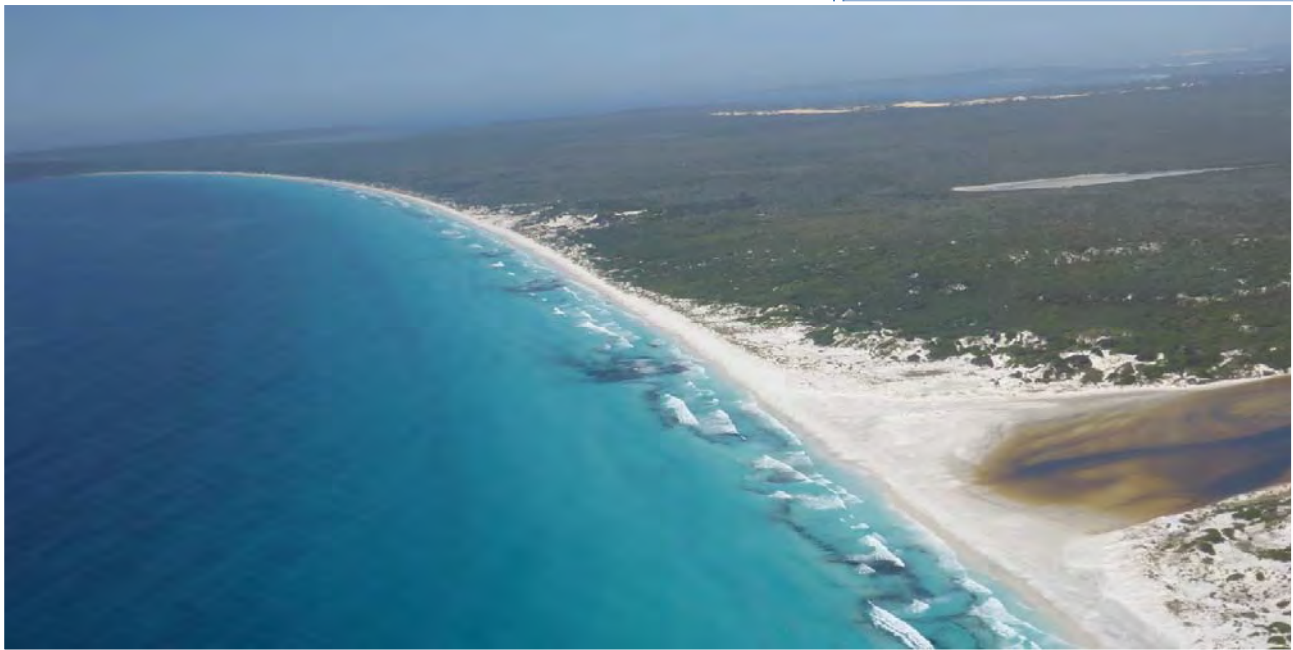


Shire of Jerramungup Coastal Management Plan (Final) 2017 - 2027



Prepared For: Shire of Jerramungup
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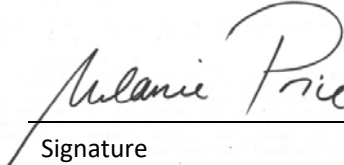
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29 March 2018

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We respectfully acknowledge the original custodians of the Shire of Jerramungup coast, their rich culture, deep affinity with the land and spiritual connection to it. We pay our respects to the Minang people of the Noongar nation and to elders past, present and future.

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The Shire of Jerramungup resolved to adopt this management plan on 21 March 2018.

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LIST OF ABBREVIATIONS

AHIS	Aboriginal Heritage Inquiry System
AS	Australian Standard
CAMBA	China-Australia Migratory Bird Agreement
CAP	Coastal Adaptation and Protection grants
DBCA	Department of Biodiversity, Conservation and Attractions
DoT	Department of Transport
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Protection
EPA	Environmental Protection Authority
GSDC	Great Southern Development Commission
FoWEG	Friends of Wellstead Estuary Group
ILUA	Indigenous Land Use Agreement
JAMBA	Japan-Australia Migratory Bird Agreement
LGA	Local government authority
NCCARF	National Climate Change Adaptation Research Facility
NRM	Natural resource management
ROKAMBA	Republic of Korea and Australia Migratory Bird Agreement
SWALSC	South West Land and Seas Council
UCL	Unallocated Crown Land
UMR	Unmanaged Reserves
WAPC	Western Australian Planning Commission

EXECUTIVE SUMMARY

The Shire of Jerramungup adopted this coastal management plan on 21 March 2018.

Where?

This coastal management plan considers the attributes of publicly owned coastal land within the Shire of Jerramungup, builds on previous knowledge and focuses on practical implementation opportunities. All public coastal areas are considered in this plan, noting that many areas are unallocated crown land or crown reserves with various purposes and management bodies (Figure 1).

For the purposes of this management plan, the project area is public land abutting the coast and the marine area beyond. However, proposals on either public or private land that trigger an assessment under State Planning Policy (SPP) 2.6 State Coastal Planning, including land identified by the First Pass Hazard Assessment or any subsequent Coastal Hazard Risk Management and Adaptation Planning (CHRMAP) will need to address the SPP and have regard to the intent and objectives of this coastal management plan.

Why?

The Shire of Jerramungup coast is under increasing pressure from a variety of user groups, particularly during peak holiday and seasonal periods. This has led to higher use of infrastructure such as the Fishery Beach marina, access tracks and beaches, including in sensitive or vulnerable areas. This plan includes an assessment of the condition of coastal areas, with practical ideas for management of coastal areas. Input from managers and coastal users has allowed for prioritisation of planned works and other projects.

The main issues which face the Shire of Jerramungup coast include:

- Increased recreational use;
- Management of commercial use;
- Opportunities for community enjoyment and tourism;
- Visitor risk;
- Risks and hazards related to climate variability and sea level rise.

What guides us?

Development of the concepts in this plan have been based on coastal management principles which consider the physical and intrinsic values of the area, and how use can be balanced to ensure sustainable environmental, social and economic outcomes.

In addition, coastal planning is guided by legislation, policy and guidelines which are outlined in Section 2.

The structure of the coastal management plan is outlined in Table 1.

