender tree frog	*Litoria adelaidensis*	En			S	DE	1, 2, 5, 10
Green and gold tree frog	*Litoria moorei*	En				DE	1, 2, 5, 10
Western banjo frog	*Limnodynastes dorsalis*	En			S	DE	1, 2, 5, 10
Burrowing frog	*Heleioporus inornatus*	En			S		1, 2, 5
Moaning frog	*Heleioporus eyrei*	En			S	DE	1, 2, 5, 8, 10
Sand frog	*Heleioporus psammophilus*	En			S	DE	1, 2, 10
Gunther's toadlet	*Pseudophryne guentheri*	En				DE	1, 2, 10
Quacking frog	*Crinia georgiana*	En				DE	1, 2, 5, 10
Glauert's frog	*Crinia glauerti*	En			S		1, 2, 10
Bleating froglet	*Crinia pseudinsignifera*	En			S	DE	10
South coast froglet	*Crinia subinsignifera*	En				DE	1, 2, 10
Nornalup frog	*Geocrinia lutea*	En, LE, P4					1
Lea's frog	*Geocrinia leai*	En			S		2, 5, 10
Roseate frog	*Geocrinia rosea*	En, LE			S		2
Nicholl's toadlet	*Metacrinia nichollsi*	En				DE	10
Fish (13 – 8 Freshwater and 5 with Marine Affinities)							
Western minnow	*Galaxias occidentalis*	En			S	DE	1, 2
Western mud minnow	*Galaxiella munda*	T(S1), En		T(VU), R	S	DE	3, 7
Black-striped minnow	*Galaxiella nigrostriata*	P1, En		LR(nt), R	S	DE	2, 3, 7
Salamander fish	*Lepidogalaxias salamandroides*	En		LR(nt), R	S	DE	1, 2, 3, 7
Night fish	*Bostockia porosa*	En			S	DE	1, 2, 3, 7
Western pygmy perch	*Edelia vittata*	En			S	DE	1, 2, 3, 7
Balston's pygmy perch	*Nannatherina balstoni*	T(S1), En		T(VU)	S	DE	1, 2, 3, 7
Freshwater cobbler	*Tandanus bostocki*	En				DE	2, 3
Big-headed goby	*Afurcagobius suppositus*					DE	6, 10
Mangrove mullet	*Mugil cephalus*				S	DE	1, 2
Blue spot goby	*Pseudogobius olorum*					DE	3, 7
Western hardyhead	*Atherinosoma wallacei*					DE	3, 7
Pouched lamphrey	*Geotria australis*	P1				DE	7

*As of March 2008

+The WA Museum classifies the red-capped parrot as *Platycercus spurius*

References

1 = Christensen, P. *et al.* (1985)
2 = Christensen, P (1992)
3 = Jaensch, R.P. (1992)
4 = Beck C (1993)
5 = Jaensch, R.P. (1993c)
6= Gill (1993)
7 = Morgan *et al.* (1998)
8 = Ranger sightings, records and reports (R. Annear pers. comm. 2002-2004)
9 = Translocations/reintroductions
10 = Western Australian Museum records
11 = Wildlife Section database

Explanation of Codes

WA

En Endemic to the south-west

T Threatened or **SP** Specially Protected fauna declared under the Wildlife Conservation Act, and in particular:
- **T(S1)** Rare or likely to become extinct
- **T(S2)** Presumed extinct but may be rediscovered
- **SP(S3)** Covered by international threatened species agreement such as JAMBA or CAMBA
- **SP(S4)** Other specially protected fauna

Priority Fauna:
- **P1** Taxa with few, poorly known populations on threatened lands
- **P2** Taxa with few, poorly known populations on conservation lands
- **P3** Taxa with several, poorly known populations, some on conservation lands
- **P4** Taxa in need of monitoring (not considered threatened or in need of special protection but could be if present circumstances change)
- **P5** Taxa in need of monitoring (subject to a conservation program, the cessation of which would result in the species becoming threatened within 5 years)

EPBC

Under the Environment Protection and Biodiversity Conservation Act:
- **CR** Critically Endangered
- **EN** Endangered
- **VU** Vulnerable
- **CD** Conservation Dependent
- **Mig** Migratory

Other

International Conventions: **J** Jamba, **C** Camba, **R** ROKAMBA, **BC** Bonn Convention, **CITES** CITES Convention

T Threatened according to the IUCN categories:
- **(CR)** Critically Endangered –facing an extremely high risk of extinction in the wild in the immediate future
- **(EN)** Endangered – facing a very high risk of extinction in the wild in the near future
- **(VU)** Vulnerable – facing a high risk of extinction in the wild in the medium-term future

LR Lower Risk when evaluated against the IUCN categories as does not satisfy the threatened criteria but does fit:
- **(cd)** Conservation Dependent – the focus of a taxon-specific conservation program, the cessation of which would result in the taxon qualifying for one of the threatened categories within a period of 5 years
- **(nt)** Near Threatened – not Conservation Dependent but is close for qualifying for Vulnerable
- **(lc)** Least Concern – not Conservation Dependent or Near Threatened

According to the Australian Society for Fish Biology's list of Australian threatened fishes:
- **pVU** proposed Vulnerable
- **VU** Vulnerable – taxa not presently endangered but which are at risk by having small populations and/or populations which are declining at a rate that would render then endangered in the near future
- **R** Restricted – taxa that are not presently in danger but which occur in restricted areas, or have suffered a long term reduction in distribution and/or abundance and are now uncommon

APPENDIX 6. ENDEMIC AND CONSERVATION FLORA

There are at least 210 vascular flora taxa in the Shannon National Park and 856 taxa in the D'Entrecasteaux National Park, totalling 890 taxa in the parks, from 94 families. There are also numerous non-vascular flora but these records have not been collated other than those that are known to be rare or priority taxa.

Endemic and Conservation Flora

There are 54 species of rare and priority flora (including four mosses and one fungi which are non-vascular) in 289 populations (180 in Donnelly District, 109 in Frankland) within 26 vegetation complexes. Twenty four species that occur in the parks have ranges of less than 150 kilometres and are considered narrow or locally endemic and 11 species occur only in the Warren bioregion (including five that are locally endemic as well) which also can be considered endemic. Of these 30 'endemic' species, 17 are also considered rare or priority.

There are 39 relictual species (including 27 monotypic taxa) and nine disjunct species that occur within the parks.

Family	Scientific Name	Cons Code*	Park	
Adiantaceae	*Adiantum aethiopicum*	RT		DE
	Cheilanthes austrotenuifolia	RT		DE
Amblystegiaceae	*Drepanocladus aduncus*	P2, LE, E		DE
Anthericaceae	*Agrostocrinum scabrum*	RM		DE
	Hodgsonia juncifomis	LE, RM		DE
Apiaceae	*Actinotus* sp. Walpole	P3	S	DE
	Homalosciadium homalocarpum	RM	S	DE
	Xanthosia eichleri	P3		DE
Aspleniaceae	*Asplenium aethiopicum*	P4, RT	S	DE
	Asplenium flabellifolium	RT		DE
	Asplenium obtusatum subsp. *northlandicum*	R, D	S	DE
Asteraceae	*Quinetia urvillei*	RM		DE
Calliergonaceae	*Warnstorfia fluitans*	P2		DE
Cephalotaceae	*Cephalotus follicularis*	RM		DE
Cyperaceae	*Chorizandra multiarticulata*	D		DE
	Cyathochaeta stipoides	P3	S	DE
	Reedia spathacea	R, RM, RT, D	S	DE
	Schoenus fluitans	P2, D		DE
Dasypogonaceae	*Baxteria australis*	RM		DE
	Dasypogon hookeri	LE		DE
	Kingia australis	RM		DE
	Lomandra hastilis	D		DE
	Lomandra ordii	P3, LE, E	S	DE
Dennstaedtiaceae	*Pteridium esculentum*	RT	S	DE
Droseraceae	*Drosera binata*	P2, D	S	DE
Epacridaceae	*Andersonia amabile* MS	P3	S	DE
	Andersonia geniculata MS	LE		DE
	Cosmelia rubra	RM		DE
	Leucopogon gracilis	LE		DE
	Leucopogon tamariscinus	P4		DE
	Needhamiella pumilio	RM		DE
	Sphenotoma parviflorum	P3	S	DE
Euphorbiaceae	*Amperea protensa*	P3	S	DE
Goodeniaceae	*Diaspasis filifolia*	RM		DE
Halogoraceae	*Meziella trifida*	R, RM	S	DE
	Gonocarpus hexandrus subsp. *hexandrus*	E		DE

Family	Scientific Name	Cons Code*	Park	
	Gonocarpus pusillus	P3		DE
	Gonocarpus simplex	P3	S	DE
Lamiaceae	*Hemiandra australis* MS	P3, E	S	DE
	Hemigenia rigida	P1		
Lindsaeaceae	*Lindsaea linearis*	RT		DE
Loranthaceae	*Nuytsia floribunda*	RM		DE
Lycopodiaceae	*Lycopodiella serpentina*	RT		DE
	Phylloglossum drummondii	RM, RT		DE
Myrtaceae	*Astartea arbuscula*	P4		DE
	Astartea sp. Mt Johnston (A.R.Annels 5645) PN	P3, LE	S	DE
	Astartea sp. Scott River (D.Backshall 88233) PN	P4, LE		DE
	Chamelaucium floriferum subsp. *diffusum* MS	P2, LE	S	DE
	Homalosperum firmum	RM	S	DE
	Hypocalymma cordifolium subsp. *minus*	P4	S	DE
	Melaleuca basicephala	P4	S	DE
	Melaleuca diosmifolia	P3		DE
	Melaleuca ringens	P3, E	S	DE
Ophioglossaceae	*Ophioglossum lusitanicum*	RT		DE
Orchidaceae	*Caladenia interjacens* MS	P4, LE, E	S	DE
	Caladenia meridionalis	LE, E		DE
	Diuris heberlei	P2	S	DE
	Epiblema grandiflorum var. *grandiflorum*	RM		DE
	Eriochilus pulchellus MS	D	S	DE
	Eriochilus scaber subsp. *orbifolius*	P1, E	S	DE
	Microtis globula	R	S	DE
	Microtis media subsp. *quadrata*	P4	S	DE
	Microtis pulchella	P4		DE
	Praecoxanthus aphyllus MS	RM		DE
	Thelymitra jacksonii	P3	S	DE
Pannariaceae	*Degelia flabellata*	P2		DE
Papilionaceae	*Bossiaea webbii*	LE		
	Callistachys lanceolata	RM	S	DE
	Euchilopsis linearis	RM		DE
	Gastrolobium formosum	P3, E, RM		DE
	Kennedia glabrata	R, LE	S	DE
	Viminaria juncea	RM		DE
Pertusariaceae	*Pertusaria trachyspora*	P2		DE
Pittosporaceae	*Marianthus sylvaticus*	P3, LE	S	DE
Poaceae	*Austrofestuca littoralis*	P1, D		DE
	Diplopogon setaceus	RM	S	DE
Podocarpaceae	*Podocarpus drouynianus*	RT	S	DE
Pottiaceae	*Calymperastrum latifolium*	P2, LE, E		DE
Proteaceae	*Acidonia microcarpa*	RM		DE
	Banksia sessilis var. *cordata*	P4	S	DE
	Banksia verticillata	R, D	S	DE
	Grevillea papillosa	P3, LE		DE
Restionaceae	*Alexgeorgea ganopoda*	P3, LE	S	DE
	Chordifex amblycoleus	LE		DE
	Chordifex jacksonii MS	P3, LE	S	DE
	Hypolaena grandiuscula	E	S	
	Meeboldina crassipes MS	P3, LE	S	DE

