GOVERNMENT OF WESTERN AUSTRALIA

PLAN FOR OUR PARKS
SECURING 5 MILLION HECTARES OVER 5 YEARS

Kalgulup Regional Park

management plan 96

2021

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**
Conservation and Parks Commission
Department of **Communities**
Department of **Planning, Lands and Heritage**
Department of **Water and Environmental Regulation**
Western Australian Planning Commission

Shire of Dardanup
WATER CORPORATION
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Front cover photos
Main: Aerial view of the park and Collie River from the Elbow (bottom left) to the Junction (top right). *Photo – Shem Bisluk/DBCA*
Top left: The critically endangered curlew sandpiper (*Calidris ferruginea*). *Photo – Georgina Steytler*
Top right: Visitors enjoying a walk within the park. *Photo – Hendersons Photographics/South West Catchments Council*
Header photo: Aerial view northwards across Shearwater Tuart Forest and Maidens Reserve towards Bunbury. *Photo – Shem Bisluk/DBCA*

VISION

Ngalang Boodja teta. Kalgulup Regional Park djarimari keta burt ngannil Natj nunnaluk burrangeet barda gnalang dek gudir nopgn kaatajin beetup natj kaata morda wer boodja bidi wurar nyal benang yungar natj kaartadjin ngutta balja joorapiny. Nyiarn boodja wer kep ngan-neel yalga yunga natj nundu natj jenjerren natj baalgup nyiarn kurliny.

Our land, together. Kalgulup Regional Park protects our culture, plants and animals across Bibbulman lands from the coast to the rivers, hills and lands beyond for present and future generations to learn about, respect, care for and enjoy. These lands and waters, we now entrust to you, to pass on to those who follow.

Kalgulup Regional Park name

Kalgulup is a Noongar word meaning 'place of fire' or 'place of burning camp'. It is a place surrounding *Quobba Keip Boya* ('a place of pretty rocks and water'), which sits within the lands of the *Pinjarup*, *Wadandi*, *Kaneang* and *Wiilmen* people. The significance of the name *Kalgulup* derives from fire and its elements (smoke, coals, ash) being at the *koort* (heart) of Noongar culture and symbolises:

- the importance of fire in supporting life (warmth, light, cooking, healing, protection)
- that fire was carried along pathways from camp to camp
- that stories, wisdom and lore were shared around campfires, and
- that fire was used in hunting, ceremony and caring for country.

The name Kalgulup is pronounced 'Kaal-gool-up'.

Kalgulup Regional Park motif

The motif for Kalgulup Regional Park is the distinctive woody spike and leaves of the *mungite*[1] or bull banksia (*Banksia grandis*), a tree which is typically found in the jarrah (*Eucalyptus marginata*) forest of the Darling Range and coastal tuart (*Eucalyptus gomphocephala*) woodlands. Noongars made a sweet drink and also sucked the nectar directly from the large flower-spikes.

Kalgulup Regional Park motif. Photo – DBCA

When mature, the woody spikes of *mungite* were used by Noongars as fire sticks when travelling. A member of the group would hold a smouldering fire stick under their cloak and carry it to the next camp.

The vertical lines on the left represent smoke from the smouldering fire stick and from the campfires that were common around the estuary and rivers when Noongar people camped there in large numbers and practiced seasonal customary activities in their country as they have for thousands of years and continue to do.

The colour of the motif represents fire and other red elements found in the natural landscape, including wildflowers and the feathers of the *karrak* or forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*).

[1] *Mungite* may also be known by other names according to location and language group: *mungaitch*, *beera/peera/pira*, *boolgalla/pulgarla*, *biara*, *boongur* and *gwangia*. Variation in pronunciation and spelling may similarly apply to other Noongar words that appear in this plan.

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2021

Conservation and Parks Commission

Department of Biodiversity, Conservation and Attractions

City of Bunbury

Shire of Capel

Shire of Dardanup

Shire of Harvey

Department of Communities

DevelopmentWA

Department of Planning, Lands and Heritage

Department of Water and Environmental Regulation

Western Australian Planning Commission

Water Corporation

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CONTENTS

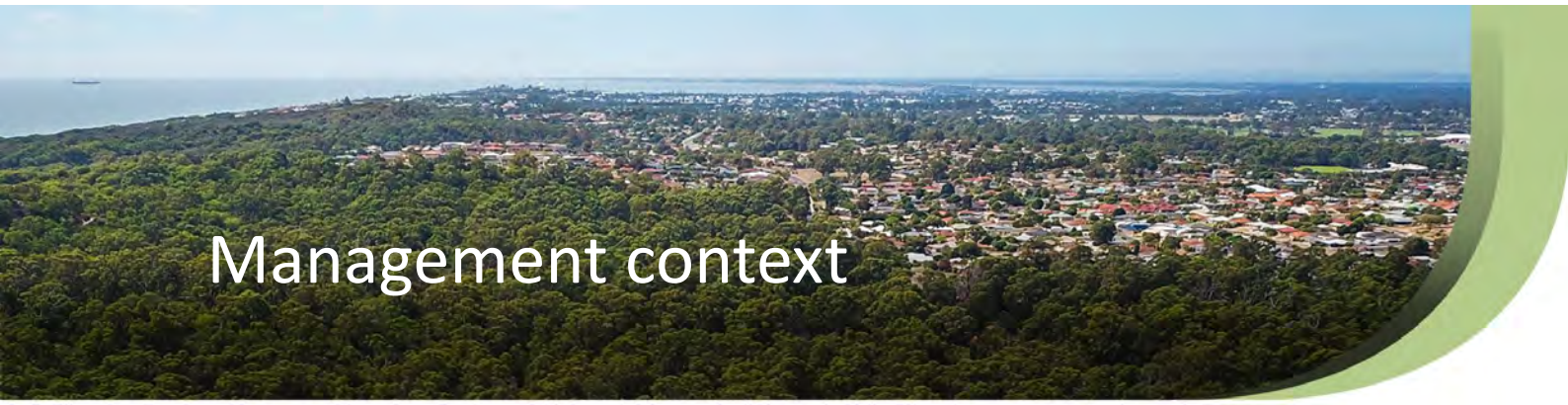
VISION I
CONTENTS I
MANAGEMENT CONTEXT 1
1. Purpose of the plan 1
2. Location, reservation and regional setting 3
3. Park values 4
4. Land tenure and boundaries 6
5. Park management 8
NATURAL ENVIRONMENT 10
6. Geology, landforms and soils 10
7. Hydrology 13
8. Native plants and vegetation 16
9. Native animals and habitats 23
MANAGEMENT ISSUES 25
10. Fire management 25
11. Weeds and pest animals 26
12. Plant and animal diseases 28
13. Climate change 29
14. Pollution, contamination and waste management 30
15. Rehabilitation 31
CULTURAL HERITAGE 32
16. Noongar cultural heritage 32
17. Other cultural heritage 34
VISITOR USE 36
18. Visitor use and planning 36
19. Visitor information, interpretation and education 40
20. Park access and accessibility 41
21. Commercial operations 42
22. Working with the community 43
MANAGEMENT OPERATIONS AND OTHER USES 45
23. Mineral and petroleum exploration and development 45
24. Use of native plants and animals 46
25. Water resources 46
26. Utilities and services 48
27. Plan implementation 49
28. Performance assessment and monitoring 50
REFERENCES 51
APPENDICES 62
Appendix 1. Performance assessment 62
Appendix 2. Schedule of land for inclusion in the regional park 64
Appendix 3. Management zones and recreation settings 86

TABLES

Table 1. Summary of the park 3
Table 2. Summary of key values of the park 4
Table 3. Significant wetlands within the park 13
Table 4. Vegetation complexes 16
Table 5. Swan Coastal Plain Floristic Community Types within the park 16
Table 6. Threatened and priority ecological communities in the park 21
Table 7. Weeds in the park 26
Table 8. Pest animals and management options in the park 27
Table 9. Recreation activities in the park 36

MAPS

Map 1. Kalgulup Regional Park overview 5
Map 2a. Land ownership (pre-park establishment) and park areas - south 56
Map 2b. Land ownership (pre-park establishment) and park areas - north 57
Map 3a. Vegetation - south 58
Map 3b. Vegetation - north 59
Map 4a. Recreation, access and management zones - south 60
Map 4b. Recreation, access and management zones - north 61



Management context

1. Purpose of the plan

The purpose of the *Kalgulup Regional Park Management Plan* (the plan) is to provide for the protection and enhancement of the conservation, recreation and landscape values of the Kalgulup Regional Park (the 'regional park' or 'park') (Map 1). The plan aims to conserve the special features of the park and sustainably manage the park's natural and cultural values while allowing an appropriate level of use by the community.

The plan has been prepared by the Conservation and Parks Commission through the agency of the Department of Biodiversity, Conservation and Attractions (DBCA) in accordance with section 8F(2), section 54(1) and other relevant sections of the *Conservation and Land Management Act 1984* (CALM Act). The plan:

- provides a statutory framework for the management of lands within the park vested in the Conservation and Parks Commission (section 19[1][a] of the CALM Act) and managed by DBCA (DBCA-managed lands) on behalf of the Conservation and Parks Commission
- guides DBCA in coordinating the management of land within the regional park in accordance with sections 8F(1) and 33(1)(ab) of the CALM Act, including the involvement of other managing agencies
- provides guidance to other land management agencies for the integrated planning and management of their lands in the regional park
- provides guidance to the Western Australian Planning Commission (WAPC) in the assessment of development proposals on lands within the park to ensure that proposed land use is not detrimental to park values and management.

Local governments and State Government agencies that control land within the park include the City of Bunbury (CoB), Shire of Capel (SoC), Shire of Dardanup (SoD), Shire of Harvey (SoH), Department of Communities (DoC), Department of Planning, Lands and Heritage (DPLH), Department of Water and Environmental Regulation (DWER), DevelopmentWA (DWA), WAPC and the Water Corporation (WC).

Once this plan is gazetted, it will be the overarching statutory management plan for the park and supersedes historic management plans for areas of the park, such as Leschenault Peninsula Conservation Park and Morangarel Nature Reserve (DPaW 2016), Manea Park (Jennings 1999), Shearwater (Usher Dalyellup) Tuart Forest (Ecoscape 2002) and Wardandi Flora Reserve (Shire of Harvey 2012). While these historic plans contain much valuable and relevant information useful to ongoing management of the park, any inconsistencies between the plans will defer to this plan. This plan is also complementary to the *Forest Management Plan 2014–2023* prepared under the CALM Act. Other subsidiary masterplans or management plans remain in place for specific sites or reserves in the park, such as Eaton Foreshore and Ridley Place Foreshore Park, that are identified by a management agency as being current.

What is a regional park?

Regional parks are areas of Regional Open Space (ROS) identified within the Western Australian (WA) planning framework as having regionally significant conservation, landscape or recreation values. The Greater Bunbury Region Scheme (GBRS) is the statutory document that provides for the creation of the Kalgulup Regional Park, through the reservation[2] of ROS.

[2] Reserves with respect to ROS refers to land reserved under a Region Scheme for a public purpose ('planning reserves'), as distinct from reserved land held by the Crown that is owned by or vested in a public authority under the *Land Administration Act 1997* ('Crown reserves') or other relevant legislation such as the CALM Act for 'conservation reserves'. 'Reserves' in this plan will generally refer to 'Crown reserves' or sometimes 'conservation reserves' where relevant.

A regional park is a land management system that provides the opportunity for a coordinated planning and management approach by different land management agencies and private landowners. Under section 8E(2) of the CALM Act, a regional park may consist of lands with a variety of tenures and purposes including:

- CALM Act lands under section 5(1) of the CALM Act (such as national and conservation parks and nature reserves)
- private or alienated lands (where the agreement of the landowner is obtained) or other Crown lands vested in local government authorities or State Government agencies other than the Conservation and Parks Commission, as per section 8D of the CALM Act.

Park establishment history

The concept of ROS was first introduced to WA in 1955 by the Stephenson-Hepburn Report, which recommended that a statutory region plan be prepared for Perth which reserved private land needed for future public purposes. In 1981, the then Department of Conservation and Environment in *The System 6 Study Report* (DCE 1981) made recommendations that included the Brunswick and Collie rivers and South Bunbury Coastal land (Maidens and part Shearwater Tuart Forest). A continuous vegetation link, termed the 'Bunbury Diagonal', from the Maidens to the Preston and Collie rivers was proposed in 1983 (Bischoff 2014).

Together with strong community advocacy and government support, environmental assessments in the late 1980s and throughout the 1990s helped to preserve these areas for conservation including studies by Koch in 1989/90, Alan Tingay and Associates in 1991, Mollemans in 1993, Hart Simpson and Associates in 1994, former Department of Conservation and Land Management and Australian Heritage Commission in conjunction with volunteers from the Wildflower Society of WA, Busselton Naturalists' Club and others in 1994/5 and Keighery and Keighery in 1999.

The creation of a park system in the Leschenault Estuary area was referred to in the South West Development Authority *Draft Land Use Plans for the Leschenault Coastal Park and the Kemerton Community Park* in 1985, and for the Preston River to Ocean area in the Greater Bunbury Structure Plan, which was adopted under the Bunbury Wellington Region Plan in 1995.

In 2007 the GBRS was established under the *Planning and Development Act 2005* with the main purpose of providing the statutory basis for implementing region plans such as the Bunbury Wellington Region Plan and Greater Bunbury Structure Plan. Areas of ROS were identified for the creation of a regional park system in recognition of the need to satisfy the growing need to protect and conserve areas close to urban areas while meeting the recreational demands of expanding urban development and preserving areas of high landscape amenity.

Legislative and policy framework

A variety of legislation and policies/guidelines[3] apply to the management of the park (mentioned throughout this plan), although key pieces of legislation include:

- CALM Act
- *Biodiversity Conservation Act 2016* (Biodiversity Conservation Act)
- *Greater Bunbury Region Scheme*
- *Local Government Act 1995*
- *Land Administration Act 1997*
- *Planning and Development Act 2005*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Aboriginal Heritage Act 1972*
- *Environmental Protection Act 1986*
- *Rights in Water and Irrigation Act 1914*
- *Waterways Conservation Act 1976*.

[3] Policies and guidelines applicable to the management of the park can be found on managing agency, Conservation and Parks Commission and other relevant websites. If there is any inconsistency between this plan and new or revised legislation and policy, then park management will be in accordance with the relevant new or revised legislation or policy.

2. Location, reservation and regional setting

Kalgulup Regional Park comprises a mosaic of lands around Bunbury and the Leschenault Estuary within the local government areas of the City of Bunbury, Shire of Capel, Shire of Dardanup and Shire of Harvey (Map 1). While two proposed regional parks were originally embodied in the *Preston River to Ocean Regional Park Establishment Plan* (WAPC 2011) and the *Leschenault Regional Park Establishment Plan* (WAPC 2017a), these two proposed regional parks were indicative and in the process of preparing this plan a decision has been made to amalgamate all parts of the two proposed parks into one regional park.

View eastwards over the Preston River to Ocean bushbelt from Shearwater Tuart Forest towards Usher Woodland, Tuart Brook/Five Mile Brook, Hay Park and Manea Park. Photo – Shem Bisluk/DBCA

The park covers an area of about 3,168ha and consists of three separate locations (Table 1), with many distinct areas that make up these sections of the park (Maps 2a and 2b). The park does not include the waters/waterways of the Leschenault Estuary and Inlet[4] or the Preston, Collie and Brunswick rivers.

Table 1. Summary of the park

Feature	Section of the park and description		
	Leschenault	Preston River to Ocean	Preston River Link
Location	East and northeast of Bunbury mainly along the foreshores of the Leschenault Estuary and Inlet and the Collie and Brunswick rivers including the lands within the Leschenault Peninsula	South of Bunbury about 5km from the city centre and mainly within the City of Bunbury	Southeast of Bunbury along the foreshores of the Preston River
Area (ha)	2,148	878	142
Tenure	Crown reserves vested in and managed by DBCA, City of Bunbury, Shire of Dardanup, Shire of Harvey and DWER, unmanaged Crown reserves and unallocated Crown land (UCL), as well as freehold land owned by the City of Bunbury, Shire of Harvey, DBCA, WAPC, DWER, Water Corporation, Main Roads WA and privately-owned land	Crown reserves vested in and managed by the City of Bunbury, Shire of Capel, Water Corporation and Aqwest, unmanaged Crown reserves and UCL, as well as freehold land owned by the WAPC, DoC - Housing Authority, DWA, Water Corporation and privately-owned land	Crown reserves vested in and managed by the City of Bunbury, unmanaged Crown reserves and UCL, as well as freehold land owned by the City of Bunbury, WAPC, DWER, South West Development Commission, Main Roads WA and privately-owned land
Park boundary	Leschenault Peninsula Conservation Park boundary extends to the low water mark next to the coast (CALM 1998). However, the coastal side of lots 3 and 4 on Plan 3957 on the Leschenault Peninsula, most of the remaining Leschenault Estuary including Turkey Point and the Collie and Brunswick rivers extend to the mean high-water mark	Crown reserve 670 within Maidens Reserve lies next to the coast and extends to the high-water mark at the coast	The boundary of this section of the park extends to the mean high-water mark along the Preston River as far south as the South Western Highway
Biogeographic region and catchment	The park extends about 11km inland and eastwards up the Collie River from its mouth into the Leschenault Estuary, and another 7km northwards along the Brunswick River from where it meets the Collie River. The park forms an almost continuous link along the foreshores of the estuary and the rivers	The park extends over a 7km contiguous east-west natural vegetation corridor stretching from the Preston River in the east to the coast in the west	The park provides a link between the Leschenault Estuary and the Preston River to Ocean parts of the park

The realignment of the Preston River as part of the planned expansion of the Bunbury Port outlined within the *Bunbury Port Inner Harbour Structure Plan 2009*, was to include additional areas of ROS into the Preston River

[4] The Leschenault Estuary and Leschenault Inlet were originally one continuous estuarine system before 'The Cut' was created in 1951 through the sand dunes opposite the mouth of the Collie River, and when the Preston River was realigned and the Bunbury Inner Harbour was completed in 1975 the water body was separated into two parts (WAPC 2017a).

Link. A revised structure plan is being prepared, which may result in additional areas of ROS being included in the park once the planning, approvals and implementation of the Bunbury Port expansion and Preston River realignment is complete.

3. Park values

Table 2. Summary of key values of the park

Natural values
• intact catena or sequence of vegetated landform elements from the Quindalup, Spearwood and Bassendean dunes to the Pinjarra Plain • regionally significant wetlands • threatened native plant species of State and national significance (KPI) • threatened ecological communities (TECs) and other vegetation of regional, State and national significance (KPI) • threatened native animal species of State, national and international significance • regionally significant habitats (tuart forests and woodlands, waterbird feeding and breeding areas) • regional ecological linkages
Cultural heritage values
• registered Aboriginal sites of archaeological, mythological, ceremonial, cultural and spiritual significance (KPI) • traditional cultural and ecological knowledge • heritage sites associated with early exploration, shipping and settlement
Recreation, tourism and community values
• a diversity of recreational experiences, opportunities and sites/facilities in coastal, riverine and forest/woodland environments such as bushwalking, cycling, picnicking, camping, birdwatching, nature appreciation, beach four-wheel driving, fishing, swimming and boating • scenic values of the Leschenault Peninsula, rivers, creeks, wetlands, estuary, riparian vegetation, tuart forests, banksia woodlands and Maidens Reserve • highly engaged and interested urban community consisting of volunteers (KPI), community groups, visitors (KPI), neighbours and residents
Other values
• underlying groundwater aquifers of the Bunbury Groundwater Area are a significant drinking water source for the greater Bunbury region • water, powerline, road and other infrastructure provide essential services to the community • knowledge about natural, cultural, recreation and landscape values of the park and the impacts on them • scientific values of the sequence of vegetated landform elements, particularly the College Grove interface of Spearwood and Bassendean landforms, and of the vegetation quadrats used in determining floristic community types

Map 1. Kalgulup Regional Park overview

4. Land tenure and boundaries

Boundaries

The boundaries of the regional park are based on the *Preston River to Ocean Regional Park Establishment Plan* (WAPC 2011) and the *Leschenault Regional Park Establishment Plan* (WAPC 2017a). Park boundaries are shown on Maps 1, 2a and 2b.

Several small anomalies at the ROS/urban interface have been identified across the park, where the boundaries set at the time of the GBRS coming into effect do not match final cadastral boundaries of adjoining subdivisions. These boundary anomalies will be corrected through an omnibus amendment to the GBRS.

Land tenure

Land in the park consists of Crown reserves administered under the *Land Administration Act 1997* with Management Orders granted to several State government agencies and local government authorities. Crown reserves may also be vested under other Acts (such as the CALM Act). The park also includes freehold land owned by State government agencies, local government authorities, private organisations or individuals. There are also unmanaged Crown reserves and UCL. Existing land tenure is shown in Appendix 2 and on Maps 2a and 2b.

Parts of the park within Eaton Foreshore and Pelican Point (left), Alexander Island (centre) and Clifton Community Reserve and Point Douro (right) adjoin the lower Collie River as it enters the Leschenault Estuary. Photo – Shem Bisluk/DBCA

Appendix 2 describes the intended future vesting and management of most parts of the park that are managed by State government agencies or local government authorities. There are some lands in the park where identification of future management is dependent on future land-use planning processes and assessments.

The tenure arrangements for Leschenault Peninsula Conservation Park (Class A reserve 42470), Morangarel Nature Reserve (Class A reserve 38393), Mangrove Cove reserve (Class C reserve 5275) and Class C reserve 40564 that are already vested in the Conservation and Parks Commission and managed by DBCA will not change. Although only a portion of Mangrove Cove reserve is within the regional park boundaries, this management plan applies to and provides a statutory management framework for the remainder of this reserve that is managed by DBCA.

Lands to be vested in the Conservation and Parks Commission will be afforded the purpose of 'conservation park' or 'conservation of flora and fauna' (for a nature reserve), depending on their natural values, connections to other DBCA-managed lands and current use.

Lands to be vested in the local government authorities will be afforded an appropriate purpose to reflect current or future approved uses.

Crown reserves, unallocated Crown land and Crown owned freehold

Some Crown reserves, UCL and freehold lands managed by agencies and local governments will transfer to the Conservation and Parks Commission for management by DBCA as conservation reserves[5], particularly several areas of the park south of Bunbury and adjoining the Collie and Brunswick Rivers. However, many lands will remain managed by agencies and local governments. In these cases, management will be in accordance with this plan.

[5] Conservation reserves are Crown reserves that are protected for conservation under sections 5 and 6 of the CALM Act and are generally nature reserves, national parks or conservation parks.

Land reserved for utilities or services, such as pumping infrastructure managed by the Water Corporation, will retain its existing reserve purpose and tenure arrangements. Access for maintenance purposes will not be restricted.

Lots 3 and 4 on Plan 3957 on the Leschenault Peninsula (between the two parcels of the Leschenault Peninsula Conservation Park) are Crown freehold managed by DBCA and have been identified in the *Forest Management Plan 2014-23* (CCWA 2013) and the *Swan Coastal Plain South Management Plan 2016* (DPaW 2016) for addition to the Leschenault Peninsula Conservation Park.

Road reserves

Gazetted road reserves managed by local government authorities and managing agencies occur throughout the park, some of which contain roads or tracks that enable access to the park. Liaison will occur between local government authorities, DBCA, WAPC, Main Roads WA and DPLH to close road reserves or portions of road reserves within the park that are considered unnecessary. Closed road reserves will be amalgamated into adjoining reserves within the park.

The unused road reserve on the Leschenault Peninsula that bisects lots 3 and 4 on Plan 3957 should be added to the Leschenault Peninsula Conservation Park, following the addition of Lots 3 and 4 to the conservation park (see above).

Private property

Privately-owned freehold land occurs within the park along the Preston River, in the Tuart Brook/Five Mile Brook area, Buffalo Road area and in pockets along the Brunswick and Collie rivers to the mouth of the Collie River and the Leschenault Estuary.

Private property within the regional park is reserved ROS in the GBRS and may be acquired by the WAPC or ceded to the State of WA as a planning condition on subdivision. This plan does not propose any changes to the management of privately-owned freehold land held by organisations, authorities or individuals within the park, although private landowners may decide to consider the content and principles set out in this plan as part of managing their land. However, if land is acquired by the WAPC or ceded to the State of WA, it will be vested in the Conservation and Parks Commission or the relevant local government, and management will be in accordance with this plan.

Access by park visitors is not available to areas of private property owned by organisations or individuals in the park without permission.

Inclusion of other lands into the park

Criteria for determining potential additions to the regional park include that an area of land:

- consolidates the regional park and has a low perimeter to area ratio
- is identified as having regionally significant values
- is reserved for ROS in the GBRS
- provides a physical link to another area of the park
- provides a park boundary that helps in the efficient and effective management of the park.

Land acquisition proposals may depend on several factors including relevant State and local government agency use and agreement, native title resolution, Statewide priorities, the values/assets of the land, owner willingness to sell, land prices and available funding, and that negotiations and land transfers can take considerable time and resources to complete.

Management objective: To protect park values through progressing formal land tenure arrangements consistent with the purpose of the park.

Management strategies

1. Adopt the boundary of the park as shown on Maps 2a and 2b. The boundary will be modified should additional lands be included in the park or ROS boundaries amended. (**WAPC, DPLH, DBCA, CoB, SoC, SoD, SoH**)[6]
2. Ensure that management is consistent with the land category, Management Order, vesting, purpose and classification of reserves. (**WAPC, DPLH, DBCA, CoB, SoC, SoD, SoH**)

[6] Each management strategy in the plan includes management responsibility, with principal or lead responsible bodies shown in **bold**.

3. Liaise with DPLH to create or transfer reserves for vesting in the relevant managing agency using Appendix 2 as a guide. (**DBCA**, CoB, SoD, SoH, DoC, DWA, DPLH)
4. Liaise with local government authorities, WAPC and DPLH to close gazetted road reserves within the park that are considered unnecessary. (**DBCA**)

5. Park management

Parts of the regional park are managed by different managing agencies (Appendix 2, Maps 2a and 2b), and ongoing management of the park will be in accordance with the strategies outlined in this plan. DBCA is responsible for managing areas of the park vested in the Conservation and Parks Commission and for the overall coordination of management through the preparation of this plan. The local government authorities, Water Corporation, DWER, DoC, DWA, DPLH and WAPC will manage areas of the park vested in or held by these entities, in accordance with the strategies outlined in this plan. Changes to the GBRS and acquisition of private land within the park, in coordination with DBCA, will remain the responsibility of the WAPC/DPLH.

View eastwards from The Cut towards the Collie River mouth, Pelican Point, Point Douro and Bar and Alexander islands. Photo – Shem Bisluk/DBCA

Community engagement and support from managing agencies is needed for this plan to be implemented efficiently and effectively. Management decisions will involve input and negotiation between the managing agencies. DBCA will refer strategic and policy issues to the Conservation and Parks Commission for consideration as needed. Where appropriate, working parties comprising representatives from DBCA, local government and other relevant agencies will be established to facilitate the preparation of detailed subsidiary plans for the park and ongoing communication on operational matters.

Local Noongar involvement will be important to facilitate maintenance of management practices and customary activities. There is a strong interest by Noongar people to be involved in the ongoing planning and management of DBCA-managed lands and to conduct customary activities on DBCA-managed lands. By working with Noongar people to care for the land, there will be great benefits for the preservation of heritage, conservation of the environment and cross-cultural awareness.

Land-use planning

Within the park

Under the GBRS, approval of the WAPC is needed for certain developments on land reserved for ROS (WAPC 2008).

Proposed operations and disturbance activities[7] within the park should be assessed for their impact on park values. The specific requirements for assessment and/or approval will depend on the managing agency, the relevant legislation that might apply and/or the type of proposed activity. Proposed disturbance activities (excluding mining) on all DBCA-managed lands will be assessed using DBCA's Disturbance Approval System.

Adjacent to the park

Many impacts and management issues affecting the park result from surrounding land uses and activities. Planning for areas surrounding the park is determined at the State and local level. At the State level, the WAPC is responsible for administering the GBRS. At the local level, local planning schemes provide detailed land-use planning zones, reservations and development provisions for each local government in the region.

[7] Disturbance activities are those activities that may disturb or otherwise impact on natural or cultural values within the park.

Structure plans are endorsed by the WAPC under the Planning and Development (Local Planning Scheme) Regulations 2015 to guide and provide a framework for future land use and subdivision. There are several existing structure plans that apply to portions of the park, such as at Five Mile Brook and the eastern side of the Brunswick, Collie and Preston Rivers (Kingston, Treendale, South Treendale, Millbridge and South Moorlands), which guide land use and subdivision within and adjacent to the park.

Interim management arrangements

Prior to the transfer of relevant lands to the appropriate agencies, there is a need to develop and implement interim management arrangements between managing agencies. DBCA will coordinate the collaborative interim management of regional park lands identified to be vested in the Conservation and Parks Commission through the preparation of this plan and Memoranda of Understanding (MOUs).

The management of private land held by organisations or individuals is the responsibility of the owner. Any interim management arrangements that may be considered for private lands would be voluntary.

Park management zones

Management zones are a land-use planning framework for protecting the park and minimising existing and potential conflicts between uses and activities by identifying areas of conservation, recreation and other values, and determining appropriate uses, facilities and activities. Management zones provide broad guidance on public use and management activities that are appropriate in certain areas of the park and indicate which management objectives have priority in each area.

The proposed management zones for the regional park are described in Appendix 3 and represented on Maps 4a and 4b. Management zones also relate to the degree of visitor and recreational use, and zones have been integrated with the recreation planning of sites, facilities and activities through visitor management settings (Section 18, Appendix 3). Proposed management zones may change as tenure and management arrangements are finalised/agreed for specific areas of the park. The management zones and recreation settings framework does not affect the tenure arrangements or management of the service and utility reserves in the park.

The management zones and recreation settings framework does not direct the management of privately-owned freehold land held by individuals or organisations in the park. However, where the land is acquired by the WAPC or ceded to the State of WA, management will be in accordance with the plan's park management zones.

Management objective: To ensure the appropriate, efficient and effective management of the park.

Management strategies

1. Prepare MOUs or management agreements for interim park management for areas controlled by State or local government authorities or private landholders as needed. (all agencies)
2. Ensure that park management is as consistent as possible with the management zones in Appendix 3 and Maps 4a and 4b. (**DBCA, CoB, SoC, SoD, SoH, DoC, DWA, WC, DWER**)
3. Where appropriate, request conditions on planning proposals, developments and operations to protect and enhance the values of the park. (**DBCA, CoB, SoC, SoD, SoH, DWER, WC, DoC, DWA, WAPC**)
4. Assess all planned operations and disturbance/development activities within the park that have the potential to impact park values, where appropriate. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)
5. Manage any proposed additional lands to the regional park that become vested/owned with the Conservation and Parks Commission, other State government agencies or local governments in accordance with this management plan. (**DBCA, CoB, SoC, SoD, SoH, DPLH, WAPC**)

Natural environment

6. Geology, landforms and soils

The park is located on the Swan Coastal Plain (SCP) major landform, which is bound by the Darling Scarp to the east and the Indian Ocean to the west. It extends from Dunsborough in the south to Jurien in the north and is part of the larger Perth sedimentary basin.