TABLE 1: STRUCTURE OF THE COASTAL MANAGEMENT PLAN

<p>Section 1 – Background</p> <ul style="list-style-type: none"> • Context • Goals and objectives • Key focus areas • Outlines of approach • Provides an overview of coastal management principles <p>Section 2 –Planning Framework</p> <ul style="list-style-type: none"> • Provides information on the planning and management framework for coastal management <p>Section 3 – Coastal Overview</p> <ul style="list-style-type: none"> • Describes the values and current state of the coastal zone <p>Section 4 – First Pass Coastal Hazard Assessment</p> <ul style="list-style-type: none"> • Summary of study undertaken for coastal hazards and long-term planning and management <p>Section 5 – Community and Stakeholder Engagement</p> <ul style="list-style-type: none"> • Outlines key stakeholders • Outlines consultation undertaken • Provides a summary of outcomes from consultation <p>Section 6 – Coastal Management Issues and Recommendations</p> <ul style="list-style-type: none"> • Description and summary of coastal management issues, with recommendations <p>Section 7 – Assessment of Coastal Nodes with Recommendations</p> <ul style="list-style-type: none"> • Provides information about coastal nodes • Analyses current condition and management requirements • Makes recommendations for management actions <p>Section 8 – Implementation</p> <ul style="list-style-type: none"> • Summarises actions and activities, outlines responsibility, ability to achieve outcomes, priorities and timeframes • Outlines specific actions and activities for top 10 priority areas. <p>Section 9 – Monitoring, Evaluation and Review</p> <ul style="list-style-type: none"> • Recommendations to ensure that the management plan is implemented and remains a useful tool

Who has been involved?

- Development of this coastal management plan review has occurred in consultation with a wide range of stakeholders who value, manage and/or use the coast.
- The review project has been guided by a Steering Committee made up of Shire of Jerramungup Councillors, community members and business people, with representation from State government agencies and other organisations with an interest in coastal matters.

- A survey has been distributed within the Shire of Jerramungup to find out what is valued about coastal area, how areas are used and what management actions are most desired.
- Community activities have been hosted by the Shire of Jerramungup, including a stall at the 2017 Easter markets and a colouring competition for young coastal lovers.
- Coastal areas have been surveyed during peak seasonal periods to determine levels of use and to determine how management might best be implemented.
- A community workshop has been held to help develop priorities for implementation and to celebrate previous coastal achievements.
- This draft plan will be advertised for a six-week period, with submissions considered and appropriate changes made to the plan, prior to its adoption by the Shire of Jerramungup.

What next?

The Shire of Jerramungup, other land managers and stakeholders will need to form and maintain partnerships to secure funding and implement priority actions. Land managers have different levels of resources available and operational priorities, so the priorities outlined in this plan reflect the risk and need for the action, not commitment of land managers for implementation.

A summary of the top strategic and on-ground actions is included in Table 2. All recommended actions are included in Appendix A.

TABLE 2: TOP STRATEGIC ACTIVITIES

Specific actions have been outlined in this management plan (Section 7 and Appendix A). The following are the top actions based on stakeholder consultation and assessment of coastal nodes.

1. **Governance and advocacy:** Implementation of this plan will occur through continued membership of the South Coast Management Group and formation of a local Coastal Action Group to achieve on-ground outcomes.
2. **Education and awareness:** Land managers and stakeholders will promote community awareness and education through activities and sharing of information.
3. **Coordination:** Seek funding in partnership with key stakeholders based on highest and most achievable priorities, budget commitments and use of action programs.
4. **First Pass Coastal Hazard Assessment:** Incorporate information into the Shire of Jerramungup Local Planning Strategy and Local Planning Scheme as a trigger for consideration of future planning and development proposals.
5. **Visitor risk management:** Undertake visitor risk assessments (safety audits) and implement visitor risk plans for priority coastal locations: Dillon Beach, Banky Beach, Little Boat Harbour and Doubtful Island Peninsula.
6. **Visitor risk management/ signage:** Develop and implement a plan to erect Australian Standard complaint signage at key points in coastal reserves to provide information including site name, risks, facilities and activities.
7. **Dieback (awareness and partnerships):** Foster partnerships between key managers (Shire, Department of Biodiversity, Conservation and Attractions, SCNRM, FBG) to promote dieback hygiene, access management, information sharing and training to reduce the risk associated with the introduction and spread of dieback.
8. **Dieback (signage):** Raise awareness of dieback risk, including via incorporation of dieback information into Australian Standard compliant signage across the Shire of Jerramungup coast.
9. **Access:** Increase awareness to minimise impacts of four-wheel drives and off road vehicles using 'Code Off-Road' information sheet.
10. **Weeds:** Monitor and treat high priority weeds as described for coastal nodes (Section 7).
11. **Weeds:** Support community groups and organisations who can assist with weed management to control priority weed species with a consistent, long term, planned approach.

12. **Tourism:** Consider development of the Rock Cairn Lookout as an iconic visitor location with interpretation of Aboriginal and European cultural heritage, whale watching, coastal values and Bremer Canyon. This would require detailed planning and design to achieve a quality outcome similar to the Point Ann facilities.
13. **Facilities:** Investigate expansion of jetty and future requirements for other facilities at Fishery Beach with key stakeholders.
14. **First Pass Coastal Hazard Assessment:** Complete full CHRMAP for areas where potential impacts are identified in the first pass hazard assessment (Bremer Beach to Fishery Beach, including Wellstead Estuary) and/or where new coastal infrastructure is proposed.
15. **Design:** Improve coastal project processes and activity implementation outcomes through adoption of high standard designs and use of existing design criteria.

TABLE 3: TOP PRIORITY ACTIONS AND AREAS

Top Priority Actions and Areas: See Section 7 and Appendix A for details

1. **Main Beach and Bremer Beach:** Monitoring of this high use area for four wheel drive use and protection of shore birds.
2. **Fishery Beach Marina:** Planning for expansion of facilities and monitoring of erosion.
3. **House Beach:** Tenure, design of camping area, access and weed management.
4. **Little Boat Harbour:** Council to resolve visitor risk issues relating to access and consider development of more detailed design for layout based on adopted concept with assessment of technical requirements for trailers, tenure, erosion risk hazard and environmental impacts.
5. **Gordon Inlet:** Road access, shore birds and associated biodiversity, dieback risk reduction.
6. **Rock Cairn Lookout:** Development of iconic visitor location.
7. **Banky Beach:** Visitor risk management.
8. **Tooregullup Beach:** Incorporate information into AS compliant signage regarding dieback risk, values of shore bird and biodiversity.
9. **Point Henry:** Install AS compliant, 'Code Off-road' and dieback risk signage at entry to Point Henry.
10. **Fitzgerald River National Park interface:** Upgrade access to Point Ann (Pabelup Road; DBCA) and via Gordon Inlet Road (Shire of Jerramungup).