Family	Scientific Name	Cons Code*	Park	
	Stenotalis ramosissima	RM, RT	S	DE
	Taraxis grossa	RM, RT	S	DE
	Tyrbastes glaucescens	P4, RM, RT		DE
Rhacocarpaceae	*Rhacocarpus rehmannianus* var. *webbianus*	R, LE, E		DE
Ramnaceae	*Trymalium venustum*	LE	S	
Rutaceae	*Chorilaena quercifolia*	RM	S	DE
Schizaeaceae	*Schizaea fistulosa*	RT	S	DE
Selaginellaceae	*Selginella gracillima*	RT		DE
Solananceae	*Anthocercis sylvicola*	P2, RT	S	DE
Stackhousiaceae	*Tripterococcus brachylobus*	P4		DE
Stylidiaceae	*Stylidium gloeophyllum*	P3		DE
	Stylidium leeuwinense	P3	S	DE
Xyridaceae	*Xyris indivisa*	LE		DE
	Xyris roycei	LE	S	DE

***See Glossary for definitions of the Conservation Codes: R (rare), P1-4 (priority species), LE (locally endemic), E (endemic), RT (relictual taxanomic), RM (relictual monotypic) and D (disjunct).**

Rare and Priority Species by Conservation Code

Conservation Code	Number of Species					
	Rare or Priority	Endemic	Locally Endemic	Relictual Monotypic	Relictual Taxonomic	Disjunct
Rare	7	1	2	2	1	3
Priority 1	3	1	1	-	-	1
Priority 2	10	2	2	-	1	2
Priority 3	22	4	7	1	-	-
Priority 4	12	1	2	1	2	-
Other	-	3	10	23	13	3
Subtotal	54	12	24	27	17	9
Total	**106 different taxa**					

Rare and Priority Species by Populations within the Parks

Species	Number of Populations		
	Donnelly	Frankland	Total
Actinotis sp. Walpole	5	1	6
Alexgeorgea ganopoda	-	1	1
Amperea protensa	10	3	13
Andersonia amabile	2	3	5
Anthocercis sylvicola	-	1	1
Asplenium aethiopicum	1	2	3
Asplenium obtusatum subsp. *northlandicum*	-	1	1
Astartea arbuscula	3	-	3
Astartea sp. Mt. Johnston	-	1	1
Astartea sp. Scott River	7	-	7
Austrofestuca littoralis	1	-	1
Banksia sessilis var. *cordata*	10	10	20
Banksia verticillata	-	2	2
Caladenia interjacens	1	4	5
Calymperastrum latifolium	1	-	1
Chamaelaucium floriferum subsp. *diffusum* MS	-	10	10
Chordifex jacksonii	4	3	7
Cyathochaeta stipoides	20	1	21
Degelia flabellata	1	-	1
Diuris heberlei	2	3	5
Drepanocladus aduncus	1	-	1

Species	Number of Populations		
	Donnelly	Frankland	Total
Drosera binata	1	2	3
Eriochilus scaber subsp. *orbifolius*	-	2	2
Gastrolobium formosum	1	-	1
Gonocarpus pusillus	3	-	3
Gonocarpus simplex	4	4	8
Grevillea papillosa	3	-	3
Hemiandra australis	12	8	20
Hemigenia rigida	-	-	-
Hypocalymma cordifolium subsp. *minus*	10	3	13
Kennedia glabrata	2	8	10
Leucopogon tamariscinus	1	-	1
Lomandra ordii	7	4	11
Marianthus sylvaticus	-	1	1
Meeboldina crassipes	4	2	6
Melaleuca basicephala	3	2	5
Melaleuca diosmifolia	2	-	2
Melaleuca ringens	4	3	7
Meziella trifida	27	6	33
Microtis globula	-	2	2
Microtis media subsp. *quadrata*	-	1	1
Microtis pulchella	1	-	1
Pertusaria trachyspora	1	-	1
Reedia spathacea	1	5	6
Rhacocarpus rehmannianus var. *webbianus*	1	-	1
Schoenus fluitans	2	-	2
Sphenotoma parviflorum	1	5	6
Stylidium gloeophyllum	1	-	1
Stylidium leeuwinense	12	3	15
Thelymitra jacksonii	1	2	3
Tripterococcus brachylobus	1	-	1
Tyrbastes glaucescens	4	-	4
Warnstorfia fluitans	1	-	1
Xanthosia eichleri	-	-	-
Total	180	109	289

APPENDIX 7. SIGNIFICANT VEGETATION COMMUNITIES

Vegetation Complexes with 15% or less than 15% of Pre-European Extent Formally Reserved (July 2003)

Vegetation Complex*	Pre-1750 Area	Extant Area		In Existing Formal Reserves		In D'Entrecast-eaux NP	In Shannon NP	Parks Represent Extant	Parks Represent of Existing Formal Reserves	Proposed Reserves	Total to be Formally Reserved	
	(ha)	(ha)	(%)	(ha)	(%)	(ha)	(ha)	(%)	(%)	(ha)	(ha)	(%)
Bevan 1 (BE1)	76 778	62 863	82	608	<1	-	588	<1	7	7339	7947	10
Corbalup (CL1)	15136	10 768	71	95	<1	-	13	<1	<1	1413	1508	10
Collis 1 (CO1)	5103	3067	60	325	6	170	93	9	38	368	693	14
D'Entrecasteaux (D5)	2838	2199	77	280	10	144	-	7	51	0	280	10
Granite Valleys (V1)	2299	2124	92	237	10	-	80	4	23	107	342	15
Wheatley (WH1)	20 322	16 508	81	539	3	11	-	<1	<1	1969	2508	12
Yanmah (YN1)	23 510	19 395	82	438	2	89	28	<1	3	3176	3514	15
Yanmah (YN2)	6749	5305	79	13	<1	-	12	<1	13	76	89	1

*Havel and Mattiske 2000

Rare and Priority Species by Vegetation Complex and Conservation Code

Vegetation Complex*	Rare	P1	P2	P3	P4	Total Species
Angove (A)	2	1	1	8	-	12
Burnett (BU)	0	0	1	2	0	3
Blackwater (BWp)	1	1	1	10	5	18
Camballup (CM)	0	1	0	0	0	1
Cleave (CV)	0	0	0	0	1	1
Collis (COb)	1	0	0	1	0	2
Collis 1 (COy1)	1	1	0	3	1	7
Crowea (CRb)	0	2	0	0	0	2
D'Entrecasteaux (DE5)	0	0	0	1	0	1
D'Entrecasteaux (E)	0	0	0	3	0	3
Granite Valleys (S1)	0	1	0	0	0	1
Granite Valleys (V4)	0	0	0	5	1	6
Keystone (Kb)	4	0	4	0	1	9
Keystone (Ky)	0	0	0	2	0	2
Lakes (L)	0	0	0	1	0	1
Meerup (Mc)	0	2	0	0	1	3
Meerup (Mf)	0	0	1	0	0	1
Meerup (Mp)	1	3	0	3	2	9
Meerup (Ms)	0	0	1	0	0	1
Meerup (Mu)	0	0	1	0	0	1
Mattaband (MTb)	0	0	0	2	1	3
Mattaband 1 (Mty1)	0	0	0	4	0	4
Pingerup (Pi)	3	0	0	4	3	10
Quagering (Q)	2	0	0	1	0	3
Shallow Valleys (S3)	0	0	0	0	1	1
Scott (Sd)	1	0	0	3	2	5
Scott (Swd)	1	0	0	5	4	9
Yanmah (YN1)	0	0	0	0	1	1

*Havel and Mattiske 2000

Location of Rare and Priority Species in Vegetation Complexes within Parks

Species	Veg Complex(es)*
Actinotis sp. Walpole	Angove
Alexgeorgea ganopoda	Mattaband 1
Amperea protensa	Angove, Blackwater (Bwp), Pingerup, Granite Valleys
Andersonia amabile	Angove, Mattaband 1, Blackwater (Bwp), Granite Valleys, D'Entrecasteaux (DE5)
Anthocercis sylvicola	Keystone (Kb)
Asplenium aethiopicum	Keystone, Yanmah
Asplenium obtusatum subsp. *northlandicum*	Meerup (Mp)
Astartea arbuscula	Scott (Swd), Pingerup
Astartea sp. Mt. Johnston	Keystone (Ky)
Astartea sp. Scott River	Blackwater, Scott (Swd)
Austrofestuca littoralis	Meerup (Mp)
Banksia verticillata	Keystone (Kb)
Brachyscias verecundus	Crowea
Caladenia interjacens	Blackwater, Meerup (Matt cavana, Mp)
Calymperastrum latifolium	Keystone (Kb)
Chamaelaucium floriferum subsp. *diffusum* MS	Keystone (Kb)
Chordifex jacksonii	Blackwater, Lakes, Mattaband 1, Pingerup, Scott (Sd)
Cyathochaeta stipoides	Meerup (Mc), Scott (Sd, Swd)
Degelia flabellata	Keystone (Kb)

Species	Veg Complex(es)*
Diuris heberlei	Meerup (Mu)
Drepanocladus aduncus	Meerup (Ms)
Drosera binata	Angove
Banksia sessilis var. *cordata*	Meerup (Mp)
Eriochilus scaber subsp. *orbifolius*	Meerup (Mc, Mp)
Gastrolobium formosum	Scott (Swd)
Gonocarpus pusillus	Blackwater (Bwp)
Gonocarpus simplex	Angove, Blackwater (Bwp), Pingerup, Scott (Swd), Granite valleys
Grevillea papillosa	Scott (Sd, Swd)
Hemiandra australis	D'Entrecasteaux (E), Meerup (Mp), Granite Valleys
Hemigenia rigida	Blackwater (Bwp), Angove, Collis1 (Cob), Granite Valleys (S1), Crowea (CRb), Camballup (CM)
Hypocalymma cordifolium subsp. *minus*	Blackwater (Bwp), Collis 1, Pingerup, Scott (Sd, Swd)
Kennedia glabrata	Collis, Collis 1, Keystone (Kb), Pingerup
Leucopogon tamariscinus	Blackwater (Bwp)
Lomandra ordii	Angove, Collis1, Granite Valleys
Marianthus sylvaticus	Burnett
Meeboldina crassipes	Burnett, Blackwater (Bwp), Collis 1
Melaleuca basicephala	Blackwater (Bwp), Scott, Granite Valleys
Melaleuca diosmifolia	D'Entrecasteaux (E), Meerup (Mp)
Melaleuca ringens	D'Entrecasteaux (E), Meerup (Mp)
Meziella trifida	Angove, Pingerup, Quagering, Scott (Sd, Swd)
Microtis globula	Pingerup, Quagering
Microtis media subsp. *quadrata*	Pingerup
Microtis pulchella	Mattaband (MTb), Cleave
Pertusaria trachyspora	Blackwater (Bwp)
Reedia spathacea	Angove, Blackwater (Bwp), Keystone (Kb)
Rhacocarpus rehmannianus var. *webbianus*	Keystone (Kb)
Schoenus fluitans	Meerup(Mf)
Sphenotoma parviflorum	Angove, Blackwater (Bwp), Mattaband
Stylidium gloeophyllum	Mattaband
Stylidium leeuwinense	Angove, Blackwater (Bwp), Pingerup, Quagering
Thelymitra jacksonii	Burnett, Collis1, Keystone (Ky), Mattaband 1
Tripterococcus brachylobus	Scott (Swd)
Tyrbastes glaucescens	Shallow Valleys, Scott (Swd)
Warnstorfia fluitans	Meerup (Ms)
Xanthosia eichleri	Collis (COb)

* Havel and Mattiske 2000 (see below)

Description of Vegetation Complexes in the Parks

Darling Plateau – Uplands

Wishart (WS2)
Tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis* with some *Allocasuarina fraseriana* on lower escarpment in hyperhumid to humid zones.

Bevan 1 (BE1)
Tall open forest of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* on uplands in perhumid and humid zones.

Bevan (BEb)
Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* over *Allocasuarina decussata-Agonis flexuosa* on lower slopes and *Banksia grandis* on upper slopes of undulating uplands in perhumid and humid zones.