The SCP is composed of Quaternary sediments of alluvial (river) and aeolian (wind-blown) origin deposited in a series of zones roughly parallel to the current coastline (Pilgrim 1979). These zones are of sequential ages, oldest to the east, youngest to the west, and each have distinctive geology, vegetation, topography, drainage and soils (McArthur and Bettenay 1960). The zones (east to west) have been described as six landforms (Dandaragan Plateau, Foothills, Pinjarra Plain, Bassendean Dunes, Spearwood Dunes, Quindalup Dunes) with the alluvial deposits to the east of the plain and the aeolian to the west.

The park surrounds the City of Bunbury extending about 15km to the south, north and east. The park includes the coastal plain landforms of Pinjarra Plain, Bassendean Dunes, Spearwood Dunes and Quindalup Dunes. The Quindalup Dunes are the youngest coastal fringing aeolian deposits associated with falling sea-levels over the last 5,000 years (McArthur and Bettenay 1960). In the park these calcareous sands have formed relatively steep parabolic dunes which are at their maximum width (ca.2km) in the Leschenault Peninsula.

The Spearwood Dunes are the next series of aeolian dunes thought to have formed from coastal calcareous sand deposits in the late Quaternary (McArthur and Bettenay 1960). With age these dunes have been heavily leached, mobilising carbonate which has redeposited as aeolianite limestone at depth, which in places is exposed. In the park these dunes are at their maximum width (ca.3.5km) in the Shearwater area. The Quindalup and Spearwood dunes are often separated by a line of lakes or inlets and within the park this is apparent at the Leschenault Inlet in the north and Muddy Lakes to the south.

The Bassendean Dunes are the oldest of the coastal aeolian landforms resulting in the total removal of carbonate leaving heavily leached siliceous sands (McArthur and Bettenay 1960, Seddon 1972). Within the park these dunes extend to a maximum width of almost 4km in Manea Park.

The Pinjarra Plain is composed of alluvial and colluvial deposits eroded from the adjoining Darling Plateau since the formation of the coastal plain landform. The sediments have been deposited by rivers and streams spreading out from the base of the Darling Scarp. Within the park the Pinjarra Plain is only represented by riverine soils fringing the Collie, Preston and Wellesley Rivers.

Regional park landforms and their subdivision

Within each coastal plain landform there is further subdivision, such as into distinctive soils (McArthur and Bettenay 1960), geomorphic units (Churchward and McArthur 1980) and soil-landscape phases (Barnesby *et.al*. 1995, DAFWA 2007). These subdivisions reflect changes in soils and climatic conditions within the landform, the influence of these changes on vegetation has been mapped as vegetation complexes (Heddle *et.al*. 1980) at a scale of 1:250,000.

For the park, DBCA has described the vegetation at a scale of 1:50,000 using soil-landscape phases (Barnesby *et.al*. 1995, DAFWA 2007) to which vegetation attributes have been applied. Further detail on the landform subdivisions associated with the vegetation types in Section 8 is provided below. Detail is also provided as to how the subdivisions correlate to geomorphic units as mapped by Churchward and McArthur (1980).

Quindalup Dunes

Churchward and McArthur (1980) call the Quindalup Dunes the 'Quindalup' unit and while they did not map separate units, they recognised there is a foredune and a stable dune alliance. Within the park soil landscape phases (Barnesby *et.al*. 1995, DAFWA 2007) can be used to map the foredunes, stable dunes and interdunal damp swales:

- Exposed coastal foredunes – these include parabolic dunes with blow-outs and exposed coastal heath
- Stable dunes – these include swales and the leeside of parabolic dunes that are away from the strong salt laden winds limiting vegetation growth
- Interdunal swales – Keighery *et.al*. (2002) observe that in the larger Bunbury area some interdunal swales have become seasonal damplands due to organic rich sands and impeded drainage. Soil-landscape mapping recognises basins within the Quindalup Dunes and some of these correspond to the dampland features as described by Keighery *et.al*. (2002). Within the park one of these features is mapped and while it once may have had more extensive dampland characteristics, with a drying climate those features are limited.

Within the park the maximum elevation of the Quindalup Dunes is 65m in the Maidens and 40m in the Leschenault Peninsula.

Estuarine

The Leschenault Estuary and Inlet, including Anglesea and Bar islands, represents the estuarine units of the park and has been called the 'Vasse' unit by McArthur and Bettenay (1960) and Churchward and McArthur (1980). The Inlet and Estuary are thought to be about 7,000 years old and were originally continuous with Lake Preston (Semeniuk *et.al*. 2000a). They are characterised by estuarine deposits such as layers of shells, organic clay, seaweed and course beach sand (McArthur and Bettenay 1960).

Bar Island at the entrance to the Collie River between Pelican Point and Point Douro. In the background is the Preston River mouth (left) and The Cut (right). Photo – Shem Bisluk/DBCA

Within the park, port development has modified and isolated the southern extent of the inlet. Two vegetation units have been mapped for the Inlet and Estuary based on levels of inundation:

- Low lying coastal saltmarsh – low-lying estuarine areas that are seasonally saturated, they are often inundated in storm events or high tides
- Slight rise coastal saltmarsh – estuarine areas associated with slight rises that can range from being predominantly dry, although sub-soil saturated, to occasionally or seasonally saturated.

Spearwood Dunes

The extent of the Spearwood Dunes in the park has been separated into two geomorphic units by Churchward and McArthur (1980) being the 'Yoongarillup' and the 'Karrakatta' units. Yoongarillup correlates to historic marine or estuarine deposits characterised by low lying shallow sand over limestone, whereas Karrakatta is elevated dunes of yellow sand.

Within the park soil-landscape mapping (Barnesby *et al*. 1995, DAFWA 2007) recognises phases that correlate to dune features, interdunal swales and flat plains; the latter generally corresponds to the Yoongarillup unit and the former to the Karrakatta unit. Soil-landscape mapping further separates the dune features based on the dunes supporting either yellow sand or duplex soils where a layer of grey sand overlies the yellow sand. In the mapping of vegetation, the soil-landscape phases have been consolidated into four units:

- Dune ridges/lower slopes – two ridges of Spearwood Dunes are within the park, the western most in the Shearwater area predominantly has yellow sand and is dominated by tuart. The eastern ridge predominantly in College Grove and to the east of the Leschenault Estuary has duplex sands and it lacks or rarely supports tuart. Different vegetation occurs on these dunes and they have been separated in vegetation mapping into:
    - Spearwood Dunes, Tuart forest – these are the western dunes which have yellow sands and some areas of outcropping limestone. This type of Spearwood Dunes is mapped as the 'Cottesloe' unit by Churchward and McArthur (1980) to the north of Myalup, possibly indicating that the mapping of that unit should have extended further south. Within the park the maximum elevation of these dunes is 25m.

- Spearwood Dunes, Banksia woodland – these are the eastern dunes with soils that are duplex in nature with a layer of grey sand over the yellow; there is no outcropping limestone. This type of dune typically correlates to the Karrakatta unit as described by Churchward and McArthur (1980). Within the park the maximum elevation of these dunes is 40m. Within College Grove there is an unusual interface of the Spearwood and Bassendean landforms, which Bischoff (2013) proposes may be the result of marine transgression in periods of higher sea-level.

- Interdunal swales – these are a series of seasonally wet depression at the interface of the Quindalup and Spearwood landforms. They are most developed as the peaty Muddy lake system just outside the park. Within the park two small sites are known on lime marl soils with near-permanent moisture; indicating that they are possibly linked to groundwater expression. Keighery *et.al*. (2002) refer to these wetlands as Quindalup/Spearwood dune interface sumplands and lakes.
- Flat plains – this represents the Yoongarillup unit as defined by Churchward and McArthur (1980) and is characterised by a flat plain with low rises of organic rich sands and shallow depressions that are subject to seasonal inundation. Within the park this area is found between Parade Road and the Bussell Hwy.

Bassendean Dunes

Churchward and McArthur (1980) describe the Bassendean Dunes of the park as the 'Southern River' unit. This is where the Bassendean sand overlies alluvial soils of the Pinjarra Plain, with the low dune height indicating the sand has been blown over the alluvial soils from their original area of deposition. Wetlands of the Southern River complex often have impeded drainage due to an alluvial (clay soil) base and/or the build-up of organic material in sands overlying the alluvial base.

Within the park, soil-landscape mapping (Barnesby *et al*. 1995, DAFWA 2007) recognises phases that corelate to dunes of different elevation and wetlands with differing levels of drainage. For the purposes of vegetation mapping the phases have been consolidated into four groups:

- Upland dunes and lower slopes – these are low dunes of free-draining Bassendean sand, the lower slopes of these dunes and dunes with slight elevation experience some sub-soil moisture and the influence of this can be observed by the presence of marri (*Corymbia calophylla*)
- Dampland wetlands – these are poorly drained wetlands with sandy soils that are seasonally saturated but rarely experience surface inundation
- Seasonally inundated wetlands – these are poorly drained and seasonally inundated wetlands characterised by organic rich Bassendean sands that have impeded drainage as they overlie alluvial soils at depth
- Pinjarra Plain wetlands – these wetlands epitomise the Southern River unit, in that they are seasonally inundated wetlands mapped to be within the Bassendean landform but they have an exposed alluvial clay soil base. The vegetation on these wetlands is typical of the Pinjarra Plain, although these wetlands are actually mapped as part of the Bassendean landform. Within the park the majority of these have been cleared.

Within the park the Bassendean Dunes landform is only found in Manea Park, Loughton Park and Wardandi Flora reserve and adjacent crown reserves.

Pinjarra Plain

The Pinjarra Plain represents the alluvial soils of the SCP. The plain is made up of coalescing alluvial deposits of varying age and sediment composition originating from shifting streams off the Darling Plateau. River alignments are incised into these deposits. The extent of this landform within the park is limited to only floodplains of the Preston, Collie and Brunswick Rivers, including Snake and Alexander islands. These floodplains have been mapped as the 'Swan' unit by Churchward and McArthur (1980).

The Collie River with its wide valley is considered to have formed in the middle to late Pleistocene, whereas the Preston and Brunswick rivers with their narrow, steep-sided channels are thought to be post-Pleistocene (McArthur and Bettenay 1960).

The riverine vegetation of the park has been mapped as one unit but the vegetation will differ in relation to tidal/saline influence.

Acid sulfate soils

Acid sulfate soils (ASS) are naturally occurring soils, sediments or organic substrates commonly occurring in low-lying wetlands, swamps, estuaries, salt marshes and tidal flats. These soils contain iron sulfide minerals mainly as the mineral pyrite or their oxidation products. In an undisturbed state, ASS are typically waterlogged or exist in

highly anaerobic conditions, are benign, not acidic and often go unnoticed and cause no problems. However, if the soils are disturbed, drained, excavated or exposed to air by a lowering of the water table, the sulfides oxidise and produce sulphuric acid, iron precipitates and concentrations of dissolved heavy metals such as aluminium, iron, cadmium and arsenic in the soil. These highly acidic soils and water can have a variety of harmful impacts to the environment (including being toxic to many native plants and animals) and infrastructure. Acid sulfate soil risk mapping covers the park.

Management objective: To protect and conserve geological features, landforms and soils.

Management strategies

1. Identify and protect the important geological, landform and soil features vulnerable to erosion and other environmental damage through the planning and assessment of sites and management operations, managing access and the provision of fencing, signs and information, where relevant and appropriate. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER**)
2. Rehabilitate coastal areas to stabilise dunes as needed. (**DBCA**, CoB)
3. Where dewatering or the excavation of more than 100m^3 of soil is proposed during activities in the park, determine the ASS risk classification for the site in question and if deemed required, undertake ASS investigations, management planning and works in accordance with WAPC and DWER policy. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)

7. Hydrology

Surface water

The regional park transitions from the coastal (marine) formations to estuarine and to freshwater river landscapes further inland. The Leschenault Estuary is the receiving body for most of the surface water within and adjacent to the park that drains through the Preston River, Brunswick River and lower Collie River catchments. It is also the receiving body for the land uses (such as agricultural and urban land uses) and activities within the almost 2,000km^2 Leschenault Catchment.

DBCA is responsible for managing wetlands (areas of seasonally, intermittently or permanently waterlogged or inundated land) and waterways on CALM Act lands (except wetlands that are estuary peripheral or are located within a floodplain with direct connection to a waterway, which are the responsibility of DWER), and coordinates mapping of WA's wetlands. Significant wetlands in the regional park, exclusive of the waters/waterways of the Leschenault Estuary and Inlet or the Preston, Collie and Brunswick rivers (Section 2), are listed in Table 3.

Table 3. Significant wetlands within the park

Park area	Wetland type[1]	Wetland UFI number[2] (category[3])
Leschenault Peninsula C.P. & proposed additions, Leschenault Estuary Cathedral Ave foreshore	estuary – peripheral, northern and western sides (includes Cathedral Avenue wetlands and Knapps Channel wetland)	15717 (C)
Leschenault Peninsula C.P. & proposed additions	estuary – peripheral, eastern side	1298, 1296, 1297, 1303, 1305, 14513, 1310, 1311, 1312 & 1313 (C)
Brunswick River foreshore reserves - east of Forrest Hwy	river floodplain	1519, 1515 (R43511) & 14521 (C)
	palusplain	1523 (C)
Foreshore reserves eastern and western sides of Brunswick River - Paris Road to Forrest Hwy	river floodplain/foreshore	1520 (R43651), 1522, 1524, 1537 & 1617 (C)
Foreshore reserves eastern and western sides of Brunswick River - south of Paris Road	river floodplain	1538, 1539 & 1540 (C)
The Junction/Twin Rivers	river floodplain	part of 15222 (C)
Meadow Landing	palusplain	1733 (C)
	floodplain	1734 (C)
	sumpland	1735 (R47717) (RE), 1738 (C)
Millars Creek	creek foreshore (palusplain)	1546 (C)
Eelup/Elbow wetland & south Collie River foreshore	river floodplain	part of 15222 (C)
Pratt Road Reserve, Watson Reserve & Leicester Reserve	river floodplain	15222 (C)

Park area	Wetland type[1]	Wetland UFI number[2] (category[3])
Australind reserves – Morangarel Nature Reserve		
Point Douro	estuary – peripheral	1227 (C)
	estuary – waterbody	15513 (C)
Clifton Community Reserve & foreshore	estuary – peripheral	1227 (C)
	floodplain	15222 (C)
Mangrove Cove	estuary – peripheral	909 (C)
Preston River Link	palusplain (Preston River foreshore)	14501 (C)
	lake	1085 (RE)
	sumpland	1079 (C)
Loughton Park	dampland	928 (C), 1067 (C)
Manea Park	dampland	1068 (C), 1100 (RE), 15612 (C)
	palusplain	1101 (C), 14516 (C)
	sumpland	1103 (C)
	creek (Eedle Creek)	1066 (C)
Hay Park	palusplain	915 (C)
	dampland	15497 (C)
Tuart Brook/Five Mile Brook	dampland	15493, 15495 & 15496 (RE)
	sumpland	15502 (RE)
	palusplain	15504 (RE)

[1] Wetland types from Semeniuk (1987): sumpland – seasonally inundated basin, dampland – seasonally waterlogged basin, floodplain – seasonally inundated flat, palusplain – seasonally waterlogged flat
[2] UFI – a wetland's Unique Feature Identifier number
[3] Management category: C – 'Conservation', RE – 'Resource Enhancement'.

Egret wetland was identified as an important breeding site for the great egret, little egret and rufous night heron in the 1980s (Jaensch *et al*. 1988). It is also one of the 100 wetlands that have been monitored under the State Salinity Strategy's *South West Wetlands Monitoring Program* (Lane *et al*. 2017). The mudflats at Point Douro and other areas around the Leschenault Estuary and Inlet provide important habitat for international migratory birds and other waterbirds to use for feeding roosting and breeding (Section 9).

Flooding

Parts of the park around the Leschenault Estuary and along the Collie, Brunswick and Preston rivers and Eedle Creek lie within floodplain, floodway and/or flood fringe within the extent of a 1 in 100-year annual exceedance probability of flooding (WAPC 2017b). DWER provides advice on development applications and subdivision proposals on floodplains, local government implements floodplain management strategies through land and development controls and building regulations, and Water Corporation maintains flood mitigation works including the flood protection embankments (levee banks) along the Preston River, parts of which are in the Preston River Link. Tuart Brook/Five Mile Brook is important for stormwater management and flood mitigation in South Bunbury.

Erosion

Active and unmanaged erosion of the riverbanks and associated sedimentation has the potential to adversely impact the ecological health of waterways or infrastructure in the regional park. Waterways can become shallower with sediment build-up, which can increase the flooding risk (DoW 2010). Transported sediments can also contain significant loads of nutrients, heavy metals and organochlorines, which impact the water quality of the waterways and estuary (DoW 2010). Appropriate surface water management can contribute towards reducing erosion and the spread of disease and weeds.

Elbow wetland. Photo – Jonnie Cobby/DBCA

The coastline[8] within the park will also be exposed to predicted future increases in storms as a result of climate change, which is likely to exacerbate coastal erosion processes.

[8] The coastline is the seaward extent of ephemeral vegetation on an accreting/stable coast (DoT 2018a).

The Peron Naturaliste Partnership, City of Bunbury, Shires of Harvey, Dardanup and Capel and other partners are preparing a collaborative Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) for the Greater Bunbury region that includes the Leschenault Inlet, Leschenault Estuary and the Preston, Collie and Brunswick rivers. This CHRMAP will provide guidance on the management of inundation and erosion risk including potential treatment options for parts of the park. A Collie River Masterplan is being facilitated by the Shires of Dardanup and Harvey in consultation with City of Bunbury, DWER and other key stakeholders, which will identify and address the erosion issues facing the Collie River.

Groundwater

The groundwater aquifers generally underlying the regional park (from the surface) are the Superficial, Leederville and Yarragadee aquifers (DoW 2009a). The Superficial aquifer is an unconfined aquifer (generally water table groundwater) consisting of mainly sands of the Bassendean Sand, Tamala Limestone and Safety Bay Sand formations that is up to 20m thick and is recharged by direct infiltration of rainfall (DoW 2008a, DoW 2009a).

The Leederville aquifer is a confined aquifer, with the formation that acts to confine the deeper Yarragadee aquifer. The Leederville aquifer is recharged by direct infiltration of rainfall on the Blackwood Plateau, where the formation outcrops (DoW 2008a, DoW 2009a).

The Yarragadee aquifer is generally confined except where it outcrops in areas of the Blackwood Plateau and in an area south of Bunbury (near the Bunbury Water Reserve) where the Leederville Formation and the Bunbury Basalt are absent. The Yarragadee aquifer is recharged by direct infiltration of rainfall where the formation outcrops on the Blackwood Plateau (DoW 2008a, DoW 2009a). This recharge is considered to be in the Nannup area. Some recharge also occurs through the superficial formations between Bunbury and Capel.

The park is mostly in the proclaimed Bunbury Groundwater Area, with the northern tip of the park (north of the Leschenault Peninsula) in the proclaimed South West Coastal Groundwater Area (DoW 2009a). A monitoring program undertaken by DWER supports the *South West Groundwater Areas Allocation Plan* so that water resources can be managed to maintain their integrity for consumptive use while protecting the social, cultural and natural values that are dependent on the resource (DoW 2009a). Groundwater level trends for the Yarragadee Aquifer show declines of up to 2m during the last 10 years (DoW 2009a). Reductions in water levels in the aquifer becomes most apparent at the surface in areas where the aquifer is shallow or overlain by the Superficial aquifer (such as in southern areas of the park) (DoW 2009a). Therefore, this area of the regional park (such as Hay Park) is particularly susceptible to the effects of Yarragadee abstraction (Del Borrello 2008).

Groundwater-dependent ecosystems

Surface water features such as wetland and river systems may be strongly connected to, and dependent on, groundwater, and in the regional park these areas include the Brunswick River and lower Collie River floodplains (Hyde 2006) and Hay Park and Manea Park wetlands.

The Hay Park and Manea Park wetlands have been identified as areas that contain groundwater-dependent ecosystems and have determined ecological water requirements (DoW 2008b, Del Borrello 2008, Loomes *et al.* 2008). Management objectives for these areas are to:

- protect TECs and rare and priority native plant species
- maintain the structure and distribution of wetland vegetation
- maintain species richness and diversity
- prevent or reduce weed invasion
- maintain and/or enhance canopy condition (Loomes *et al.* 2008).

Threatened native plant and animal species, TECs, wetlands and watercourses and associated bed and banks may be linked to groundwater-dependent ecosystems and considered in managing groundwater abstraction (DoW 2009b). If a licence application to take water near these groundwater dependent ecosystem sites for commercial purposes is submitted, the need for and level of detail required to support an assessment to determine any adverse effects to these sites will be in accordance with DWER's *Operational policy No. 5.12 - Hydrogeological reporting associated with a groundwater well licence* (DoW 2009b).

Salinity

Sea water intrusion into groundwater is an issue in the southern area of the regional park. Saline intrusion is caused by over-abstraction of groundwater, with sea water being drawn eastwards into coastal groundwater aquifers.

Water levels in the Yarragadee aquifer in the East Bunbury area have declined below sea level, which increases the likelihood of the sea water interfaces moving inland (DoW 2010). This sea water intrusion can impact wetland ecosystems, groundwater-dependent ecosystems and users of the resource.

The risk of intrusion of the sea water interface around the Bunbury area is known to be high (DoW 2009a). The City of Bunbury receives potable water from shallow groundwater bores close to the coast that draw on the Yarragadee aquifer (DoW 2010). The bores are subject to the effects of inland movement of the saltwater interface. The sea water interface will be managed through responsible allocation limits, ongoing licence assessment, investigations and monitoring (Section 25, DoW 2009a).

Management objective: To protect and conserve hydrological values and processes, particularly wetlands, and minimise the impacts of altered hydrology on park values.

Management strategies

1. Identify and protect hydrological values vulnerable to environmental damage, where relevant and appropriate. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA, **DWER**)
2. Investigate and implement riverbank stabilisation and coastal hazard management techniques and approaches to manage and reduce impacts to infrastructure and the natural environment, from sea level rise and associated erosive forces, where relevant and appropriate. (**DBCA, CoB, SoD, SoH, DWER**)

8. Native plants and vegetation

Vegetation

The regional park is in the Swan Coastal Plain region of the Interim Biogeographic Regionalisation for Australia, which corresponds to Beard's (1980) 'Drummond' subdistrict within the 'Darling Botanical District' of the Southwestern Botanical Province of WA. Of the 38 percent of pre-European vegetation remaining in the Swan Coastal Plain region, 10.2 percent of current extent is protected within conservation reserves.

Seven vegetation complexes (Heddle *et.al*. 1980) occur in the park (Table 4). Four of the vegetation complexes are extensively cleared and can be considered vulnerable, that is that they have less than 30 percent of their pre-1750 extent remaining (column C).

Table 4. Vegetation complexes

Vegetation complex	A. Pre-1750 extent (ha)	B. Current extent (ha)	C. % remains	D. Current extent in reserves[1] (ha)	E. % current extent protected as proportion of pre-1750 extent	F. Area in the park (ha)
Bassendean Complex - Central & South	87,476	23,533	26.9	1,624	1.86	110
Karrakatta Complex - Central & South	53,081	12,465	23.48	2,054	3.87	427
Quindalup Complex	54,574	32,983	60.44	4,566	8.37	1,295
Southern River Complex	58,782	10,828	18.42	691	1.18	361
Swan Complex	15,194	2,056	13.53	56	0.37	332
Vasse Complex	15,692	4,929	31.41	2,052	13.08	194
Yoongarillup Complex	27,978	9,946	35.55	3,676	13.14	274

[1] 'reserves' mentioned in this table are conservation reserves.

Gibson *et al*. (1994) defined 43 floristic community types within the southern Swan Coastal Plain (FCT), 18 of which occur within the park (Table 5). Some floristic community types are also recognised as threatened or priority ecological communities (Tables 5 and 6).

Table 5. Swan Coastal Plain Floristic Community Types within the park

SCPFCT number	Floristic community	TEC or PEC	Bushland area (quadrats)[2]
Supergroup 2 - Seasonal wetlands			
4	*Melaleuca preissiana* damplands		Manea [MGK0]
5	Mixed shrub damplands		Manea [Swamp01]
06	Weed dominated wetlands on heavy soils		Manea [Sunday01]

7	Herb rich saline shrublands in clay pans	TEC	Manea [Swamp0, PROP01]
08	Herb rich shrublands in clay pans	TEC	Hay [Hay01], Manea [PROP06]
9	Dense shrublands on clay flats	TEC	Manea [MANEA01, PROP03], Loughton [LOU01]
10a	Shrublands on dry clay flats	TEC	Manea [PROP05]
11	Wet forests and woodlands		Loughton [LOU02], Manea [PROP07]
12	*Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands		Manea [PROP04]
17	*Melaleuca rhaphiophylla - Gahnia trifida* seasonal wetlands		Hay [Hay02], Lesch [LESCH06]
18	Shrublands on calcareous silts	TEC	Hay [Hay05]
S01[1]	*Astartea* aff. *fascicularis*/*Melaleuca* species dense shrublands		Manea [Swamp03]
S05	*Acacia saligna* wetlands		Hay [Hay03, Hay04]
Supergroup 3 - Uplands centred on Bassendean Dunes			
21a	Central *Banksia attenuata - Eucalyptus marginata* woodlands		Manea [MGK01, Sunday02, Manea02], Wardandi [AUSTRA01]
21b	Southern *Banksia attenuata* woodlands	PEC	Manea [MGK03, MGK04, Manea03]
Supergroup 4 - Uplands centred on Spearwood Dunes			
25	Southern *Eucalyptus gomphocephala - Agonis flexuosa* woodlands	PEC	Elbow [colriv01], Maidens [GMaid01, GMaid02, GMaid03, GMaid04, NMaid05], Manea [bunb01]
29a	Coastal shrublands on shallow sands	PEC	Maidens [BMaid02, NMaid01, NMaid03]
30b	Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands	PEC	Lesch [LESCH01, LESCH02, LESCH03, LESCH04, LESCH05], Maidens [NMaid04]

[1] = Community types preceded by an 'S' represent supplementary groups (Government of Western Australia 2000). [2] = Quadrats were from the following datasets: Gibson *et al*. (1994) (Austra01, Lesch01–06, Manea01–03), DEP (1996) (Bmaid02, Bunb01, Colriv01, Gmaid01–04, HAY01–05, MGK01–04, NMaid01, 03–05, Sunday01–02, Swamp 01–03) and Webb (2016) (LOU01–02, PROP01, 03–07).

Nineteen vegetation types have been mapped for the park (below, Maps 3a and 3b), which have been produced from vegetation attributes at a 1:50,000 scale that have been applied to the DAFWA (2007) soil landscape mapping from limited field inspections. There are several areas in the park that are cleared of native vegetation.

Quindalup dunes

The Quindalup dune vegetation of the park is the southern-most substantial area of this landform vegetation remaining uncleared and in public vesting on the Swan Coastal Plain. Distinct vegetation occurs within exposed coastal foredunes, stable dunes and dune swales.

Exposed coastal foredunes

Exposed coastal foredunes includes parabolic dunes with blow-outs and exposed coastal heath. The vegetation includes coloniser species on foredunes such as hairy spinifex (*Spinifex hirsutus*), beach spinifex (*S. longifolius*), sea rocket (*Cakile maritima*), sea spinach (*Tetragonia decumbens*) and *Carpobrotus* species, which intergrades into coastal heath with species including coastal daisybush (*Olearia axillaris*), rigid wattle (*Acacia cochlearis*), dysentery bush (*Alyxia buxifolia*), *Acanthocarpos preissii*, thick-leaved fan-flower (*Scaevola crassifolia*), coast sword-sedge (*Lepidosperma gladiatum*), berry saltbush (*Rhagodia baccata*) and stunted peppermint.

Quindalup dune vegetation in Maidens Reserve. Photo – Andrew Webb/DBCA

Stable dunes

The stable dune vegetation has peppermint and tuart trees. In exposed locations, mallee peppermint is dominant occasionally with mallee tuart. Both species become tall trees and co-dominant in sheltered areas. The dominant understory species include coastal daisybush, *Spyridium globulosum*, coast hop-bush (*Dodonaea aptera*), rigid wattle, southern diplolaena (*Diplolaena dampiera*), *Exocarpos sparteus*, *Jacksonis furcellata*, *Acanthocarpos preissii*, snakebush (*Hemiandra pungens*), thick-leaved fan-flower, panjang (*Acacia lasiocarpa*) over herbs, sedges and grasses such as *Conostylis aculeata*, large flowered bogrush (*Schoenus grandiflorus*), *Austrostipa flavescens*, *Lepidosperma squamatum* and *Bromus arenarius*.

Quindalup interdunal swales

Some interdunal swales have developed dampland features due to organic-rich sands and impeded drainage. These features can support species more typically associated with wetlands such as swamp banksia (*Banksia littoralis*), orange wattle (*Acacia saligna*), bare twigrush (*Baumea juncea*) and kidney weed (*Dichondra repens*). DAFWA (2007) maps one of these features for the park, but its dampland features are limited.

The Quindalup dune vegetation of the park supports several range-end populations of Swan Coastal Plain species. The Quindalup dunes within the park is one of only two locations in WA where tuart occurs as a mallee form and is the only known location where tuart occurs in contiguous woodland and mallee vegetation units (Keighery *et al*. 2002b).

Spearwood dunes

The Spearwood landform of the park includes wetland and upland vegetation.

Wetland vegetation – Quindalup/Spearwood interdunal swales

The park supports two small seasonally wet swales occur at the junction of the Quindalup and Spearwood dunes. These areas are associated with lime marl soils and near-permanent moisture. The vegetation is dominated by species associated with moist soils such as orange wattle, *Chorizema diversifolium*, *Logania vaginalis*, *Adriana quadripetala*, swamp banksia, *Leucopogon australis*, coast saw-sedge (*Gahnia trifida*), *Ficinia nodosa*, *Myoporum caprarioides*, bare twigrush and *Centella asiatica*. An area of near-permanent surface water in the largest of these swales supports *Schoenoplectus pungens*, which in the Bunbury area is a rarely encountered sedge only known from a handful of otherwise degraded sites.

Wetland vegetation – Flat plains

These areas of historic marine/estuarine deposition have varying depths of organic-rich soils over underlying limestone. The lowest lying parts of this area have calcareous silt soils and are dominated by Melaleuca species such as mohan *(M. viminea*), swamp paperbark (*M. rhaphiophylla*) and banbar (*M. teretifolia*) over sedges such as coast saw-sedge and pithy sword-sedge (*Lepidosperma longitudinale*) and herbs including beaded samphire (*Salicornia quinqueflora*), creeping brookweed (*Samolus repens*) and the grass *Sporobolus virginicus*.