1 INTRODUCTION

1.1 BACKGROUND

The Shire of Jerramungup contains some of Western Australia's most dramatic and diverse coastline and marine areas with long sandy beaches, dramatic cliffs, rocky headlands, continental shelf and marine canyons. The coastline and associated marine areas are highly valued by locals and visitors for intrinsic, environmental and commercial values. Much of the coastline is remote, with limited accessibility. This remoteness is one of the greatest values of the coastline in terms of visitor appreciation but also presents challenges for management of this fragile area.

The increasing number of visitors to the coast, particularly during peak holiday periods, is leading to environmental and land use pressures. There are emerging economic development opportunities related to the coastal attributes, including the Bremer Canyon and other ecotourism opportunities. However, the development of the ecotourism sector requires investment of resources and the development of partnerships between key stakeholders.

The coastline is made up of a number of crown reserves, unallocated crown land (UCL) and private land holdings (Figure 1). Some of the reserves have management bodies, such as the Shire of Jerramungup. However, much of the public land does not have a formal body to oversee its management (i.e. unmanaged reserves; UMR). The responsibility for these areas lies with the Department of Planning, Lands and Heritage (DPLH), which is not sufficiently resourced to have an active management presence. There are several professional fishermen who have commercial leases and fishing shacks on Crown land along the coast. Contrary to the Western Australia Squatter's Shack Policy, shacks exist in UMR and on a private land holding.

The recent South West Native Title Settlement has implications for coastal tenure and management. This is likely to result in the joint management of some UCL and UMR areas with Aboriginal groups and provide opportunities for coastal management.

The Jerramungup coast has been the subject of previous management plans, including:

- Shire of Jerramungup (1995) Jerramungup Coastal Management Plan.
- Belton – Taylforth (2005) Shire of Jerramungup Coastal Management Plan.

Other related plans which relate to the Shire of Jerramungup coastal zone are listed in Appendix B.

1.2 WHY DO WE NEED A PLAN FOR MANAGEMENT?

A wise man once said, 'make this the last management plan we need'. What he meant was that many management plans are written, but recommended actions are not achieved (due either to technical issues, lack of funding or limited resources). However, the process of planning for management is more than just the preparation of a document. Consultation with decision makers and the community allows for re-evaluation of what coastal areas mean to us. It allows us to update our ideas in the face of emerging issues. And it allows coastal users to rethink their relationship with the coastal and marine management process. So, more than a document, coastal management planning is a process which sets us on a path. The path enables us to identify and implement actions which will enhance our experience of the coast and protect valuable areas for future generations.

1.3 MANAGEMENT PLAN AREA

The area covered by this Management Plan includes Crown Reserves and UCL adjacent to the coast, within the Shire of Jerramungup, as shown in Figures 1a and 1b.

1.4 GOALS AND OBJECTIVES

The goals, strategies and objectives for this Management Plan are outlined below.

Goals (broad primary outcome):

To promote sustainable use of coastal natural resources, maintain high levels of biodiversity and facilitate community enjoyment of coastal areas.

Strategies (approach to achieve goal):

- Shire of Jerramungup and other land managers to establish a budget category for coastal management projects, maintenance and monitoring.
- To strengthen the South Coast Management Group, an existing partnership group with membership including the Shire of Jerramungup, other local governments on the South Coast, other land managers, community members and stakeholders. The group currently meets regularly and will provide advice and feedback to the Shire of Jerramungup regarding projects, progress, and funding.
- To form a Coastal Action Group to allow the Shire to work with stakeholders to plan and implement coastal projects.
- Link outcomes of this Coastal Management Plan to the Shire of Jerramungup Strategic Community Plan.
- Engage with the community and key stakeholders to raise awareness, in support of the overall goal of this management plan.

Objectives (measurable steps to achieve strategies):

The objectives for this management plan are:

- To undertake ongoing, meaningful engagement with coastal stakeholders and the community;
- To enhance and protect the natural environment through planning and implementation of realistic strategies and actions;
- The identification of on-ground management activities to allow for sustainable use;
- To provide planning direction for all land managers, including the Shire of Jerramungup Council and stakeholders; and
- To consider coastal processes, including hazards related to storm surge, sea level rise with identification of options and potential actions.