Bevan 1 (BEy1)
Tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on uplands with a low woodland of *Melaleuca preissiana -Banksia littoralis* on the scattered depressions in perhumid and humid zones.

Corbalup 1 (CL1)
Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Banskia* spp. on well drained sites, with some *Eucalyptus decipiens* on lower slopes in southern areas, woodland of *Eucalyptus rudis-Melaleuca preissiana-Banksia littoralis* on depressions in perhumid and humid zones.

Collis 1 (CO1)
Open forest to tall open forest of *Eucalyptus marginata* subsp. *marginata* with some *Corymbia calophylla* on low undulating hills in perhumid and humid zones.

Collis (COb)
Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on crests of hills arising above the southern coastal plain in the hyperhumid zone.

Collis (COd)
Tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis* on saddles between hills in the perhumid zone.

Collis 1 (COy1)
Tall open forest to woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis-Allocasuarina fraseriana* on low hills and with *Allocasuarina decussata* on slopes in perhumid and humid zones.

Crowea (CRb)
Tall open forest of *Corymbia calophylla-Eucalyptus diversicolor* on upper slopes with *Allocasuarina decussata-Banksia grandis* on upper slopes in hyperhumid and perhumid zones.

Crowea (CRd)
Open forest to tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on uplands in hyperhumid and perhumid zones.

Crowea (CRy)
Tall open forest of *Corymbia calophylla* with mixture of *Eucalyptus marginata* subsp. *marginata* and *Eucalyptus diversicolor* on uplands in hyperhumid and perhumid zones.

Keystone (Kb)
Mosaic of tall open forest *of Eucalyptus guilfoylei-Eucalyptus jacksonii-Eucalyptus diversicolor* on slopes of major hills rising above coastal plain with *Allocasuarina decussata-Banksia grandis-Agonis flexuosa* on slopes in hyperhumid and perhumid zones and tall open forest of *Eucalyptus brevistylis-Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* and the occasional *Eucalyptus megacarpa* near rock outcrops in hyperhumid and perhumid zones.

Keystone (Ky)
Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis* on mild slopes of hills in perhumid zone and open forest to tall open forest of *Eucalyptus brevistylis* on slopes below outcrops in hyperhumid and perhumid zones.

Mattaband (MTb)
Mixture of tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* and woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Agonis flexuosa* on small hills arising above the coastal plain with some outcrops in hyperhumid and perhumid zones.

Mattaband 1 (MTy1)
Mixture of tall open forest of *Eucalyptus diversicolor-Eucalyptus guilfoylei*, tall open forest of *Eucalyptus jacksonii-Eucalyptus diversicolor* and an open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla – Banksia grandis* on hills rising above the coastal plain in hyperhumid and perhumid zones.

Darling Plateau – Depressions and Swamps on Uplands

Camballup (CM)
Mosaic of woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes, and woodland of *Eucalyptus occidentalis-Melaleuca cuticularis-Melaleuca rhaphiophylla*, low woodland of *Melaleuca preissiana-Banksia littoralis* and tall shrublands of *Melaleuca viminea* on broad depressions in humid to semiarid zones.

Cormint (CT)
Open woodland of *Eucalyptus marginata* subsp. *marginata* over *Banksia littoralis* and *Melaleuca* spp. on broad depressions in the perhumid zone.

Darling Plateau – Valleys

Wheatley (WH1)
Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on slopes and tall open forest of *Eucalyptus patens* on valley floor in perhumid and humid zones.

Yanmah (YN1)
Mixture of tall open forest of *Eucalyptus diversicolor* and tall open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata* subsp. *marginata* over *Agonis flexuosa* and *Taxandria juniperina* on valleys in perhumid and humid zones.

Yanmah (YN2)
Mixture of tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes and low woodland of *Banksia littoralis-Banskia seminuda* on valley floors in the humid zone.

Pemberton (PM1)
Tall open forest of *Eucalyptus diversicolor* with mixtures of *Corymbia calophylla* on valley slopes and low forest of *Taxandria juniperina-Banksia seminuda-Callistachys lanceolata* on valley floors in the perhumid zone.

Cattaminup (CP)
Mosaic of tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on low undulating hills and woodland of *Melaleuca preissiana-Banksia littoralis* on depressions in perhumid and humid zones.

Granite Valleys (S1)
Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on slopes with some *Eucalyptus patens* and *Eucalyptus megacarpa* on valley floors in hyperhumid and perhumid zones.

Granite Valleys (V1)
Mixture of tall open forest of *Eucalyptus diversicolor-Allocasuarina decussata-Agonis flexuosa*, and tall open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Eucalyptus guilfoylei* on valleys at transition between granite hills and sedimentary plain with some *Corymbia calophylla* on slopes and *Eucalyptus patens* and *Taxandria juniperina* on lower slopes in hyperhumid and perhumid zones.

Granite Valleys (Vh2)
Tall open forest of *Eucalyptus diversicolor-Eucalyptus patens* on slopes with *Agonis flexuosa-Allocasuarina decussata - Callistachys lanceolata* on valley floors in hyperhumid and perhumid zones.

Granite Valleys (Vh3)
Tall open forest of *Eucalyptus diversicolor-Eucalyptus guilfoylei* on slopes and woodland of *Eucalyptus rudis -Banksia littoralis* on lower slopes in hyperhumid and perhumid zones.

Granite Valleys (V4)
Tall open forest of *Eucalyptus diversicolor-Allocasuarina decussata-Agonis flexuosa* with *Eucalyptus patens* and *Corymbia calophylla* on slopes at the interface between granite hills and the southern coastal plain, with some shrublands of Myrtaceae spp. in hyperhumid and perhumid zones.

Lefroy (LF)
Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on slopes and low woodland of *Taxandria juniperina-Callistachys lanceolata* on lower slopes in hyperhumid and perhumid zones.

Southern Plains

Quagering (Q)
Mosaic of low open woodland of *Eucalyptus marginata* subsp. *marginata-Banksia ilicifolia-Nuytsia floribunda* and low open woodland of *Eucalyptus patens-Melaleuca preissiana-Nuytsia floribunda* on less undulating flats in hyperhumid and perhumid zones.

Burnett (BU)
Mosaic of tall shrubland of *Taxandria linearifolia-Taxandria parviceps*, open heaths of Myrtaceae-Proteaceae-Papilionaceae

spp. with some emergent *Eucalyptus patens* and *Eucalyptus megacarpa* and sedgeland of *Anarthria-Lepidosperma* spp. on broad flats in the hyperhumid zone.

Angove (A)
Open forest of *Eucalyptus marginata* subsp. *marginata-Banksia ilicifolia-Nuytsia floribunda* with some *Eucalyptus diversicolor* on gently sloping sandy terrain in hyperhumid and perhumid zones.

Pingerup (Pi)
Mosaic of closed heaths of Myrtaceae spp. and sedgeland of Restionaceae-Cyperaceae spp. with occasional emergent *Eucalyptus patens* and *Melaleuca preissiana* on broad depressions and drainage corridors in hyperhumid and perhumid zones.

Owingup (OW)
Mosaic of open woodland of *Allocasuarina fraseriana-Banksia attenuata-Banksia ilicifolia*, low open woodland of *Melaleuca rhaphiophylla-Taxandria juniperina*, low open woodland of *Melaleuca cuticularis* and tall shrubland of *Melaleuca densa* on broad swamps and plains in the hyperhumid zone.

Blackwater (BW)
Low open woodland of *Agonis flexuosa-Taxandria juniperina* on low rises, and a mosaic of sedgeland of *Leptocarpus* spp., open heath of Myrtaceae-Proteaceae spp., low open woodland of *Melaleuca rhaphiophylla-Banksia littoralis* on broad flats in hyperhumid and perhumid zones.

Blackwater (BWp)
Mosaic of low open woodland of *Melaleuca preissiana*, low open woodland of *Melaleuca cuticularis*, open heath of Myrtaceae-Proteaceae spp. and sedgelands of Restionaceae spp. on low lying flats in hyperhumid and perhumid zones.

Hawk (HK)
Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Agonis flexuosa* on mild slopes in the hyperhumid zone.

Quindabellup (QN)
Low woodland of *Eucalyptus marginata* subsp. *marginata* on slopes and low open woodland of *Banksia littoralis-Melaleuca preissiana* on broad depressions in perhumid and humid zones.

Shallow Valleys (S3)
Low woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes, and mosaic of low open woodland of *Melaleuca preissiana-Banksia littoralis* , closed heaths and sedgeland of Cyperaceae spp. on valley floors with impeded drainage in hyperhumid and perhumid zones.

Broad Swamps (S4)
Low woodland of *Eucalyptus marginata* subsp. *marginata-Nuytsia floribunda* with some *Melaleuca preissiana* and closed heaths of Myrtaceae spp. on broad drainage lines in hyperhumid and perhumid zones.

Blackwood Plateau and Plain – Uplands

Kingia (KI)
Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Allocasuarina fraseriana-Banksia grandis-Xylomelum occidentale* on lateritic uplands in perhumid and humid zones.

Jangardup (JN)
Open woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on rises and low open woodland of *Melaleuca preissiana-Banksia littoralis* on depressions in hyperhumid and perhumid zones.

Blackwood Plateau and Plain – Depressions and Swamps on Uplands

Coate (CE)
Low open woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Allocasuarina fraseriana-Banksia ilicifolia* and low open woodland of *Melaleuca preissiana-Banksia littoralis* on broad depressions in upper gullies in perhumid and humid zones.

Blackwood Plateau and Plain – Valley Floors and Swamps

Darradup (DP)
Open forest to woodland of *Corymbia calophylla* with some *Eucalyptus marginata* subsp. *marginata* on slopes, woodland of *Eucalyptus rudis*4 *-Banksia seminuda-Melaleuca preissiana-Agonis flexuosa* and tall shrubland of *Taxandria linearifolia-Callistachys lanceolata* on fringes of streams in perhumid and humid ones.

Scott Coastal Plain – Uplands

Scott (Sd)
Low open forest and low woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Agonis flexuosa* with some *Eucalyptus patens* and *Banksia* spp. on low dunes to low woodland of *Melaleuca preissiana-Banksia littoralis* on inter-dune depressions in hyperhumid and perhumid zones.

Scott (Sd2)
Low woodland of *Banksia attenuata-Banksia ilicifolia-Nuytsia floribunda-Eucalyptus marginata* subsp. *marginata* with occasional *Corymbia calophylla* on dunes rising above the plain in hyperhumid and perhumid zones.

Scott Coastal Plain – Valley Floors and Swamps

Scott (Swd)
Mosaic of sedgeland of Restionaceae-Cyperaceae spp. and closed heath of Myrtaceae-Proteaceae spp. with occasional *Banksia ilicifolia* on swampy depressions and stunted *Eucalyptus marginata* subsp. *marginata-Banksia attenuata-Xylomelum occidentale* on low sandy rises in hyperhumid and perhumid zones.

Jasper (JA)
Open forest to woodland of *Corymbia calophylla* with some *Banksia littoralis-Callistachys lanceolata* near low lying drainage areas in the hyperhumid zone.

Cleave (CV)
Woodland of *Melaleuca preissiana* on drainage areas in the hyperhumid zone.

Southern Coastal Dune System

D'Entrecasteaux (E)
Coastal complex and closed heath of *Phyllanthus calycinus – Olearia axillaris-Spyridium globulosum-Pimelea ferruginea - Rhagodia baccata* with some emergents of *Agonis flexuosa* and sedgeland of *Lepidosperma* spp. on steeper exposed dunes in the hyperhumid zone.

D'Entrecasteaux (D5)
Mosaic of low woodland of *Agonis flexuosa* and closed heath of *Olearia axillaris-Spyridium globulosum-Acacia littorea* on steep dunes on calcareous deep sands in the perhumid zone.

D'Entrecasteaux (DE5)
Coastal complex and closed heath of *Olearia axillaris* and *Senecio* spp. on recently stabilised dunes in hyperhumid and perhumid zones.