The remainder is slight rises of alluvial/organic-rich soils overlying the limestone with a diverse, mainly wetland vegetation but also some small upland areas. Overstory species can include flooded gum (*Eucalyptus rudis*), swamp paperbark, moonah (*M. preissiana*), swamp banksia and in the dryer areas tuart and marri. The understory species of these rises is diverse and varied. The critically endangered grass *Austrostipa jacobsiana* is known from these vegetation types.

Mature tuart tree in Shearwater Tuart Forest. Photo – Paul Roberts/DBCA

Upland vegetation – Spearwood tuart forest over peppermint

This form of upland Spearwood vegetation dominates the Shearwater Tuart Forest where it occurs at the base of the Quindalup dune, surrounds the dune interface swales and extends over the Mosedale dune to about Parade Road. This forest is dominated by relatively dense tuart over peppermint and often slender banksia. The understory is

dominated by species of near-coastal locations, such as berry saltbush, *Spyridium globulosum*, southern diplolaena, *Eremophila glabra*, coast sword-sedge and *Acanthocarpos preissii*. The soils are yellow spearwood sands with outcropping limestone on the crest of the Mosedale dune.

Upland vegetation – Spearwood banksia, jarrah, marri woodland

This Spearwood vegetation occurs at Leschenault (north of the Bunbury golf course) and in the Shearwater Tuart Forest and Usher Woodland east of Parade Road extending to the top of the College Grove dune. Within the Shearwater Tuart Forest and Usher Woodland, the change-over of the two upland vegetation types at Parade Road is noticeable. Tuart becomes scattered and the secondary tree layer becomes dominated by jarrah, slender banksia and marri. Peppermint is rarely dominant, and the understory very rarely includes near coastal species. The understory is typically dominated by *Hibbertia hibbertioides*, stalked guinea flower (*Hibbertia racemosa*), *Bossiaea eriocarpa* and woody pear (*Xylomelum occidentale*). The Leschenault occurrence of this vegetation lacks tuart. Both the Leschenault and the Shearwater/Usher examples of this vegetation support several understory species typical of the Spearwood landform that distinguishes this banksia vegetation from that of the Bassendean Dune landform. These species include large flowered bogrush, *Daviesia divaricata*, *Synaphea spinulosa*, sand lily (*Corynotheca micrantha*), *Orthrozanthus laxus* and *Lasiopetalum membranaceum* (which is Priority 3 listed).

Bassendean dunes

The Bassendean landform within the park is only found in Manea Park, Loughton Park and Wardandi Flora Reserve and adjacent Crown reserves. It includes upland and wetland vegetation.

Upland dunes and lower slope vegetation – banksia and/or marri woodlands

Banksia woodland in Manea Park. Photo – Paul Roberts/DBCA

The elevated rises of Bassendean sand are dominated by a slender banksia and jarrah low open forest, often with holly-leaved banksia (*Banksia ilicifolia*). Less elevated rises and lower slopes near wetlands where subsoil moisture influences the vegetation have marri as a co-dominant. Understory species of these vegetation types include yellow buttercups (*Hibbertia hypericoides*), stalked guinea flower, *Bossiaea eriocarpa*, *Eriostemon spicatum*, *Phyllanthus calycinus*, *Melaleuca thymoides*, *Lyginea barbata*, *Hypolaena exsulca*, *Phlebocarya ciliata*, *P. filiformis* and *Dasypogon bromelifolius*. Populations of several priority-listed species are found in this vegetation.

Wetland vegetation – dampland wetlands

Dampland wetlands rarely experience surface inundation. The vegetation is dominated by a moonah low woodland occasionally with holly-leaved banksia and Christmas tree or *moodja* (*Nuytsia floribunda*) over an understory including *Kunzea glabrescens*, *Hypocalymma angustifolia*, *Pericalymma elliptica*, *Adenanthos obovatus*, *Euchilopsis linearis*, grass tree or *balga* (*Xanthorrhoea preissii*), *Dasypogon bromeliifolius*, *Phlebocarya ciliata*, *Baxteria australis*, *Anarthria prolifera* and *Hypolaena exsulca*. The priority-listed *Acacia flageliformis* occurs in these wetlands.

Wetland vegetation – seasonally inundated wetlands

These poorly drained and seasonally inundated wetlands are characterised by organic-rich Bassendean sands with impeded drainage. Several different types of these wetlands are within Manea Park and Loughton Park and they are generally dominated by moonah, swamp paperbark, occasionally with mohan over shrubs such as variable-leaved hakea (*Hakea varia*), *Kunzea recurva*, grey honeymyrtle (*Melaleuca incana*), west-coast astartea (*Astartea affinis*), *Pimelea lanata*, orange stars (*Hibbertia stellaris*), *Eutaxia virgata* and the sedges bare twigrush, *Cyathochaeta avenacea*, pithy sword-sedge, *Meeboldina roycei* and occasionally coast saw-sedge. The vulnerable tall donkey orchid (*Diuris drummondii*) and the endangered grass *Austrostipa bronwenea* occur in these wetlands.

Wetland vegetation – Pinjarra Plain wetlands

These inundated wetlands with alluvial soils have vegetation typical of the Pinjarra Plain landform. These wetlands are only in Manea Park and most of them have been historically cleared for agriculture. Those that remain are dominated by mohan, swamp paperbark and robin redbreast bush (*Melaleuca lateritia*) over variable-leaved hakea,

Chaetanthus aristatus, coast saw-sedge, *Meeboldina* species and a diverse range of annually renewed herbs. Several priority-listed annually renewed herbs are within these wetlands such as floating bog-rush (*Schoenus natans*), *Blennospora doliformis*, jumping jacks (*Stylidium longitubum*), *Angianthus drummondii* and stalked water ribbons (*Aponogeton hexapetalus*).

Estuarine

Low-lying coastal saltmarsh

Fringing the Leschenault Estuary and on Anglesea Island is a mainly seasonally and tidally inundated area supporting a closed herbland of beaded samphire. Other herbaceous dominants include shrubby samphire (*Tecticornia halocnemoides*), *T. indica*, *Suaeda australis*, creeping brookweed, *Frankenia pauciflora* and *Sporobolus virginicus.* Overstory species are rare but can include swamp sheoak (*Casuarina obesa*) and swamp paperbark, and in places particularly at Anglesea Island and Mangrove Cove the white mangrove (*Avicennia marina*) is dominant. The Priority 1 grass *Puccinellia vassica* is centred on this vegetation and the park is the only area where this species is still known to occur.

Slight rise coastal saltmarsh

This vegetation type is within the seasonally and tidally inundated areas of the Leschenault Estuary and Bar Island. It is found on slight rises that intermingle with and fringe the 'low-lying coastal saltmarsh' vegetation type. The vegetation is generally dominated by the same herbaceous species as found in the 'low-lying coastal saltmarsh' but will also include sedges such as sea rush (*Juncus krausii*), knotted club rush (*Ficinia nodosa*) and coast saw-sedge. This vegetation generally has an overstory that is often saltwater paperbark (*Melaleuca cuticularis*), swamp paperbark, mohan, swamp sheoak and sometimes flooded gum. In places on the eastern side of the Leschenault Estuary small even more elevated dunes of coarse sand have formed such as at Point Douro. The vegetation on these is predominantly introduced but the presence of dryland species such as *Jacksonia furcellata* indicates that they may rarely inundate if at all.

Pinjarra Plain

Riverine vegetation

The Pinjarra Plain is only represented by riverine vegetation. It includes all the river channels and associated pools of the park. River fringing trees will include marri, flooded gum, swamp paperbark, peppermint and often swamp sheoak.

The lower reaches of the Collie and Brunswick Rivers have a saline influence and swamp paperbark, swamp sheoak and flooded gum are the main trees over an understory that is generally a closed sedgeland of species such as pithy sword-sedge, sea rush and coast saw-sedge, often with beaded samphire and creeping brookweed.

Outside of the saline influence, swamp sheoak is rare and the understory is often degraded. Where present, the understory may include west-coast astartea, *Taxandria linearifolia*, wonnich (*Callistachys lanceolata*), grey honeymyrtle, robin redbreast bush and bracken *(Pteridium esculentum).* Sedges in these areas can include *Lepidosperma tetraquetrum*, spreading sword-sedge (*Lepidosperma effusum*), *Baumea rubiginosa, B. preissii*, sheath twigrush (*Baumea vaginalis*), bare twigrush (*Baumea juncea*), marsh club-rush (*Bolboschoenus caldwellii*) and *Juncus* and *Carex* species.

Particularly in the upper fresher reaches of the rivers, understory species such as *Acacia urophylla*, lemon-scented darwinia (*Darwinia citriodora*), *Trymalium odoratissimum subsp. odoratissimum, Bolboschoenus medianus* (P1) and *Calycopeplus oligandrus* can be found. These are significant species on the Swan Coastal Plain as they typically occur on the Darling Plateau and/or they are species that are otherwise very poorly known for the Swan Coastal Plain.

Threatened and priority ecological communities

There are ten threatened ecological communities (TECs) and eight priority ecological communities (PECs) in the park (Table 6). The 'Clay pans of the Swan Coastal Plain' TEC listed under the EPBC Act is recognised as four TECS listed under the Biodiversity Conservation Act. Four PECs are also TECs listed under the EPBC Act. Three PECs can be components of other TECs or PECs.

Table 6. Threatened and priority ecological communities in the park

Ecological community		WA status	National status
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (SCP19a)		CR	EN
Shrublands on dry clay flats (SCP10a)	Collectively referred to as 'Clay pans of the Swan Coastal Plain'	EN	CR
Herb rich saline shrublands in clay pans (SCP07)		VU	
Herb rich shrublands in clay pans (SCP08)		VU	
Dense shrublands on clay flats (SCP09)		VU	
Shrublands on calcareous silts of the Swan Coastal Plain (SCP18)		VU	
Relictual white mangrove community (Leschenault Inlet)		P1	
Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain		P3	CR
Banksia dominated woodlands of the Swan Coastal Plain IBRA Region		P3	EN
Subtropical and temperate coastal saltmarsh		P3	VU
Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands (FCT30b)		P3	
Southern Swan Coastal Plain *Eucalyptus gomphocephala - Agonis flexuosa* woodlands (FCT25)		P3	
Southern *Banksia attenuata* woodlands (FCT21b)		P3	EN
Coastal shrublands on shallow sands (FCT29a)		P3	

'Clay pans of the Swan Coastal Plain' communities occur where clay soils low in the landscape form an impermeable layer close to the surface, and wetlands form that rely on rainfall and local surface drainage to fill and then dry to impervious pans in summer. A suite of perennial plants that propagate by underground bulbs, tubers or corms (geophytes), and annual herbs flower sequentially as the clay pans dry out during summer, producing a floral display for more than three months. The clay pans have very high species richness, many local endemic taxa and are the most floristically diverse of the Swan Coastal Plain wetlands. In the park, these TECs are restricted to several small patches totalling about 24ha in Hay Park, Manea Park and Loughton Park.

The 'Tuart woodlands and forests of the Swan Coastal Plain' community covers about 14 percent of the park and mainly occurs in the Shearwater Tuart Forest and Usher Woodland, Maidens Reserve and Leschenault Peninsula.

The 'Banksia dominated woodlands of the Swan Coastal Plain' community covers a third of the park and more than 75 percent of the Preston River to Ocean section of the park. The community mainly occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands. The community consists of (i) a distinctive canopy commonly dominated by one or more *Banksia* species, (ii) occasional emergent trees of marri, tuart and jarrah, and (iii) a highly species-rich and locally endemic shrub and herbaceous understorey.

The 'Subtropical and temperate coastal saltmarsh' community occurs around the edge of most of Leschenault Estuary (including a sizable area of the park within freehold Lots 7 and 14 on Plan 232713, north of Leschenault Peninsula Conservation Park) as well as Bar Island and Point Douro. This TEC is restricted to coastal areas under regular or intermittent tidal influence and consists mainly of salt-tolerant vegetation (halophytes) including grasses, herbs, sedges, rushes and shrubs generally to less than 0.5m in height.

Above left 'Subtropical and temperate coastal saltmarsh' threatened ecological community. Photo – Andrew Webb/DBCA

Above right 'White mangrove' priority ecological community. Photo – Andrew Webb/DBCA

The 'Shrublands on calcareous silts of the Swan Coastal Plain' community is confined to one small patch of Hay Park. The habitat of this community is classified as a dampland, as it experiences seasonal waterlogging. The community consists of open low shrubs with a rich annual flora and is described in more detail in the 'wetland vegetation – calcareous silts' vegetation type.

The Priority 1 'relictual white mangrove community (Leschenault Inlet)' occurs at Mangrove Cove and Anglesea Island in the Leschenault Inlet and in the upper (northern) Leschenault Estuary. In this latter area, this community occurs on high tidal flats and the steep dune shores along the eastern Leschenault peninsula, where they are supported by a salinity regime that varies from brackish to hypersaline. The community occurs as scrub, heath, shrubland, open shrubland and open heathland, with *Avicennia* forming single columnar-trunked shrubs less than 1m high and up to 3-4m high, or multi-stemmed radially branched shrubs 2-4m high. This community is the most southerly occurrence of the white mangrove in WA (Semeniuk *et al*. 2000b), with the nearest white mangroves occurring more than 500km to the north at the Abrolhos Islands. The extent of mangroves in the upper Leschenault Estuary has slowly increased and may be linked to the slowly increasing sedimentation of the estuary (DoW 2007).

Plants

Current data indicates that there is in the order of 600 vascular plant species[9] within the park[10]. More than 200 native flowering plants have been recorded within the Leschenault Peninsula Conservation Park (CALM 1998). The most taxa-rich of the 86 native plant families currently documented are Fabaceae (legumes, peas and wattles), Cyperaceae (sedges), Poaceae (grasses) and Asteraceae (diasies), which reflects similar floristic trends across the southern Swan Coastal Plain (Gibson *et al*. 1994).

Caladenia speciosa is a Priority 4 orchid that occurs in the park. Photo – Andrew Webb/DBCA

Plants of conservation significance

Native plant species of conservation significance within the park include:

- three species listed as threatened under section 19(1) of the Biodiversity Conservation Act: the critically endangered *Austrostipa jacobsiana*, the endangered *Austrostipa bronwenae* and the vulnerable tall donkey orchid
- 21 priority native plant species[11], including two Priority 1 species, three Priority 2 species, eight Priority 3 species and eight Priority 4 species
- other conservation significant species (such as range-end, disjunct and locally endemic) occur within the park, although an incomplete inventory of plant species limits a fuller description of these species.

Recovery plans, Wildlife Management Program No. 33 and other conservation plans provide guidance on the management of native plants of conservation significance in the park.

Management objective: To ensure that native vegetation, including threatened and other significant plants and ecological communities, within the park are not significantly impacted by human activities.		
Management strategies 1. Implement relevant strategies for protection and recovery of populations of threatened species and ecological communities present in the park, as required. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA) 2. Undertake habitat restoration or enhancement in degraded areas. (all management agencies)		
Key performance indicators		
Target	**Performance measure**	**Reporting**

[9] A plant or animal taxon is a classificatory group of any rank, such as a family, genus, species or any infraspecific category.
[10] There is no full inventory of plant species for the park.
[11] Priority 1 and 2 native plant species are still considered to be under threat even though they are not listed as 'threatened' under the Biodiversity Conservation Act.

No more than 10 percent decrease (from 2020 levels) in the number of occurrences or populations of selected threatened plants	Number of occurrences or populations of selected threatened plants	Every five years, or as per recovery plans if applicable
No more than five percent decrease (from 2020 levels) in native species diversity of selected threatened ecological communities	Number of native plant species within selected threatened ecological communities	Every five years, or as per recovery plans if applicable

9. Native animals and habitats

Native animals

There are 199 native animal taxa recorded in the park, including:

- 13 native mammal taxa from nine animal families including five bats (Vespertilionidae), two kangaroos and wallabies (Macropodidae), two possums (Phalangeridae and Pseudocheiridae), one bandicoot (Peramelidae), one dasyurid (Dasyuridae) and one rodent (Muridae)
- 131 bird taxa from 36 animal families including 12 sandpipers (Scolopacidae), 11 parrots and cockatoos (Psittacidae), eight hawks and eagles (Accipitridae), eight ducks, geese and swans (Anatidae) and eight plovers, dotterels and lapwings (Charadriidae)
- 14 reptiles from six animal families including eight skinks (Scinidae), one gecko (Gekkonidae), three front-fanged venomous snakes (Elapidae), one non-venomous snake (Boidae) and one iguanian lizard (Agamidae)
- five amphibians from two animal families including four ground-dwelling frogs (Myobatrachidae) and one burrowing frog (Limnodynastidae)
- 36 spider species have been recorded in the park including seven orb-weaving spiders (Araneidae) and six wolf spiders (Lycosidae).

Animals of conservation significance

Native animal species of conservation significance[12] within the park include:

- 14 species listed as threatened under the Biodiversity Conservation Act:
  - four critically endangered species – western ringtail possum or *ngwayir* (*Pseudocheirus occidentalis*), curlew sandpiper (*Calidris ferruginea*), great knot (*Calidris tenuirostris*) and eastern curlew (*Numenius madagascariensis*)
  - five endangered species – Australasian bittern (*Botaurus poiciloptilus*), red knot (*Calidris canutus*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), lesser sand plover (*Charadrius mongolus*)
  - five vulnerable species – forest red-tailed black cockatoo, greater sand plover (*Charadrius leschenaultia*), western quoll or *chuditch* (*Dasyurus geoffroii*), fairy tern (*Sternula nereis*) and Carter's freshwater mussel (*Westralunio carteri*)
- 29 migratory species listed under the Biodiversity Conservation Act
- one species of special conservation interest (conservation dependent native animals) listed under the Biodiversity Conservation Act – brush-tailed phascogale or *wambenger* (*Phascogale tapoatafa wambenger*)
- two other specially protected species listed under the Biodiversity Conservation Act – New Zealand fur-seal or long-nosed fur-seal (*Arctocephalus forsteri*) and peregrine falcon (*Falco peregrinus*)
- 14 species listed as threatened under the EPBC Act
- 31 species listed as 'Migratory species' under the EPBC Act
- nine species listed as threatened under the IUCN Red List of Threatened Species

The critically endangered curlew sandpiper is also listed under several migratory bird agreements. Photo – Georgina Steytler

[12] There is overlap in the species listed under the Biodiversity Conservation Act, EPBC Act, IUCN Red List of Threatened Species and International Conventions.

- 28 migratory birds are listed under the Bonn Convention, 25 are listed under the China-Australia Migratory Bird Agreement, 26 are listed under the Japan-Australia Migratory Bird Agreement and 23 are listed under the Republic of Korea-Australia Migratory Bird Agreement
- eight priority animal species including one Priority 3 species and seven Priority 4 species.

Recovery plans provide guidance on the management of threatened and priority animal species in the park.

Habitats

With a mostly linked combination of vegetated landforms including steep dunes, low dunes, plains and wetlands (flats and depressions or basins) from Quindalup Dunes, Spearwood Dunes, Bassendean Dunes, Pinjarra Plain and marine and estuarine deposits, the park supports a diverse combination of habitats and sequences of unique (Preston River to Ocean) and typical (Leschenault) ecological linkages.

Key regional ecological linkages that are regionally significant sequences of ecological communities within and between the major landform elements include the Maidens/Preston River linkage, McLarty/Kemerton/Twin Rivers/Preston River/Gwindinup linkage, Collie River linkage, Brunswick River linkage, Leschenault/Eaton linkage and Leschenault/Kemerton linkage (EPA 2003). These strong ecological linkages within and to areas outside of the park are important in maintaining biodiversity and ecological systems, buffering the park from undesirable impacts and in helping to integrate the park within the broader urban and peri-urban landscapes. Opportunities should be taken to strengthen regional ecological linkages, such as links from Manea Park to the Preston River, and DBCA will liaise with relevant agencies as needed in relation to the establishment and management of these linkages.

Leschenault Estuary is one of the largest waterbodies and important waterbird habitats in the wetland network used by waterbirds in southern WA. Tidal flats, sandbars, bare shorelines and wet saltmarsh areas are important habitats for most species, including migratory waterbird species (Raines *et al.* 2000).

The critically endangered western ringtail possum. Photo – Kim Williams/DBCA

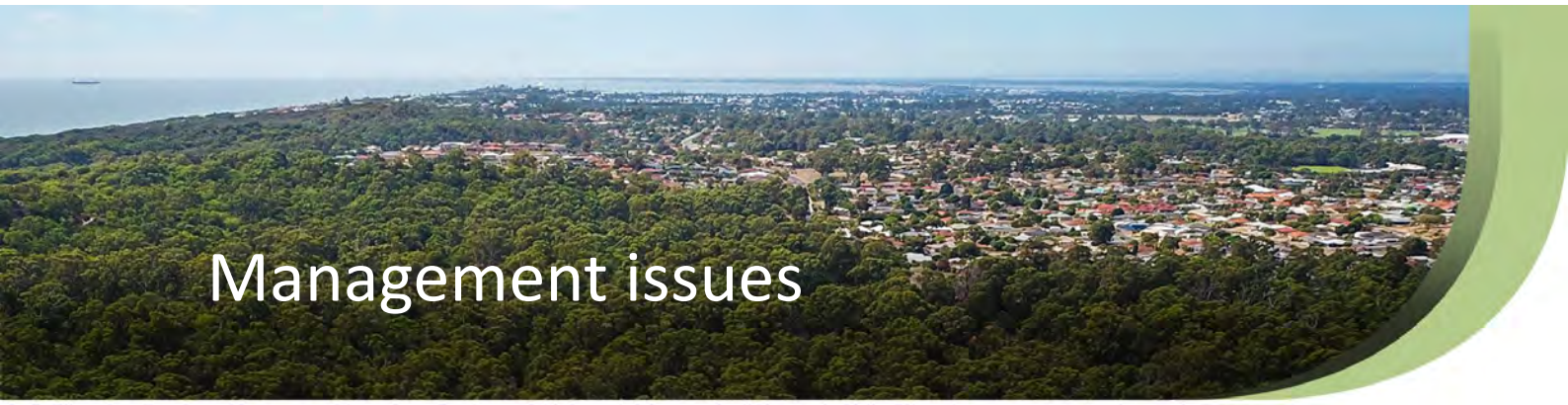
Much of the park contains suitable habitat for the critically endangered western ringtail possum, including high-quality habitat patches in the Belvidere, Shearwater Tuart Forest and Usher Woodland, Tuart Brook/Five Mile Brook, Maidens Reserve and Hay Park areas and along the Collie, Brunswick and Preston rivers (Shedley and Williams 2014).

Habitat in the park for Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo includes eucalypt woodland that provides nesting hollows used for breeding and vegetation that provides feeding, roosting and watering habitat.

Management objective: To conserve the habitat and populations of native animals, including populations of threatened and other significant animal species.

Management strategies

1. Implement relevant strategies for the protection and recovery of threatened animal species and populations within the park, as required. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA)
2. Undertake habitat restoration or enhancement to support threatened animal populations. (**DBCA**)



Management issues

10. Fire management

Most of the regional park lies within either the Bunbury or Eaton-Australind gazetted fire districts, where the Department of Fire and Emergency Services (DFES) has responsibility for bushfire suppression. Outside of gazetted fire districts, DBCA is responsible for suppression on all CALM Act lands and local government authorities are responsible for suppression on remaining lands within the park. Pre-suppression on UCL and unmanaged Crown reserves within gazetted town sites is the responsibility of DFES and outside of gazetted town sites is DBCA responsibility. Pre-suppression and post-suppression on remaining lands in the park are the relevant land managers' responsibilities.

Most of the regional park contains flammable vegetation that is bushfire prone and able to support a bushfire or is vulnerable to bushfire attack and is subject to *State Planning Policy 3.7*, which directs how land-use planning for new developments is to address bushfire risk management in WA. Most of the park is bounded by private properties (Map 1) and there is often minimal to no physical separation (firebreaks or access) between the park vegetation and urban development making fire mitigation actions and bushfire suppression operations more complex.

Many native plants depend upon fire for regeneration and the germination of seeds. However, no single fire management regime is suited for all species and ecosystems, and some species and communities can be sensitive to fire or the effects of other treatments.

Bushfire mitigation aims to reduce the risk and severity of bushfire impacts through:

- prescribed burning and other treatments[13] to reduce the amount of combustible fuel
- asset protection by using appropriate building designs and materials, and setbacks
- engaging and educating communities to maintain firebreaks and create fire resilient properties.

DBCA mitigates bushfire risk, protects lives and property and maintains biodiversity on DBCA-managed lands within the regional park through the implementation of an annual burn program that involves an extensive planning, consultation and approval process to ensure that all risks and priorities are considered.

Community engagement is key in reducing the impact of bushfires on private properties.

Management objective: To manage fire to protect people and communities from the impacts of bushfire, and to apply planned fire as a management tool to maintain and enhance the natural environment, in partnership with other stakeholders and the community.

Management strategies

1. Develop fire management guidance for the park, for inclusion in annual indicative burn programs, that considers risks, priorities, and environmental and cultural values of the park. (**DBCA, DFES,** CoB, SoC, SoD, SoH, WC, DoC, DWA, DPLH, DWER)
2. Undertake prescribed burning and fire mitigation, preparedness, response and recovery measures within the park in consultation with the community, key stakeholders, DFES and land managers in accordance with the requirements of the *Emergency Management Act 2005*, *Bush Fires Act 1954* and other relevant legislation. (**DBCA, DFES, CoB, SoC, SoD, SoH**, **WC, DoC, DWA, DPLH**)

[13] Other treatments could include mechanical methods (such as mulching, pruning, ploughing or slashing), chemical methods (such as spraying weeds and grasses before they emerge or mature) and grazing.

Key performance indicator		
Target	**Performance measure**	**Reporting**
Fire management guidance for the park is developed, and implemented in accordance with this guidance	Fire management guidance for the park that proposes fire prevention, preparedness, response and recovery measures to reduce the risk of bushfire to life, community and park values and maintain ecologically appropriate fire regimes	Every five years

11. Weeds and pest animals

Weeds

Environmental weeds are plants that invade natural ecosystems and negatively affect the survival of native plants and animals through reducing biodiversity, competing with native species for space, light, nutrients and water, disrupting ecosystem processes, altering fire regimes, changing and reducing native animal habitat and resources, and landscape and scenic values.

Wetland infested with arum lily. Photo – Jenny Kikeros/DBCA Herbarium volunteer

There are 114 weed species that have been recorded in the park[14]. The most taxa-rich of the 28 weed plant families are Poaceae (grasses – 21 taxa), Fabaceae (legumes, peas and wattles – 10 taxa) and Asteraceae (daisies – 7 taxa). Weed invasions have been reported for the Leschenault Estuary (Pen *et al*. 2000), Manea Park (70 species, Bischoff 2003), Maidens Reserve/Shearwater Tuart Forest (55 species, Ecoscape 2002), Wardandi Flora Reserve (Shire of Harvey 2012), Eelup/Elbow wetland and Leicester Reserve (Shire of Dardanup 2008), Millars Creek (Waters 2017), Collie River (Leschenault Catchment Council 2008) and Brunswick River (Leschenault Catchment Council 2006). Weeds are a major issue across many parts of the park (Table 7), particularly in open and/or previously cleared/grazed areas, along boundaries, along waterways and drainage lines, or in areas of disturbance such as along roads and tracks, and recreation sites.

Table 7. Weeds in the park

Particular weeds of concern within the park include:	
Sydney golden wattle (*Acacia longifolia*)	blackberry (*Rubus ulmifolius*)
lantana (*Lantana camara*)	madeira or potato vine (*Anredera cordifolia*)
bridal creeper (*Asparagus asparagoides*)	narrowleaf cottonbush (*Gomphocarpus fruticosus*)
arum lily (*Zantedeschia aethiopica*)	pampas grass (*Cortaderia selloana*)
lupin (*Lupinus cosentinii*)	watsonia (*Watsonia bulbillifera*)
cape tulip (*Homeria flaccida*)	perennial veldt grass (*Ehrharta calycina*)
annual veldt grass (*E. longiflora*)	bulrush (*Typha orientalis*)[15]
Weeds invading and replacing estuarine shoreline vegetation (Pen *et al.* 2000) include:	
couch (*Cynodon dactylon*)	kikuyu (*Pennisetum clandestinum*)
saltwater couch (*Paspalum vaginatum*)	buffalo grass (*Stenotaphrum secundatum*)
pigface (*Carpobrotus edulis*)	

DBCA applies the regionally-based *Weed Prioritisation Process*, which involves the prioritisation of weed species for control through a 'species-led' approach, an 'asset-protection-based' approach and other social, cultural, economic, good neighbour and resource considerations, including plants that are declared pests under the *Biosecurity and Agriculture Management Act 2007*, *Weeds of National Significance* or are on the *National Environmental Alert List*.

[14] There has been no full inventory of weed species within the park.

[15] Bulrush is a native species (Keighery and McCabe 2015) and can become a weed in suitable habitat within the park.

Pest animals

Pest animals are those species that have the potential to cause significant environmental, social and economic impacts on local communities, visitors and natural values within the park (Table 8) through direct effects such as predation, habitat destruction, competition for food and territory, and introduction of disease, and through environmental degradation, for instance from overgrazing. Pest animals can be either native species that are impacting on natural values (for instance, from unsustainable populations) or introduced species that have become established as wild or naturalised populations. Native animals are protected under the Biodiversity Conservation Act, which places limits on the control of pest species on private and other lands, and a range of fauna licences may be needed for management of native animals that are considered pests.