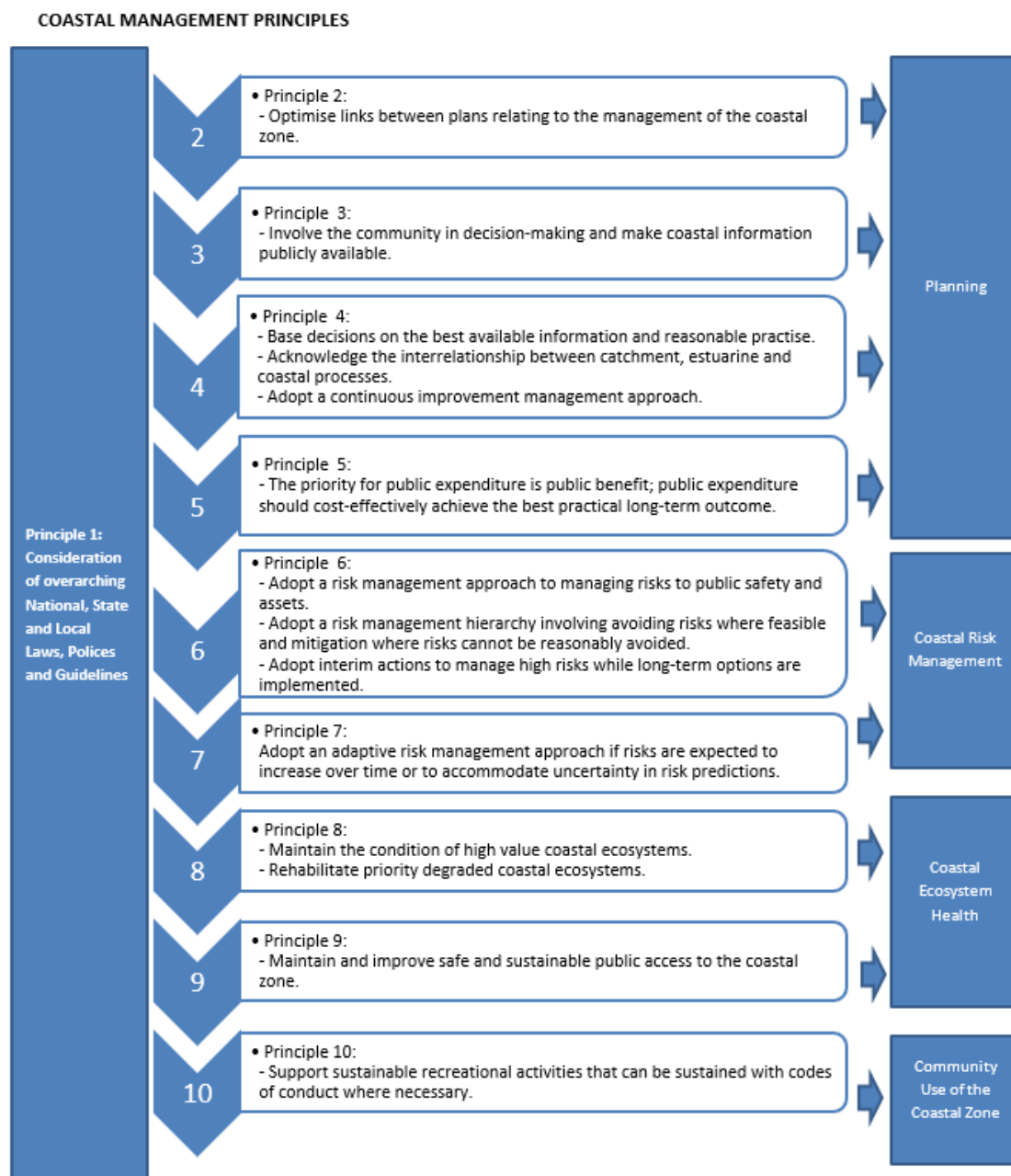
Actions

To outline specific, measurable, achievable and time bound activities, including who is responsible for actions.

Actions for this management plan are developed in each section of this plan and summarised in Appendix A.

1.5 COASTAL PLANNING AND MANAGEMENT PRINCIPLES

Overarching principles for coastal management are outlined below.



(Adapted by Aurora Environmental from: Office of Environment and Heritage (2013) NSW Government Guidelines for Preparing Coastal Zone Management Plans)

1.6 FOCUS ISSUES

Initial consultation with stakeholders indicated that there are six important focus issues:

1. Access management;
2. Sustainable community use and safety management;
3. Future risk and actions associated with sea level rise and storm impacts;
4. Protection of biodiversity, culture and heritage;
5. Consideration of tourism and other commercial drivers; and
6. Management regardless of tenure.

1.7 APPROACH AND SCOPE

The development of this Management Plan has included:

- A review of strategic documents, including previous management plans.
- Interviews with coastal users and managers, including land managers, State Government agencies, Shire of Jerramungup officers and other organisations and stakeholders.
- Consultation with community groups and members on the coast and at public events, a workshop, advertising of the draft coastal management plan.
- Assessment of coastal nodes.
- Identification of risks and opportunities.
- On-ground works and strategic actions for priority areas have been determined through consultation, consideration of resources available and achievability of proposed actions.

2 PLANNING FRAMEWORK

2.1 INTERNATIONAL

Launched in 1971, UNESCO's Man and the Biosphere Programme (MAB) is an Intergovernmental Scientific Programme that aims to establish a scientific basis for the improvement of relationships between people and their environments.

MAB combines the natural and social sciences, economics and education to improve human livelihoods and the equitable sharing of benefits, and to safeguard natural and managed ecosystems, thus promoting innovative approaches to economic development that are socially and culturally appropriate, and environmentally sustainable.

Its World Network of Biosphere Reserves currently counts 669 sites in 120 countries all over the world, including 20 transboundary sites. One of 14 biosphere reserves in Australia, the Fitzgerald Biosphere Reserve (330,000 ha) is located between Bremer Bay and Hopetoun on the south coast of Western Australia which includes a significant proportion of the Shire of Jerramungup coast. It comprises upland plains, a marine plain deeply incised by several rivers creating large valleys and tablelands, and a chain of small isolated peaks running close to the coast, forming the distinctive Barren Ranges. The highest peak reaches 450 metres above sea level, and rugged coastal cliffs are formed where the quartzite ranges meet the ocean.

Sand dunes, inlets and rivers, swamps and lakes also occur on the gently sloping marine plain and dry up in summer. There is a rich diversity of plant species in the park and surrounding areas, including dry sclerophyllous woodland, coastal woodlands and heath. The biosphere contains over 250 rare or geographically restricted plant and animal species, about many of which little is known. Of the 2,000 vascular plants species native to this area, around 75% are endemic. Human impacts that occur within the reserve are mainly related to tourism and the development of visitor facilities. More than 36,000 people visit the reserve each year.

Designation date: 1978

Administrative authorities: Conservation Commission of Western Australia, Department of Biodiversity, Conservation and Attractions

Surface area (terrestrial and marine): 329,039 ha

Core area(s): 329,039 ha

2.2 NATIONAL

The Australian Government is a signatory to many international environmental initiatives. These initiatives are often the impetus for specific planning and management to occur throughout the country. The initiatives of most relevance to the Shire of Jerramungup coastline are:

- Wetlands Policy of the Commonwealth Government of Australia (Environment Australia, 1997).
- Japan-Australia Migratory Bird Agreement (JAMBA, 1974).
- China-Australia Migratory Bird Agreement (CAMBA, 1988).
- *Environment Protection and Biodiversity Conservation Act, 1999.*

- The Republic of Korea and Australia Migratory Bird Agreement (ROKAMBA) which came into force in July 2007 and complements JAMBA and CAMBA.