D'Entrecasteaux (Dd5)
Woodland to low forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Agonis flexuosa-Banskia*

grandis with some *Eucalyptus megacarpa* on stabilised higher dunes in hyperhumid and perhumid zones.

D'Entrecasteaux (Dd)
Woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Agonis flexuosa-Banskia grandis* with some *Eucalyptus megacarpa* on recent low dunes with dense shrub understorey in hyperhumid and perhumid zones.

Meerup (Mc)
Coastal complex and closed heath of *Olearia axillaris-Spyridium globulosum-Pimelea ferruginea-Rhagodia baccata* and sedgeland of *Lepidosperma* spp. on recently developed coastal dunes in the hyperhumid zone.

Meerup (Mf)
Low woodland of *Eucalyptus megacarpa-Agonis flexuosa-Allocasuarina fraseriana* on flats between dunes some distance from coast in the hyperhumid zone.

Meerup (Mp)
Mosaic of open low woodland of *Agonis flexuosa* with some *Eucalyptus cornuta*, tall shrubland of *Agonis flexuosa* with *Trymalium floribundum* in gullies and closed heath of *Olearia axillaris-Spyridium globulosum-Acacia littorea* on stabilised dunes in the hyperhumid zone.

Meerup (Mr)
Low woodland of *Agonis flexuosa-Banksia attenuata* in gullies between beach ridges supporting coastal complex in the hyperhumid zone.

Meerup (Ms)
Low woodland of *Agonis flexuosa-Xylomelum occidentale-Banksia attenuata-Banksia ilicifolia* on oldest dunes in the hyperhumid zone.

Meerup (Mu)
Coastal complex and open heath of open *Olearia axillaris-Acacia cyclops-Acacia divergens* and sedgeland of *Lepidosperma* spp. on unstable coastal dunes in the hyperhumid zone.

Meerup (My)
Closed heath of *Olearia axillaris-Spyridium globulosum-Phyllanthus calycinus* with occasional *Agonis flexuosa* in gullies on steep sloped dunes in the hyperhumid zone.

Significant Vegetation Associations that Meet or Exceed the Criteria for Significance used by Hopkins *et al.* 2000

Veg Association No*	Beard Code	Description	Reason For Significance
37	mSc	Shrublands; teatree thicket	Poorly reserved >0 but < 15% in reserves
949	bLi	Low woodland; banksia	Poorly reserved >0 but < 15% in reserves
965	e2,3Mi	Medium woodland; jarrah (*E. marginata*) & marri *(E. calophylla*)	Vegetation association of limited extent in study area e.g. < 2000 ha in SW catchments
999	e3Mi	Medium woodland; marri (*E. calophylla*)	Poorly reserved >0 but < 15% in reserves and ≤ 30% of original extent
1111	e37Mi	Medium woodland; yate (*E. occidentalis*)	Poorly reserved or limited in extent
1112	e1Tc/e2,3Tc	Mosaic: Tall forest; karri (*E. diversicolor*) / Tall forest; jarrah (*E. marginata*) & marri (*E. calophylla*)	Poorly reserved or limited in extent
1115	e3,37Mi	Medium woodland; marri (*E. calophylla*) & yate (*E. occidentalis*)	Poorly reserved or limited in extent
1131	e37Mc	Medium forest; bushy yate (*E. cornuta*)	Poorly reserved or limited in extent

* Beard 1980

APPENDIX 8. ENVIRONMENTAL WEEDS

Environmental Weed Strategy Rating

High Priority for control and/or research
Moderate Control or research efforts should be directed to it if funds are available in addition to reasonably high level of monitoring
Mild Monitoring and control where appropriate
Low Low level of monitoring
Based on *Environmental Weed Strategy for Western Australia (1999)*

Environmental Weeds in the Parks

Species	Common Name	Location	Local Management
High (6)			
Bromus diandrus	Great brome	D'Entrecasteaux NP	Control
Freesia hybrid	Freesia	Scattered, Shannon Townsite	Control/monitor
Lagurus ovatus	Hares tail grass	Pt D'Entrecasteaux	Control
Leptospermum laevigatum	Victorian tea tree	Shannon Townsite, Windy Harbour, Coodamurrup/Fish Creek	Control, if possible eradicate
Pelargonium capitatum	Rose pelargonium	Scattered, Windy Harbour	Control/monitor
*Zantedeschia aethiopica**	Arum lily	Lower Donnelly River, Lake Jasper	Control, if possible eradicate
Moderate (42)			
Aira caryophyllea	Silvery hair grass	D'Entrecasteaux NP	Control/monitor
Aira cupaniana	Silvery hair grass	D'Entrecasteaux NP	Control/monitor
Anagallis arvensis	Pimpernel	D'Entrecasteaux NP	Control/monitor
Anthoxanthum odoratum	Sweet vernal grass	Wheatley Coast Rd (D'Entrecasteaux NP), Shannon Rock (Shannon NP)	Control/monitor
Arctotheca populifolia	Dune arctotheca	D'Entrecasteaux NP	Control/monitor
Avena barbata	Bearded oat	Crystal Springs (D'Entrecasteaux NP)	Control/monitor
Briza maxima	Blowfly grass	D'Entrecasteaux NP	Control/monitor
Briza minor	Shivery grass	D'Entrecasteaux NP	Control/monitor
Cakile maritima	Sea rocket	D'Entrecasteaux NP	Control/monitor
Callitriche stagnalis	Common starwort	South Western Hwy (Shannon NP)	Control/monitor
Carpobrotus edulis	Hottentot fig	D'Entrecasteaux NP	Control/monitor
Centaurium erythraea	Common centaury	D'Entrecasteaux NP	Control/monitor
Chasmanthe floribunda	African cornflag	Scattered, Windy Harbour Road	Control, if possible eradicate
Cuscuta epithymum	Dodder	D'Entrecasteaux NP	Control/monitor
Euphorbia paralias	Sea spurge	D'Entrecasteaux NP	Control/monitor
Euphorbia peplus	Petty spurge	D'Entrecasteaux NP	Control/monitor
Ficus carica	Fig tree	Bolghinup Hut, other stockman's huts/camps	Monitor
Heliophila pusilla	-	D'Entrecasteaux NP	Control/monitor
Holcus lanatus	Yorkshire fog	D'Entrecasteaux NP	Control/monitor
Hypochaeris glabra	Smooth cat's ear or flat weed	D'Entrecasteaux NP	Control/monitor
Isolepis marginata	Coarse club rush	D'Entrecasteaux NP	Control/monitor
Isolepis prolifera	Budding club rush	D'Entrecasteaux NP	Control/monitor
Juncus bufonius	Toad rush	D'Entrecasteaux NP	Control/monitor
Lolium rigidum	Annual rye grass	D'Entrecasteaux NP	Control/monitor
Melilotus indica	Hexham scent King Island melilot	Yeagarup, Malimup	Control/monitor
Orobanche minor	Lesser Broomrape	Scattered along roadsides	Control/monitor

Species	Common Name	Location	Local Management
Parentucellia viscosa	Sticky bartsia	Shannon NP, D'Entrecasteaux NP	Control/monitor
Paspalum sp.	Paspalum	Yeagarup, Callcup	Eradicate
Pinus pinaster	Pinaster pine	Yeagarup, Callcup, Shannon	Control, if possible eradicate
Pinus radiata	Radiata pine	Shannon Townsite	Control
Rorippa nasturtium-aquaticum	Watercress	D'Entrecasteaux NP	Control/monitor
Rubus ulmifolius var. *ulmifolius*	Elmleaf blackberry	Warren River Bridge (D'Entrecasteaux NP)	Control/monitor
Sigesbeckia orientalis	Indian weed	D'Entrecasteaux NP	Control/monitor
*Solanum sodomaeum**	Apple of Sodom	Lake Jasper	Eradicate
Sonchus oleraceus	Common sowthistle	D'Entrecasteaux NP	Control/monitor
Trifolium campestre var. *campestre*	Hop clover	D'Entrecasteaux NP	Control/monitor
Trifolium dubium	Suckling clover	Wheatley Coast Rd (D'Entrecasteaux NP)	Control/monitor
Trifolium subterraneum	Subterranean clover	Shannon NP	Control/monitor
Vellereophyton dealbatum	White cudweed	D'Entrecasteaux NP	Control/monitor
Vulpia bromoides	Squirrel tail fescue	Chesapeake Rd (D'Entrecasteaux NP), Shannon Rock (Shannon NP)	Control/monitor
Vulpia fasciculata	-	D'Entrecasteaux NP	Control/monitor
Vulpia myuros	-	D'Entrecasteaux NP	Control/monitor
Mild (10)			
Acacia dealbata	Silver wattle	Shannon Townsite	Monitor
Acacia decurrens	Early black wattle	Shannon Townsite	Monitor
Chamaecytisus palmensis	Tagasaste	1km SE of Shannon Townsite	Monitor
Dittrichia graveolens	Stinkwort	Shannon Townsite	Control, if possible eradicate
Juncus articulatus	Jointed rush	D'Entrecasteaux NP	Monitor
Juncus microcephalus	Tiny-headed rush	D'Entrecasteaux NP	Monitor
Plantago major	Great plantain	D'Entrecasteaux NP	Monitor
Poa annua	Annual winter grass	D'Entrecasteaux NP	Monitor
Sherardia arvensis	Field madder	Crystal Springs (D'Entrecasteaux NP)	Monitor
Trachyandra divaricata	Branched onion weed	Windy Harbour, Malimup and scattered along coast	Control, if possible eradicate
Low (35)			
Acacia elata	Mountain cedar wattle	Shannon Townsite	Monitor
Acacia melanoxylon	Blackwood	Shannon Dam	Control, if possible eradicate
Acacia podalyriifolia	Queensland silver wattle	Shannon Townsite	Monitor
Acetosella vulgaris	Sheep sorrel	D'Entrecasteaux NP	Monitor
Aira praecox	Early hair grass	D'Entrecasteaux NP	Monitor
Amaryllis belladonna	Easter lily	Shannon Townsite	Monitor
Ammophila arenaria	Marram grass	Disturbed dunes	Monitor
Bromus hordeaceus	Soft brome	D'Entrecasteaux NP	Monitor
Cardamine hirsuta	Common bittercress	D'Entrecasteaux NP	Monitor
Carduus tenuiflorus	Sheep thistle	Long Point Track (D'Entrecasteaux	Monitor

Species	Common Name	Location	Local Management
		NP)	
Cerastium glomeratum	Chickweed	D'Entrecasteaux NP	Monitor
Conyza sumatrensis	Tall fleabane	D'Entrecasteaux NP	Monitor
*Cuscuta campestris**	Golden dodder	Lower Warren River (may not be in park)	Control, if possible eradicate
Erica baccans	Berry flower heath	Shannon River	Monitor
Eriobotrya japonica	Loquat	Shannon Townsite and scattered populations usually near car parks	Eradicate
Eucalyptus globulus	Tasmanian blue gum	Shannon Townsite	Harvest
Eucalyptus saligna	Sydney blue gum	Shannon Townsite	Harvest
Gladiolus sp.	Gladioli	Scattered on roadsides, Windy Harbour Road	Control, if possible eradicate
Leontodon taraxacoides subsp. taraxacoides	Hairy hawkbit	Malimup Spring (D'Entrecasteaux NP)	Monitor
Lolium perenne	Perennial rye grass	D'Entrecasteaux NP	Monitor
Lonicera sp.	Honeysuckle	Shannon Townsite	Monitor
Lotus subbiflorus	Hairy birdsfoot trefoil	D'Entrecasteaux NP	Monitor
Melilotus albus	White sweet clover	D'Entrecasteaux NP	Monitor
Mentha pulegium	Pennyroyal	D'Entrecasteaux NP including Black Point Road and Malimup track	Control, if possible eradicate
Narcissus sp.	Daffodil	Shannon Townsite	Monitor
Oxalis corniculata	Yellow wood sorrel	D'Entrecasteaux NP	Monitor
Pinus canariensis	Canary Island pine	Shannon Townsite	Monitor
Plantago lanceolata	Ribwort plantain	Shannon NP, D'Entrecasteaux NP	Monitor
Populus alba	White poplar	Shannon Townsite	Control
Populus nigra var. *italica*	Black poplar	Shannon Townsite	Control
Rubus fruticosus+*	Blackberry	Warren River	Control, if possible eradicate
Stellaria media	Chickweed	D'Entrecasteaux NP	Monitor
Tropaeolum majus	Nasturtium	Scattered, not common	Monitor
Verbascum virgatum	Green mullein	Shannon Townsite and scattered populations	Control, if possible eradicate
Vinca major	Blue periwinkle	Shannon Townsite	Control
Unrated as of 1999 (11)			
Bartsia trixago	White bartsia	D'Entrecasteaux NP	Monitor
Cotoneaster sp.	Cotoneaster	Shannon Townsite	Monitor
Dischisma arenarium	-	D'Entrecasteaux NP	Monitor
Foeniculum vulgare	Fennel	Shannon Townsite	Control
Hedra helix	Ivy	Shannon Townsite	Monitor
Kunzea sulphurea	-	Shannon NP, D'Entrecasteaux NP	Monitor
Lophostemon confertus	Brush box	Shannon Townsite	Monitor
Oenothera drummondii	Beach evening primrose	Wheatley Coast Rd	Monitor
Phleum pratense	Timothy grass	Warren River (D'Entrecasteaux NP)	Monitor
Romulea rosea	Guildford grass	Shannon Townsite and various locations	Monitor /control/eradicate