Table 8. Pest animals and management options in the park

Fox (*Vulpes vulpes*)
Fox baiting is generally unsuitable within the park (except where baits are tethered and in areas away from the public) due to proximity to urban areas and high use by the community including for dog walking. Other techniques such as foothold trapping and den management (SWCC 2015) may be suitable for fox control. The use of Canid Pest Injectors could also be considered.
Feral cat (*Felis catus*)
Trapping. In addition to requirements under the *Cat Act 2011* and any Local Laws, feral cat management must minimise the potential risks of harm to owned (domestic) cats through notifications, identification (including microchip scanning) and other means in accordance with policies and standard operating procedures.
European rabbit (*Oryctolagus cuniculus*)
Rabbit control may be best achieved through (i) existing biological control such as the Rabbit Haemorrhagic Disease Virus (or 'calicivirus') and myxomatosis, (ii) warren fumigation and/or ripping, (iii) baiting with pindone oats (although there are risks associated with this, SWCC 2015), and/or (iv) rabbit-proof fencing at specific sites to protect important natural values.
Little corellas (*Cacatua sanguinea*), galahs (*Eolophus roseicapilla*)
Control measures for corellas and other flocking cockatoos should be well planned, based on an understanding of the behaviour of the birds, varied frequently, integrated with different methods and be persistent, and may include scaring techniques, trapping and targeted shooting. The City of Bunbury and Shire of Harvey have corella control programs in place.
Feral European honeybee (*Apis mellifera*)
Park managers seek the support of the public in detecting and reporting occurrences of feral honeybee hives within the park. Where feral honeybee hive sites are found, they can be removed by apiarists or by other means as a first priority before other management options are used such as fumigation or hive destruction, depending on the availability and suitability of options in each case.
Mosquitos (*Aedes camptorhynchus* and *A. vigilax*)
Mosquito management programs include monitoring of tides and weather (which can affect mosquito borne virus activity and breeding patterns), trapping, pre-treatment surveillance, runnels, larviciding, post-treatment surveillance, adulticiding (or fogging), and public awareness/notification. During spring and early summer, tides and mosquito larvae are monitored prior to implementing a targeted control program on the samphire saltmarshes, including floating bait dispensers and spraying (by helicopter) to limit adult mosquito numbers. Monitoring continues from September to April. Treatments may still be needed in late summer-autumn while water levels are lower. Runnels, which are installed in tidal areas at Mangrove Cove, Point Douro, Bar Island and Knapp's/Crimp Channel wetland, provide access for fish to feed on larvae and help the draining of tidal waters. Runnels may deteriorate over time and need maintenance. Monitoring and treatment on seasonal wetlands are also undertaken as needed. Control activities on CALM Act lands may require lawful authority and disturbance assessment by DBCA, and in nature reserves and high conservation value wetlands approval of the Conservation and Parks Commission.
Western grey kangaroo (*Macropus fuliginosus*)
Monitoring of kangaroos and their impacts may be needed to provide a trigger for management control. Potential control approaches include exclusion fencing, reducing numbers through targeted shooting or relocation, fencing and revegetation of open grazing areas (SWCC 2015).
House sparrow (*Passer domesticus*), rainbow lorikeet (*Trichoglossus haematodus*) and ferret (*Mustela putorius furo*)
Park managers seek the support of the public in securing captive animals in enclosures and detecting and reporting any occurrences of these species within or near the park.
Insect outbreaks
A range of insect species such as psyllid (*Creiis periculosa*), tuart bud weevil (*Haplonyx tibialis*), tuart longicorn beetle (*Phoracantha impavida*), jarrah leafminer (*Perthida glyphopa*), marri spitfire (*Perga* sp.), gum leaf skeletoniser (*Uraba lugens*), Helena gum moth (*Opodiphthera helena*) and the bulls-eye borer (*Phoracantha acanthocera*), may impact flooded gum, tuart, jarrah, marri and other tree species, sometimes in conjunction with other threatening processes such as water stress or inappropriate fire.

Pest animal control is a partnership and managing agencies should work wherever possible with the community, especially with neighbours and biosecurity groups, to share in the control and optimise the benefits across the

landscape from works undertaken. The priorities and programs for pest animal (as well as weed) management are developed in collaboration with local government authorities, Department of Primary Industries and Regional Development (DPIRD), landowners and local Recognised Biosecurity Groups such as the Leschenault Biosecurity Group and the Peel Harvey Biosecurity Group. Priorities for pest animal programs will be based on their impact on key assets/threatened species and feasibility of control.

Management objective: To minimise the negative impacts of weeds and pest animals on the assets/values within the park.

Management strategies

1. Prepare and implement weed and pest animal management guidance for the park that considers prioritising control on an 'asset-protection-based' and 'species-led' approach and other considerations including staff awareness and training, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)
2. Limit the opportunity for weeds to be introduced and established by (i) applying appropriate hygiene practices to machinery entering the park, (ii) minimising disturbance of soil during operations, and (iii) restricting the importation of soil to only those sources with strict soil quarantine, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)
3. Maintain monitoring and management programs for mosquitos through the Leschenault and Geographe Mosquito Management Groups and provide for minimal environmental impact mosquito control methods and programs, where appropriate. (**DoH, CoB, SoC, SoD, SoH, DBCA**)
4. Work with relevant agencies, adjacent land managers, other organisations, community groups, visitors and volunteers to facilitate effective, coordinated management of priority weeds and pest animals, where relevant and appropriate. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA, DWER, DPLH)

Key performance indicator

Target	Performance measure	Reporting
Weeds and pest animal management guidance for the park is developed, and implemented in accordance with this guidance	Management guidance that prioritises the management of weeds and pest animals	Every five years

12. Plant and animal diseases

Phytophthora Dieback refers to the disease caused by soil-borne plant pathogens from the genus *Phytophthora*. *Phytophthora cinnamomi* is considered the most significant plant disease in the regional park because many of the plant families most at risk from *P. cinnamomi*, such as Proteaceae, Myrtaceae, Ericaceae and Fabaceae (Shearer *et al.* 2004) are present within the park, and *P. cinnamomi* can irreversibly change the composition of many plant and animal communities (Shearer *et al*. 2009). Although much of the park has not been surveyed for Phytophthora, *P. nicotianae* has been recorded in Manea Park, *P. multivora* has been recorded at the nearby Edith Cowan University campus, and Phytophthora Dieback has been recorded in Manea Park, at Australind on unmanaged R33247 and WAPC freehold Lot 31 on Plan 232758, and along the Brunswick River at Wellesley on R43511, R45532 and Lot 500 on Diagram 74316.

Boot cleaning station in Manea Park. Photo – Paul Roberts/DBCA

Phytophthora Dieback can be introduced and spread by vectors such as motor vehicles, earth-moving equipment, humans (through walking), bicycles, horses and rehabilitation planting through the movement of infested soil and plant matter. As *Phytophthora* species are all soil-borne pathogens, measures to reduce the spread of *P. cinnamomi* will be beneficial in reducing the spread of other *Phytophthora* species, other soil-borne pathogens and some weed species. Phytophthora Dieback is best managed as part of an integrated disease management strategy for the whole park. Factors triggering consideration of *P. cinnamomi* surveys may be proposed tracks/facilities or observed expansion of disease extent.

Honey fungus (*Armillaria luteobubalina*) has been found in the Maidens area (Hart Simpson and Associates 1994) and is a major plant pathogen in coastal dune vegetation, including tuart forests and banksia woodlands of the Spearwood Dune System.

Marri is susceptible to cankers[16] caused by the endemic fungus *Quambalaria coyrecup*, which results in high disease incidence and mortality of trees (Paap *et al*. 2018).

Dramatic declines in health of tuart trees over the past two decades (tuart decline) may be due to a combination of factors such as insect damage, hydrological change including increased alkalinity and salinity, loss of beneficial mycorrhizal fungi, altered fire regimes and infection by pathogens such as *P. multivora* and Armillaria.

Myrtle rust (*Austropuccinia psidii*) occurs in all States and Territories of Australia except SA and WA, and it is considered highly likely it will enter WA at some point. Myrtle rust is a declared 'pest' under the *Biosecurity and Agriculture Management Act 2007* and a biosecurity threat for WA. Given the proximity of the park to human settlement (plant nurseries/tourist traffic) and that the park is in the climatic zone thought to be suitable for myrtle rust establishment, an incursion could occur here.

Diseases in native animals can contribute to poor population health, reduced fertility and local decline of populations, and appropriate hygiene is required for native animal management activities and is also important in caring for or applying first aid to sick or injured wildlife.

Management objective: To minimise the impact and spread of plant and animal diseases.

Management strategies

1. Prepare and implement Phytophthora Dieback management guidance for the park. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA)
2. Consider appropriate hygiene measures (including hygiene management plans and training) for management operations (including use of contractors) and proposed developments based on risk according to DBCA's Phytophthora Dieback Management Manual. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DPLH**)
3. Provide information, interpretation and education material that promotes an understanding and appreciation of the threat that diseases pose to the park's native plant and animals, and to staff and wildlife carers handling or coming into contact with wildlife. (**DBCA**)

13. Climate change

The temperate climate of the regional park is characterised as 'Mediterranean' with hot, dry summers and mild, wet winters, and is controlled by the eastwards passage of anticyclones and associated troughs (Oma 1989). Climatic data recorded from the Bunbury weather station (Site No. 009965) for 1995-2019 shows that the mean minimum temperature ranges from 7.1°C in July to 15.8°C in February and the mean maximum temperature ranges from 17.3°C in July to 30.0°C in February (Bureau of Meteorology 2019). The mean annual rainfall (1995-2019) of 726.1mm falls mainly between May and September, with the highest mean rainfall in July (142.5mm) (Bureau of Meteorology 2019).

Climate can significantly affect the physical and environmental values of the park and increase the pressures on individual species, communities and ecosystems. The seasonal climate variations from year-to-year and climate cycles are important factors in determining vegetation patterns, their condition and vulnerability to other climate induced impacts such as bushfires, cyclonic summer rainfall, windstorms and drought, as well as habitat conditions for native animals.

Climate change projections for the south-west of WA (CSIRO and BoM 2015) show continuing trends of:

- decreasing winter, spring and annual rainfall
- increasing mean, maximum and minimum temperatures in all seasons
- increasing extreme temperatures, frequency of hot days and duration of warm spells
- increasing intensity of extreme rainfall events and time spent in drought
- increasing mean sea level rise
- harsher fire-weather climate.

[16] Cankers are formed where fungi invade trunks, branches or twigs of trees through wounds or areas of stress and form gum staining, bark cracking or shedding, or lesion symptoms leading to the death of areas of tree tissue.

Coastal erosion and inundation are some of the most significant long-term threats to the park's coastal areas (Section 7), which are west-facing sandy beaches that are exposed to south-westerly swells and the north-westerly storms.

Management objective: To minimise the effects of climate change on park values.

Management strategies

1. Consider the results of climate change information, as it become available, and incorporate this into adaptive management strategies at the regional, community and species level. (**DBCA**, CoB, SoD, SoH, WC, DoC, DWA, DWER)
2. Continue existing fire, pest and weed management programs to increase the park's ability to cope with future disturbances, including climate change, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)

14. Pollution, contamination and waste management

Potential pollution from within the park or surrounding lands may impact on park values, including from:

- surface water pollution – for example chemicals, nutrients or weeds from industrial areas; nutrients carried in sediments through the stormwater system; and garden fertilisers, herbicides and pesticides used in urban areas
- groundwater pollution – for example seepage from septics, and nutrients and chemicals from agricultural and industrial activities
- marine pollution – for example fuel and oil spills, litter (such as plastics and fishing line), bilge and ballast discharge from ships, and sewage
- land pollution – for example illegal dumping of urban, visitor, industrial and agricultural waste including rubbish, scrap or soil; and inappropriately disposed solid and liquid waste generated by visitors at camping areas or from recreational activities.

Contaminated sites

There are 14 sites in the regional park that have been reported as a known or suspected contaminated site in accordance with the *Contaminated Sites Act 2003* and are subject to Contaminated Sites Regulations 2006. Seven of these sites are confirmed contaminated sites identified on DWER's 'Contaminated Sites Database' and seven sites are other reported sites listed on the 'Reported Sites Register'.

Waste management

Illegal dumping of rubbish is a significant management issue in some areas of the park. The management of rubbish and wastes will focus on:

- the enforcement of relevant local laws or the application of the *Litter Act 1979* or CALM Act and regulations relating to rubbish dumping
- where appropriate, minimising and/or maintaining rubbish disposal facilities consistent with relevant managing agency policies and local laws
- providing visitors with appropriate information and education about waste management, and encouraging them to take their rubbish home where bins are not provided
- minimising unmanaged access into the park through the provision of boundary fencing (Section 4).

Management objective: To minimise the production and impacts of pollution and waste on park values.

Management strategies

1. Identify and report any potential contaminated sites in accordance with the requirements of the *Contaminated Sites Act 2003*. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DPLH, WAPC, DWER**)
2. Investigate, remediate and monitor confirmed contaminated sites, in accordance with the requirements of the *Contaminated Sites Act 2003*. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DPLH, WAPC, DWER**)
3. Assess and implement site design and management measures to reduce littering in the park, where relevant and appropriate. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DPLH, WAPC, DWER**)

4. Provide interpretive and education material to inform park visitors and neighbours about the adverse impacts of pollution and inappropriate litter or waste disposal, where appropriate. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA**)

15. Rehabilitation

There are many areas in the park that have environmental degradation resulting from grazing, weed infestation, previous bushfires, unauthorised access, recreational activities or development, and utilities and service corridors, which have modified vegetation communities and some park edges and significant patches have little to no native vegetation.

The necessity for, complexity in, and prioritisation of rehabilitation[17] or restoration can vary significantly with the type and extent of disturbance, the proposed use or values of an area and its natural condition, resources available, land tenure, community support and the type of vegetation community or landscape position to be repaired. Some principles for considering potential rehabilitation or restoration include:

- as far as possible, avoiding disturbance
- encouraging disturbed areas to regenerate naturally
- areas with high conservation value should be considered priorities for restoration
- areas that would buffer or expand habitat for threatened species or communities and improve key landscape linkages should be considered priorities for rehabilitation
- identification of priority areas for restoration or rehabilitation should consider aspects of feasibility
- plant material (including seeds, cuttings, brushing and seedlings) should be preferentially sourced from within the park (and only for rehabilitation projects within, directly impacting or benefitting the park) as close as possible to the site, and where this is not reasonable and practicable, then in order from nearby areas, within 50km and on the Swan Coastal Plain or from other sources
- mulch and soil used in rehabilitation works should not contain unwanted weed seeds or plant disease.

Areas within the park that may be potential candidates for rehabilitation projects include:

- cleared areas north of Eelup/Elbow wetland, to create ecological connections to the Collie River
- cleared area on the river at The Junction/Twin Rivers
- degraded areas within Point Douro
- degraded areas within Manea Park
- riparian areas along the Collie and Brunswick Rivers
- degraded dunal and woodland areas within Shearwater Tuart Forest and Maidens Reserve
- degraded dunal areas within the Leschenault Peninsula Conservation Park.

Management objective: To rehabilitate or restore degraded areas in the park to enhance ecosystem functionality and help protect park values.

Management strategies

1. Undertake rehabilitation or restoration in accordance with best practice principles and standards, and coordinate works with other management operations including protecting treatment areas from threatening processes. (**DBCA**, CoB, SoC, SoD, SoH)
2. Consider the participation of volunteers, school groups and local communities in rehabilitation works. (**DBCA, CoB, SoC, SoD, SoH**)

[17] Rehabilitation aims to reinstate some degree of ecosystem functionality on degraded sites (where ecological restoration is not the aspiration), whereas ecological restoration aims to recover and return an ecosystem to its prior condition.

Cultural heritage

16. Noongar cultural heritage

Noongar people are the traditional owners of the south-west, which includes the regional park. There are fourteen Noongar language (dialect) groups across the south-west, with each group relating to specific geographic areas with ecological distinctions. The park is located within four of these groups – *Pinjarup*, *Wadandi*, *Kaneang* and *Wiilmen*, although the spelling and boundaries of these groups may vary.

Noongar people have inhabited the south-west for up to 50,000 years (Dortch and Dortch 2001, Turney *et al*. 2001) and have developed a close association with their *boodja* (land or country).

Within the park:

- four registered Aboriginal heritage sites and four sites that are not registered ('other heritage place') occur within the Leschenault section of the park
- one registered Aboriginal heritage site and one 'other heritage place' occur within the Preston River to Ocean section of the park
- two registered Aboriginal heritage sites and eight 'other heritage places' occur within the Preston River Link.

The Leschenault Estuary and Preston, Collie and Brunswick rivers (and their tributaries) are mythological sites associated with the Waugal that is believed to have created many of the rivers in the south-west, including the Collie, Brunswick and Preston rivers, and is still present in all these sources of water. When approaching pools or places for swimming or fishing where the Waugal was known to reside, propitiatory rituals such as offering articles of food, singing and throwing sand into the water are conducted so that no harm would befall those who approached.

The Junction/Twin Rivers where the Brunswick River (left) meets the Collie River (centre and right). Photo – Lorna Charlton/DBCA

Manea Park was a hunting and camping area traditionally used by elder Noongar people, who would access the Preston River and adjacent swamplands for fresh water supplies and food, and woodland areas in Dalyellup, Shearwater/Usher and Manea Park were important corridors used for hunting and accessing the coast for fishing (WAPC 2011).

A range of other Aboriginal heritage sites are described across the park including artefacts/scatters, camps, modified tree, ceremonial, man-made structures, skeletal material or burial sites. However, it is likely that registered sites only represent a small proportion of the actual Aboriginal heritage sites within the regional park. Aboriginal heritage sites are protected, whether known or not, and large areas within the park have not been the subject of formal heritage surveys. DBCA has a Noongar Standard Heritage Agreement (NSHA) with Gnaala Karla Booja (GKB) native title group which establishes a uniform and efficient Aboriginal heritage survey regime for land clearance and the protection of sites/objects. Rivers, estuaries, foreshores and wetlands should be a focus of cultural heritage management, and due diligence should be exercised during any on-ground works (such as fencing and revegetation) given the potential for archaeological sites to exist. The State Government's *Aboriginal Heritage Due Diligence Guidelines* guides management actions to ensure Aboriginal heritage sites are not adversely impacted.

Native title

The South West Native Title Settlement (SWNTS) Indigenous Land Use Agreements were registered by the National Native Title Tribunal on 25 February 2021 which has the effect of resolving native title in the south west of WA. The SWNTS is a multifaceted resolution of native title matters over Noongar country which covers an area of 200,000km^2 ranging from Jurien Bay on the mid north west coast, east to Hyden and south to Hopetown on the south coast. The SWNTS formalises recognition of Noongar people as the traditional owners of south west WA and establishes six Noongar Regional Corporations. This management plan is located within the footprint of the Gnaala Karla Booja Regional Corporation (GKBRC). The SWNTS commits DBCA to entering into cooperative and joint management agreements with the GKBRC for conservation estate managed by DBCA within the GKB Agreement Area. The SWNTS also provides substantial land financial benefits to Noongar people.

Customary activities

The CALM Act (and associated regulations), together with the Biodiversity Conservation Act, allow Noongar people to access DBCA-managed lands to conduct traditional activities, subject to regulations. Amendments to the Metropolitan Water Supply, Sewerage and Drainage By-laws 1981 and the Country Areas Water Supply By-laws 1957 also enable Noongar people to legally do certain customary activities in Public Drinking Water Source Areas (PDWSAs). There is also provision in the SWNTS for access to unmanaged reserves and UCL for customary activities. Such traditional customary purposes may be for medicinal, artistic, ceremonial or other cultural purposes. However, certain customary activities, such as hunting, may be inappropriate in places where it is evident there is a real and significant risk to public safety, the protection of native plants and animals or other uses, users or values, as outlined in DBCA's *Guide to Aboriginal customary activities*.

Working relationships with Noongar people

The CALM Act has a management objective "*to protect and conserve the value of the land to the culture and heritage of Aboriginal people*" and establishes legal frameworks to enable joint management of lands and waters between DBCA and other parties. The SWNTS provides for a cooperative and joint management framework for all CALM Act land within the settlement area and establishes a formal governance arrangement for DBCA and Noongar people to work together. GKB and other local Noongar people have been consulted on and involved in the preparation of this plan.

Reconciliation Australia promotes and facilitates respect, trust and positive relationships between the wider Australian community and Aboriginal people through its *Reconciliation Action Plans* program. Management agencies in the regional park have developed and are implementing reconciliation action plans (RAPs). A region-wide *Bunbury-Geographe Reconciliation Action Plan Reflect* has been developed for the City of Bunbury and the Shires of Capel, Dardanup and Harvey.

Some of the ways that the cultural ties between Noongar people and *boodja* can be better appreciated, cross-cultural awareness enriched and working relationships strengthened is through:

- Noongar naming of reserves and other park features/places
- appropriate signage and cultural interpretation at key sites around the park
- developing walk trails that tell stories of Aboriginal Dreaming, the significance of key sites and other aspects of Noongar culture.

Employment of Noongar people, organisations and businesses is another way of creating greater cross-cultural awareness upon which to build better working relationships between managing agencies and Noongar people. It is also an important mechanism for developing expertise among Noongar people which can lead to long-term employment.

There is considerable and growing interest in Aboriginal tourism in WA, and there are opportunities to capitalise on this interest given the closeness of the regional park to urban areas, which can deliver tourism and other social and economic benefits to Noongar people (Government of Western Australia 2011).

Management objectives: To identify and protect significant Aboriginal places and values. To involve Noongar people in managing the park.
Management strategies:

1. Protect, maintain, manage and where possible record and monitor known or identifiable sites of Noongar cultural heritage significance in accordance with the requirements of the *Aboriginal Heritage Act 1972*[18]. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)
2. Maintain and build cooperative management arrangements with Noongar people for lands within the park, consistent with legislation, policy and the SWNTS. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)
3. Where appropriate, undertake cross-cultural awareness, Aboriginal heritage site identification and other relevant Noongar cultural heritage training for relevant managing agency staff. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)

Key performance indicator

Target	Performance measure	Reporting
No unapproved disturbance of registered Aboriginal heritage sites because of park management operations	Number of registered Aboriginal heritage sites disturbed without formal approval through the GKB/SWALSC NSHA and Aboriginal Heritage Act processes	Annually

17. Other cultural heritage

A range of other cultural heritage sites occur within the park associated with the initial exploration and settlement in the early years of the Swan River Colony and the subsequent development of the greater Bunbury region including:

- the twin peaks of the Maidens (Heritage Place No. 5741) were identified as significant landmarks and ocean navigational references by English and French maritime explorers from the late 1790s
- Bunbury's first settlers were John and Helen Scott who arrived in 1838 and established a farm at Eelup[19] (Heritage Place No. 6617) at the request of landowner Governor James Stirling
- Thomas Little also arrived in 1838 and built a homestead at Belvidere (Heritage Place No. 17632) on the Leschenault Peninsula that was bought by Charles Robert Prinsep, which was originally part of land granted to William Hudson in 1831 (Wooltorton 2013)

The twin peaks of the Maidens are a part of the Preston River to Ocean bushbelt. Photo – Shem Bisluk/DBCA

- William Kernott Shenton established a house on the banks of the Collie River in the 1830s (Shire of Harvey Municipal Inventory)
- Point Lautour, at the junction of the Collie and Brunswick rivers, was named after Colonel Peter Augustus Lautour who held the first land grant in the Leschenault area in 1830 (Shire of Harvey Municipal Inventory)
- the Australind Memorial (Heritage Place No. 11964) on the eastern shore of Leschenault Estuary commemorates the vision of the Australind Settlement
- the wooden whaler '*North America*', which was carrying whale oil and provisions, was shipwrecked at Mangrove Cove (Heritage Place No. 5660) in 1843
- in 1849 William Forrest built the Forrest Homestead (Heritage Place No. 381) at Picton, which lies adjacent[20] to the Preston River Link. In 1851 Forrest built a water mill and mill race (Heritage Place No. 5676) to produce flour for the district
- the wooden brig '*Annie M Young*', which was transporting jarrah and other cargo, was shipwrecked along the North Beach (Turkey Point) foreshore (Heritage Place No. 5658) in 1876
- a memorial to convict John Boyle O'Reilly, who escaped custody in 1869 and hid in the dunes in Leschenault Peninsula Conservation Park before boarding the American whaler '*Gazelle*' and escaping to America, and other convicts that worked in the district stands at the entrance to Leschenault Peninsula Conservation Park (Heritage Place No. 3163)

[18] The *Aboriginal Heritage Act 1972* is under review and may change during the life of this plan.
[19] The spelling for this corresponds to the Heritage listing but is equivalent to Elaap.
[20] The registered site extends into the park.

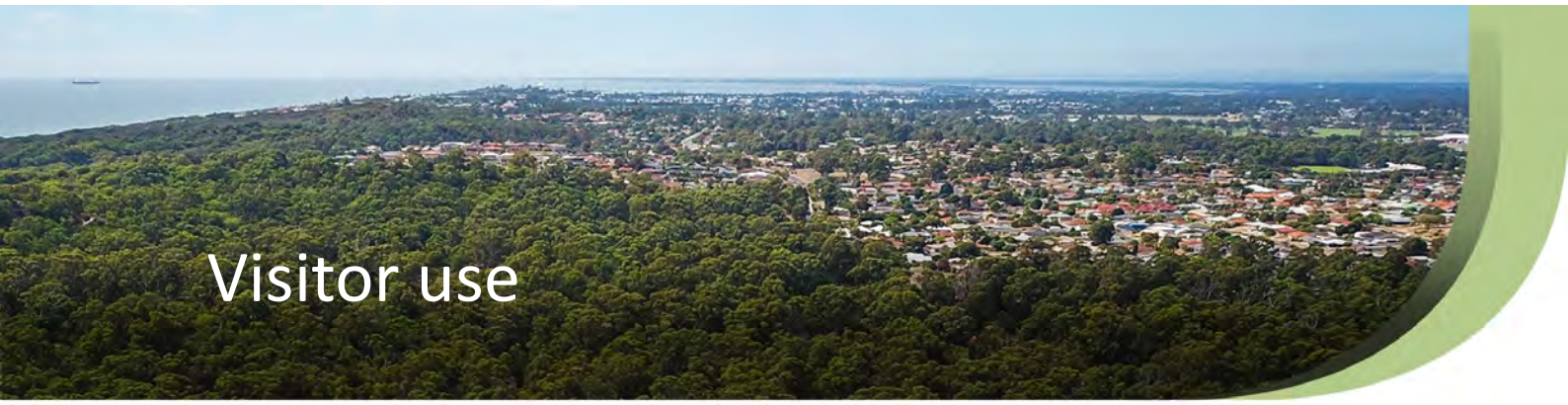
- Picton Inn (Heritage Place No. 382), which lies adjacent[21] to the Preston River Link, was built in about 1850 and serviced the needs of travellers using the Preston River ford
- Thomas Walter's Turkey Point holiday resort opened in 1918 (Heritage Place No. 5637) and was a popular local holidaying destination up to the 1950s, involving boating across Leschenault Estuary at the time to access tea rooms, accommodation, and recreation facilities
- the Preston River to Ocean bushbelt (Heritage Place No. 5670) was listed on the City of Bunbury Municipal Inventory in 1996 as a result of proposed residential developments and following the initial Preston River to Ocean link proposed by Bernhard Bischoff and the subsequent recognition by the then Department of Environmental Protection as the 'South Bunbury Bushland' for its "significance as a unique sequence of vegetated landform elements typical of the Swan Coastal Plain in an atypical combination close to the Bunbury urban area" (Section 1).

Management objective: To identify and protect other cultural heritage values of significance.

Management strategies

1. Protect, maintain, manage and where possible record and monitor known or identifiable other sites of cultural heritage significance. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER, DPLH, WAPC**)
2. Ensure that other cultural heritage values of the park inform and guide management actions, where relevant and appropriate. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)

[21] The registered site extends into the park.



Visitor use

18. Visitor use and planning

The regional park is of high recreational value as it provides a range of nature-based recreation opportunities associated with coastal, riverine and bushland environments within and close to urban populations of the greater Bunbury region. This plan will encourage visitor use while ensuring that the level and type of use are sustainable and minimise conflict with other park visitors and values.

Visitation to the regional park is likely to be high given the proximity of the park to urban areas. More than 275,000 visits alone were recorded for Leschenault Peninsula Conservation Park in 2018–19, which increased from 93,270 visits in 2011–12. Visitor numbers to the park are expected to continue to increase with further residential developments planned in the greater Bunbury region and greater awareness of the regional park's attributes. Local communities are likely to be the dominant users of recreational areas of the park and are increasingly valuing and using the open spaces and facilities of local park areas.

The boat ramp at Ridley Place provides access through the park to the Leschenault Estuary for various boating activities. Photo – Shire of Harvey

Existing recreation sites and opportunities in the park are shown on Maps 4a and 4b. The most popular recreation activities in the park include bushwalking, cycling, nature observation, fishing, picnicking, dog walking and scenic driving (Table 9).

Table 9. Recreation activities in the park

Boating
DoT is responsible for safety and navigation on waters surrounding the park, and the *Bunbury-Busselton Boating Guide* provides guidance for boating. Formal boat ramps occur at Ridley Place in the Leschenault Estuary and Eaton Foreshore, Pelican Point and 'The Elbow'/Eastwell Road along the Collie River (with floating jetty). The disturbance of estuarine sediments from boating access is an issue along the Estuary side of the Leschenault Peninsula Conservation Park, and boat landing/access is restricted to non-motorised boats. The jetty at Tuart Grove is proposed to be removed (for boat access). Boating may also contribute to riverbank and foreshore erosion.
Bushwalking
Bushwalking trails include the dual-use Tuart Walk/Dalyellup-Usher trail, Maidens Reserve walk trail network, Pultenaea Loop (Manea Park), Mangrove Cove boardwalk, Eaton Foreshore Walk through to Watson Reserve, Collie River foreshore walk (north side), Leschenault Estuary trail, Brunswick River foreshore walk (north western side), Millars Creek, John Boyle O'Reilly walk, Belvidere Interpretive Walk and Harris Track. More bushwalking trails may be proposed for the park in conjunction with future detailed recreation area/site or urban development planning.
Camping
Designated camping facilities are at Belvidere campground and The Cut campground (accessed by boat, or by walking or cycling on the management access track from Belvidere). Informal camping is not allowed in the park. Campfires and firewood collection can have detrimental effects on the natural environment. Hot ash and coals from beach campfires, as well as glass and other rubbish thrown into campfires, can be a visitor risk, and campfire escapes are a cause of bushfires. Gas barbecues are provided at major recreation sites in the park, but some campfires are allowed in fire rings at Belvidere and The Cut, except when fire bans apply.
Cycling

Cycling occurs in areas of the park also used for bushwalking such as the dual-use Tuart Walk and Pultenaea Loop. The *Bunbury-Wellington 2050 Cycling Strategy* (DoT 2018b) outlines potential cycling opportunities in the region including proposed new or improved existing facilities along the eastern side of Leschenault Estuary, the western side of Leschenault Estuary, a bridge[22] across The Cut to facilitate a future cycling loop around Leschenault Estuary, along the Collie, Brunswick and Preston rivers, along Millar's Creek between Collie River and Forrest Highway, and Five Mile Brook. Local government authorities also have local bike plans identifying local priorities for bicycle networks. The South West Mountain Bike Master Plan (WestCycle 2015) identifies the Maidens Reserve and the edges of the Collie and Preston rivers as potential areas for future mountain bike trail development. Sandy soils and sensitive environments in many areas of the park may require some trails to be hardened.

Day-use

Day-use sites across the park provide a range of facilities such as barbecues, toilets, tables, playgrounds and shelters, as well as opportunities for a range of activities such as nature appreciation, lookouts, interpretation and bushwalking. There is potential for new or upgraded facilities for many park areas and sites. Parts of Maidens Reserve have potential for a regional-level attraction including a lookout facility at the old trigonometrical station.

Dogs and cats

Local government authorities are responsible for administering and enforcing the *Dog Act 1976* within local government District boundaries including:

- registration of dogs
- requiring dogs to be under control or on leash at all times in public places
- designating 'Dog Exercise Areas' where dogs are permitted off-leash within public areas under local government authority control or management
- designating dog-prohibited areas within public areas under local government authority control or management.