The Australian Government is responsible for the management of the Exclusive Economic Zone which extends 200 nautical miles offshore, excluding three nautical miles of inshore State waters. The Department of the Environment and Energy oversees the establishment of zoning and rules for Australian Marine Parks, including for the South-west Network which includes the Commonwealth waters adjacent to the Shire of Jerramungup. A review of Australian Marine Parks (formally known as Commonwealth Marine Reserves) is currently being undertaken with an objective of balancing the need to protect important marine habitats and features, with supporting the sustainable use and enjoyment of marine areas. The Bremer Marine Park (Appendix C) is proposed to contain a National Park Zone and two Special Purposes Zones (mining exclusion and trawl zone). Different uses are either permitted or prohibited depending on the zone designation (Appendix C). The *Draft South-west Network Management Plan 2017* is currently being reviewed.

The Australian Government has recognised that a national approach is needed to address the potential risks associated with climate change in the coastal zone, including sea level rise, storm events, more frequent inundation and flooding. The National Climate Change Adaptation Research Facility (NCCARF) has been established to help local decision makers plan for climate risks with the creation of an online tool called CoastAdapt (Department of the Environment and Energy, 2017).

2.3 WESTERN AUSTRALIAN GOVERNMENT¹

Responsibility for the coastal and marine environment in Western Australia is spread over many State Government agencies and other organisations. While not directly responsible for coastal and marine areas, some have an interest via funding and other programs. Key organisations include:

- DPLH and Western Australian Planning Commission (WAPC)– Planning legislation, State Planning Policies, guidelines and land tenure. *The State Coastal Planning Policy 2.6* (WAPC, 2013) has been updated to recognise predicted sea level rise over the next 100 years. The new setbacks, which allow for a sea-level rise, only apply to new development, not existing ones. There is also a framework for coastal hazard assessment related to climate change and coastal processes.
- Department of Water and Environmental Regulation (DWER) and Environmental Protection Authority (EPA) – *Environmental Protection Act 1986*, policies and guidelines. Information about groundwater, estuaries, inlets and wetlands.
- Department of Biodiversity, Conservation and Attractions (DBCA)– Conservation estate and marine park strategic planning, limited management of weeds, dieback and feral animals in UCL and UMR;
- Department of Transport (DoT) – Boating facilities and coastal infrastructure planning, construction, and management. DoT also provides advice and grants to support coastal management;

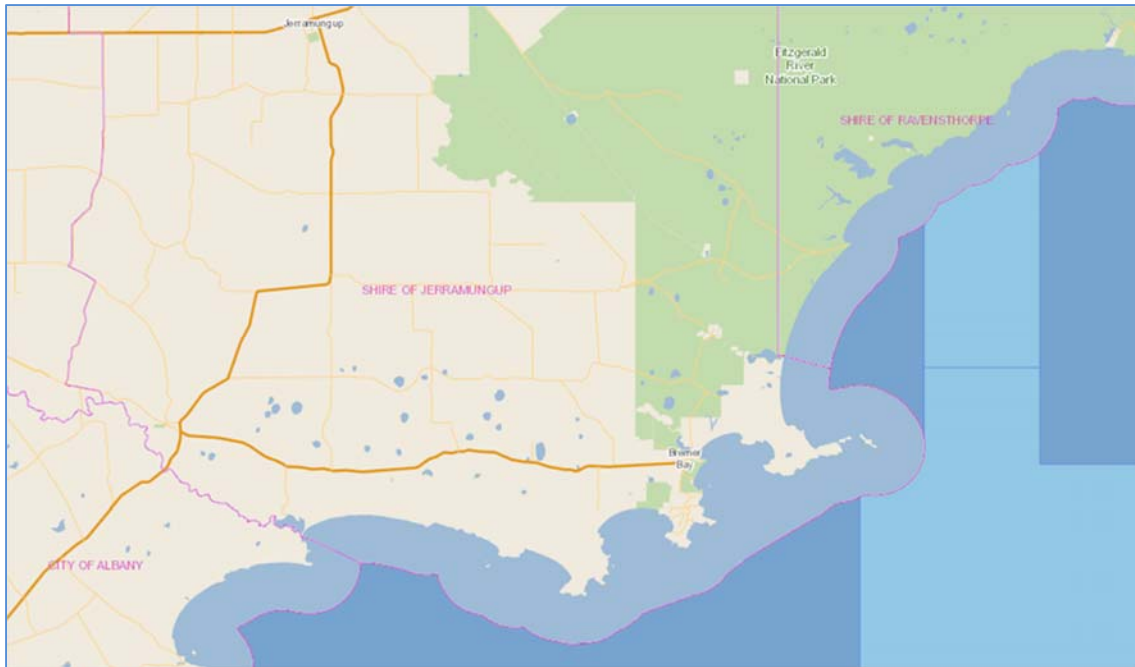
¹ The 2017 Machinery of Government process amalgamated State Government departments as shown in Appendix D.

- Department of Primary Industries and Regional Development (DPIRD) – Management of fisheries (commercial and recreational) and sustainable management of aquatic biodiversity. Includes Great Southern Development Commission (GSDC) (transformational projects and Royalty for Region funding).

Strategic documents created which relate to coastal management include:

- *WA Coastal Zone Strategy* (2017) Government of Western Australia. This strategy outlines a planning and management framework for key coastal issues with five high level goals relating to environment, community, economy, infrastructure and governance. It also broadly outlines roles and responsibilities for planning and implementation. The strategy's appendix outlines definitions, key government strategies, stakeholder roles, funding opportunities, legislation, policies and documents.
- *The Western Australian South Coast Macro Corridor Network – A Bioregional Strategy for Nature Conservation* (Wilkins *et al.*, 2006) Department of Conservation and Land Management and South Coast NRM Inc.
- *Great Southern Strategic Plan for Maritime Tourism* (2010) Great Southern Development Commission. Reference and support document for local government and tourism sector developers of maritime assets.
- *Oceans of Opportunity: A Proposed Strategic Framework for Marine Waters of Western Australia's South Coast* (2010) Department of Environment and Conservation (2010). Supporting report to the South Coast Draft Regional Marine Strategic Plan 2010.
- *South Coast Draft Regional Marine Strategic Plan* (2010) Department of Environment and Conservation. Strategic Regional Plan.
- *Wellstead Estuary Management Plan* (2006) Department of Water and Department of Environment and Conservation. The plan details five strategies which recommend specific actions and suggest long term resource condition targets and short-term management action targets.
- *Threatened Species and Communities Regional Strategic Management Plan* – Gilfillan, S., Mitchell, P., Newell, J., Danks, A. and Comer, S. (2009) South Coast Threatened Species and Communities Regional Strategic Management Plan. Department of Environment and Conservation, Albany
- *Fitzgerald Biosphere Recovery Plan* – Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation, Western Australian Department of Environment and Conservation, Albany.
- *South Coast Regional Management Plan* – Department of Conservation and Land Management (1992) South Coast Regional Management Plan: Management Plan No. 24, Department of Conservation and Land Management, Perth, Western Australia.
- *Fitzgerald River National Park Management Plan* – Department of Conservation and Land Management (1991) *Fitzgerald River National Park Management Plan*, Department of Conservation and Land Management, Perth, Western Australia.