Species	Common Name	Location	Local Management
			isolated/new populations
Senecio elegans	Ragwort	Scattered along coast, not widespread	Eradicate
Various (6+)			
-	Annual grasses	Former grazing leases	Control/monitor
Cirsium sp. (Moderate to Low)	Thistle	Throughout parks	Control/monitor
Oxalis sp. (Mild to Unrated)	Woodsorrel	Scattered at disturbed sites, especially old camps, settlements	Monitor
Rosa sp. (Unrated to Low)	Roses	Shannon Townsite	Monitor
Rumex sp. (High to Unrated)	Docks	Scattered at disturbed sites, especially old camps, settlements	Control/monitor
Watsonia sp. (High to Low)	Watsonia	Shannon Townsite	Control
Not Listed (15)			
Acaena ovina	Bidgee widgee	Around huts used by graziers	Control
Araucaria exelsa	Norfolk Island pine	Shannon Townsite	Monitor
Brachychiton acerifolium	Flame tree	Shannon Townsite	Monitor
Cerastium pumilum	Chickweed	Yeagarup Dunes and Cliffy Head (D'Entrecasteaux NP)	Monitor
Cryptomeria japonica	Japanese cedar	Shannon Townsite	Monitor
Echium plantagineum	Paterson's curse	D'Entrecasteaux NP	Monitor
Eucalyptus muelleriana	Yellow stringybark	Shannon NP	Harvest
Eucalyptus seiberi	Silvertop ash	Shannon Townsite	Monitor
Fuscia sp.	Fuscia	Shannon Townsite	Monitor
Gamochaeta calviceps	-	Mt Pingerup (D'Entrecasteaux NP)	Monitor
Genista monpessulana	Cape broom	Shannon Townsite	Control, if possible eradicate
Impatiens sodenii	Balsam	Chudalup	Eradicate
Mulus sp.	Apples	Shannon Townsite	Monitor
Pinus illiki	Southern pine	Shannon Townsite	Monitor
Quercus sp.	Oak	Shannon Townsite	Monitor

* Declared species under the Agriculture and Related Resources Protection Act (as of 14 December 2000).

\+ Weed of National Significance' (ARMCANZ and ANZECC 2000).

Additional Environmental Weeds adjacent to the Parks^

Species	Common Name	Location	Local Management
High (3)			
Euphorbia terracina	Geraldton carnation weed	Walpole-Nornalup NP	Monitor
Malva dendromorpha	Tree mallow	Windy Harbour Reserve	Control, if possible eradicate
Sparaxis bulbifera	Harlequin flower	Wheatley Coast Rd	Monitor
Moderate (7)			
Arctotheca calendula	Capeweed	Wheatley Coast Rd, Long Point Track (Walpole-Nornalup NP)	Monitor
Disa bracteata	South African orchid	Walpole-Nornalup NP	Control/monitor
Galium murale	Small goosegrass	Long Point Track (Walpole-Nornalup NP)	Control/monitor
Gazania linearis	Gazania	Salmon Beach Rd (Windy Harbour Reserve)	Control, if possible eradicate
Solanum nigrum	Blackberry nightshade	Near Crystal Springs	Control/monitor

Species	Common Name	Location	Local Management
Sonchus asper	Rough sow thistle	Near Crystal Springs	Control/monitor
Vicia sativa subsp. *nigra*	Narrow leaf vetch	Near Crystal Springs	Control/monitor
Mild (6)			
Juncus oxycarpus	-	Deep River Bridge	Monitor
Nymphaea mexicana	Yellow waterlily	Jeffery Rd	Monitor
Oxalis glabra	Finger leaf	Wheatley Coast Rd	Monitor
Petrorhagia velutina	Velvet pink	Wheatley Coast Rd (Boorara Gardner NP)	Monitor
Solanum laciniatum	Kangaroo apple	Plantation Rd (Warren State Forest)	Control/monitor
Trifolium repens	White clover	Wheatley Coast Rd (Boorara Gardner NP)	Monitor
Low (15)			
Amaranthus blitum	Purple amaranth	Warren River (Lot 5463)	Monitor
Centranthus ruber	Red valerian	Camfield (Lot 2)	Monitor
Conyza bonariensis	Flaxleaf fleabane	CALM Executive Body	Monitor
Conyza parva	-	CALM Executive Body	Monitor
Corrigiola litoralis	Strapwort	Black Point Rd	Monitor
Cotula turbinata	Funnel weed	Black Point Rd	Monitor
Crepis capillaris	Smooth hawksbeard	Shannon State Forest	Monitor
Ixia maculata	Yellow ixia	South Western Hwy, Deep River Bridge (Mt Frankland South NP), Wheatley Coast Rd (Boorara-Gardner NP)	Monitor
Ixia polystachya	Variable ixia	South Western Hwy (Mt Frankland South NP)	Monitor
Linum trigynum	French flax	Wheatley Coast Rd	Monitor
Lotus uliginosus	Greater lotus	CALM Executive Body	Monitor
Mentha x piperita var. *citrata*	Eau de cologne mint	Farm Dam	Monitor
Modiola caroliniana	Red flowered mallow	CALM Executive Body	Monitor
Persicaria capitata	Japanese knotweed	Burnside Tower (Mt Frankland NP)	Monitor
Verbena bonariensis	Purple-top verbena	Gardner River Rd (Windy Harbour Reserve)	Control/monitor
Not Listed (3)			
Leontodon hispidus subsp. hispidus	Rough hawkbit	South Coast Hwy (Walpole-Nornalup NP)	Monitor
*Rubus laudatus**	Early blackberry	South Western Hwy	Monitor
Rubus loganobaccus	Loganberry	Jane Waters Rest Stop	Monitor

^ Within a 2 kilometre radius of the parks. It is possible that these species may already occur within the parks but have not been recorded.

* Declared species under the Agriculture and Related Resources Protection Act (as of 14 December 2000).

APPENDIX 9. KEY PRINCIPLES OF FIRE MANAGEMENT

Principle 1
The vegetation and climate of most parts of Western Australia make it highly prone to bushfire. Fire should be regarded as an environmental factor that has and will continue to influence the nature of Western Australian landscapes and is integral to land management.

Principle 2
Species and communities vary in their adaptations to, and reliance on, fire. Knowledge of the temporal and spatial scales of fires in relation to the life histories of organisms or communities involved underpins the use of fire in natural resource management.

Principle 3
Following fire, environmental factors such as landform, topography and species' life history attributes, and random events such as climatic events, often drive ecosystems towards a new transient state with respect to species composition and structure. This may preclude the identification of changes specifically attributable to fire.

Principle 4
Fire management is required for four primary reasons, which are not necessarily mutually exclusive: a) to protect and conserve the biota, b) to reduce the occurrence of large, damaging wildfires, c) to manage and regenerate productive vegetation and c) to minimise the potential for damage to life, property and natural resource values. The biological impact of a single fire event and the rate of recovery are directly proportional to the intensity and size of the fire.

Principle 5
Fire management should be precautionary and consider both ecological and protection objectives in order to optimise outcomes.

Principle 6
Fire diversity promotes biodiversity. An interlocking mosaic of patches of vegetation representing a range of fire frequencies, intervals, seasons, intensities and scales need to be incorporated into ecologically-based fire regimes if they are to optimise the conservation of biodiversity.

Principle 7
Avoid applying the same fire regime over large areas for long periods of time and avoid seral and structural homogenisation by not treating large areas with extreme regimes such as very frequent or very infrequent fire intervals.

Principle 8
The scale, or grain-size, of the mosaic should a) enable natal dispersal b) optimise boundary habitat (interface between two or more seral states) and c) optimise connectivity (ability of fauna to cross).

Principle 9
All available knowledge, including life histories, vital attributes of the flora and fauna and knowledge of fire regimes applied by Aboriginal people should be utilised to develop ecologically-based fire regimes appropriate at a landscape scale and a scale pertinent to the local vegetation complex.

Principle 10
Fire history, vegetation complexes and landscape units should be used to develop known and ideal fire age class distributions.

Principle 11
Wildfire can damage and destroy both conservation and societal values, hence risk management must be based on a systematic and structured approach to identifying and managing the consequences of such an event.

Principle 12
Fire management should adapt to changing community expectations and to new knowledge gained through research, monitoring and experience.

APPENDIX 10. VISITOR MANAGEMENT SETTINGS CRITERIA

Visitor Management Settings in the Parks

	Visitor Management Setting Class				
	Wilderness*	**Natural**	**Natural -Recreation**	**Recreation**	**Highly Modified**
Principal Purposes	Conservation, low level recreation.	Conservation, low level recreation.	Conservation, low to medium level recreation.	Conservation, medium level recreation, education and interpretation	High level recreation, education and interpretation, conservation, multiple-use.
Description	Natural areas with minimal evidence of modern human activity. Large, remote areas (8000 ha in temperate areas)	Natural areas with minimal evidence of modern human activity. No size criteria.	Predominantly natural areas, with some disturbance and modern human activity apparent at specific sites.	Mostly natural areas, but with disturbance and modern human activity apparent at some sites.	Concentrated areas of modified environment but with natural or rural background. Human activity conspicuous.
Access Access standards and type of transport used for visitors, resource users and protected area managers	Vehicles: mechanised access in emergency situations or essential management operations only. Walking: via natural routes formed principally by human use (AS Walking Track class 6 only). Aircraft: landing of non-fixed wing aircraft is permitted for emergency and essential research purposes only. Fixed wing aircraft must fly above 2000 feet and non-fixed wing above 1500 feet.	Vehicles: mechanised access in emergency situations or essential management operations only. Walking: via natural routes formed to a minimum standard (AS Walking Track class 4 to 5). Boat: non-motorised only. Horse: no horses permitted. Aircraft: no airstrips permitted.	Vehicles: mechanical access on 4WD tracks. Cycle type 4 trails. Walking: formed walktrails (AS Walking Track class 2 to 5). Boat: non-motorised, and limited motor boat only in designated areas. Horse: commercial horseriding access in designated areas. Aircraft: natural earth airstrip permitted.	Vehicles: mechanical access on 2WD unsealed tracks. Cycle type 2 and 3 trails. Walking: well-built walking trails with direction signs (AS Walking Track class 2 to 4). Boat: non-motorised, and motor boats only in designated areas Horse: designated bridle trails possible Aircraft: unsealed airstrip permitted.	Vehicles: mechanical access on 2WD sealed tracks. Cycle type 1 trail. Walking: Well-built, signposted walking trails (AS Walking Track class 1 and 2). Boat: non-motorised, and motor boats only in designated areas Horse: designated bridle trails possible Aircraft: sealed airstrip permitted.
Site Modification Extent, type and design of infrastructure, facilities, amenities and the style of accommodation provided	No site modification and no facilities or structures except for reasons of visitor safety, resource protection and/or management operations. Camp sites are not defined ('Wild Camping').	No site modification and no facilities or structures except for reasons of visitor safety, resource protection and/or management operations. Trail markers may be used. Camp sites are not defined ('Wild Camping'). Day use sites not defined.	Minor modification of specific sites. Basic facilities such as toilets may be provided in specific locations. 'Low' recreation sites and 'Beach Camping' may be provided.	Modification of specific sites. Low-key facilities such as simple car parks, toilets, shelters and picnic areas may be present. 'Medium' or 'Low' recreation sites or 'Beach Camping' may be provided.	Modified site, with often a range of facilities. Accommodation facilities, picnic areas, visitor centres and lookouts may be present. 'High' and 'Medium' recreation sites may be provided.