Under the CALM Regulations, dogs are not permitted on DBCA managed CALM Act lands unless an area has been gazetted or sign posted as a designated area for dogs. Dogs are prohibited within existing DBCA managed reserves within the park, with the exception of ocean beaches below the high-water mark in Leschenault Peninsula Conservation Park and at Mangrove Cove, provided they are kept on a leash. Dogs will not be permitted in future conservation reserves to be managed by DBCA in the park because of conservation values at Point Douro, Loughton Park bushland areas, Hay Park, Elbow/Eelup wetland and nearby river foreshore and Crown reserve 52873 at north Treendale. Within the remainder of proposed conservation reserves to be managed by DBCA dogs will continue to be permitted on-leash, which may be subject to review.

The only designated local government dog-prohibited area in the park is within Hay Park.

Local government designated off-leash Dog Exercise Areas in the park occur at Loughton Park (middle section), Pelican Point foreshore and Maidens Reserve beach in the City of Bunbury; reserve 25417 (Watson reserve), reserve 43641 (Leicester Reserve, although dogs are prohibited within the fenced possum sanctuary), reserve 24359 (Eaton Foreshore Reserve), part 25417 (Eaton Foreshore Reserve) and Hunter Park Millbridge (only between 3.00pm and 10.00am) in the Shire of Dardanup; and reserves 31576[23] and 43714 (Clifton Community Reserve) in the Shire of Harvey. In response to public comments as part of the management plan, off-leash dog exercise areas within the Shire of Harvey's Clifton Community Reserve have been reviewed. A bushland portion of reserve 43714, which is proposed to be managed by DBCA, and a portion of foreshore reserve 31576 that were previously considered to be off-leash dog exercise areas have been changed to on-leash dog areas. Other off-leash areas in the park may also be subject to review over the life of the plan. Several Dog Exercise Areas also occur next to or near the park[24].

The *Cat Act 2011* requires all cats to be sterilised, microchipped, tagged and registered, and provides for local governments to make local laws under this Act and administer and enforce the Act and Cat Regulations 2012. Local governments can designate cat prohibited areas in accordance with local laws. Cat prohibited areas in the park include Maidens Reserve, Manea Park, Hay Park and Loughton Park.

Events and group activities

In general, many organised group activities may be an acceptable use of the park, provided they:

- are sensitively located to maintain natural and cultural values
- are properly planned and managed
- do not interfere with other forms of recreation or other activities
- are safe for participants and spectators
- are not resource-demanding on managing agencies.

Special events that present opportunities for nature-based recreation may be permitted in the park, subject to the policies of, and approval from, relevant managing agencies and other authorities (such as Department of Health and DWER).

Fishing

[22] Implementation of a bridge would trigger the need for significant investment in a major re-development of the existing site at The Cut to cater for the resultant change in accessibility and visitor numbers.

[23] Part of R31576 (Lot 5117 on Plan 9821 and Lot 500 on Plan 66272) is a 'dog on-leash' area.

[24] See relevant local government authorities for details of these areas.

Fishing platforms are located at Turkey Point (The Cut) and the Elbow. Recreational fishing (freshwater and coastal) is managed under the *Fish Resources Management Act 1994* by DPIRD and is allowed within the park unless specified. Access for fishing can cause environmental degradation to riverbanks, foreshores and dune systems and existing informal access along rivers may need to be consolidated. Vehicle access to Buffalo and Belvidere beaches for recreational and commercial fishing may continue provided (i) the fragile dune systems are protected, (ii) conflict between the users of the beaches are minimised, and (iii) relevant activity codes are adhered to. Vehicle access to the Maidens Reserve beach for commercial fishing may continue in accordance with City of Bunbury's local laws and policies.

Horseriding

Horse use will continue to be permitted at City of Bunbury lands in accordance with *Reserve areas set aside for the riding of horses* Council Policy. Horseriding in areas of the park will vary with the relevant managing agency and will be reviewed on an ongoing basis. For example, horseriding in the park within Shire of Harvey managed lands near Cathedral Avenue can continue, while horse access within proposed conservation reserves to be managed by DBCA, including Manea Park, will not be permitted.

Nature appreciation

Many people use areas in the park for nature appreciation activities. Several birdwatching sites occur in the park including Point Douro and Leicester Reserve. Inappropriate interaction with wildlife can put visitors and wildlife at risk. Issues include disruption of wildlife activities such as feeding (including through poor rubbish management), breeding and/or nesting, direct injury such as nest trampling (via people, horses and dogs), or changes to habitat. Adverse effects can be minimised through the provision of information, restricting vehicle access on beaches, and the appropriate siting/design of facilities.

Remotely piloted aircraft

The Civil Aviation Safety Authority (CASA) is responsible for regulating remotely piloted aircraft or drones, model aircraft and rockets under the Civil Aviation Safety Regulations 1998 regardless of land tenure[25]. Areas where drones are not allowed to fly are identified on CASA's 'Drone safety apps', which includes an area around the Bunbury Airport. The use of drones, model aircraft and rockets on and over the park must comply with CASA regulations, Biodiversity Conservation Regulations (which provide separation distances from prescribed animals) and local government policy and directions. The use of remotely piloted aircraft for commercial or surveying purposes over DBCA-managed lands requires a licence or lawful authority in accordance with CALM Regulations.

Running and navigation activities

Orienteering, rogaining, cross-country running[26] and geocaching are appropriate within some parts of the park, with lawful authority, where they do not conflict with the protection of the natural and cultural environment, with other park visitors or management operations. The placement of geocaches should adhere to the *geocache hiding guidelines* (see geocaching.com/play/guidelines).

Sandboarding

Regulation 32 of the CALM Regulations and City of Bunbury local laws prohibits sandboarding on DBCA-managed and City-managed land respectively without lawful authority, and sandboarding will continue to not be allowed in the park because of the environmental damage that is occurring or may potentially occur.

Scenic driving and motorised recreation

Four-wheel drive vehicles can access Turkey Point and Buffalo and Belvidere beaches. Continued four-wheel drive access along the beach at Leschenault Peninsula Conservation Park can be maintained provided that the activity does not damage the fragile dune system, harm other areas with conservation and heritage values or cause conflict with other users of the beach. Four-wheel drivers must only access the beach between the high and low-water marks. Four-wheel drive and other vehicles are not allowed to access the beach next to or through Maidens Reserve.

Swimming and other water activities

Swimming occurs at Mindalong Beach, Turkey Point, Eaton Foreshore, Watson Reserve and Buffalo and Belvidere beaches. Some of these swimming sites also attract surfers and other water users. A beach for nude bathing is located along Mindalong Beach about 400m south of the Mindalong Beach steps for a distance further south of 200m.

[25] Information on safety rules for flying drones in Australia is available at casa.gov.au/drones .

[26] 'Cross-country running' includes, for the purposes of CALM regulation 50, trail running.

Recreation planning

Planning for visitor use within the park is necessary to manage the 'recreational development criteria' of visitor risk, social benefit, equity, public demand, potential economic benefit and environmental impacts caused by human activity, and needs to consider urban growth and development including the associated potential for increased pressure on the park. Recreation plans help ensure that a variety of recreation opportunities are offered in the park, help coordinate recreation developments and allocate appropriate facilities and services to those areas of the park best able to sustainably accommodate them. Changes in recreational development criteria may result in adjustments to prioritised recreation planning, sites and activities and the way visitor impacts are managed during the life of the plan.

Lookout overlooking Collie River in the Shire of Dardanup's Pratt Road Reserve. Photo – Paul Roberts/DBCA

Recreation plans reflect the management zones and land uses (Section 5, Appendix 3). Generally, access to the 'Conservation and Protection' zones of the park will be limited, with an emphasis on the enjoyment of nature, interpretation and habitat protection. The 'Natural Environment Use' zones will have greater access, primarily by walking trails and cycle paths, and the provision of some facilities is anticipated. The 'Recreation' zones will be the most intensively used and modified sections of the park, which will have an emphasis on providing well-designed recreation facilities without detracting from the natural or cultural values of the park.

Risks to visitors within the park include falling tree limbs, slips/trips and falls, mosquito, snake and tick bites, coastal and inland water risks, and bushfire. Parts of the regional park may be relatively remote or difficult to access by emergency services such as the Leschenault Peninsula. Many visitor risks can be overcome through attention to personal safety (such as the registration of trip details with friends or family, and behaving responsibly while undertaking recreation activities that involve risk), appropriate building and maintenance of facilities, and appropriate risk warning information and signage. Where illegally built structures in the park, such as rope swings and bike jumps, pose safety risks they will be removed by management agencies.

The Cut at the southern end of the Leschenault Peninsula. Photo – Shem Bisluk/DBCA

There is considerable scope for recreational development across the park for the improvement or expansion of sites, new sites and facilities, while managing and minimising environmental impacts. Tourism sites in the park include Mangrove Cove, Maiden's Reserve, Eaton Foreshore, Leschenault Estuary and Leschenault Peninsula Conservation Park, and there is potential for further tourism development at Mangrove Cove, Maiden's Reserve, Turkey Point and The Cut, Ridley Place and the trails network. For some areas, there may be limited use and few plans for recreation, but recreation plans may evolve during the life of the plan as nearby urban populations expand and pressure on or demand for areas for recreational use of the park increase. A potential upgrading of The Cut's campground and day-use area to allow four-wheel drive vehicles access to and egress from the site via the beach only will protect the dunes and meet an existing demand for use of the site but will require proper planning and structures such as fencing and gates to restrict vehicle movement, and in time renewal of facilities. The potential upgrading and use of Turkey Point for recreation is dependent on future plans for Bunbury Port expansion (Section 2). It will be important for recreation proposals to be referred to a range of key stakeholders that have responsibilities or interests in certain areas such as DWER, Water Corporation, relevant local governments, neighbours and local communities.

Management objective: To provide and manage a range of safe, quality and minimal-impact recreation sites, facilities and activities.

Management strategies

1. Provide, maintain and/or improve a range of recreation sites, facilities and activities consistent with recreational development criteria and in consultation with key stakeholders, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH**)
2. As needed, develop and implement recreation plans for specific areas within the park that are consistent with a Recreation Masterplan for the park. (**DBCA, CoB, SoD, SoH**)
3. Assess, mitigate, manage and/or monitor visitor risks associated with recreation, works, proposed development and maintenance programs and proposals, where appropriate. (**DBCA**, **CoB, SoD, SoH, DoC, DWA, WC**)
4. Where appropriate, ensure new paths allow for emergency and management vehicle access. (**DBCA**, **CoB, SoD, SoH, DoC, DWA, WC**)
5. Consider changes to recreation activities, including dog exercise areas, in consultation with managing agencies. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA**)
6. Consider proposals for cultural and other ecotourism opportunities in the park. (**DBCA**, CoB, SoC, SoD, SoH)
7. Consider providing specific information and education to the community about the responsibilities for bringing and managing dogs onto public lands within the park. (**DBCA**, **CoB, SoC, SoD, SoH**)

Key performance indicator

Target	Performance measure	Reporting
Level of visitation at selected recreation sites to be maintained or increased from 2020 levels	Number of visits (as measured by DBCA) to selected recreation sites	Every five years

19. Visitor information, interpretation and education

Visitor information, education and interpretation raises awareness about the park and its values (such as informing the public of attractions, facilities and recreation opportunities within the park), promotes support for its management, and encourages community involvement and appropriate behaviours so that adverse impacts on the environment are minimised. Communication is also vital to managing visitor risk so that visitors have safe and enjoyable park experiences. A range of information and interpretive products (such as signage, information bays, printed materials, electronic media and guided interpretive activities) are provided at sites within Leschenault Peninsula Conservation Park and Manea Park and at the Eco Museum (on the Leschenault Estuary eastern foreshore), Tuart Walk and other recreation sites. The park provides opportunities for education programs such as community bushland education activities as well as activities for schools including DBCA's *Nearer to Nature* programs such as *Bush Rangers*, which is active at several schools in the Bunbury area.

DBCA's *Regional Parks Sign Manual* will provide guidance on the provision of signage for the regional park to help ensure that signs are designed and located appropriately and guide the development of the regional park's branding (colour, style and logo) to enhance public recognition of the park. Local government authorities and other land management agencies will be encouraged to adopt the regional park's signs system and logo for signs in areas of the park under their control.

Management objective: To increase the community's awareness, understanding and appreciation of the park and its management through the provision of appropriate information, signage, interpretation and education products.

Management strategies

1. Provide up-to-date and high-quality information, interpretation and education products and services to visitors, tourism industry, volunteers, educational bodies and local communities to promote the appreciation and understanding of key themes, values and management issues of the park, where relevant and appropriate. (**DBCA, CoB, SoD, SoH**)
2. Develop and implement a communication plan and interpretation plan for the regional park that examines appropriate information, interpretation and education opportunities for visitors. (**DBCA**, CoB, SoD, SoH)
3. Wherever possible, implement a consistent regional park sign system or park branding based on DBCA's *Regional Parks Sign Manual*. (**DBCA**, **CoB, SoD, SoH**)

20. Park access and accessibility

The provision and management of access to the park is an important part of this plan given that:

- uncontrolled access can degrade the natural environment and affect other visitors
- the park is close to urban areas
- the park has a high level of accessibility and demand for access
- the park is popular with visitors.

Pedestrian and vehicle access at Buffalo Beach. Photo – Lorna Charlton/DBCA

Accessibility to the park and recreation sites is proposed to be at least maintained at current levels, but may need to be improved, modified or restricted in some areas. Access within the park, which will be a key component of recreation planning (Section 18), will need to consider:

- ensuring that the park is accessible to all
- facilitating access to recreation sites
- providing access for management
- ensuring that access is provided and maintained to appropriate standards to reduce visitor risk
- ensuring existing access is best located to satisfy access needs
- ensuring that where access is provided, the park environments can sustain the levels and types of access.

Fences and other barriers play a role in helping to prevent access by unauthorised vehicles and activities (such as horseriding, camping and boat launching), and will be built and maintained around parts of the park to help compliance. The provision of roads between adjacent development and the park can also help with managing access and providing a buffer to the park.

Parking

Limited parking is provided at many sites within the regional park, mainly at sites associated with recreational access and facilities, although the provision, quality and size of parking varies significantly. Parking may need to be developed or upgraded at some sites such as Shearwater Tuart Forest and Manea Park to improve accessibility to the park particularly for recreation. Four key issues relating to parking are:

- providing safe and convenient parking to facilitate access
- reducing the undesirable effects of uncontrolled and informal parking and access
- reducing the level of anti-social behaviour such as vandalism at parking areas in the park
- appropriate positioning of parking facilities to avoid environmentally sensitive areas.

Access, including parking, throughout the park will be addressed in further recreation planning (Section 18).

Management access

Managing agencies often access roads and tracks to conduct operations such as pest animal baiting, fire management, native plant and animal monitoring, weed control, rehabilitation, evacuation and other purposes, and during these times some access may need to be temporarily, permanently or seasonally closed to the public for management purposes. Where possible, maintenance vehicles will use existing access, although there may also be a need to build additional access in some areas for management purposes such as to improve fire management or provide boundary access. Access that is exclusively for management purposes will be signposted and/or physically closed by a gate, drain or natural barrier. Access tracks that are no longer needed for management purposes should be closed and rehabilitated to deter unauthorised use.

Access for all

The park should be as accessible to and inclusive of everyone in the community as possible including people of all ages, abilities and cultural backgrounds to access, use and enjoy the park's natural areas and the associated facilities, services and information provided by managing agencies.

Several sites within the park have universal access such as the Tuart Walk, Buffalo Beach pathways and dual-use paths at Eaton Foreshore and Old Coast Road. Accessibility and the provision of universally accessible and inclusive facilities, services and information will be considered in recreation planning (Section 18).

Tuart Walk sealed pathway provides universal access through Shearwater Tuart Forest. Photo – Shem Bisluk/DBCA

Management objective: To provide and maintain safe and structured access that facilitates visitor enjoyment and appreciation of, and minimises impacts on, the park.

Management strategies

1. Provide, maintain, monitor or otherwise manage safe and appropriate access in the park that is consistent with protecting park values and minimising environmental and visitor impacts, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH**)
2. Maintain licensed four-wheel drive vehicle access only at Turkey Point and Leschenault Peninsula Conservation Park on ocean beaches between low-water and high-water marks, subject to review by the relevant managing agency. (**DBCA, CoB**)
3. Prohibit the use of unauthorised vehicles, quad bikes or any other 'off-road vehicles' as defined under the *Control of Vehicles (Off-road Areas) Act 1978* and vehicles driving off roads and tracks in the park, except where formal approval is obtained from the relevant managing agency. (**DBCA**, **CoB, SoC, SoD, SoH, WC, DoC, DWA, DPLH**)
4. Maintain formal boating access at current sites and levels within the park, subject to review by the relevant managing agency. (**DBCA, CoB, SoD, SoH**)
5. Where appropriate, ensure facilities, services and events are accessible and inclusive for all in accordance with Australian Standards. (**DBCA**, **CoB, SoD, SoH**)

21. Commercial operations

Commercial concessions, such as licences and leases for commercial operations, provide opportunities for private businesses to offer tourism and recreation opportunities, facilities and services to the public. Appropriate concessions can also generate income to help offset regional park management costs and can significantly enhance public access and enjoyment of the park. Licences allow commercial operators to enter and use the park to conduct activities such as guided walks and tours, whereas leases allow the lessee to occupy land for commercial services that need exclusive rights of access and substantial infrastructure.

Concessions need to be carefully designed, assessed and managed to ensure that they do not detract from the conservation and landscape values of the park, and are consistent with the plan's objectives and guiding principles and the relevant land manager's policy, planning and other requirements. Leases and licences pertaining to land managed by a particular land manager need approval from that land manager. Some proposals, especially if they result in a permanent development, may need GBRS development approval. Advertising within the park also needs the approval of the relevant land manager.

Expressions of interest for commercial concessions within the park are usually subject to a competitive process consistent with State and local government processes. Leases for recreation clubs and associations may be subject to the same processes.

Any leases within public water catchments must be consistent with DWER's water quality protection policies and any Drinking Water Source Protection Plans (Section 25). The Water Corporation reserves the right to licence its landholdings for commercial uses subject to all normal approvals processes.

Concessions for visitor services

Existing concessions

Commercial tour operators are licensed by DBCA to conduct a range of recreational activities in Leschenault Peninsula Conservation Park.

New concessions

Visitor demand for commercial services in the park is low, which may reflect the early planning phase for the park. However, there is the potential for commercial concessions for visitor services to be developed in the future, providing they are consistent with the provisions of this plan.

Mobile traders

Mobile food vans, coffee vans, flowers and other mobile trader businesses operate at some sites around the park such as Pelican Point, Eaton Foreshore to Watson Reserve and Leschenault Estuary foreshore at Ridley Place and Christina Street. Although there is not a large demand, these businesses may continue to operate in the park, subject to the issuing of an appropriate licence/permit by the relevant managing agency.

Community and Special Events

There may be occasional requests for the use of parts of the park for community and special events such as car rallies, rowing regattas, running events, exercise classes, filming, fund raising, festivals and weddings or private/other gatherings (Section 18). The appropriateness of such events within the park is affected by whether they are sensitively located, properly planned and managed, interfere with other visitors and resource-demanding on the managing agency, and will be assessed and approved by the relevant land manager. Gatherings requiring sole use of a site will need a booking with the relevant land manager. A concession arrangement (bond) may be needed between the event organiser and the managing agency for the right to use a site and to cover the operational and administrative costs incurred by the managing agency.

Management objective: To extend the range of services, facilities and experiences available through the involvement of private enterprise, consistent with other management objectives and the protection of park values.

Management strategies

1. Evaluate, grant proposals for, and manage licences, commercial tourism leases and events consistent with State, DBCA and other land manager policy and guidelines, licence/lease conditions, plan objectives and guiding principles, the purpose of the park, and the protection of values, where relevant and appropriate. (**DBCA**, **CoB, SoD, SoH**, **WC, DoC, DWA**)
2. Where appropriate, allow for activities of community organisations and clubs that are consistent with land tenure purposes. (**DBCA**, **CoB, SoC, SoD, SoH**, WC, DoC, DWA)
3. Seek sources of potential income such as commercial opportunities, sponsorship, merchandising and product development, and concessions, where appropriate and consistent with the purpose of reserves. (**DBCA**, **CoB, SoD, SoH**)
4. Support, and liaise with local Noongar people and the Western Australian Indigenous Tourism Operators Council to foster and develop Noongar enterprises that meet the objective of protecting and conserving the natural and cultural values of the park such as cultural tours. (**DBCA**, WAITOC, GKB, CoB, SoD, SoH)

22. Working with the community

There has been a long history of the involvement of the community in the protection of the park's bushland and the establishment of the park (Section 1, Section 17).

Working with the community is an integral part of park operations. Community participation helps promote community awareness, appreciation and support for the protection and conservation of biodiversity and natural and cultural values as well as for park management and programs. Community participation expands park

managers' work capabilities, knowledge and skills base, and fosters communication links, sense of place, understanding and value of the park within the community. Some community organisations such as Leschenault Catchment Council and South West Catchments Council also play a key role in community engagement in the region and undertake volunteer-based activities in many parts of the park.

Neighbours and residents who live near the park can have a great impact on the park (positively and negatively), and it is important to seek the cooperation and involvement of nearby landowners to protect park values. This can be done through educational programs and communication strategies that promote responsible use of the park and inform the community of management roles and responsibilities, as well as through joint venture on-ground works.

The Friends of Manea Park community volunteers. Photo – Hendersons Photographics/South West Catchments Council

The Regional Park Community Advisory Committee provides a forum at which issues affecting the park are discussed. The committee, which was established in 2019, consists of community members, and representatives from DBCA, local government and other agencies. The committee's role is to provide advice in implementing this plan and subsidiary plans for the park.

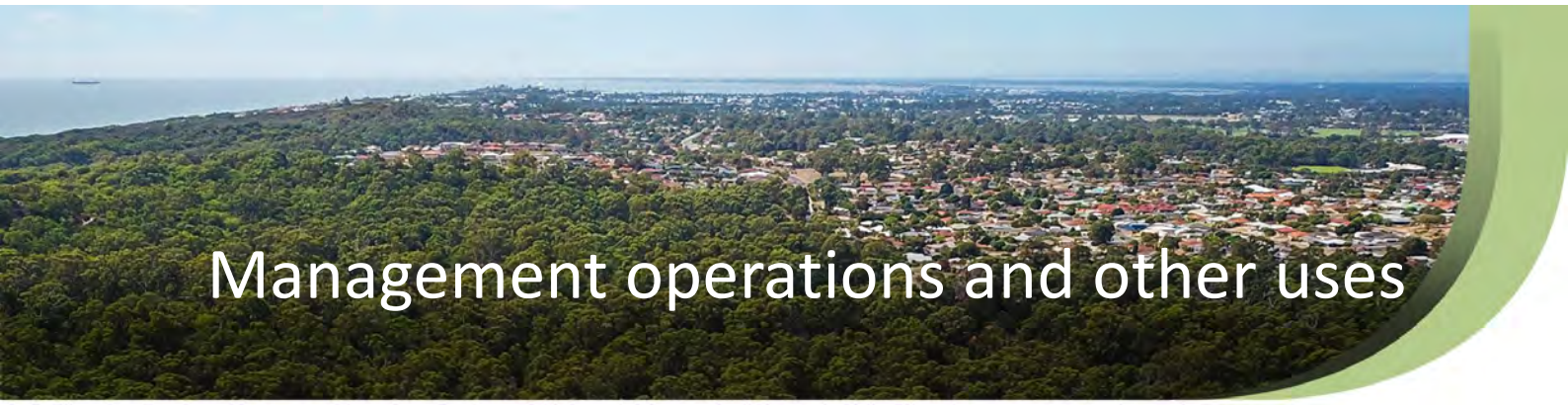
Management objective: To facilitate community participation in park management.

Management strategies

1. Maintain the Regional Park Community Advisory Committee in accordance with a Terms of Reference and Code of Conduct. (**DBCA**)
2. Coordinate the activities of volunteers in the park in liaison with community groups, including recording the number of registered volunteers and the amount of volunteer hours contributed, where relevant and appropriate. (**DBCA**, **CoB, SoD, SoH**)
3. Inform the community, groups and volunteers of management actions, programs and developments within the park, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH**)

Key performance indicator

Target	Performance measure	Reporting
Maintenance or increase in the numbers of volunteers and number of volunteer hours contributed to park management from 2020 levels	Number of volunteers registered with DBCA and LGAs, and number of volunteer hours contributed to park management	Every five years



Management operations and other uses

23. Mineral and petroleum exploration and development

Mining

The park has known mineral deposits and potential for a range of heavy mineral sands, although there are no tenements that cover the regional park[27]. Any applications for mining within the park will be processed under the *Mining Act 1978*.

Basic raw materials

There are different legislative requirements for mining or extraction of basic raw materials (BRM) (such as sand, limestone, clay, gravel and hard rock), depending on land tenure. Where BRM occurs on Crown land, mining for commercial purposes requires a mining lease issued under the Mining Act, which is administered by the Department of Mines, Industry Regulation and Safety (DMIRS). BRM that occurs on private (freehold) land is not covered by the Mining Act and requires an extractive industry licence and planning approval under the *Planning and Development Act 2005*.

Extractive industry proposals in areas with native vegetation are subject to the provisions of the *Environmental Protection Act 1986* for clearing applications. Proposals for extracting BRM from the regional park are likely to be deemed as having a significant effect on the environment and therefore are likely to be referred by the decision maker to the EPA for consideration.

Most requirements for BRM in the park will be from local government authorities, Main Roads WA or DBCA for use on roads, recreation sites and other purposes. BRM should be preferentially sourced from outside the park. When this is not feasible, BRM may be sourced from within the regional park for use within the park boundary.

Management objective: To minimise the impact of mineral and petroleum exploration and development, including BRM extraction, on park values.

Management strategies

1. Review and provide advice on the effect of exploration or development proposals on park values and seek to avoid or minimise these impacts. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)
2. Refer or recommend referral of exploration or development proposals with the potential to have a significant environmental impact on the park to the EPA for consideration of assessment under the *Environmental Protection Act 1986*. (**DBCA, CoB, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)
3. Should proposals for mining or the extraction of BRM be approved, ensure adequate provisions are made to manage impacts and to protect the remaining areas of the park, where relevant and appropriate. (**DBCA**, **CoB, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)

[27] To view various resources datasets, including operating mines, mining tenements and mineral deposits see DMIRS's GeoVIEW.WA online interactive mapping system.

24. Use of native plants and animals

Firewood collection

Firewood collection is not allowed within the regional park, except on DBCA-managed lands for 'customary activities' purposes (Section 16). Approved public firewood collection is only allowed from gazetted firewood areas in nearby areas of State forest under the conditions of a fee payable permit issued by DBCA. Commercial firewood operations are managed through contracts administered by the Forest Products Commission. Unlawful removal of firewood (including dead wood) occurs in the park, and this can lead to damage or loss of vegetation cover and habitat integrity, soil compaction and the spread of plant diseases. Firewood is supplied at Belvidere campground fireplaces and occasionally at The Cut. Visitors are encouraged to bring and use their own gas fuel cookers or the gas barbecues provided, unless a total fire ban has been declared.

Wildflowers and other native plants

Commercial picking of native plants is not permitted in DBCA-managed conservation reserves. The collection of native seed may occur within the park with an appropriate flora licence, where community groups, farmers, mining companies and nurseries use native seed for revegetation, rehabilitation and propagation projects.

Native animals

Under the Biodiversity Conservation Act, DBCA is responsible for the regulation of commercial gain associated with protected native animals in WA on all private property and Crown lands. DBCA administers the taking, farming, killing, processing, transport and sale of native animals, including the commercial harvesting of kangaroos and emus, and the keeping and breeding of birds (aviculture), reptiles and amphibians as a hobby, in accordance with an appropriate fauna licence.

Beekeeping

There are no beekeeping sites within the park. Given the proximity of the park to residential areas and the current and potentially high visitation to the park, no permits will be granted for beekeeping within the park.

Management objective: To facilitate the sustainable use of native plants and animals.

Management strategies

1. Manage the taking and public or commercial use of native plants and animals in accordance with relevant legislation, policies and guidelines, and licensing systems. (**DBCA**, CoB, SoC, SoD, SoH, DoC, DWA, WC, DPLH)
2. Allow the taking or removal of forest produce, with conditions if necessary, in accordance with a licence issued by DBCA for (i) removal of exotic plants, (ii) removal for therapeutic, scientific or horticultural purposes, and (iii) essential works. (**DBCA**)
3. Exclude beekeeping activities from the park. (**DBCA**, CoB, SoC, SoD, SoH, DoC, DWA, WC, DPLH)

25. Water resources

Through the *Water Agencies (Powers) Act 1984*[28], DWER leads water resource management in WA by coordinating cross-government efforts to protect and manage water resources. Other water legislation also supports the sustainable management of water resources.

Water abstraction

The *Rights in Water and Irrigation Act 1914* (RIWI Act) provides for the regulation, management, use and protection of water resources through a licensing system for taking water and a permit system for activities that may damage, obstruct or interfere with water flow or the beds and banks of watercourses and wetlands in proclaimed rivers, surface water management areas and irrigation districts. Proclaimed areas covering the park are the Collie River Irrigation District, Brunswick River and Tributaries and Preston River and Tributaries surface water areas, and the Bunbury and South West Coastal groundwater areas (Section 7). The Bunbury Groundwater Area is an important source of drinking water for the greater Bunbury area. DWER's approach to allocation and

[28] Water resources management legislation in WA is under review and may change during the life of this plan.

licensing is set out in the *South West Groundwater Allocation Plan* (DoW 2009a) and the subarea reference sheets (DoW 2009b), and background information and challenges to managing the region's water resources are set out in the *South West Regional Water Plan 2010–2030* (DoW 2010).

Proponents of proposals for water abstraction from surface or underground waters of the park need a licence from DWER. To be licensed, the proponent also needs approval from the land manager to access the land for abstracting water. For access to CALM Act lands, DBCA may, after consultation with the Conservation and Parks Commission and approval from the Minister for Environment, issue a permit to authorise access. Where infrastructure is needed, a lease may also be issued.

Water protection

The *Country Areas Water Supply Act 1947*[29] and associated by-laws protect the State's Public Drinking Water Source Areas (PDWSA)[30] such as proclaimed catchment areas, water reserves and pollution areas. The only PDWSA within the park is the 'Bunbury Water Reserve', which covers Maidens Reserve, Shearwater Tuart Forest and Usher Woodland, Tuart Brook/Five Mile Brook, Hay Park and part of Manea Park (at College Grove). The *Bunbury Water Reserve Drinking Water Source Protection Plan* (DoW 2008a) establishes the level of protection needed within the Bunbury Water Reserve.

Water Corporation manages two water supply bores in Bunbury Water Reserve within Shearwater Tuart Forest, which supply water to Dalyellup. Each bore has a 300m radius Wellhead Protection Zone (WPZ), which are declared around wellheads in public drinking water source areas to protect the groundwater from immediate contamination risks. Aqwest manages a water supply bore that has a WPZ partly extending over Hay Park. Within WPZs, by-laws may prohibit, restrict or approve defined land uses and activities to prevent water source contamination or pollution. Water Corporation infrastructure associated with the drinking water bores supplying the Dalyellup area (including the access road to bores and the Treatment Plant) is located within Shearwater Tuart Forest. Formalisation of access arrangements may need to be considered for these specific areas. The Water Corporation, Aqwest and DWER should be notified of any planned developments or works that will cross pipeline easements or affect public drinking water source wellheads and their buffer zones, and approval is to be gained before starting works.