STATE AND COMMONWEALTH WATERS



State waters extend 3 nautical miles from land and Commonwealth Waters extend 200 nautical miles off-shore.

2.4 SOUTH COAST - REGIONAL

The five coastal local government authorities (LGAs) within the South Coast region, including the Shire of Jerramungup, are members of the South Coast Management Group (SCMG), a regional local government and community group. Together, with South Coast Natural Resource Management (NRM) Inc., the community has been active in planning for coastal and marine environments, including:

- South Coast NRM Inc. – *Southern Prospects 2011 – 2016 – The South Coast Regional Strategy for Natural Resource Management* (South Coast NRM Inc., 2011).
- South Coast Management Group – *Southern Shores* – A strategy to guide coastal zone planning and management in the South Coast Region of Western Australia (Coffey Environments and South Coast Management Group, 2009). Outlines regional objectives, management actions and opportunities for collaboration between stakeholders to better manage the coast, including the impacts of climate change.
- Code Off-Road – A guide to safe and responsible off-road driving on the WA South Coast (South Coast NRM, undated) (Appendix D).

These strategies and codes have led to direct investment into the protection and management of coastal and marine environments.

2.5 SHIRE OF JERRAMUNGUP

The Shire of Jerramungup is responsible for the management of several high profile (and some lesser known) coastal locations (Figures 1a and 1b), including:

- Reserve 14988 at Beaufort Inlet/ Pallinup Beach;
- Reserve 511: Back Beach and Rock Cairn Lookout;
- Parts of Fishery Beach, Short Beach, Point Henry, Little Boat Harbour, Blossom's Beach, Native Dog Beach, Main Beach and Johns Cove.

Through its Community Strategic Plan, the Shire of Jerramungup has identified that the coast has high values to the local community and visitors to the area. The Shire also acknowledges that there is increasing pressure from recreational use which means that management of coastal reserves is high on the Shire's natural resource management priorities.

2.6 COMMUNITY GROUPS AND OTHER ORGANISATIONS

The South Coast region has many community groups and organisations which have an interest in the management of coastal and marine areas. Some of the key stakeholders include the following:

- Aboriginal groups including Native Title claimants, reference groups, Aboriginal Corporations, Goldfields Land and Sea Council, Southern Agricultural Indigenous Landholder Service and South West Aboriginal Land and Sea Council;
- Gondwana Link;
- Green Skills;
- Fitzgerald Biosphere Group (with subcommittees comprising Friends of Wellstead Estuary Group (currently in recess) and Bremer Bay Trails Committee);
- Regional Development Australia – Great Southern (Australian Government organisation);
- Schools and tertiary institutions; and
- University of Western Australia and Centre for Excellence in Natural Resource Management.

Community members have been involved in local-level coastal management projects to look after their local 'patch', supported through partnerships with local government, state agency land managers, and other stakeholders.

2.7 SOUTH WEST NATIVE TITLE SETTLEMENT

The South West Native Title Settlement process will resolve native title claims in the South West of Western Australia in exchange for a range of benefits for Noongar people, including recognition of Noongar people as the traditional landowner of the south-west, creation of a trust to hold and manage benefits and assets arising from the settlement, establishment of six Noongar Corporations, access to Crown lands for customary activities, creation of a Noongar Land Fund (for land related projects) and determination of up to 320,000 ha of development and cultural land to be held by the Noongar Boodja Trust.

Registration has been delayed by a Federal Court decision based on some Aboriginal representatives not signing off on the agreement (ABC, 2017). In response to the Federal Court (McGlade) judgment the Australian Commonwealth Government introduced the *Native Title Amendment (Indigenous Land Use Agreements) Bill 2017* which removes uncertainty about the validity of registered Indigenous Land Use Agreements (ILUA) and confirms that the ILUAs subject to the McGlade judgment are valid ILUAs and can be considered for registration.

In the Shire of Jerramungup, the Wagl Kaip and Southern Noongar Agreement will see consideration of up to 150 parcels of UCL, UMR and Aboriginal Lands Trust lands for inclusion in the Noongar Boodja Trust or available for joint management based on significance to Noongar people (and whether the land is eligible for inclusion). The time frame for determination may take several years after the settlement is registered.

2.8 ROLES AND RESPONSIBILITIES FOR THIS MANAGEMENT PLAN

Ultimately, land managers are responsible for the care of land under their control. However, for public land, the community and other organisations are key stakeholders. To achieve the best outcomes for coastal areas, partnerships between all stakeholders must be fostered.

Land managers

Most of the Shire of Jerramungup coastline is made up of public land with responsible authorities including:

- Shire of Jerramungup (for relatively few reserves, but popular areas with high use);
- DPLH (for UCL and UMR);
- Other land managers, including State government agencies; and
- Private owners (for freehold land).

Other organisations

Organisations such as Fitzgerald Biosphere Group and South Coast NRM Inc. have a long history of facilitating practical outcomes for natural resource management. Often, these organisations are the link between the community and managers of public land.

Community and Individuals

Use of coastal land by the community also means that users should be held responsible for their actions on the coast. If we, as individuals, enjoy the coast, we are also responsible for its well-being and management.

3 COASTAL OVERVIEW

3.1 VALUES

Values of the Shire of Jerramungup coastline include:

- The terrestrial and marine environment contain much of the region's most intact and diverse ecosystems;
- A high proportion of reserved land;
- A high degree of species endemism;
- An almost continuous strip of intact coastal native vegetation (macro corridor); and
- Significant habitat refuges for threatened fauna and flora.