	Visitor Management Setting Class				
	Wilderness*	**Natural**	**Natural -Recreation**	**Recreation**	**Highly Modified**
Commercial Uses	Commercial recreation and tourism operations not permitted	Commercial tourism licences permitted, but may consider regulating numbers (e.g. E Class Licence) Leases not permitted	Commercial tourism licences permitted with a focus on nature-based/cultural activities Leases permitted	Commercial tourism licences permitted with a focus on nature-based/cultural and adventure activities Leases permitted	Commercial tourism licences permitted with a focus on nature-based/cultural and adventure activities Leases permitted
Probable Social Interaction Density of users and degree of social interaction and opportunities for solitude	Interaction between users is minimal, with usually less than two other groups encountered during a day, and no other groups within sight or sound at camp sites. Maximum group size of about six to eight people.	Little interaction between users, with usually less than about four to six other groups encountered during a day, and usually no more than about two other groups within sight or sound at camp sites. Group size approximately 8-12 people.	Moderate interaction between users, with encounters with several other groups likely along access routes and at camp sites. Group size approximately 12-15 people.	High level of contact and interaction with other users on roads and in camping and picnic areas, moderate interaction on walking tracks. Groups of more than 15 people may be expected, depending on location.	High level of contact and frequent interaction with many other groups. Groups may exceed 20 people.
Probable Recreation Experiences	Opportunities for isolation, independence, closeness to nature, tranquillity and self-reliance through the application of outdoor skills in an environment that offers a high degree of challenge.	Opportunities for isolation, independence, closeness to nature, tranquillity and self-reliance through the application of outdoor skills in an environment that offers a high degree of challenge.	Opportunities for closeness to nature, tranquillity and self-reliance through the application of outdoor skills in an environment that offers a moderate degree of challenge.	Opportunities include closeness to nature and nature appreciation. Moderate levels of social contact and some opportunity to experience tranquillity.	Opportunities for nature appreciation, and for social interaction. Facilities often support presentation of nature or access to nature-based opportunities in nearby areas.
Degree of Self-Reliance Level of support services provided	Visitors must be totally self-reliant as support services are inappropriate and are not provided. Commercial tourism and recreation operators not permitted.	Visitors must be totally self-reliant, as support services are inappropriate and are minimal or non-existent.	Visitors must be largely self-reliant as basic support services are provided in specific locations only.	Self-reliance requirements are generally low where facilities are provided, but outdoor skills will be important in areas away from roads and tracks.	Low level of self-reliance due to high level of support services and facilities present.
Style of Visitor Management Level of on-site management, site constraints and regulations	On-site visitor management is very low with controls primarily off site. All interpretation is off-site. No trail information in brochures. Boundary signage only. Very infrequent ranger presence.	On-site regimentation is low with controls primarily off site. Generally boundary signs only. Infrequent ranger presence.	Low on-site regimentation. Walking trails and camp sites may be defined. Most interpretation is off-site. Along trails and at trail camp sites there may be basic markers and signage with minimal management messages. Infrequent ranger presence.	Moderate on-site regimentation, including some signs and barriers. Facilities may be common and clustered. Track signs may include interpretation. Brochures and track guides often available. May be frequent ranger presence.	A high degree of on-site visitor management, including the use of physical barriers to constrain movement of pedestrians and vehicles/boats. Well-developed structures. There may be considerable interpretive signage, materials or activities. Frequent ranger presence likely.

* Refer to Policy 62 *Identification and Management of Wilderness and Surrounding Areas*

APPENDIX 11. VEHICLE ACCESS STRATEGY

Introduction

As access is quite restricted and undeveloped in both parks, they display qualities of remoteness and wildness (see Sections 25 Recreational Opportunities and 26 Visitor Access). These qualities are highly valued by visitors and the community. Many of the vehicle tracks in the parks, particularly those in D'Entrecasteaux National Park, are constructed through sensitive landforms, which are infected by or susceptible to *Phytophthora*, are seasonally inundated, easily erodable, damage important habitats and/or cross Aboriginal sites (see Sections 15 Catchment Protection, 21 Diseases and 23 Indigenous Heritage).

Vehicle Access Strategy

The type of access provided affects the level and type of use of an area. A variety of access has been planned for the parks on the continuum from walking to sealed two-wheel drive vehicle access (Map 10 Public Access – Vehicle and Boat and Map 11 Public Access – Walktrails). This appendix details the roads and tracks that will remain open for public or management vehicle access. Rationale for this strategy is available from the Pemberton District Office. Roads and tracks managed by Main Roads Western Australia or the local authority mentioned in the strategy are not within the parks and are not the responsibility of the Department.

Where discrepancy exists to the nomenclature of the various roads and tracks, only those shown in Map 10 Public Access – Vehicle and Boat will remain open to the public. Any roads or tracks not shown on Map 10 Public Access – Vehicle and Boat will not be available for use by the general public. Other types of access such as walking, boating and horseriding are discussed in sections 26 Visitor Access, 27 Recreational Use – Recreational Activities and 28 Commercial Tourism Operations.

Where vehicle access is indicated to remain, one good track/road to end point destinations will be provided rather than multiple access roads and tracks. Before upgrading or improving access, planning and funding must also be available to establish end points facilities that are able to cope with increased use.

Proposed Vehicle Access Strategy

Track^	1987 Management Plan$^{\Delta}$	Proposed Management and Comments$^{\nabla}$
Donnelly District – D'Entrecasteaux National Park West of Windy Harbour Road		
Black Point Road (part local authority road)	Close	Open 4wd – seasonal
Wapet Track	Open – upgrade to 2wd	Open 4wd (goes through private property)
270 Degrees Track	Close*	Close – management access (goes through private property)
Jasper Beach Track	Open – upgrade to 2wd	Open 4wd (mostly within pastoral lease until 2015)
Jasper Beach	Open 4wd	Open 4wd
Scott Road (part local authority road)	Open 2wd	Open 4wd (local authority road part may close if no bridge)
Lake Jasper Road	Open 4wd	Open 4wd (dependent on proposed mine)
Woodaburrup Road	Close*	Open 4wd to Black Point Road
Jangardup Road	Open 2wd	Open 4wd within planning area (dependent on proposed mine)
Schultz Track	Fire access track	Close – management access, consider complete closure post 2015
Quitjup Track	Close*	Closed
Jasper East fire line	Fire access track	Close – management access
Twin Karris Track	Close*	Open 4wd (within pastoral lease until 2015)
Pneumonia Road (local authority road)	Open 4wd	Open 4wd

Track^	1987 Management Plan^Δ	Proposed Management and Comments^∇
Boat Landing Road	Open	Open 2wd unsealed
Bolghinup Track	Close*	Closed – management access
Dunes Road	Close*	Closed – management access
Tracks (2) from Bolghinup Track to Charley Road	Close*	Close
Silver Mount to the beach	Close*	Close
Extension off Palm Road	Close*	Close – management access
Landslide Road	Close*	Close – management access, possible permit access
Yeagarup Track	Open	Open 4wd – long term strategy to be developed in case of dune closure
Oilwell Track	Close*	Restricted (permit) access
Beaches from Donnelly River to Malimup	Open 4wd	Open 4wd – may need seasonal closures in some areas due to breeding birds
Ryder Road	Close*	Close - management access
Lewis Road	Open 2wd	Open 2wd unsealed
Warren Beach Track	Open – realign	Open 4wd (passes through some private property)
Tracks at mouth of the Warren e.g. to hut	Close*	Close
Tracks which go into Meerup Dunes from private property and track to the west	Close*	Closed – management access
Tracks off Ladhams Road	Close*	Close – management access
Summertime Track	Open 2wd	Open 4wd – seasonal closure
Wheatley Coast Road (Doggerup Track)	Close*	Closed – management access
Track to Lake Samuel	Close*	Closed
Track to Doggerup Lake	Close*	Closed – management access
Various tracks off Windy Harbour Road to lakes and waterholes	Close*	Closed
Sandy Peak Road (local authority road reserve, road as yet unconstructed)	--	As per results of Environment Protection Authority process
Salmon Beach Road	Open 2wd	Open 2wd sealed
Lighthouse Road	Open 2wd but relocate	Open 2wd sealed – has been relocated, now called D'Entrecasteaux Drive
Track to Chimneys	Close*	Open 2wd – now part of D'Entrecasteaux Drive
Windy Harbour Road (local authority road)	Open	Open 2wd sealed
Donnelly District – D'Entrecasteaux National Park East of Windy Harbour Road		
Lake Florence Track	Close*	Close
Tragedy Track	Open	Close once alternate access to mouth of Gardner River resolved with local authority
Blackwater Track	Close	Closed
Beaches from Windy Harbour to West Cliff Point	Open	Open 4wd - may need seasonal closures in some areas due to breeding birds
Gardner Track	Close*	Open 4wd
Lower Gardner Road	Close	Close – management access
Multiple tracks off Lower Gardner Road	Close*	Close
Lake Road	Close*	Close – management access
Pingerup Road	Close	Closed – management access
Laws Track	Close*	Close – management access
Florence Road	Close*	Close
Chesapeake Road (local authority road)		Currently closed from Windy Harbour Road to Gardner River,

Track^	1987 Management Plan[Δ]	Proposed Management and Comments[∇]
		open 2wd unsealed east of Gardner River
Tracks from Moores Hut toward Gardner River (near the beach)	Close	Close
Moores Track (to Coodamurrup Beach)	Open	Open 4wd
Cut Off Track from Moores Hut to Fish Creek	Close*	Open 4wd
Maringup Road	Close*	Closed – management access
Deeside Coast Road south of Chesapeake Road (local authority road)	--	In negotiation with the local authority, close and relocate road reserve to Moores Track, Fish Creek Track to gain access to Loc. 5273
Fish Creek Track	Open	Open 4wd – seasonal, possibly realign some sections
Track from Muirs block to the Shannon River	Close*	Close
Hester Track	Close*	Open 4wd
Track from Coodamurrup Beach to West Cliff Point	Close*	Open 4wd – realign
All tracks east of West Cliff Point and west of Broke Inlet	Close	Rationalise to one open 4wd track with three offshoots to access coast – possible permit entry or seasonal closure
Fire boundary south of Chesapeake Road to Broke Inlet	Close*	Close - management access
Donnelly District – Shannon National Park		
Deeside Coast Road north of Chesapeake Road (local authority road), part known as the 'Great Forest Trees Drive'	Open	Open 2wd unsealed
Middleton Road (MRWA managed road)	-	Open 2wd sealed
South Western Highway (MRWA managed road)	-	Open 2wd sealed
Lockyer Road	Open	Open 2wd unsealed
Creekbend Road, part known as the 'Great Forest Trees Drive'	Close*	Open 2wd unsealed
Curtin Road, part of the 'Great Forest Trees Drive'	Open	Open 2wd unsealed
Strachan Road	Open	Open 2wd unsealed
Upper Shannon Road, part of the 'Great Forest Trees Drive'	Open	Open 2wd unsealed
Lower Shannon Road, part of the 'Great Forest Trees Drive'	Open	Open 2wd unsealed
Bevan Road	Open	Open 2wd unsealed
Buffer Road 2	Close*	Closed – management access
Dog Road north of South West Highway	Close	Close
Dog Road between South West Highway and Nelson Road	Close	Open 2wd unsealed
Dog Road south of Nelson Road	Close	Close --management access
Jeffrey Road	Close*	Open
Preston Road (log haulage road)	Open but review	Open 2wd unsealed but try to negotiate alternative routes for log haulage
Whimpy Road	Close*	Closed – management access
Marron Road	Close	Closed – management access
Other various tracks in Shannon National Park north of Nelson Road	Close*	Review hard surfaced roads and if no environmental or other issues then open as 2wd unsealed to public if required