Under the *Waterways Conservation Act 1976* (WWC Act), waterways in need of coordinated management can be declared as 'management areas'. DWER administers the WWC Act and actively licences a range of activities within the declared management areas and waterways within parts of the regional park, including retaining wall construction licences, dewatering licences, reclamation licences, dredging licences, disposal licences, and private boat ramp licences (outside DoT management area).

Wastewater treatment

Access to the Bunbury Wastewater Treatment plant, located on reserve 37116 and managed by the Water Corporation, is through Shearwater Tuart Forest. The buffer area (or separation distance) for the wastewater treatment plant is implemented through a special control area (SCA) in the GBRS (SCA No. 4 *Wastewater Treatment Plant Odour Buffer area*) which extends north to Reserve 670 (Maidens Reserve) and east to Ocean Drive. The Water Corporation is to be consulted about any planned developments or works within this buffer area that will affect the wastewater treatment plant.

Management objective: To minimise the impact of water resource use on park values.

Management strategies

1. Where appropriate, assess the potential impact from new or upgrading of existing water resource use proposals, and recommend appropriate conditions and refer proposals to DWER. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, WAPC**)
2. Ensure permits for the extraction of water are consistent with the objectives of this plan. (**DWER**, **DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DPLH**)
3. Liaise with relevant water resource stakeholders and monitor activities to ensure that water use complies with conditions of approval. (**DWER**)
4. Ensure water resource use operations consider the responsible management of fire, weeds, pest animals and diseases. (**WC, Aqwest**)

[29] As well as the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*.

[30] PDWSAs may have constraints placed on land use, development, public access and land/water-based activities.

26. Utilities and services

Public utilities provide essential community infrastructure, but the building and subsequent maintenance of infrastructure and associated access can have significant visual and environmental impacts. The impact of utilities or services and associated infrastructure can be minimised by:

- avoiding the placement of new and relocated infrastructure within the park, but when this is unavoidable, the use of already degraded areas, pre-existing corridors or co-location with existing infrastructure is preferred
- where necessary, relocating infrastructure to existing utility corridors or sites to ensure minimal impact, or encouraging alternative low-impact methods of providing services
- accommodating requests for the placement of temporary radio masts, subject to assessment of potential impacts
- removing infrastructure (except where it is considered to have other value) and rehabilitating the site, if utilities and services are no longer needed (Section 15)
- where there is no other viable alternative, seek an alternative appropriate land category/managing authority or excise the land containing utility and service infrastructure from the park.

This plan does not restrict access for providers to maintain existing utilities and services or associated infrastructure, however permission is needed from the relevant land manager for access. The maintenance of existing infrastructure must consider sensitive sites such as wetlands, significant habitat areas and places of cultural significance. Access can lead to the spread of weeds and disease and therefore appropriate hygiene practices must be employed.

The provision of new recreation facilities will be limited to locations where they do not conflict with the operational requirements of infrastructure providers.

Specific infrastructure[31]

The Picton to Marriott Road 132kV powerline crosses the Collie River and the park in the Roelands area. The Picton to Bunbury Harbour132kV powerline crosses the Preston River link. High voltage overhead powerlines traverse the park in Shearwater Tuart Forest (to access the Bunbury Wastewater Treatment plant), Preston River Link, Turkey Point, Pelican Point, Australind reserves, Leicester Reserve and Wardandi Reserve. Some underground power cabling also occurs in the park. Overhead powerlines generally have a significant impact on landscape value. Wherever possible, mains power lines should be placed underground or in such a way that there is minimal visual impact. Where feasible, power supplies for facilities in the park should be from alternative renewable energy sources such as solar power.

The Dampier to Bunbury natural gas pipeline crosses the park and the Collie River in the Roelands area. Dampier Bunbury Pipeline operate the pipeline under an access arrangement approved by the Economic Regulation Authority.

Road infrastructure (roads or tracks) within the park may be located on road reserves or within other Crown reserves managed by local government authorities or other managing agencies. Road infrastructure not only provides access but also helps provide a buffer between existing or future, residential or industrial development and the park.

Telecommunication infrastructure is generally not considered appropriate within the park unless there is a considerable benefit to the park, or they comprise a historical land use. Development proposals for telecommunications infrastructure are to comply with WAPC's *State Planning Policy 5.2 - Telecommunications infrastructure*.

The park also contains a range of other infrastructure such as boat ramps, lighting, bores, training walls and stormwater pipes and basins. The ongoing maintenance and management responsibility for these will vary depending on the type and purpose of the infrastructure.

[31] Utilities and services associated with water are covered in Section 25.

Leases

Cristal Pigment (Tronox) have a Crown lease on the portions of Lot 350 on Plan 72934 Australind that are within the regional park, for the manufacture of titanium dioxide products and associated processes. The lease was renewed in January 2012 for a term of five years with the option of four more terms of five years. Infrastructure that Cristal Pigment will continue to access includes pipelines, water treatment and paint exposure testing facilities on the lease, monitoring bores within the WAPC freehold land to the north and UCL to the east, and a noise monitoring station within the WAPC freehold land to the north.

There are no current leases for primary production on Crown reserves managed by DBCA, local governments or other managing agencies, although primary production does occur on private property in the park including freehold land held by the Shire of Harvey. New primary production leases for the agistment of animals may be considered in certain cleared and degraded areas of the park as a method of minimising fire fuel loads (Section 10) and keeping weeds under control (Section 11) until areas are rehabilitated or future land use is confirmed.

Servicing and maintenance of the park

Some parts of the park and their facilities/infrastructure may need regular monitoring and maintenance, and responsibilities for this will vary depending on the type of infrastructure and park area. Where agencies responsible for the maintenance and management of facilities/infrastructure are not the land management agency, relevant access approvals will need to be obtained from land management agencies.

Management objective: To minimise the impact of utilities and services in the park and provide safe, cost-effective park services.

Management strategy

1. Liaise with infrastructure providers, development proponents and other relevant stakeholders to ensure that an environmental management and rehabilitation program accompanies utilities or services and associated infrastructure proposals in the park including consideration of appropriate conditions, monitoring and rehabilitation, where relevant and appropriate. (**DBCA, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, WAPC**)

27. Plan implementation

Term of the plan

Once finalised, this plan will guide the management of the regional park for 10 years from the date the plan is gazetted. During this time, amendments to the management plan may be made in accordance with section 61 of the CALM Act, which includes public notification of plan amendments under section 57 of the CALM Act.

If the plan is not reviewed and replaced by the end of the 10-year period, this plan will remain in force until a new plan is approved, as specified under section 55(2) of the CALM Act.

Subsidiary plans and implementation programs

More detailed subsidiary plans or other guidance will be prepared to guide implementation of this plan. Subsidiary plans that may be (or already have been) prepared include:

- Fire management guidance (Section 10)
- Weed management guidance (Section 11)
- Pest animal management guidance (Section 11)
- Recreation master and/or site plans (Section 18)
- Communication plan, which includes an interpretation plan (Section 19).

Annual operations or works plans will be prepared by managing agencies to guide the implementation of this plan for the areas of the park that agencies manage. Managing agencies, as well as the Regional Park Community Advisory Committee and other relevant stakeholders (which may include the community), will be consulted where major projects in the park are proposed.

Park managers will implement the plan for areas that they control where possible in light of available staff, contractors, finances and other resources. Funding for the acquisition of private property proposed for inclusion in the park rests with the WAPC.

Improvement in knowledge

Improved management of the park and its values can result from a better understanding of values and management issues, which can be gained through research and adaptive management. There is significant interest in the park and its values from environmental, scientific and educational institutions and communities, and these groups are encouraged to be involved in research projects that provide valuable scientific knowledge for park management. Important knowledge can also be gained from operational observations and trials by park managers and can be used to improve management practices in an adaptive management framework.

Some values (such as native plants), management issues (such as weeds) and specific areas within the park need further investigation to improve overall knowledge about the park. The set of quadrats that have been established in the park to determine the Swan Coastal Plain Regional Floristic Community Types (Section 8) are of ongoing use as a base reference information set for scientific studies and in monitoring changes in vegetation and flora and the effectiveness of management actions.

Management objectives: To manage the park according to the priorities developed for implementation. To increase knowledge and understanding of park values and management issues to inform and improve management.

Management strategies

1. Ensure that annual operations plans or works plans consider the priorities identified in this plan and any subsidiary plans. (**DBCA**, **CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER, DPLH**)
2. Prepare subsidiary plans or other guidance where needed to guide operational activities. (**DBCA**, CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER)
3. Consult with managing agencies, the Regional Park Community Advisory Committee and other relevant stakeholders where major projects in the park are proposed. (**DBCA**, **CoB, SoC, SoD, SoH, WC, DoC, DWA, DWER**)
4. Support, encourage, record and where necessary undertake research and monitoring that facilitates management, establishes baseline information and contributes to management objectives, and adapt future management where appropriate. (**DBCA, CoB, SoD, SoH, DWER**)

28. Performance assessment and monitoring

Park managers should take an outcome-based approach to assessing the effectiveness of management, including assessment of how well the park is protecting values and whether the objectives of the plan have been achieved. KPIs and management strategies may be used to assess management effectiveness, although further KPIs, approaches and elements (Hockings *et al*. 2006) may also be developed and used during the life of the plan. KPIs have been identified for the following sections of the plan (Appendix 1):

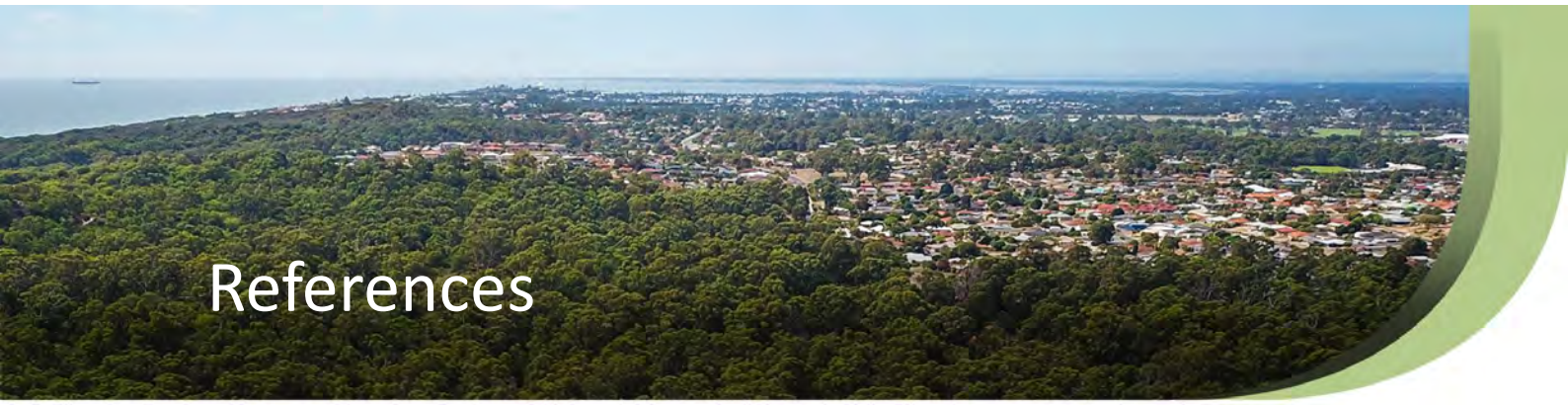
- Native plants and ecological communities (Section 8)
- Fire (Section 10)
- Weeds and pest animals (Section 11)
- Noongar cultural heritage (Section 16)
- Visitor use and planning (Section 18)
- Working with the community (Section 22).

KPIs underpin the audit process of this plan. The Conservation and Parks Commission has responsibility for assessing the implementation and success of this plan in accordance with section 19(1)(g)(iii) of the CALM Act.

Management objective: To monitor and report on the implementation of this plan to track its effectiveness in meeting its objectives.

Management strategies

1. Monitor the KPIs and collate and report findings to the Conservation and Parks Commission. (**DBCA**)
2. Assess and report on the overall effectiveness of park management. (**Conservation and Parks Commission**)



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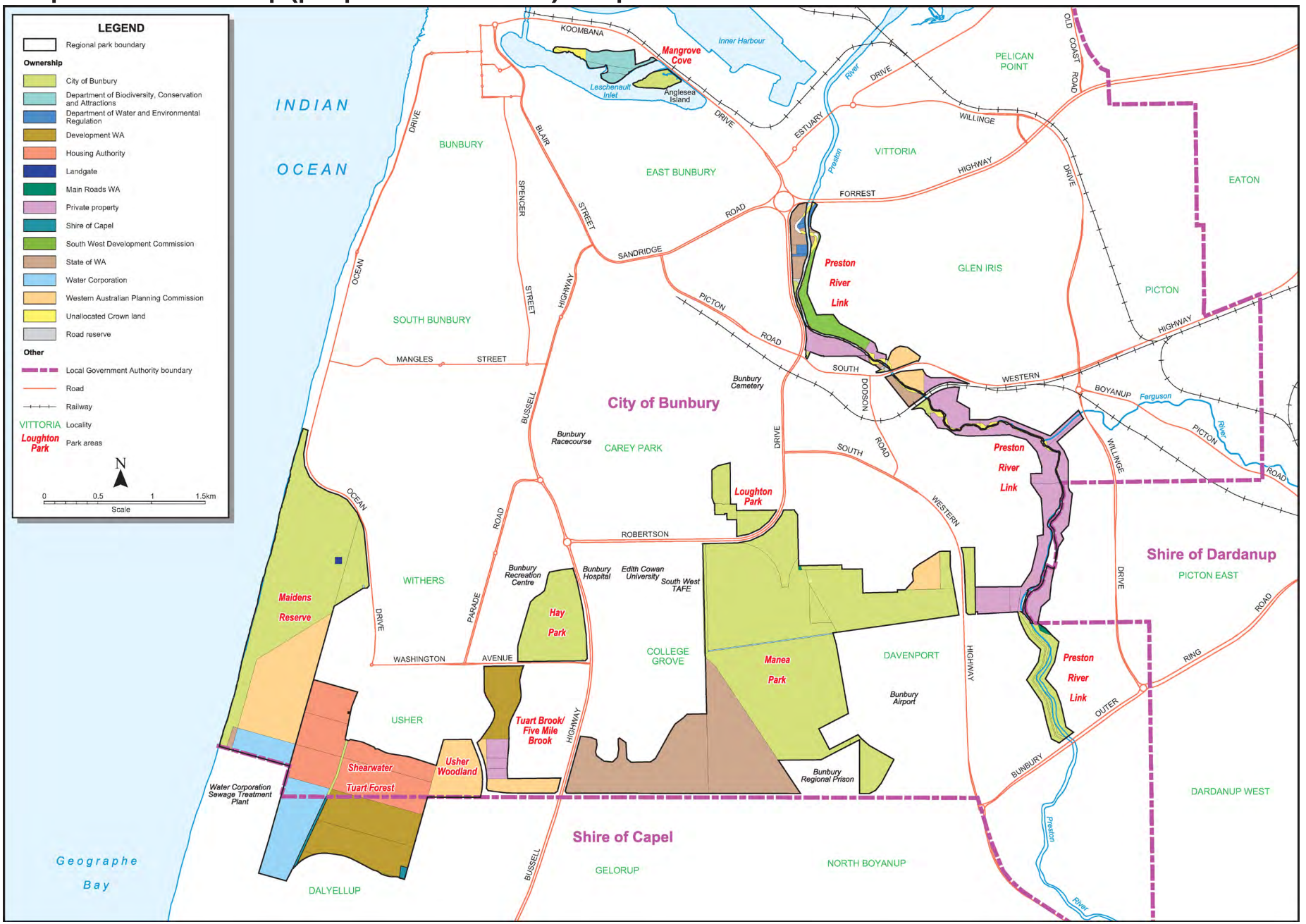
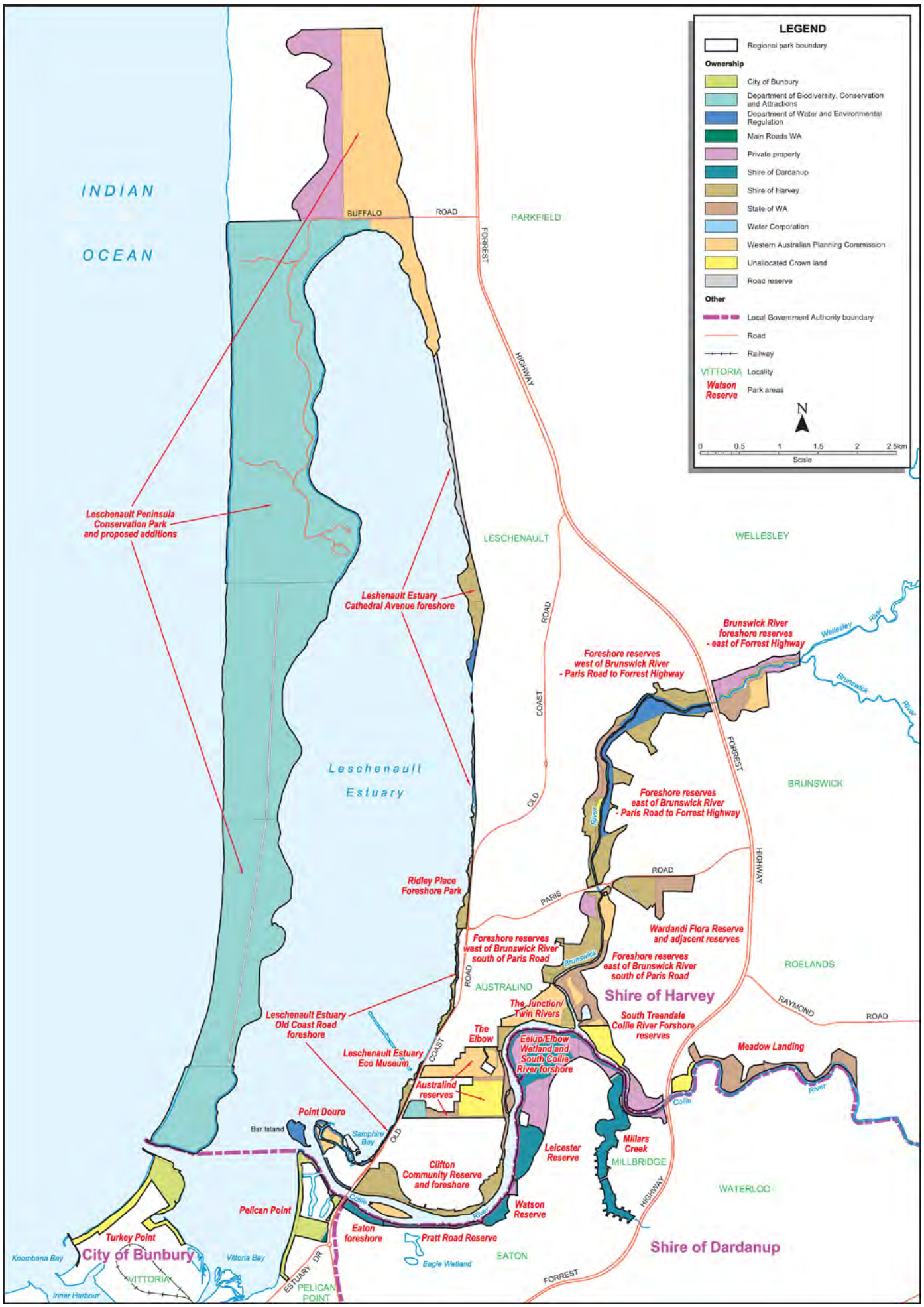
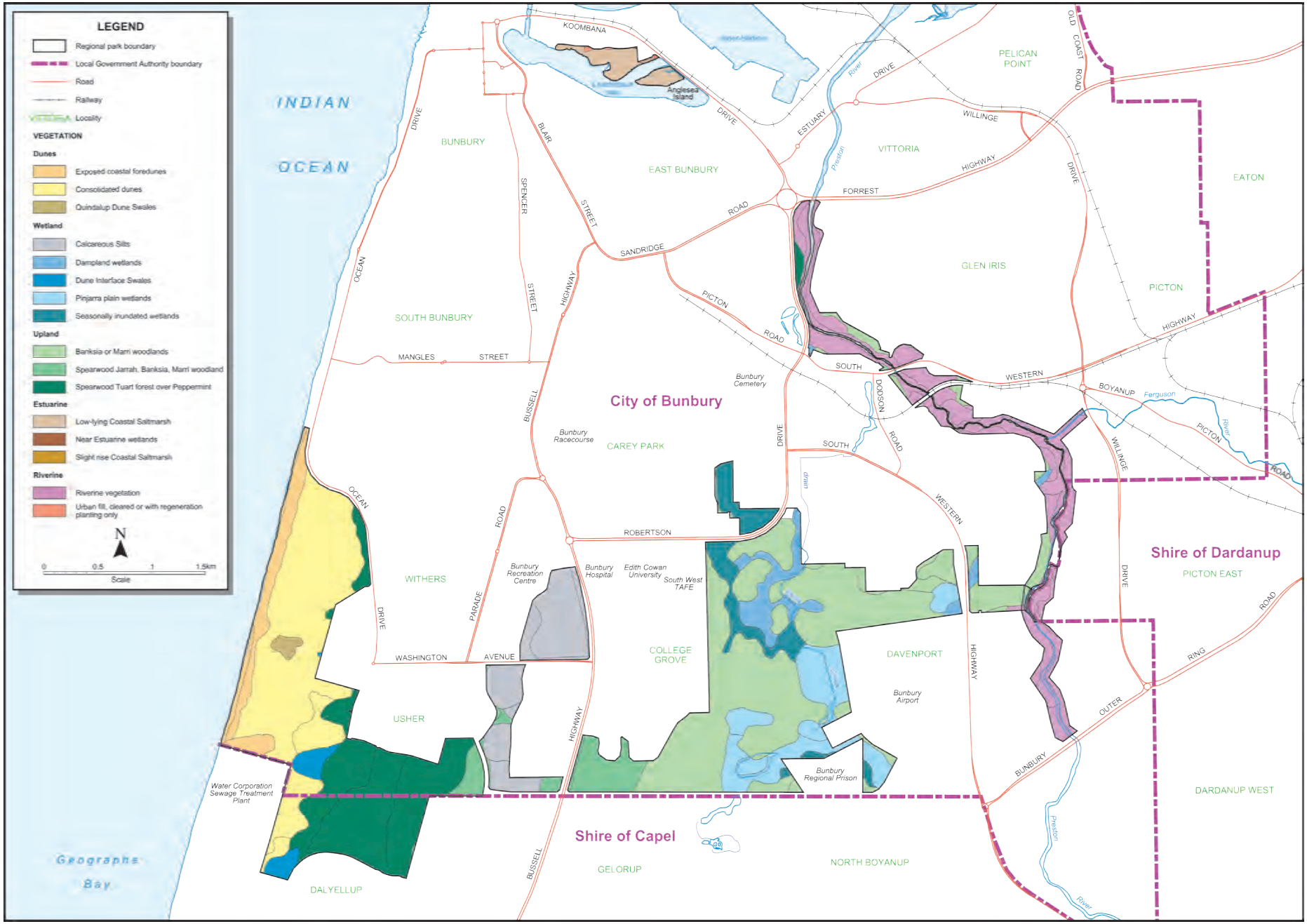
Map 2a. Land ownership (pre-park establishment) and park areas - south



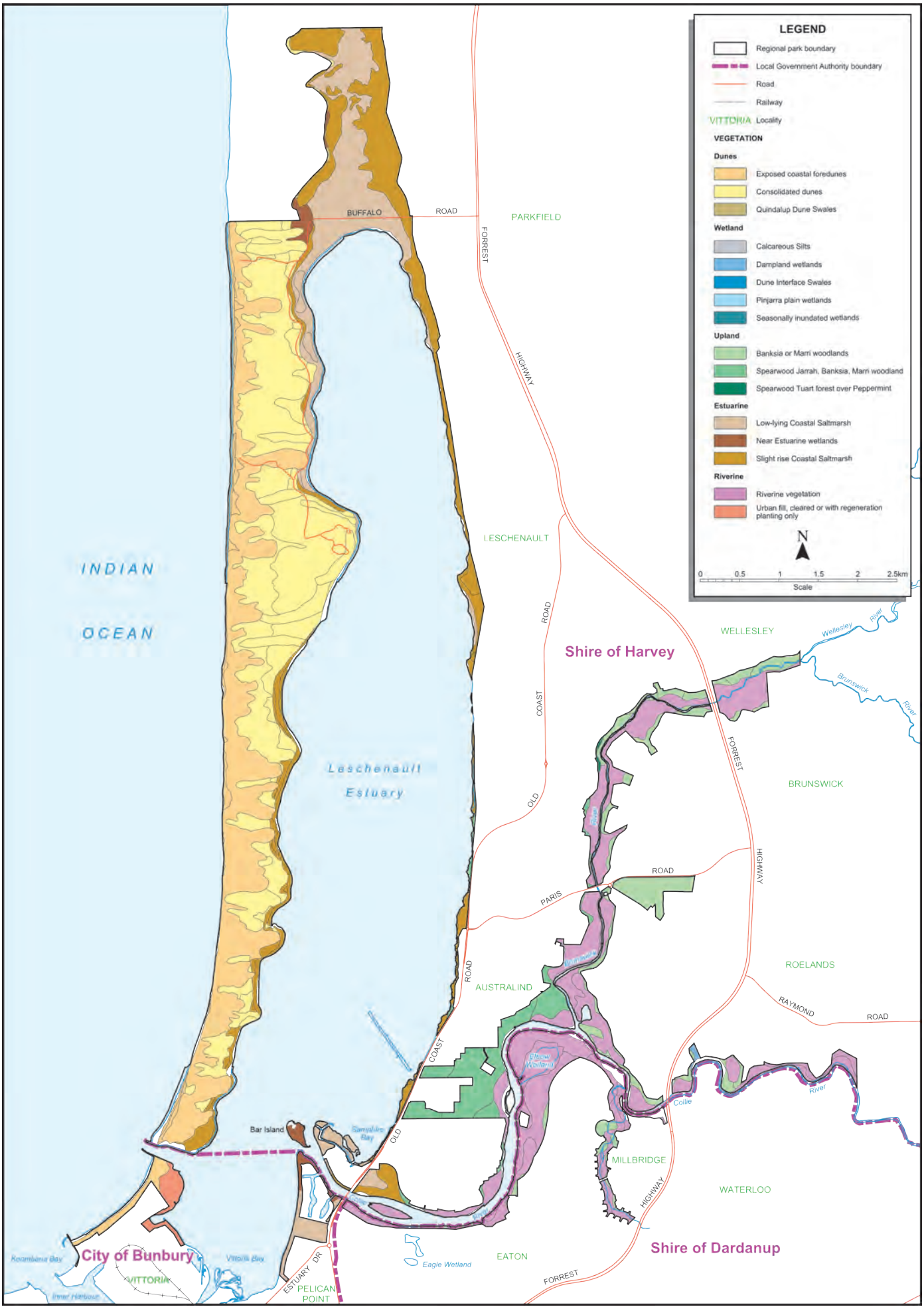
Map 2b. Land ownership (pre-park establishment) and park areas - north