Coastal and marine resource uses include:

- The oligotrophic waters of the region are not highly productive compared with other parts of the country and similar marine environments around the world. The marine habitats of the Jerramungup coast have fine, clear sand sea floors interspersed with occasional granite outcrops and limestone shoreline platforms and sub-surface reefs (Fletcher and Santoro, 2014).
- The Department of Primary Industries and Regional Development has identified the major commercial fisheries of the South Coast bio-region include abalone, the purse seine targeting pilchards and other small pelagic organisms and a demersal gillnet for sharks (Fletcher and Santoro, 2014).
- Other smaller commercial fisheries include long-standing beach seine for Western Australian salmon and herring, a trap fishery targeting southern rock lobsters and deep-water crabs and the intermittent scallop fishery. There is also a commercial net fishery for finfish operating in several estuaries. South Coast commercial fishing vessel operators often hold a number of licenses to create a viable year-round fishing operation.
- As much of the region is remote or difficult to access, recreational beach and boat fishing tends to be concentrated around the main population and holiday centres. The major target species for beach and rock anglers are salmon, herring, whiting and trevally, while boat anglers target pink snapper, queen snapper, bight redfish, various shark species, samson fish and King George whiting.
- The third major component of the recreational fishery is dinghy and shoreline fishing off estuaries and rivers, focused in the western half of the bioregion. Here the main angling targets are black bream and whiting (including King George whiting).
- Fishing along the coast has traditionally been practised by Aboriginal people for thousands of years and remains an important cultural activity. A *Draft Aboriginal Fishing Strategy* (Aboriginal Fishing Strategy Working Group, 2003) has recognised the interests of Aboriginal people in the protection and use of fish resources.

3.2 RISKS AND THREATS

A literature review and stakeholder consultation have identified that the most significant threats to the coastal zone are:

- Tourism and recreation use (e.g. camping, fishing, four wheel driving with key impacts including erosion from coastal access and four-wheel drives/ off-road vehicles).
- Climate change (key impacts include sea level rise, storm surge, bushfires, reduced rainfall and impacts to climate sensitive species).
- Difficulties related to planning for coastal development (ensuring reduction of key impacts such as loss of habitat, landscape fragmentation, pollution, increased visitation and user conflicts).
- Feral animals.
- Lack of infrastructure and facilities (of lack of maintenance).
- Lack of formal effluent and rubbish disposal systems.
- Bushfire and post fire impacts such as erosion and weeds.
- Weeds and pests.
- Disease (including *Phytophthora* dieback).
- Inaccessibility resulting in poor management and maintenance of facilities in remote areas.
- Lack of funding for coastal management.
- Vandalism.
- Use of closed tracks and creation of new tracks.
- Lack of knowledge.
- Land tenure - private land and leases, squatters' huts, native title, UCL.
- Coastal risk (e.g. limestone cliffs).
- Management of community expectations.
- Informal camping in sensitive areas.
- Large camping groups resulting in environmental degradation due to lack of appropriate facilities.

The Department of Primary Industries and Regional Development (Department of Fisheries, 2016) has identified the following external drivers and associated risks for ecological assets in the South Coast Bioregion (Table 4).

TABLE 4: RISKS TO SOUTH COAST BIOREGION MARINE ECOLOGICAL ASSETS FROM EXTERNAL DRIVERS

SAMPLING SITE	CURRENT RISK STATUS
Climate	Low
Introduced Pests	Low
Introduced Diseases	Low
Finfish - Estuarine	Significant
Finfish – Nearshore, Inshore and Offshore	Moderate
Finfish - Pelagic	Negligible
Invertebrate – Crustaceans (Lobsters and Crabs)	Moderate
Molluscs - Abalone	Moderate
Molluscs - Scallops	Negligible
Protected Fish Species	Negligible
Protected Mammals	High
Protected Birds and Reptiles	Moderate

Source: Department of Fisheries, 2016.

3.3 TENURE AND MANAGEMENT

The *Land Administration Act 1997* is Western Australia’s legislation dealing with the tenure and purpose of State land. While freehold (alienated) land is owned by individuals or corporations, most land in Western Australia is publicly owned or Crown land. Some publicly owned land is reserved, that is, it is been set aside for a specific public purpose. Often this land has been placed under the care, control and management of a State government department, local government or incorporated community group by way of a management order. UMR have been created or reserved but have not been placed in the care of a management organisation. Such reserves remain under the administration of the Minister for Lands and the DPLH. UCL is Crown land which is not subject to any interest (aside from native title) and is not reserved or dedicated. By default, management of this land is the responsibility of the Minister for Lands and DPLH. While DPLH assumes some responsibility on behalf to the State for areas of UCL and UMR, its focus is on reaching agreement with appropriate bodies for ongoing management of these areas.

DPLH currently grants, under the *Land Administration Act 1997*, license agreements (and in some cases letters of authority) to groups such as ‘Friends of –’, including weed action groups and other similar

community based entities which receive funding for low key works on specific areas of Crown land. These agreements provide necessary authority for the relevant party to enter the Crown land to undertake agreed works.

Reserved land may be given a classification of ‘Class A’ which affords the greatest degree of protection and is usually assigned to areas of high conservation or community values. Changes to boundaries, tenure and purpose can only be altered through an Act of Parliament.

Tenure of the terrestrial portion of the Shire of Jerramungup coastal zone is predominantly UMR and UCL as shown in Figures 1a and 1b. These figures also indicate that very few reserves have been placed under the control of the Shire of Jerramungup.

Active management of the vast tracts of UCL and UMR are challenging due to the limited resources available and the many issues that need to be considered. In 2003, the DBCA became responsible for the management of fire prevention, weeds and pest animals on UCL and UMR outside gazetted townsites under a Memorandum of Understanding with DPLH. However, resources provided by the State government for activities related to these issues is limited. DPLH has advised that should the retention, improvement and/or maintenance of some of the existing tracks in UCL and UMR be supported, it is important that these areas are placed under appropriate formal local management arrangements.