Track^	1987 Management Plan[Δ]	Proposed Management and Comments[∇]
Nelson Road (log haulage road – unused)	Open but review	Open 2wd unsealed but try to negotiate alternative routes for log haulage
Frankland District – D'Entrecasteaux National Park		
Pingerup Road	Close	Close – management access (same as in Donnelly District)
Springbreak Road	Close	Open 4wd – seasonal closure
Track from north west Broke Inlet to Chesapeake Road	Close*	Close – management access
North/South track from Fisherman Track to Broke Inlet	Close*	Close – management access
Broke Inlet Beach	Open	Open 4wd - may need seasonal closures in some areas due to breeding birds
Bald Island Access Track north of Fishermans Track	Close*	Open 4wd – seasonal closure and possible permit access
Fishermans Track (between Broke Inlet and north/south track from Banksia Camp)	Close	Open 4wd – seasonal closure and possible permit access
Fishermans Track (between north/south track from Banksia Camp and Mandalay Beach Road)	Close	Open 4wd
Cliffy Head tracks	Close	Retain one access to Cliffy Head and Bottleneck Bay. Close and rehabilitate other tracks
Banksia Camp Track	Open – realign and upgrade to 2wd	Open 4wd
Banksia Camp Beach	Open	Open 4wd - may need seasonal closures in some areas due to breeding birds
North/South track from Banksia Camp to Fisherman Track	Close*	Open 4wd
Fishermans Track shortcut	Close*	Close – management access
Mandalay Beach Road	Open unsealed 2wd	Open 2wd unsealed
Track to Tumbledowns (bottletops)	Close*	Close
Track to Icypoles	Close*	Close
Inlet River Road – from SW Highway to Bibbulmun Track	Close*	Close – management access
Inlet River Road – fom Bibbulmun Track to Broke Inlet	Close*	Close
Lost Beach Track	Close*	Open 4wd
Red Rock Track	Open	Open 4wd
Mt Pingerup Bib Track access track from SW Highway to Mt Pingerup car park	Close*	Open 4wd
Mt Pingerup Bib Track access track from car park to steps	Close*	Close – management access
Long Point Track	Close*	Open 4wd
Woolbales Road	Close*	Close – management access
Woolbales Bib Track access track	-	Close – management access
Mt Chance Bib Track access track	-	Close – management access

^ Track names have not necessarily gone through the Nomenclature Committee.

[Δ] Taken from either Map 15 Recreation Opportunities, Table 8 Rationale Behind Road Closures and Realignments or from the text of the 1987 Management Plan.

[∇]All roads/tracks not shaded will be open to the public on a permanent or seasonal/permit basis and can be located on Map 10 Public Access – Vehicle and Boat.

* Considered as "various unnamed tracks" in the 1987 Management Plan to be closed due to either duplication, seasonally inundated, disease impacts, erosion potential, landscape impacts or conservation values.

APPENDIX 12. CAMPING AREA DEFINITIONS

Recreation Site Classification

	Recreation Site Classification			Other Areas	
	High	**Medium**	**Low**	**No facilities, vehicles [3]**	**No facilities, no vehicles [4]**
General Facilities					
Vehicle Access to Area	Yes – 2WD	Yes	Optional	Optional	No
Long vehicle turning & parking[1]	Yes	Optional	No	No	No
Water provided	Optional	Optional	Optional	No	No
Toilets	Yes	Preferred	Optional	No	No
Cooking – Gas/Electric BBQs	Preferred	Acceptable	Optional	No	No
Cooking – Wood BBQs/Fire rings	Acceptable	Optional	Optional	No	No
Tables	Yes	Yes	Optional	No	No
Shelters	Preferred	Optional	No	No	No
Rubbish collection	Acceptable	Optional	No	No	No
Visitor information	Yes	Optional	Optional	No	No
Overnight Stays specific					
Camp sites defined	Yes	Yes	Optional	No	No
Resident manager	Optional	Optional	No	No	No
Campground host (peak)	Optional	Optional	No	No	No
Powered sites	Optional	No	No	No	No
Showers	Optional	Optional	No	No	No
Cooking – fuel stoves only	Optional	Optional	Optional	Preferred	Yes
Fires allowed in container (where/when ground fires permitted)	No	No	No	Acceptable	No
Camping Area numbers[2]	16+ sites 100+ people	6 – 15 sites 21 – 100 people	1 – 5 sites 1 – 20 people	Preferred <4 vehicles, 20 people	One group of <10 people
Accommodation • Basic shelter (eg 3-sided) • Semi-permanent structure (eg safari tent) • Other (e.g. permanent structures)	 Optional Optional Yes	 Optional Optional No	 No No No	 No No No	 No No No
Day Use specific					
Car parking	Yes – 2WD	Yes	Optional	NA	NA
Kiosk / shop	Optional	Optional	No	NA	NA
Visitor centre	Optional	No	No	NA	NA
Site numbers	Up to 200 vehicles or 800 people	Up to 30 vehicles or 120 people	Up to 20 vehicles or 80 people	NA	NA

1 – Long vehicles include coaches, buses, caravans, campervans and motor homes
2 – To preserve the visitor management setting, the maximum number of people ideally should not be exceeded; as a site reaches the threshold limits, a review should be conducted to confirm future intent of site.
3 – Could include beach or bush camping.
4 – Often referred to as wild or remote camping

Legend
Yes = facility or service should be provided.
Preferred = facility should be provided; this option is preferred but not only valid option; local conditions will determine the best option.
Optional = facility or service may be provided, but is not essential.
Acceptable = facility may be provided but there may be a better option; local conditions will determine best option.
No = facility or service will not be provided.

RECREATION SITE DEFINITIONS & CLASSIFICATION GUIDELINES

High (Major) Recreation Site

Major recreation sites are highly modified and will generally support high to moderate level recreation, education or interpretation facilities and services. Access to major recreation sites will be via two-wheel drive vehicles, generally on sealed roads. Overnight stays may include high to moderate level nature-based built, mostly permanent accommodation with multiple structures and high to moderate level of facilities and services (e.g. safari camps and ecolodges). Highly developed and permanent structures for commercial purposes may also be present (e.g. motel style accommodation). Camping areas will generally provide sites for caravans and campervans and may cater for over 100 people. Individual camp sites will be defined. Day-use areas may include defined car parking areas and bays (including parking for long turning vehicles), extensive picnic facilities and/or commercial operations (e.g. shops, kiosks, visitor centre). Facilities and services may include shade shelters, gas BBQs, tables, toilets, visitor information and rubbish collection. Group and family activities are specifically catered for at many sites and are part of the visitor experience. Human activity at these sites is conspicuous and there may be frequent staff presence. High (Major) recreation sites are provided in the 'highly modified' visitor management setting only.

Medium Recreation Site

Medium recreation sites provide for moderate to low intensity recreation set in mostly natural landscapes. Sites in some areas may have significant natural and cultural values. Access to medium recreation sites will be via two-wheel drive vehicles on unsealed roads or by four-wheel drive vehicles. Overnight stays are of a medium to low level of development and may include nature-based built accommodation with either a single structure (e.g. shacks/huts) or semi-permanent multiple structures (e.g. safari camps). Camp sites may provide for caravans and campervans and can cater for up to 100 people. Camp sites are generally defined and allow for group camping. Campground hosts may be used at peak times. Day-use areas include car parking areas that are generally defined and picnic facilities may be present. Facilities and services may include shade and interpretive shelters, gas BBQs, tables and toilets. There may be frequent or some staff presence. Medium recreation sites may be provided in either the 'highly modified' or 'recreation' visitor management settings, with the possible level of development varying according to the setting.

Low (Minor) Recreation Site

Minor recreation sites will be accessible by four-wheel drive vehicles and/or by foot. Camping areas will cater for group sizes for up to 20 people. Some camping areas may only cater for one vehicle. They will cater for tents but not campervans or caravans. The extent of the camping area will be defined but individual camp sites may not. The level of facilities may vary although generally only basic facilities will be provided. Toilets may be provided depending on the size and popularity of the site. BBQs may be provided to the site. There will no rubbish collection and minimum impact camping techniques will be encouraged. Minor recreation sites may generally be provided in the 'recreation' and 'natural-recreation' visitor management settings.

No Facilities, Vehicles Camping (Beach Camping)

These areas are accessed by four-wheel drive vehicles and/or by foot and no facilities are provided. These areas include either beach camping (or bush camping in remote bush areas). Camping may occur at any time in this area provided it is safe to do so. Generally camping will only be allowed as an overnight stay. Fires will be allowed but must be contained in a vessel and all coals and ash must be removed. Firewood must be collected from outside the reserves. Camping groups will be limited to four vehicles. For beach camping, camping will be confined to the area between high and low water mark and will not be permitted in the primary dune area or within 2km of a formal camping area. Note that the high water mark is not the same year-round, so there are opportunities when visitors can safely camp below the 'high water mark'. No facilities, vehicle camping may be provided in the visitor management settings only where vehicles are permitted.

No Facilities, No Vehicles Camping (Wild Camping)

These areas are accessed by foot. They are referred to as 'wild' or 'remote' camping. No sites will be defined and minimum impact camping techniques will be practiced at all times. Camping group sizes generally will be limited to 10 people. Campfires will not be permitted. Camping will generally occur in the more natural visitor management settings.

APPENDIX 13. GENERAL LICENCE CONDITIONS FOR HORSERIDING OPERATIONS

The licence holder will develop an evacuation and emergency plan to be developed and approved by the District Manager.

The licence holder will assist the Department with monitoring and research programs related to his activities in the D'Entrecasteaux National Park and the compilation of an annual report on the operation.

The licence holder will submit to the District Manager an annual audited statement showing the number of clients that have visited the park as part of the licence holders operation.

The licence holder will keep a logbook showing the date, number of clients and areas visited in the park.

The licence holder will pay a quarterly fee in arrears calculated on dollar value per person per trip for each client undertaking the activity.

The licence holder will complete quarterly log sheets showing the number of passengers for each quarter and submit them along with the payment on the dates specified above to the Department's Pemberton District office.

The licence holder is only permitted to use areas of the park as set out in the management plan and in accordance with Departmental policy. These areas are to be shown on a plan.

Proposed tethering, yarding and camping sites are to be inspected by a Department of Environment and Conservation Officer and approved by the District Manager before being used by the licence holder.

The design and location of tethering and yarding facilities are to be approved by the District Manager and are to be constructed by the licence holder. Should the licence be terminated the licence holder will have to remove these facilities at his expense.

Access points onto mobile dunes, sand blows and the beach are to be selected carefully to minimise damage to colonising vegetation and approved by the District Manager.

All rock outcrops are to be avoided. Inundated areas are to be avoided; however access may be approved by the District Manager when they dry out.

The licence holder will be required to operate in accordance with the Conservation and Land Management Act, the Bush Fires Act and Conservation and Land Management Regulations. The licence will be suspended if any breach of these Acts, Regulations or licence conditions occurs.

For seven days prior to entering the park and while horses are in the park only weed free feed is to be given to the horses.