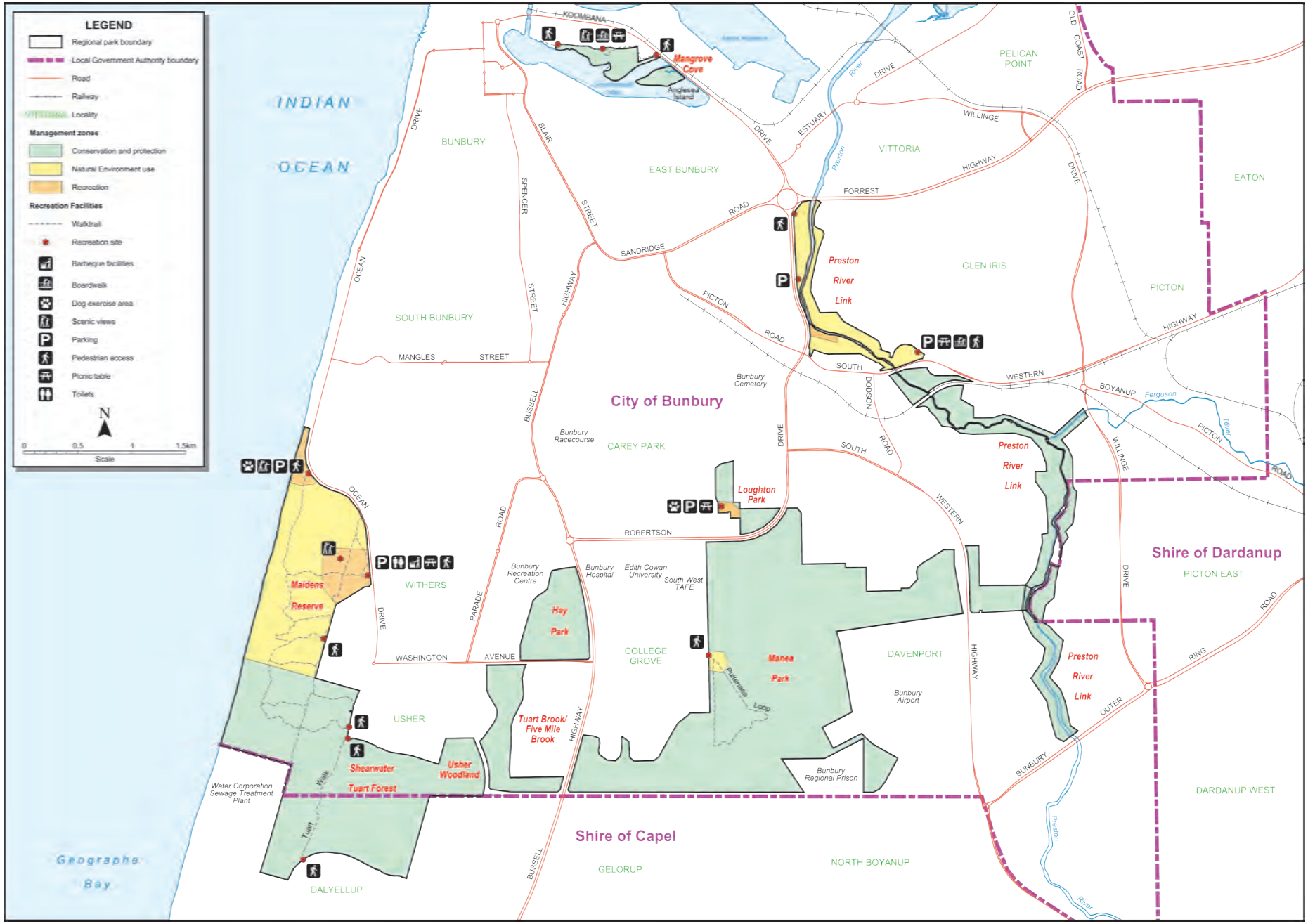
Map 3a. Vegetation - south



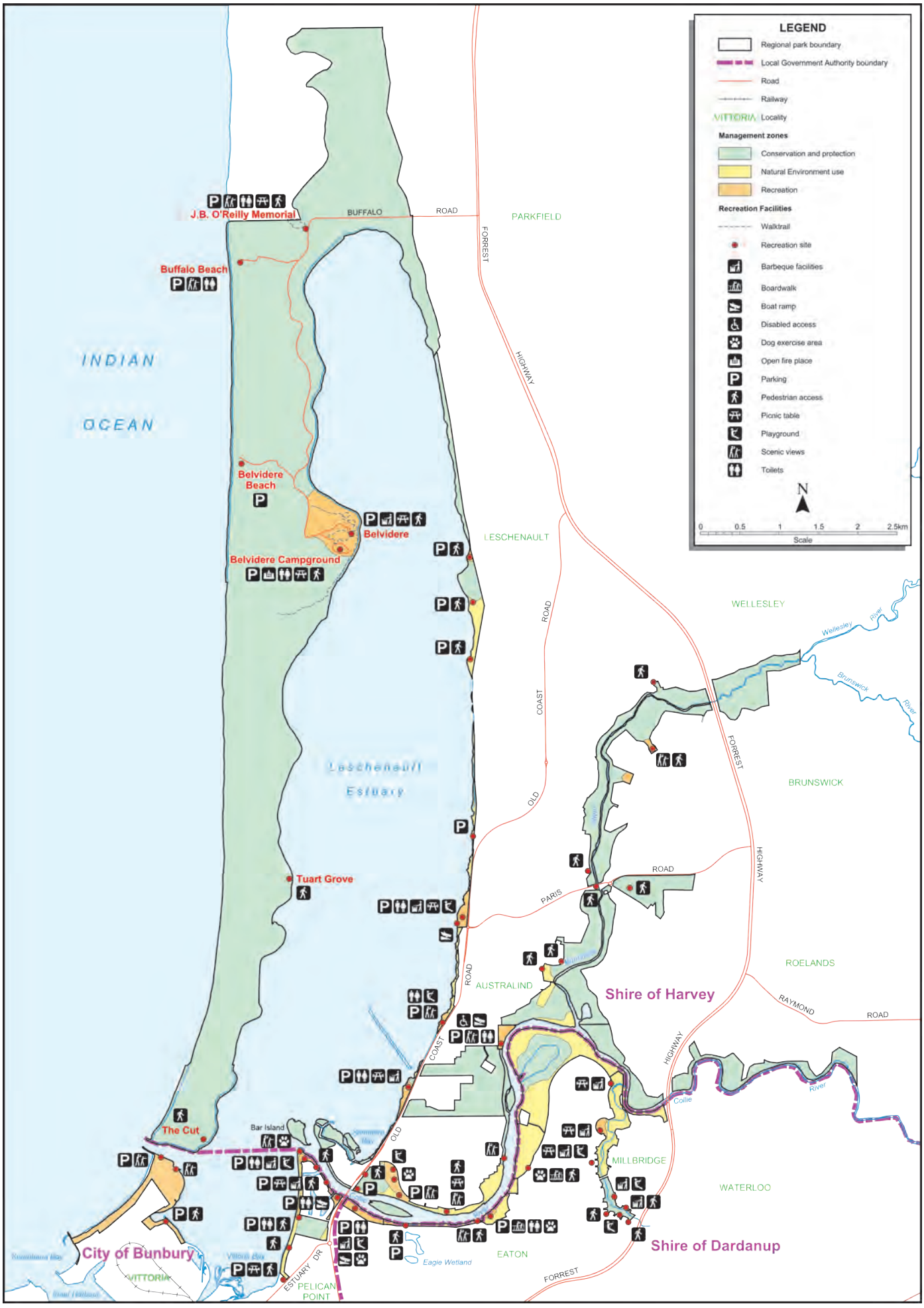
Map 3b. Vegetation - north

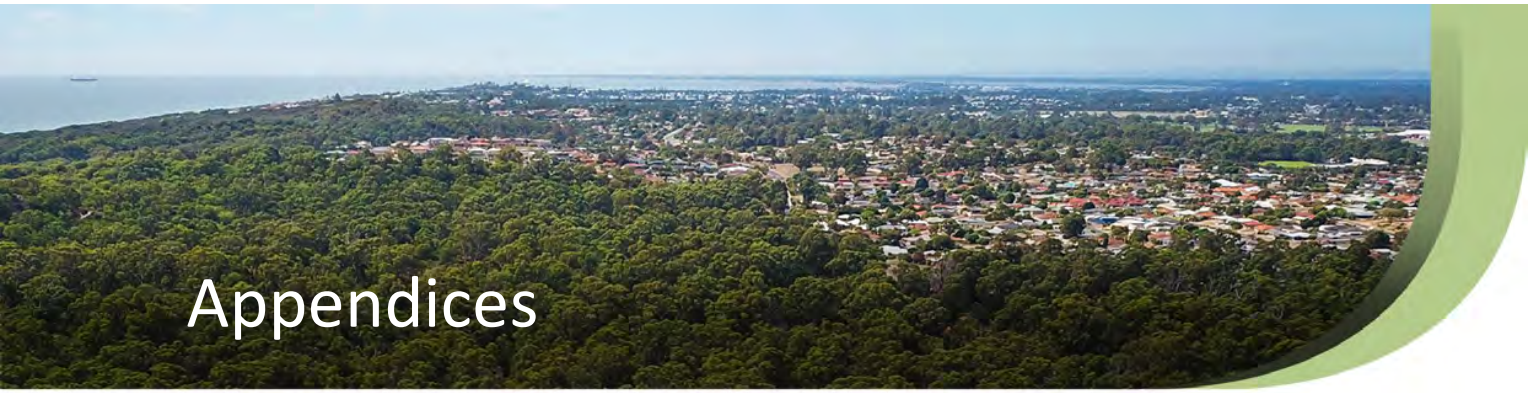


Map 4a. Recreation, access and management zones - south



Map 4b. Recreation, access and management zones - north





Appendices

Appendix 1. Performance assessment

Key values	Key objectives	Key Performance Indicators		
		Target	Performance measure	Reporting
Section 8 Native plants and vegetation				
threatened native plant species and threatened ecological communities (TECs) of regional, State and national significance	To ensure that native vegetation, including threatened and other significant plants and ecological communities, within the park are not significantly impacted by human activities	No more than five percent decrease (from 2020 levels) in the number of occurrences or populations of selected threatened plants No more than five percent decrease (from 2020 levels) in native species diversity of selected threatened ecological communities	Number of occurrences or populations of selected threatened flora Number of native plant species within selected threatened ecological communities	Every five years, or as per recovery plans if applicable
Section 10 Fire				
	To manage fire to protect people and communities from the impacts of bushfire, and to apply planned fire as a management tool to maintain and enhance the natural environment, in partnership with other stakeholders and the community	Fire management guidance for the park is developed, and implemented in accordance with this guidance	Fire management guidance for the park that proposes fire prevention, preparedness, response and recovery measures to reduce the risk of bushfire to life, community and park values and maintain ecologically appropriate fire regimes	Every five years
Section 11 Weeds and pest animals				
	To minimise the negative impacts of weeds and pest animals on the assets/values within the park	Weed and pest animal management guidance for the regional park is developed, and implemented in accordance with this guidance	Management guidance that prioritises the management of weeds and pest animals	Every five years
Section 16 Noongar cultural heritage				
registered Aboriginal sites of archaeological, mythological, ceremonial, cultural and spiritual significance	To identify and protect significant Aboriginal places and values. To involve Noongar people in managing the park.	No unapproved disturbance of registered Aboriginal heritage sites because of park management operations	Number of registered Aboriginal heritage sites disturbed without formal approval through the GKB/SWALSC NSHA and Aboriginal Heritage Act processes	Annually
Section 18 Visitor use and planning				

highly engaged and interested urban community consisting of volunteers, community groups, visitors, neighbours and residents	To provide and manage a range of safe, quality and minimal-impact recreation sites, facilities and activities	Level of visitation at selected recreation sites to be maintained or increased from 2020 levels	Number of visits (as measured by DBCA) to selected recreation sites	Every five years
Section 22 Working with the community				
highly engaged and interested urban community consisting of volunteers, community groups, visitors, neighbours and residents	To facilitate community involvement in the management of the park	Maintenance or increase in the numbers of volunteers and number of volunteer hours contributed to park management from 2020 levels	Number of volunteers registered with DBCA and LGAs, and number of volunteer hours contributed to park management	Every five years

Appendix 2. Schedule of land for inclusion in the regional park

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
Bunbury	9000 on P61603 (11800241) part	College Grove	60.38	State of WA			Vacant land - residential	UCL	Manea Park	To be vested in Conservation and Parks Commission[33]
	937 on P220462 (1295992)	College Grove	56.61	State of WA	16044	Unmanaged reserve	Rifle range	Crown	Manea Park	To be vested in Conservation and Parks Commission
	506 on P74949 (12009787) part	College Grove	100.06	State of WA	32963	City of Bunbury	Parklands, recreation	Crown	Manea Park	To be vested in Conservation and Parks Commission
	935 on P220463 (1295987)	College Grove	1.19	State of WA	36316	Aqwest - Bunbury Water Corporation (MO)	Pipeline, water supply	Crown	Manea Park	To remain vested in Bunbury Water Corporation (Aqwest)
	939 on P220463 (1295989)	College Grove	80.72	State of WA	32963	City of Bunbury	Parklands, recreation	Crown	Manea Park	To be vested in Conservation and Parks Commission
	1051 on P33288 (11049624)	College Grove	3.74	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Manea Park	To be vested in Conservation and Parks Commission
	1085 on P39511 (11239002) part	Davenport	3.73	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Manea Park	To be vested in Conservation and Parks Commission
	1050 on P33291 (11051601) portion	Davenport	6.05	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Manea Park	To be vested in Conservation and Parks Commission
	1052 on P33287 (11050142) part	Davenport	16.39	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Manea Park	To be vested in Conservation and Parks Commission
	505 on P74949 (12009786) part	Davenport	10.81	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Manea Park	To be vested in Conservation and Parks Commission
	417 on P47943 (11515236)	Davenport	7.22	WAPC				freehold	Manea Park	To be vested in Conservation and Parks Commission
	570 on P408588 (12242052)	Davenport	48.73	State of WA	40664	City of Bunbury (MO)	Golf	Crown	Manea Park	To be vested in Conservation and Parks Commission
	6092 on P19647 (1100467) part	Davenport	1.52	State of WA	46486	City of Bunbury	Drainage, recreation	Crown	Manea Park	To remain vested in City of Bunbury
	91 on P19647 (1100468) part	Davenport	0.14	Commissioner of Main Roads				freehold	Manea Park	To be amalgamated with City of Bunbury drainage reserve (R46486)
	567 on D541565 (499626)	Carey Park	6.22	State of WA	32719	City of Bunbury	Public recreation	Crown	Loughton Park	To be vested in Conservation and Parks Commission
	568 on P215947 (499576) part	Carey Park	6.62	State of WA	32722	City of Bunbury	Public recreation	Crown	Loughton Park	To be vested in Conservation and Parks Commission

[32] PIN = Property Identifier Number.

[33] Lands that are vested in the Conservation and Parks Commission are managed by DBCA on behalf of the Conservation and Parks Commission in accordance with the CALM Act.

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	617 on P12039 (499577)	Carey Park	2.45	State of WA	32722	City of Bunbury	Public recreation	Crown	Loughton Park	Cleared area to remain with City of Bunbury, bushland area to be vested in Conservation and Parks Commission
	3 on D30204 (500206) part	Usher	1.85	private				freehold	Tuart Brook/Five Mile Brook	Subject to future planning considerations including Tuart Brook Structure Plan
	4 on D30204 (500205) part	Usher	1.84	private				freehold	Tuart Brook/Five Mile Brook	Subject to future planning considerations including Tuart Brook Structure Plan
	8 on D75424 (500203) part	Usher	3.66	private				freehold	Tuart Brook/Five Mile Brook	Subject to future planning considerations including Tuart Brook Structure Plan
	802 on P65631 (11919150) part	Usher	18.2	Development WA				freehold	Tuart Brook/Five Mile Brook	Subject to further consideration by DevelopmentWA. Part of lot is subject to the Tuart Brook Structure Plan
	632 on P183835 (500204)	Usher	8.91	WAPC				Crown	Tuart Brook/Five Mile Brook	To be vested in Conservation and Parks Commission
	632 on P183835 (500201) part	Usher	1.3	WAPC				Crown	Tuart Brook/Five Mile Brook	To be vested in Conservation and Parks Commission
	632 on P183835 (500187)	Usher	21.97	WAPC				Crown	Usher Woodland	To be vested in Conservation and Parks Commission
	2001 on P31675 (11023817)	Usher	14.45	DoC - Housing Authority				freehold	Shearwater Tuart Forest	Subject to further consideration by Department of Communities
	450 on P302624 (11400768)	Usher	13.63	DoC - Housing Authority				freehold	Shearwater Tuart Forest	Subject to further consideration by Department of Communities
	451 on P302624 (11400767)	Usher	13.57	DoC - Housing Authority				freehold	Shearwater Tuart Forest	Subject to further consideration by Department of Communities
	452 on P302624 (11400766)	Usher	13.03	DoC - Housing Authority				freehold	Shearwater Tuart Forest	Subject to further consideration by Department of Communities
Bunbury, Capel	303 on P3097 (500184)	Usher	26.91	DoC - Housing Authority				freehold	Shearwater Tuart Forest	Subject to further consideration by Department of Communities
	(11406941) part	Usher	2.59	City of Bunbury and Shire of Capel			Public road (portion Ocean Drive)	road reserve	Shearwater Tuart Forest	To remain with City of Bunbury, Shire of Capel portion subject to further considerations
	304 on P3097 (500183)	Dalyellup	28.29	Development WA				freehold	Shearwater Tuart Forest	Subject to further consideration by DevelopmentWA
	2 on D89772 (1157632) part	Dalyellup	32.03	Water Corporation			Pump station	freehold	Shearwater Tuart Forest	To remain with Water Corporation
Capel	9001 on P28038 (1369026)	Dalyellup	0.64	Development WA				freehold	Shearwater Tuart Forest	Subject to further consideration by DevelopmentWA
	9001 on P28038 (1369027)	Dalyellup	0.15	Development WA				freehold	Shearwater Tuart Forest	Subject to further consideration by DevelopmentWA

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	9003 on P28038 (1369034)	Dalyellup	27.07	Development WA				freehold	Shearwater Tuart Forest	Subject to further consideration by DevelopmentWA
	5000 on P56132 (11714952)	Dalyellup	0.65	State of WA	46267	Shire of Capel (MO)	Drainage	Crown	Shearwater Tuart Forest	To remain with Shire of Capel
	1 on D94794 (1232243)	Usher	11.82	Water Corporation				freehold	Maidens Reserve	To remain with Water Corporation
Bunbury	(11200626)	Usher	1.01	State of WA				UCL	Maidens Reserve	To be vested in Conservation and Parks Commission
	626 on P183497 (500015)	Usher	54.21	WAPC				freehold	Maidens Reserve	To be vested in Conservation and Parks Commission
	1180 on P33518 (11074212)	Withers	113.61	State of WA	670	City of Bunbury (MO)	Endowment	Crown	Maidens Reserve	City of Bunbury to retain Mindalong car park, remainder to be vested in Conservation and Parks Commission
	1179 on P33518 (11058425)	Withers	0.41	State of WA	11998	WA Land Information Authority (Landgate)	Trigonometrical station	Crown	Maidens Reserve	To be vested in Conservation and Parks Commission
	613 on P182781 (492993)	Withers	12.08	State of WA	35020	City of Bunbury	Public recreation, toilets	Crown	Maidens Reserve	To be vested in the Conservation and Parks Commission
	614 on P182781 (492994)	Withers	0.04	State of WA	35449	Water Corporation	Sewage pumping	Crown	Maidens Reserve	To remain with Water Corporation
	3001 on P43554 (11362986) part	Withers	41.76	State of WA	30601	City of Bunbury	Recreation, club, hall, sports complex, youth centre	Crown	Hay Park	City of Bunbury to retain Bussell Hwy layby, remainder to be vested in Conservation and Parks Commission
	633 on P184054 (499953)	Withers	0.01	State of WA	36803	Water Corporation	Sewage pumping	Crown	Hay Park	To remain with Water Corporation
	5 on D50137 (499916) part	Davenport	7.85	Rawling Road Pty Ltd				freehold	Preston River Link	N/A
	1 on D12060 (499913) part	Davenport	16.05	Rawling Road Pty Ltd				freehold	Preston River Link	N/A
	(11580420) part	East Bunbury	0.21	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	(11580417) part	East Bunbury	0.74	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations, including South Moorlands Structure Plan
	31 on P808 (11421160)	East Bunbury	0.43	State of WA				freehold	Preston River Link	Subject to further planning & land use considerations
	31 on P808 (11421158)	East Bunbury	2.23	State of WA				freehold	Preston River Link	Subject to further planning & land use considerations
	792 on D29960 (494114)	East Bunbury	0.76	State of WA	43612	City of Bunbury	Public recreation	Crown	Preston River Link	To remain with City of Bunbury

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	(1301697) part	East Bunbury	0.21	City of Bunbury			Public road	road reserve	Preston River Link	To remain with City of Bunbury
	507 on D23148 (494133)	East Bunbury	0.01	State of WA	30116	City of Bunbury	Drainage	Crown	Preston River Link	To remain with City of Bunbury
	30 on P808 (11421161) part	East Bunbury	0.89	Water Resources Ministerial Body				freehold	Preston River Link	Subject to further planning & land use considerations
	32 on P808 (11421159) part	East Bunbury	0.29	Water Resources Ministerial Body				freehold	Preston River Link	Subject to further planning & land use considerations
	3 on D36038 (490396) part	Glen Iris	0.73	Water Resources Ministerial Body				freehold	Preston River Link	Subject to further planning & land use considerations
	4 on D42434 (490404) part	Glen Iris	0.39	Water Resources Ministerial Body				freehold	Preston River Link	Subject to further planning & land use considerations
	41 on P2144 (11487253)	East Bunbury	0.02	private				freehold	Preston River Link	N/A
	0 on P3853 (11561060) part	Glen Iris	4.06	State of WA				freehold	Preston River Link	Subject to further planning & land use considerations
	501 on D34014 (490403) part	Glen Iris	0.40	State of WA	29721	unmanaged reserve	Drainage	Crown	Preston River Link	Subject to further planning & land use considerations, including South Moorlands Structure Plan
	(11580408)	Glen Iris	0.26	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations, including South Moorlands Structure Plan
	(11580409)	Glen Iris	0.98	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations, including South Moorlands Structure Plan
	(11580416)	Glen Iris	0.30	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	34 on P409640 (12287724)	Glen Iris	0.25	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	50 on D2965 (11558422) part	Glen Iris	0.002	State of WA				freehold	Preston River Link	Subject to further planning & land use considerations
	141 on P39512 (11238202) part	Glen Iris	4.08	WAPC				freehold	Preston River Link	To be vested in Conservation and Parks Commission
	141 on P39512 (11238203) part	Glen Iris	3.75	WAPC				freehold	Preston River Link	To be vested in Conservation and Parks Commission

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	200 on P63117 (11843011)	Glen Iris	3.15	State of WA	50481	unmanaged reserve	Foreshore management	Crown	Preston River Link	Future tenure is subject to consideration under the South West Native Title Settlement
	(11580411)	Glen Iris	0.48	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations, including potential amalgamation with Lot 200 subject to South West Native Title Settlement
	27 on P2155 (12003407) part	Glen Iris	0.09	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations, including potential amalgamation with Lot 200 subject to South West Native Title Settlement
	704 on P14391 (494117)	Glen Iris	0.2	State of WA	40578	City of Bunbury	Public recreation	Crown	Preston River Link	To remain with City of Bunbury
	5458 on P186979 (499923)	Glen Iris	0.18	State of WA	39701	City of Bunbury	Parklands, recreation	Crown	Preston River Link	To remain with City of Bunbury
	(11580412)	Davenport	1.59	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	(11580414)	Davenport	0.92	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	5636 on D78059 (1020911) part	Davenport	1.05	State of WA	42566	City of Bunbury	Parklands, recreation	Crown	Preston River Link	To remain with City of Bunbury
	1059 on P32797 (11057358) part	Davenport	0.1	State of WA	42566	City of Bunbury	Parklands, recreation	Crown	Preston River Link	To remain with City of Bunbury
	123 on P71853 (11980439)	Davenport	10.2	State of WA	31866	City of Bunbury	Parklands, recreation	Crown	Preston River Link	To remain with City of Bunbury, may be reviewed if Structure Plan to north progressed
	126 on P71854 (11980445)	Davenport	3.05	State of WA	45201	City of Bunbury	Drainage	Crown	Preston River Link	To remain with City of Bunbury, may be reviewed if Structure Plan to north progressed
	121 on P71853 (11980435)	Davenport	1.21	State of WA	31866	City of Bunbury	Public recreation	Crown	Preston River Link	To remain with City of Bunbury, may be reviewed if Structure Plan to north progressed
	120 on P71852 (11963553) part	Davenport	5.45	City of Bunbury				freehold	Preston River Link	To remain with City of Bunbury, may be reviewed if Structure Plan to north progressed
	74 on P40593 (11265746) part	Davenport	13.41	ATG Geraldton Pty Ltd				freehold	Preston River Link	N/A
	313 on P43713 (11374820)	Davenport	11.73	South West Development Commission				freehold	Preston River Link	Subject to further planning & land use considerations, including South Moorlands Structure Plan
	104 on P403618 (12120803) part	Davenport	0.47	Commissioner of Main Roads				freehold	Preston River Link	To remain with MRWA
	1030 on P30054 (1390858)	Glen Iris	0.05	State of WA			Public road	road reserve	Preston River Link	To remain with City of Bunbury

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	120 on D42966 (494120) part	Glen Iris	0.02	City of Bunbury				freehold	Preston River Link	To remain with City of Bunbury
	(1347374) part	Glen Iris	0.13	City of Bunbury			Public road	road reserve	Preston River Link	City of Bunbury to retain portion south of Collie River, portion north of river to be vested in Conservation and Parks Commission
	(1292288) part	Glen Iris	0.07	City of Bunbury			Public road	road reserve	Preston River Link	To remain with City of Bunbury
	(11580410) part	Glen Iris	0.15	City of Bunbury			Public road	road reserve	Preston River Link	To remain with City of Bunbury
	150 on P30054 (1390857)	Glen Iris	8.06	private				freehold	Preston River Link	N/A
	200 on P2075 (11853580) part	Glen Iris	0.21	private				freehold	Preston River Link	N/A
	16 on P2075 (494146) part	Glen Iris	0.01	private				freehold	Preston River Link	N/A
	17 on P2075 (494147) part	Glen Iris	0.03	private				freehold	Preston River Link	N/A
	18 on P2075 (494148) part	Glen Iris	0.05	private				freehold	Preston River Link	N/A
	19 on P2075 (494149) part	Glen Iris	0.07	private				freehold	Preston River Link	N/A
	104 on D84803 (1087271) part	Glen Iris	0.18	private				freehold	Preston River Link	N/A
	200 on P56668 (11891694) part	Glen Iris	1.47	private				freehold	Preston River Link	N/A
	(11580413) part	Picton	1.21	State of WA				UCL	Preston River Link	Portion adjacent to Kaeshagen reserves (Lots 141) to be vested in Conservation and Parks Commission, remainder subject to further planning & land use considerations
	201 on P57769 (11733330) part	Picton	2.55	Private				freehold	Preston River Link	N/A
	91 on P26522 (499878) part	Picton	8.83	Private				freehold	Preston River Link	N/A
	51 on P71842 (11967602) part	Picton	5.01	Wesfarmers CSBP Ltd				freehold	Preston River Link	N/A
Bunbury, Dardanup	(11580415)	Picton	0.21	State of WA				UCL	Preston River Link	Subject to further planning & land use considerations
	9000 on P401654 (12165753) part	Picton East	15.84	Tigerpoint Pty Ltd, Goldbright Pty Ltd, Bunbury				freehold	Preston River Link	N/A

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
				Industrial Properties						
Bunbury	(494451)	Bunbury	4.83	State of WA	12636	City of Bunbury	Recreation	Crown	Mangrove Cove (Anglesea Island)	To be vested in Conservation and Parks Commission
	(11866801) part	Bunbury	0.24	State of WA				UCL	Mangrove Cove	Northern cleared strip containing pathway to be vested in City of Bunbury, remainder to be vested in Conservation and Parks Commission
	(494487)	Bunbury	1.53	State of WA				UCL	Mangrove Cove	Northern cleared strip containing pathway to be vested in City of Bunbury, remainder to be vested in Conservation and Parks Commission
	502 on P410594 (12263712)	Bunbury	0.69	State of WA	5275	CALM Executive Body (MO)	Conservation, educational purposes, Government requirements - State	Crown	Mangrove Cove	To remain with DBCA
	502 on P410594 (12263713)	Bunbury	1.32	State of WA	5275	CALM Executive Body (MO)	Conservation, educational purposes, Government requirements - State	Crown	Mangrove Cove	To remain with DBCA
	503 on P410594 (12263714)	Bunbury	1.60	State of WA	5275	CALM Executive Body (MO)	Conservation, educational purposes, Government requirements - State	Crown	Mangrove Cove	To remain with DBCA
	501 on P410594 (12263711)	Bunbury	15.01	State of WA	5275	CALM Executive Body (MO)	Conservation, educational purposes, Government requirements - State	Crown	Mangrove Cove	To remain with DBCA
	830 on P91060 (12300469)	Vittoria	16.94	State of WA	34030	City of Bunbury	Recreation	Crown	Turkey Point	To remain with City of Bunbury
	958 on P219849 (1356722)	Vittoria	10.94	State of WA				UCL	Turkey Point	No change proposed
	(1209898)	Vittoria	1.31	State of WA				UCL	Turkey Point	No change proposed
	(494427)	Vittoria	0.55	State of WA				UCL	Turkey Point	No change proposed
	963 on P220558 (494450) part	Vittoria	4.13	State of WA				UCL	Turkey Point	No change proposed

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	250 on P66833 (11866293) part	Pelican Point	5.42	State of WA	50518	City of Bunbury (MO)	Recreation	Crown	Pelican Point	To remain with City of Bunbury
	905 on P22473 (1222428)	Pelican Point	3.12	State of WA	45799	City of Bunbury	Public recreation	Crown	Pelican Point	To remain with City of Bunbury
	906 on P22473 (1222429)	Pelican Point	1.65	State of WA	45799	City of Bunbury	Public recreation	Crown	Pelican Point	To remain with City of Bunbury
	250 on P24033 (1314819)	Pelican Point	0.80	State of WA	45799	City of Bunbury	Public recreation	Crown	Pelican Point	To remain with City of Bunbury
	500 on P67347 (11888883)	Pelican Point	1.25	State of WA	50517	City of Bunbury (MO)	Recreation and drainage	Crown	Pelican Point	To remain with City of Bunbury
	132 on P24030 (1314864)	Pelican Point	0.42	State of WA	47810	City of Bunbury	Public recreation	Crown	Pelican Point	To remain with City of Bunbury
	245 on P24030 (1314865)	Pelican Point	0.005	State of WA	47810	City of Bunbury	Public recreation	Crown	Pelican Point	To remain with City of Bunbury
	901 on D93176 (1198061)	Pelican Point	8.89	State of WA	45607	City of Bunbury	Public recreation and drainage	Crown	Pelican Point	To remain with City of Bunbury
	(1155907) part	Pelican Point	0.38	State of WA			Public road	road reserve	Pelican Point	To remain with City of Bunbury
	428 on D65386 (496623) part	Pelican Point	0.55	Commissioner of Main Roads				freehold	Pelican Point	No change proposed
Dardanup	500 on P65634 (11886551)	Eaton	4.53	State of WA	24359	Shire of Dardanup (MO)	Recreation, reserve, toilets	Crown	Eaton foreshore	To remain with Shire of Dardanup
	501 on P65634 (11886552)	Australind	3.51	State of WA	25417	Shire of Dardanup (MO)	Public recreation, park	Crown	Pratt Road reserve	To remain with Shire of Dardanup
	4847 on P6229 (11813668)	Eaton	1.60	State of WA	25417	Shire of Dardanup (MO)	Public recreation, park	Crown	Pratt Road reserve	To remain with Shire of Dardanup
	(495732)	Eaton	0.34	State of WA				UCL	Leicester Reserve	To be vested in Shire of Dardanup
	5536 on P15906 (11036318)	Eaton	7.001	State of WA	25417	Shire of Dardanup (MO)	Public recreation, toilets	Crown	Watson Reserve	To remain with Shire of Dardanup
	5091 on D29894 (495723)	Eaton	0.87	Australian Boy Scouts' Association				freehold	Watson Reserve	N/A
	500 on P405484 (12180397)	Australind	2.59	State of WA	43939	Shire of Dardanup (MO)	Foreshore management	Crown	Eelup/Elbow wetland & south Collie River foreshore	To remain with Shire of Dardanup
	501 on P405484 (12180398)	Australind	3.72	State of WA	43939	Shire of Dardanup (MO)	Foreshore management	Crown	Eelup/Elbow wetland & south Collie River foreshore	To remain with Shire of Dardanup
	5679 on P19531 (1093320)	Eaton	47.99	State of WA	43641	Shire of Dardanup	Drainage, foreshore	Crown	Eelup/Elbow wetland & south	Shire of Dardanup to retain portion south of buffer from Eelup/Elbow

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
							protection, public recreation		Collie River foreshore	Wetland, remaining northern area to be vested in Conservation and Parks Commission. Minimum 50m buffer subject to further discussion
	9504 on P50198 (11561849) part	Eaton	0.21	Lancett Court Pty Ltd				freehold	Eelup/Elbow wetland & south Collie River foreshore	N/A
	9503 on P50198 (11561847)	Eaton	17.16	Parkridge Group Pty Ltd				freehold	Eelup/Elbow wetland & south Collie River foreshore	A buffer around Eelup/Elbow wetland to be vested in Conservation and Parks Commission, remainder to be vested in Shire of Dardanup. Minimum 50m buffer subject to further discussion
	9505 on P50198 (11561850)	Eaton	16.11	Parkridge Group Pty Ltd				freehold	Eelup/Elbow wetland & south Collie River foreshore	To be vested in Conservation and Parks Commission when ceded to the State
	9004 on P40217 (12190812) part	Eaton	2.21	Parkridge Group Pty Ltd				freehold	Eelup/Elbow wetland & south Collie River foreshore	Subject to further planning & land use considerations
	3001 on P38067 (11197151) part	Eaton	5.14	Ardross Estates SA Pty Ltd				freehold	Eelup/Elbow wetland & south Collie River foreshore	To be vested in Shire of Dardanup when ceded to the State
	(1370905) part	Millbridge	0.45	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	(12180399) part	Millbridge	0.11	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	(1218778) part	Millbridge	0.10	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	647 on P51067 (11593725)	Millbridge	6.94	State of WA	48979	Shire of Dardanup (MO)	Conservation, foreshore management, public recreation, drain reserve	Crown	Millars Creek	To remain with Shire of Dardanup
	645 on P51067 (11593724)	Millbridge	0.21	State of WA	48829	Shire of Dardanup (MO)	Drainage, public recreation	Crown	Millars Creek	To remain with Shire of Dardanup
	646 on P50141 (11559827)	Millbridge	0.46	State of WA	48802	Shire of Dardanup (MO)	Conservation, foreshore management,	Crown	Millars Creek	To remain with Shire of Dardanup

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
							recreation, reserve			
	641 on P50141 (11559826)	Millbridge	2.74	State of WA	48801	Shire of Dardanup (MO)	Drainage and recreation	Crown	Millars Creek	To remain with Shire of Dardanup
	122 on P42477 (11365904)	Millbridge	0.6	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	121 on P41302 (11323542)	Millbridge	1.61	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	(12276466) part	Millbridge	0.01	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	(12276464) part	Millbridge	0.03	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	(12188724) part	Millbridge	0.03	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	(12249432) part	Millbridge	0.005	State of WA			Public road	road reserve	Millars Creek	To remain with Shire of Dardanup
	2010 on P404752 (12188758) part	Millbridge	0.02	State of WA	52264	Shire of Dardanup (MO)	Public recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2009 on P407123 (12223412) part	Millbridge	1.61	State of WA	52942	Shire of Dardanup (MO)	Public recreation	Crown	Millars Creek	To remain with Shire of Dardanup
	2008 on P55740 (11718315)	Millbridge	0.29	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2023 on P55740 (11718316)	Millbridge	0.73	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	15 on P38067 (11197045)	Millbridge	2.44	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	443 on P44632 (11443966)	Millbridge	0.45	State of WA	47537	Shire of Dardanup	Conservation, foreshore	Crown	Millars Creek	To remain with Shire of Dardanup

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
							management, recreation, drainage			
	444 on P47151 (11533567)	Millbridge	0.74	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2001 on P66488 (11941677)	Millbridge	0.61	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2002 on P66488 (11941676)	Millbridge	0.24	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2003 on P55740 (11718310)	Millbridge	0.24	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2005 on P55740 (11718312)	Millbridge	1.06	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2006 on P55740 (11718313)	Millbridge	1.06	State of WA	47537	Shire of Dardanup	Conservation, foreshore management, recreation, drainage	Crown	Millars Creek	To remain with Shire of Dardanup
	2012 on P410933 (12276465)	Millbridge	3.22	State of WA	48979	Shire of Dardanup	Conservation, foreshore management, public recreation	Crown	Millars Creek	To remain with Shire of Dardanup
	2011 on P404752 (12188759) part	Millbridge	0.45	State of WA	48979	Shire of Dardanup	Conservation, foreshore management, public recreation	Crown	Millars Creek	To remain with Shire of Dardanup

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	2061 on P407123 (12223415)	Millbridge	3.95	State of WA	48979	Shire of Dardanup	Conservation, foreshore management, public recreation	Crown	Millars Creek	To remain with Shire of Dardanup
	9535 on P408140 (12281688) part	Millbridge	1.83	Ardross Estates SA Pty Ltd				freehold	Millars Creek	To be vested with Shire of Dardanup following implementation of developer commitments
Harvey	500 on P66272 (11905545)	Australind	15.67	State of WA	43714	Shire of Harvey (MO)	Recreation	Crown	Clifton Community Reserve & foreshore	Shire of Harvey to retain cleared & active recreation areas, remainder to be vested in Conservation and Parks Commission
	5117 on P9821 (501675)	Australind	1.83	State of WA	31576	Shire of Harvey	Public recreation	Crown	Clifton Community Reserve & foreshore	To remain with Shire of Harvey
	501 on P66272 (11905546)	Australind	15.88	State of WA	31576	Shire of Harvey	Public recreation	Crown	Clifton Community Reserve & foreshore	To remain with Shire of Harvey, northern portion subject to further land use considerations
	502 on P66272 (11905547)	Australind	0.11	Water Corporation				freehold	Clifton Community Reserve & foreshore	To remain with Water Corporation
	23 (501672)	Australind	5.25	WAPC				freehold	Clifton Community Reserve & foreshore (Alexander Island)	To be vested in Conservation and Parks Commission
	300 on D13648 (502785)	Australind	2.01	State of WA	33247	unmanaged reserve	Public recreation	Crown	Collie River foreshore reserves - golf course to Elbow	Subject to further consideration associated with northern portion of adjacent Lot 501
	5188 on D26619 (502784)	Australind	4	State of WA	33247	unmanaged reserve	Public recreation	Crown	Collie River foreshore reserves - golf course to Elbow	Future tenure is subject to consideration under the South West Native Title Settlement
	5189 on D26619 (502786)	Australind	2.24	State of WA	33247	unmanaged reserve	Public recreation	Crown	Collie River foreshore reserves - golf course to Elbow (Snake Island)	Future tenure is subject to consideration under the South West Native Title Settlement
	355 on P72934 (11966228) part	Australind	23.94	State of WA				UCL	Australind reserves	On completion of site contamination remediation, to be vested in Conservation and Parks Commission
	350 on P72934 (11966227) part	Australind	8.03	State of WA				Crown Lease	Australind reserves	N/A
	122 on P64347 (12303511) part	Australind	0.22	Water Corporation				freehold	Australind reserves	To be amalgamated with Lot 121 on P64347 (12303512)
	121 on P64347 (12303512)	Australind	24.62	WAPC				freehold	Australind reserves	On completion of site contamination remediation, to be vested in Conservation and Parks Commission
	5428 on D26619 (502762)	Australind	5.26	State of WA	38393	WA Wildlife Authority[3]	Conservation, fauna,	Crown	Australind reserves	To remain with Conservation and Parks Commission

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
							protection of flora			
	123 on P64347 (12303513)	Australind	0.64	Shire of Harvey				freehold	Australind reserves	To be vested in Conservation and Parks Commission
	123 on P64347 (12303510)	Australind	3.58	Shire of Harvey				freehold	The Elbow	Shire of Harvey to retain southern portion (including recreation site infrastructure), northern portion to be vested in Conservation and Parks Commission
	3 on P2858 (496505)	Australind	3.05	Shire of Harvey				freehold	The Junction/Twin Rivers	To be vested in Conservation and Parks Commission
	929 on P57707 (11740698)	Australind	23.61	WAPC				freehold	The Junction/Twin Rivers	To be vested in Conservation and Parks Commission
	(496504)	Australind	0.47	State of WA				UCL	The Junction/Twin Rivers	To be vested in Conservation and Parks Commission
	618 on P417764 (12451623)	Australind	12.05	State of WA				UCL	South Treendale Collie River foreshore reserves	Following implementation of developer commitments, small area of low fuel zone to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	9501 on P409841 (12267810) part	Australind	10.27	Fastbet Investments Pty Ltd				freehold	South Treendale Collie River foreshore reserves	Subject to further planning & land use considerations as part of Foreshore Management Plan
	5146 on P9944 (502070)	Australind	0.83	State of WA	32214	Shire of Harvey (MO)	Public recreation, drainage	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	100 on P458054 (11487238)	Australind	1.39	State of WA	32214	Shire of Harvey (MO)	Public recreation, drainage	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	19 on D68327 (502065)	Australind	2.34	Shire of Harvey				freehold	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	14 on D28693 (502076)	Australind	18.67	Shire of Harvey				freehold	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	5742 on D88577 (1137577)	Australind	0.64	State of WA	43953	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	5147 on P9944 (502084)	Australind	0.86	State of WA	32213	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	6129 on P107134 (502083)	Australind	1.15	State of WA	8025	Shire of Harvey	Recreation	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	4977 on P171122 (502082)	Australind	0.08	State of WA	8025	Shire of Harvey	Recreation	Crown	Foreshore reserves west of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	16 on P9944 (502080) part	Australind	5.09	private				freehold	Foreshore reserves west of Brunswick River south of Paris Road	N/A
	10 on D20247 (502081) part	Australind	0.88	private				freehold	Foreshore reserves west of Brunswick River south of Paris Road	N/A
	5513 on P13594 (503652)	Australind	0.97	State of WA	39922	Shire of Harvey (MO)	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	5512 on P13595 (503653)	Australind	3.72	State of WA	40020	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	Portion south of Lot 1 on D65161 (503650) to remain with Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	5509 on D65161 (503651)	Australind	1.78	State of WA	39864	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	1 on D 65161 (503650)	Australind	5.67	Shire of Harvey				freehold	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	5737 on P18677 (1114536)	Leschenault	1.38	State of WA	43651	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	5842 on D93610 (1205858)	Leschenault	0.2	State of WA	43651	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	5736 on P18677 (1114539)	Leschenault	7.003	State of WA	43651	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	5736 on P20002 (11624867)	Leschenault	4.05	State of WA	43651	Shire of Harvey	Public recreation	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	5456 on P216236 (503660)	Australind	1.62	State of WA				UCL	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	6055 on P23788 (1314810)	Australind	5.85	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	335 on P41808 (11315859) part	Australind	3.11	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	Landscaped/mown areas to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	338 on P43298 (11394283)	Australind	0.29	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	Landscaped/mown areas to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	801 on P43301 (11456640) part	Australind	0.11	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	Portion in Regional Park to be vested in Conservation and Parks Commission, remainder of Lot to be vested in Shire of Harvey
	802 on P46330 (11518832) part	Australind	0.31	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	Landscaped/mown areas to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	803 on P48873 (11570377) part	Australind	0.05	State of WA	46225	unmanaged reserve	Recreation, conservation and foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	5734 on P18677 (1114537)	Australind	4.46	State of WA	45505	Water and Rivers Commission	Foreshore management	Crown	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	To be vested in Conservation and Parks Commission
	1 (503654)	Australind	0.02	private				freehold	Foreshore reserves west of Brunswick River - Paris Road to Forrest Hwy	N/A

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	4781 on P167274 (496567)	Australind	3.12	State of WA	26270	Shire of Harvey	Conservation of flora	Crown	Wardandi Flora Reserve & adjacent reserves	To remain with Shire of Harvey
	4781 on P167274 (496568)	Australind	6.23	State of WA	26270	Shire of Harvey	Conservation of flora	Crown	Wardandi Flora Reserve & adjacent reserves	To remain with Shire of Harvey
	5866 on P193908 (1262126)	Australind	4.91	State of WA	26271	Shire of Harvey	Rubbish dump	Crown	Wardandi Flora Reserve & adjacent reserves	To remain with Shire of Harvey
	562 on P68322 (11899777)	Australind	0.03	State of WA				Public Road	Wardandi Flora Reserve & adjacent reserves	To remain with Shire of Harvey
	(11737646) part	Australind	0.79	State of WA				Public Road	Wardandi Flora Reserve & adjacent reserves	To remain with Shire of Harvey
	560 on P68322 (11899778)	Australind	12.69	State of WA	35061	unmanaged reserve	Regional open space	Crown	Wardandi Flora Reserve & adjacent reserves	Future tenure is subject to consideration under the South West Native Title Settlement
	42 on D60534 (503655) part	Australind	11.89	Shire of Harvey				freehold	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	Landscaped/mown area to remain with Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	5976 on P220515 (1299574)	Australind	0.44	State of WA	46276	Shire of Harvey	Public recreation	Crown	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	5977 on P220515 (1299575)	Australind	3.92	State of WA	46276	Shire of Harvey	Public recreation	Crown	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	5978 on P220515 (1299576)	Australind	9.09	State of WA	46276	Shire of Harvey	Public recreation	Crown	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	21 on P35611 (11118467)	Australind	0.78	State of WA	46276	Shire of Harvey	Public recreation	Crown	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	To remain with Shire of Harvey
	5774 on P220515 (1299573)	Australind	23.18	State of WA	46275	Water and Rivers Commission	Foreshore management	Crown	Foreshore reserves east of Brunswick River - Paris Road to Forrest Hwy	Following implementation of developer commitments, to be vested in Conservation and Parks Commission
	110 on P408141 (12262164)	Australind	16.33	State of WA	52873	unmanaged reserve	Foreshore management,	Crown	Foreshore reserves east of Brunswick	Following implementation of developer commitments,

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
							conservation, public recreation		River south of Paris Rd	landscaped/POS areas to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	112 on P408141 (12262177)	Australind	1.43	WAPC				freehold	Foreshore reserves east of Brunswick River south of Paris Rd	To be vested in Conservation and Parks Commission
	111 on P408141 (12262172)	Australind	3.52	WAPC				freehold	Foreshore reserves east of Brunswick River south of Paris Rd	To be vested in Conservation and Parks Commission
	4740 on P107135 (496591)	Australind	0.77	State of WA	8118	Shire of Harvey	Stopping place	Crown	Foreshore reserves east of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	(12010942) part	Australind	0.03	State of WA				Public Road	Foreshore reserves east of Brunswick River south of Paris Rd	To remain with Shire of Harvey
	1000 on P73813 (12000224) part	Australind	2.41	State of WA	51740	unmanaged reserve	Recreation	Crown	Foreshore reserves east of Brunswick River south of Paris Rd	Landscaped/mown areas to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	123 on D5637 (11682229)	Australind	7.71	WAPC				freehold	Foreshore reserves east of Brunswick River south of Paris Rd	Area containing infrastructure associated with house to remain with WAPC, remainder to be vested in Conservation and Parks Commission
	5877 on P22225 (1226953)	Brunswick	11.95	State of WA	45532	unmanaged reserve	Public recreation	Crown	Brunswick River foreshore reserves - east of Forrest Hwy	To be vested in Conservation and Parks Commission
	5905 on P215641 (1339531)	Brunswick	0.02	State of WA				UCL	Brunswick River foreshore reserves - east of Forrest Hwy	To be vested in Conservation and Parks Commission
	61 on P22225 (1226947) part	Brunswick	9.51	WAPC				freehold	Brunswick River foreshore reserves - east of Forrest Hwy	To be vested in Conservation and Parks Commission
	100 on D9442 (11567912) part	Brunswick	2.66	Walford Developments Pty Ltd				freehold	Brunswick River foreshore reserves - east of Forrest Hwy	N/A
	5729 on P17161 (1014271) part	Brunswick	4.65	State of WA	43511	Shire of Harvey	Public recreation	Crown	Brunswick River foreshore reserves - east of Forrest Hwy	To be vested in Conservation and Parks Commission

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	5729 on D74316 (11662116)	Wellesley	0.16	State of WA	43511	Shire of Harvey	Public recreation	Crown	Brunswick River foreshore reserves - east of Forrest Hwy	To be vested in Conservation and Parks Commission
	43 on P17161 (1059634) part	Wellesley	10.51	Oasis Holdings Pty Ltd				freehold	Brunswick River foreshore reserves - east of Forrest Hwy	N/A
	500 on D74316 (542406) part	Wellesley	1.67	Oasis Holdings Pty Ltd				freehold	Brunswick River foreshore reserves - east of Forrest Hwy	N/A
	(1286916)	Australind	0.05	State of WA				UCL	Point Douro	To be vested in Conservation and Parks Commission
	(11575854) part	Australind	0.001	State of WA				UCL	Point Douro	To be vested in Conservation and Parks Commission
	10 on P220125 (1286915) part	Australind	2.77	State of WA	26858	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro	To be vested in Conservation and Parks Commission
	9 on P220125 (1286914) part	Australind	0.61	State of WA	26858	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro	To be vested in Conservation and Parks Commission
	8 on P220125 (1286913) part	Australind	1.81	State of WA	26858	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro	To be vested in Conservation and Parks Commission
	6 on P220125 (1286912)	Australind	0.57	State of WA	26858	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro	To be vested in Conservation and Parks Commission
	7 on P220125 (1211195)	Australind	0.15	State of WA	26858	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro	To be vested in Conservation and Parks Commission
	2 on P193812 (502824)	Australind	4.92	State of WA	13531	Water and Rivers Commission (MO)	Foreshore management	Crown	Point Douro (Bar Island)	To be vested in Conservation and Parks Commission
	51 on P416281 (12364857)	Australind	14.9	WAPC				freehold	Point Douro	To be vested in Conservation and Parks Commission
	4851 on P557 (503211)	Australind	4.22	State of WA	25441	Shire of Harvey (MO)	Recreation	Crown	Ridley Place Foreshore Park	To remain with Shire of Harvey
	5 on D24236 (503212)	Australind	0.20	Shire of Harvey				freehold	Ridley Place Foreshore Park	To remain with Shire of Harvey

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	4921 on P2681 (503240)	Australind	1.41	State of WA	9722	Shire of Harvey	Recreation	Crown	Ridley Place Foreshore Park	To remain with Shire of Harvey
	4779 on P404503 (12155898) part	Australind	4.09	State of WA	25203	Shire of Harvey (MO)	Recreation	Crown	Leschenault Estuary eco-museum/Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	4921 on P2681 (1211194)	Australind	0.31	State of WA	9722	Shire of Harvey	Recreation	Crown	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	5286 on P2686 (503241)	Australind	0.41	State of WA	36030	Shire of Harvey	Heritage place	Crown	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	(1343937) part	Leschenault	1.80	State of WA			Public road	road reserve	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	6034 on P220933 (1317775)	Leschenault	6.22	State of WA	36857	Shire of Harvey	Public recreation	Crown	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	5865 on D86526 (541493)	Leschenault	2.98	State of WA	45943	Water and Rivers Commission	Conservation and recreation	Crown	Leschenault Estuary Cathedral Ave foreshore	To be vested in Shire of Harvey
	5741 on D88168 (1135553)	Leschenault	9.19	State of WA	44269	Shire of Harvey	Foreshore management	Crown	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	5728 on P12735 (541514)	Leschenault	1.47	State of WA	43513	Shire of Harvey	Public recreation	Crown	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	(1348501) part	Leschenault	13.21	State of WA			Public road	road reserve	Leschenault Estuary Cathedral Ave foreshore	To remain with Shire of Harvey
	3919 (496340)	Australind	0.25	State of WA	18133	Shire of Harvey	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	31 on D27242 (496341)	Australind	1.99	Shire of Harvey				freehold	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	15 on P194817 (1317096)	Australind	0.92	State of WA	26534	Shire of Harvey	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	4939 on D27767 (502154)	Australind	0.53	State of WA	26872	Shire of Harvey	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	5735 on D24172 (502153)	Australind	0.16	State of WA	29508	Shire of Harvey	Public recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	5049 on D34684 (502155)	Australind	0.14	State of WA	29508	Shire of Harvey	Public recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	(11397024) part	Australind	0.06	State of WA			Public road	road reserve	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	61 on P41826 (11347901)	Australind	0.16	State of WA	53694	Shire of Harvey	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	4723 on D20089 (502163)	Australind	0.83	State of WA	24445	unmanaged reserve	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To be vested with Shire of Harvey
	5046 on D35230 (502168)	Australind	0.03	State of WA	24445	unmanaged reserve	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To be vested with Shire of Harvey
	5250 on D49249 (501929)	Australind	0.1	State of WA	35051	unmanaged reserve	Public recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To be vested with Shire of Harvey
	4744 on D21347 (501930)	Australind	0.47	State of WA	24879	unmanaged reserve	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To be vested with Shire of Harvey
	46 on D61635 (502165)	Australind	0.13	State of WA	53694	Shire of Harvey	Recreation	Crown	Leschenault Estuary Old Coast Road foreshore	To remain with Shire of Harvey
	50 on P417236 (12371261)	Parkfield	162.61	WAPC				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	7 on P232713 (540172) part	Parkfield	87.97	Coonawarra Nominees Pty Ltd				freehold	Leschenault Peninsula C.P. & proposed additions	N/A
	(1307696) part	Parkfield	9.99	State of WA			Public road	road reserve	Leschenault Peninsula C.P. & proposed additions	To remain with Shire of Harvey
	6121 (11340442) part	Parkfield	1.50	State of WA			Public road	road reserve	Leschenault Peninsula C.P. & proposed additions	To remain with Shire of Harvey
	(1307699)	Parkfield	1.36	State of WA			Public road	road reserve	Leschenault Peninsula C.P. & proposed additions	To remain with Shire of Harvey

LGA	Lot no. & plan (P) or diagram (D) of survey (PIN[32])	Locality	Area (ha)	Ownership	Crown reserve			Land type	Park area	Comments/proposal[2]
					No.	Vesting[1]	Purpose(s)			
	(1307700) part	Parkfield	0.47	State of WA			Public road	road reserve	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	100 on P44680 (11426637)	Parkfield	38.47	WAPC				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	(11624952)	Leschenault	13.31	State of WA			Public road	road reserve	Leschenault Peninsula C.P. & proposed additions	Remain managed by DBCA as part of the Conservation Park
	5641 on P190960 (540089)	Leschenault	564.28	State of WA	42470	NPNCA[3]	Conservation park	Crown	Leschenault Peninsula C.P. & proposed additions	To remain with Conservation and Parks Commission, managed by DBCA
	5547 on P188523 (540167)	Leschenault	5.67	State of WA	40564	NPNCA	Conservation of flora and fauna	Crown	Leschenault Peninsula C.P. & proposed additions	To remain with Conservation and Parks Commission, managed by DBCA
	3 on P3957 (540087)	Leschenault	179.99	State of WA				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	3 on P3957 (540091)	Leschenault	96.09	State of WA				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	4 on P3957 (540086)	Leschenault	127.87	State of WA				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	4 on P3957 (540090)	Leschenault	82.31	State of WA				freehold	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	5592 on P91879 (494449)	Leschenault	72.24	State of WA	42470	NPNCA	Conservation park	Crown	Leschenault Peninsula C.P. & proposed additions	To be vested in Conservation and Parks Commission
	17 on P406672 (12248323) part	Roelands	5.87	State of WA				UCL	Meadow Landing	Fire access track to be vested in Shire of Harvey, remainder to be vested in Conservation and Parks Commission
	341 on P59720 (11771208)	Roelands	3.31	State of WA	50179	unmanaged reserve	Recreation and foreshore management	Crown	Meadow Landing	Foreshore strip to be vested in Conservation and Parks Commission, remainder to be vested in Shire of Harvey
	6213 on P36378 (11156178)	Roelands	13.79	State of WA	47717	unmanaged reserve	Foreshore management	Crown	Meadow Landing	Future tenure is subject to consideration under the South West Native Title Settlement
	6211 on P35690 (11141235)	Roelands	13.60	State of WA	47717	unmanaged reserve	Foreshore management	Crown	Meadow Landing	Future tenure is subject to consideration under the South West Native Title Settlement

[1] MO = management order; unmanaged reserve = a reserve which is not formally placed under the care and control of a management body (formerly unvested reserve).
[2] Proposals in this table may need more consultation with the owner(s) or vesting body to complete, may be subject to future planning proposals/approvals, and some proposals may not reach a conclusion during the life of the plan or may result in a different outcome than proposed.
[3] The NPNCA (National Parks and Nature Conservation Authority) and the Western Australian Wildlife Authority have been replaced by the Conservation and Parks Commission.

Appendix 3. Management zones and recreation settings

Management zones and recreation settings framework

	Management zones		
	Conservation and Protection	**Natural Environment Use**	**Recreation**
Recreation settings	Natural		
	Natural Recreation		
		Recreation	
			Highly Modified

Management zones

Management zone	Management emphasis	Acceptable uses and facilities	Recreation setting
Conservation and protection	The management emphasis is to protect and where possible enhance the conservation values (biota, natural systems and heritage) as well as the landscape qualities of the park. Priority will be given to restoring and maintaining the natural state of conservation and protection areas. Visible evidence of management will be low/minimal.	Areas within this zone will have restricted public access to protect conservation values. Unauthorised vehicles prohibited. Rehabilitation of vegetation and habitat protection will be undertaken. Education, interpretation and research uses are appropriate. Some facilities, such as interpretive information, nature trails, boardwalks, cycle paths and through access, is acceptable in certain locations, with measures to mitigate environmental impacts (Section 18 *Visitor use and planning*). The provision of new facilities will depend on the values of an area and whether it is located within the Bunbury Water Reserve and Wellhead Protection Zones.	**'Natural' or 'Natural-recreation'**
Natural environment use	The management emphasis is to provide for appropriate uses of the natural environment. Areas will be managed jointly for conservation and enhancement of native plants and animals, improvement of landscape qualities, public use and recreation. Public use must be compatible with the assigned purpose of the relevant reserve. Visible evidence of management may be moderate to high. Management will encourage uses and develop facilities that promote conservation and education.	Public access primarily by nature trails and cycle paths. Through access by vehicles along established roads is allowed. Some development of facilities may be necessary. These may include education nodes and facilities associated with visitor use. The provision of facilities will depend on the values of an area and whether it is located within the Bunbury Water Reserve and Wellhead Protection Zones. Commercial concessions may be appropriate. Rehabilitation and habitat protection may be necessary.	**'Natural-recreation' or 'Recreation'**
Recreation	The prime emphasis of management will be to provide a variety of recreation opportunities. The type and scale of facilities provided will depend on the values of any given area, community demand for recreation, and appropriate park management. Management involves minimising the impact of visitor activities through the sensitive placement and provision of access and facilities as well as through the provision of information and interpretive material. Visible evidence of management may be high.	Public use may be high in these areas. Ranges from passive to active recreation pursuits. Commercial concessions are considered appropriate. Rehabilitation, landscaping and reticulation of areas may be necessary. The provision of new facilities will depend on the values of an area and whether it is located within the Bunbury Water Reserve and Wellhead Protection Zones.	**'Natural-recreation', 'Recreation' or 'Highly modified'**
Special use	Management for purposes other than conservation, recreation or visitor services.	Private lease or freehold land. No public access. Access for managing agencies as needed.	**No visitor management settings**

Recreation settings

	Highly modified	Recreation	Natural-recreation	Natural
Principle experience	***Visitors within a 'Highly Modified' setting will experience: an extensive range of nature based recreation opportunities; opportunities to discover a specific feature or experience; a high level of on-site information and facilities requiring a minimal level of self-reliance; opportunities for group activities; and a high likelihood of contact with other users.***	***Visitors within a 'Recreation' setting will experience: a range of opportunities to interact with nature; a high to moderate level of on-site information and facilities requiring a low level of self-reliance; and a high to moderate likelihood of contact with other users.***	***Visitors within a 'Natural Recreation' setting will experience: a range of opportunities for activities including opportunities for challenging interaction with nature using outdoor skills; a moderate to low level of on-site information requiring a degree of pre-visit planning using off-site information; a moderate to low level of facilities requiring visitors to be largely self-reliant; and a moderate to low likelihood of contact with individuals and small groups allowing for experiences of tranquility, solitude and independence.***	***Visitors within a 'Natural' setting will experience: a range of opportunities for activities in an environment that offers a high degree of challenge; a low level of on-site information requiring pre-visit planning using off-site information; a low level of facilities requiring visitors to be self-reliant; and a low likelihood of interaction between visitor groups allowing for experiences of tranquility, solitude and independence.***
Visitation and interaction	High level of visitation from the local population and visitors to the area. High likelihood of contact with other users, interaction with other visitors is expected and is constant. Group and family activities are an important part of the visitor experience.	High to moderate level of visitation. High to moderate likelihood of contact with other users.	Moderate to low level of visitation. Moderate to low likelihood of contact with individuals and small groups. Visitors can experience isolation from human influences.	Low level of visitation. Low likelihood of interaction between visitor groups. Visitors can experience solitude.
Self-reliance	Minimal self-reliance is required.	Low level of self-reliance is required. Outdoor skills important in areas away from roads and tracks.	Visitors need to be largely self-reliant, access only to basic facilities at specific locations. Outdoor skills are important.	Visitors need to be self-reliant. Outdoor skills are required.
Information and interpretation	Interpretation shelters, displays and leaflets, guided tours may be provided. Trailheads and signs along trails. Large group interpretation and education focus.	Interpretative material, brochures and track guides available. Trailheads and signs along trails.	Signposting provided where necessary and minimal interpretative material may be provided off-site or at trailheads. Trip planning before visit more essential. Pre-visit off-site information available.	Limited sign posting only where necessary. Low level of information found principally off-site. Trip planning before visit is essential. Pre-visit off-site information available.
Modification and development	High level of modification to natural landscape character is evident. A high level of facilities is provided including defined parking areas, shade shelters, gas barbecues, tables, toilets and visitor information; a visitor centre may also be present. High to moderate level of marine facilities available at marine entry points, including large boat ramps. High level of recreation and commercial craft.	High to moderate level of modification to natural landscape character is evident. A high to moderate level of facilities such as interpretative shelters, gas barbecues, tables and toilets maybe provided. Facilities may be common but clustered.	Moderate to low level of modification to natural landscape character is evident. Local landscape and features are dominant although there have been some changes to the vegetation and landform such as clearings and formed tracks. A moderate to low level of basic facilities such as shade shelters, barbecues and toilets may be provided.	Minimal modification to natural landscape character is evident. Local landscape and features dominate without major changes to the landform or features. A low level of basic facilities such as parking areas, signage and trails may be provided. Parking areas provided are small scale and defined by natural elements.

	Highly modified	Recreation	Natural-recreation	Natural
		Moderate to low level of marine facilities including small boat ramps, small jetty or moorings. Low level of recreation and commercial craft.	Basic level of marine facilities including beach access for boat / kayak launching. Low level of recreation and commercial craft.	No marine facilities provided. Very low to no recreation and commercial craft.
Management intent	Frequent management presence / on-site manager. High degree of on-site management including use of physical barriers and on-site staff, vehicle and pedestrian movement is heavily controlled. Managed for high levels of visitor use. Provide for sustainable interaction between developments and the adjacent natural areas.	Frequent management presence in the area. High to moderate on-site management requirements, including signs and barriers, defined paths and controlled recreation opportunities.	Occasional management presence including visits by managing agency staff and signs. Permits may be used to control access.	Infrequent management presence. Permits may be used to control access.
Access	Easy to access by a full range of vehicles including two-wheel drive. Well defined trails including universal access. High likelihood[34] that trails[35] will be sealed.	Easy to moderate level of accessibility for two-wheel drive vehicles sealed or unsealed. Well defined and signed trails. High to moderate likelihood that trails will be sealed.	Moderate to difficult level of accessibility. Four-wheel drive and seasonal two-wheel drive. Formed trails with some signage. Moderate to low likelihood that trails will be sealed.	Difficult access, mainly four-wheel drive only. Some trails formed but with limited signposting. Low likelihood that trails will be sealed.

[34] The likelihood of sealed trails does not preclude the occurrence of unsealed trails across the settings, and vice versa.
[35] For more information on trail classification see the *Users guide to the Australian walking track grading system* at parks.dpaw.wa.gov.au/activity/bushwalking.