The District Manager at Pemberton is to be advised on each occasion the licence holder will be operating in the park.

All vehicle access is to be confined to public access tracks. This does not include management access only tracks.

If any of the conditions within this licence are not met by the licence holder to the satisfaction of the District Manager, the licence holder will be advised in writing and if the unsatisfactory situation has not been rectified to the satisfaction of the District Manager within one month, the licence will be suspended or cancelled.

APPENDIX 14. COMMERCIAL APIARY SITE ASSESSMENT

Criteria and Approach for Assessing Commercial Apiary Sites within the Planning Area

	Suitable	Suitable but Conditional	Highly Constrained
Approach	Maintain or increase numbers of apiary sites in these areas. Standard permit conditions would apply	Maintain or increase numbers of apiary sites in these areas. Additional permit conditions would apply such as increased hygiene control and seasonal, site location and access restrictions. Research and monitoring at these sites may be required	Close, and relocate where possible, any current apiary sites in these areas. Prevent any new apiary sites in these areas
Environmental Criteria			
1. Threatened and other conservation significant flora within a 2 km radius[1]	No rare, priority 1 or 2 flora present that are visited by honey bees	Rare, priority 1 or 2 flora present that are visited by honey bees and impacts are seasonal or undetermined[2]	Rare, priority 1 or 2 flora present that are visited by honey bees and impact is predicted to be year-round[2]
	No priority 3 or 4, endemic, disjunct or relictual flora present that are visited by honey bees	Rare, priority 1 or 2 flora present that are visited by honey bees but no predicted impact[3] Priority 3 or 4, endemic, disjunct or relictual flora that are visited by honey bees present[4]	-
2. Significant communities within a 2 km radius	No threatened ecological communities (TECs) or priority ecological communities (PECs)	TEC or priority 1 or 2 PEC present and impacts are seasonal[2] TEC or priority 1 or 2 PEC present but no predicted impact[3] Priority 3 or 4 PEC present and flora is visited by honey bees[4]	A TEC or priority 1 or 2 PEC present and impact is predicted to be year-round[2]
3. Threatened fauna and other significant habitats (i.e. habitats for fauna adversely impacted by honey bees) within a 2 km radius	No old growth forest or other known habitat of hollow nesting threatened fauna present	Old growth forest or other known habitat of hollow nesting threatened fauna is present[5]	
	No threatened, priority 1 or 2 pollen or nectar feeding birds or mammals present	Threatened, priority 1 or 2 pollen or nectar feeding birds or mammals present that are seasonally impacted[2]	Threatened, priority 1 or 2 pollen or nectar feeding birds or mammals present and impact is predicted to be year-round[2]
	No fauna watering points at fauna breeding centres and re-introduction sites present	-	Fauna watering point at fauna breeding centres and re-introduction sites present[6]
	No other significant habitats or communities present	Other significant habitats or communities are present that are seasonally impacted[7]	Other significant habitats or communities are present that are impacted year-round

	Suitable	Suitable but Conditional	Highly Constrained
Management Criteria			
1. Previous use	A conservation reserve that has authorised historic use of commercial beekeeping	-	A conservation reserve that has no authorised historic use of commercial beekeeping
2. Access	Public or suitable management vehicle only access is available	-	There is no public or suitable management vehicle only access or current access is being closed
	No gazetted wilderness present	'Candidate' wilderness only	Gazetted wilderness or wilderness proposed to be gazetted present
3. Recreation sites or dwellings within a 500 m radius	No built accommodation/ camping/day use site present	-	Built accommodation/ camping/day use site present
4. Tracks and trails within a 200 m radius	No walktrail present (Class 1 or 2)	Walktrail (Class 1 or 2) present but only used infrequently, or proposed walktrail (Class 1 or 2)	Walktrail (Class 1 or 2) present and used frequently
5. Disease control[8]	Low risk of *P. cinnamomi* spread	*P. cinnamomi* present or area identified as protectable from *P. cinnamomi* spread but there is an existing site Disease present or vegetation identified as being susceptible to disease and there is a risk of spread from existing apiary activities	Area identified as protectable from *P. cinnamomi* spread and there are no existing sites Disease present, or vegetation identified as susceptible to disease and there are no existing sites
6. Apiary sites within 3 km radius	No other apiary sites present		Apiary site present
7. Feral honey bee management within 2 km	-	Feral honey bee control program in place[9]	-
8. Weed management within a 2 km radius	No high or moderate environmental weeds present that are considered to have an increased seedset due to honey bees	High or moderate rated environmental weeds that are considered to have an increased seed set due to honey bees but flower seasonally[10]	High or moderate rated environmental weeds that are considered to have an increased seed set due to honey bees and flower year-round
9. Other management concerns	No impact on Departmental operations or the requirements of other authorities controlling Crown land or Government reserves	An impact on Departmental operations or the requirements of other authorities controlling Crown land or Government reserves that can be managed	An impact on Departmental operations or the requirements of other authorities controlling Crown land or Government reserves that can not be managed

Notes

[1] This process has been based on where there is spatial data for threatened and other conservation significant flora. A list is available for the threatened and other conservation significant flora within the planning area (and buffer), which has been assessed as being impacted by honey bees. This apiary assessment should be adaptive through the life of the plan and the best data incorporated, for example if during an application for a new site or during a review of an existing site, any new locations of these identified species are found, then this data should be incorporated and the assessment should be rerun for the site.

[2] Impacts are seasonal or undetermined (see Guidance for Additional Conditions – A). Where impacts are predicted to be year-round, the area will be considered to be highly constrained.

[3] Visited by honey bees, but no predicted impact. These flora and communities are still of high conservation significance and a precautionary approach is warranted (see Guidance for Additional Conditions – B).

[4] As with note 3 above, priority 3 or 4, endemic, disjunct and relictual flora are of conservation significance and a precautionary approach is warranted. In addition, although populations of these species may be widespread and impacts on these populations may not threaten the existence of the species, there still may be some populations that should be afforded higher protection (e.g. the population may be (1) at the species' range end, (2) the largest viable population or (3) genetically significant) (see Guidance for Additional Conditions – C).

[5] If there is a current apiary site and there are feral honey bees present, then use can continue year-round. However, old growth forest and other significant habitats for hollow nesting fauna will be targeted for feral honey bee control (see Guidance for Additional Conditions – D). For new sites within old growth forest see Guidance for Additional Conditions – E.

[6] Native fauna breeding centres and fauna re-introduction sites often have watering points. Commercial beekeeping in the vicinity may disturb the animals from drinking.

[7] No other significant habitat or community likely to be impacted by honey bees has been identified during the planning process however, they may be identified during the life of this management plan

Other significant habitats may be identified due to:
- new research/information;
- changes in threat status of fauna; and/or
- changes in resource availability – for example, directly after a fire, when competition between species such as honey possums and honey bees would be at its highest.

[8] Standard disease control conditions will apply. The soil dryness index may be used to restrict vehicle access to the sites. There should be no new sites established in areas that are:
- protectable from *P. cinnamomi*;
- designated Disease Risk Areas; or
- in vegetation associations identified as susceptible to disease.

[9] There may need to be seasonal restrictions (see Guidance for Additional Conditions – D) when a feral honey bee control program is in place.

[10] High or moderate environmental weeds are a high priority for the Department to control (see Guidance for Additional Conditions – F).

Guidance for Additional Conditions

A. Seasonal restriction based on flowering period of flora or target flora with respect to pollen or nectar feeding birds/mammals. Site must be available for a minimum of 1 month otherwise the impact is year-round. Placement and number of hives also may be restricted if threatened flora/fauna occurs at apiary site.

B. Placement (at least 100 metres from populations) and number of hives may be restricted. Monitoring of representative samples for health of adult populations and seedling recruitment or TEC/PEC to ensure there is no decline due to apiary management, taking into account other factors such as drought, disease, fire, environmental weeds and other disturbances. If unacceptable impacts are shown or observed later, then treatment will be the same as A.

C. There may be a need to review populations within the planning area to determine whether these populations are significant to the conservation of the species. If deemed significant then treatment will be the same as A.

D. When a feral honey bee program is in place, then use of the site will be restricted during periods when the queen may swarm, such as Spring or a suitable method to restrict the queen should be implemented.

E. For new sites in old growth forest where there are no feral honey bees present, a condition may be that if during the period of the permit, feral honey bee hives are located within 2 kilometres of the site, the site will be temporarily restricted until the feral honey bees are controlled.

F. Seasonal restriction based on flowering period of environmental weed however, only until the environmental weed has been successfully eradicated.

Assessment of Current Apiary Sites within the Planning Area

Apiary sites within the planning area were assessed against the environmental and management criteria and categorised as suitable, suitable but conditional or highly constrained. Information for some of the criteria, such as disease risk and weed management were not available at the time of the assessment but should be collected during the lifetime of the management plan. The table below shows the result of the assessment and indicates what criteria require additional conditions. Some of these additional conditions have been included as guidance but should be seen as a minimum set.

	Environmental Criteria Assessment								**Management Criteria Assessment**							Additional Conditions
Apiary Site No.	Rare & Priority 1, 2 Flora Visited			Other Cons. Flora Visited	TEC			Fauna Habitat (e.g. Old Growth)	Wilderness		Rec Sites	Class 1 or 2 Walktrail	Disease Risk	Weed Management		
	Impact Year-Round	Impact Seas-onal	No Predicted Impact		Impact Year-Round	Impact Seas-onal	No Predicted Impact		Cand-idate	Gaze-tted				Impact Seas-onal	Impact Year-Round	
Suitable but Conditional (37)																
245				X				X								C, D
535				X				X								C, D
797								X								D
798				X				X								C, D
868								X								D
965								X								D
1143				X				X								C, D
1421								X								D
1687				X				X								C, D
1688				X				X								C, D
1702								X								D
1789				X				X								C, D
2147								X								D
2148								X								D
2585			X	X				X								B, C, D
2751								X								D
2872								X								D
2910								X								D
2911								X								D
3227								X								D
3471				X				X								C, D
3945								X								D
4028				X				X								C, D
4029								X								D
4030								X								C, D
4031								X								D
4239		X		X				X								A (restricted Aug to Nov), C, D
4424				X				X								C, D
4997								X								D
5058								X								D
5059				X				X								C, D

	Environmental Criteria Assessment								Management Criteria Assessment							Additional Conditions
Apiary Site No.	Rare & Priority 1, 2 Flora Visited			Other Cons. Flora Visited	TEC			Fauna Habitat (e.g. Old Growth)	Wilderness		Rec Sites	Class 1 or 2 Walktrail	Disease Risk	Weed Management		
	Impact Year-Round	Impact Seas-onal	No Predicted Impact		Impact Year-Round	Impact Seas-onal	No Predicted Impact		Cand-idate	Gaze-tted				Impact Seas-onal	Impact Year-Round	
5060		X		X				X								A (restricted Aug to Nov), C, D
5080								X	X							D
5223				X				X	X							C, D
5299								X								D
5317								X								D
5565				X				X								C, D
Highly Constrained (5)																
867								X			X					NA
3085				X	X			X								NA
4264			X	X				X				X			X	NA
5081				X	X			X								NA
5217			X	X	X			X	X							NA
Sites within 2 km of Planning Area (21)																
5789								X								D*
2871								X								D*
3031								X								D*
5787								X								D*
334								X								
5761				X				X								C
563				X				X								C
5065																
5763								X								
284				X				X								C
934								X								
4516								X								
5306				X				X								C
3873				X				X								C
573				X				X								C
547								X								
2134								X								
946								X								
5302				X				X								C
3201		X	X	X				X								A (restricted Aug to Nov), B, C, D*
5950^		X	X	X	X			X								Highly Constrained

*Additional conditions from adjacent planning process assessments, in this case from the assessment for the Walpole Wilderness and Adjacent Parks and Reserves planning area.
^ to be relocated as a result of the assessment for the Walpole Wilderness and Adjacent Parks and Reserves planning area.