Crown reserves around the mouth of the Pallinup River have been identified in DBCA South Coast Regional Management Plan 1992 – 2002 to become conservation reserves. These reserves are 14988 (Pallinup River Mouth), 21647 (Beaufort Inlet), 22353, 27102 (Pallinup Beach) and 33257.

Tenure of the marine environment is complex and the Western Australian State limit of jurisdiction extends from the coastline for three nautical miles, including waters to three nautical miles off the coast of offshore islands. The marine zone outside the three-nautical mile limit is the jurisdiction of the Australian Government.

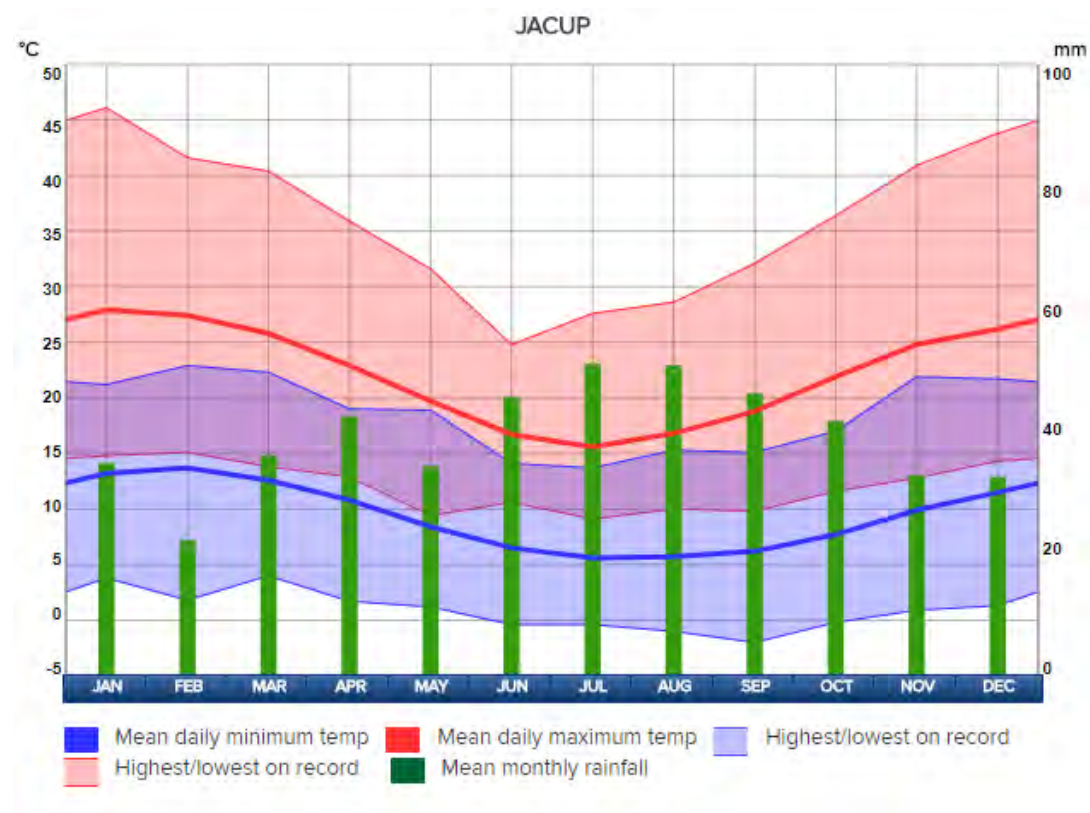
3.4 CLIMATE, CLIMATE CHANGE AND SEA LEVEL RISE

The Shire of Jerramungup experiences a temperate climate, moderated somewhat by the Southern Ocean. Mean daily temperatures vary by approximately 10 degrees between summer and winter, with most of rainfall occurring during winter months (see below).

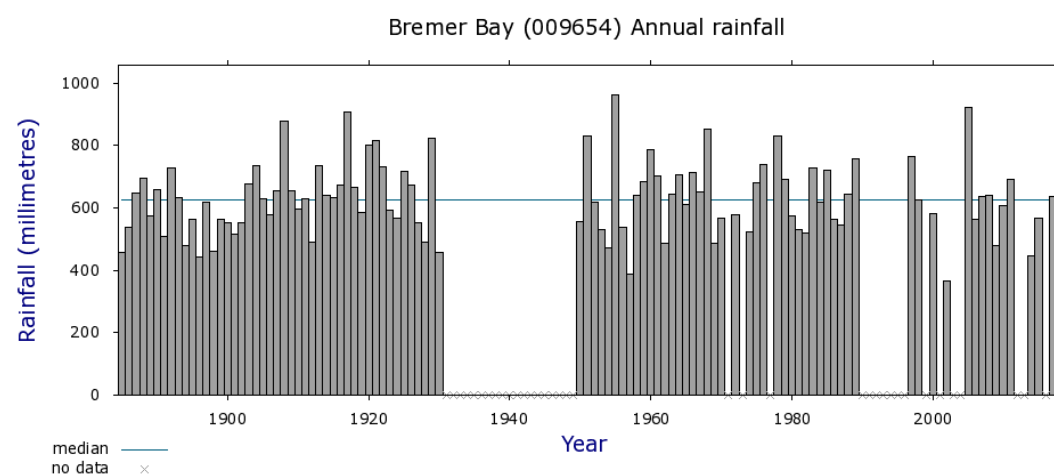
The summer weather pattern is typically influenced by an ongoing series of high pressure cells. The anti-clockwise movement of air around these cells results in predominantly easterly/south-easterly winds along the south coast. The zone between the high-pressure cells is occupied by a trough of low pressure, often containing a weak cold front. This cold front can often bring cloud and drizzle to coastal areas during summer.

The winter weather pattern is dominated by cool moist westerly winds, containing frequent cold fronts. Air behind the fronts is usually from the south resulting in cold winter gales along the coast. Rainfall is influenced by the passage of cold fronts. The fronts reduce in strength as they travel from west to east, and thus rainfall in the eastern areas of the south coast are often lower and less reliable than in western and south-western areas of the State.

PLATE 2: CLIMATE AVERAGES AND RAINFALL, BREMER BAY



Note: Jacup is the nearest weather station to the Jerramungup coast which provides general weather and climate information. Source: Weatherzone, 2017.



Climate Data Online, Bureau of Meteorology
Copyright Commonwealth of Australia, 2018

South Coast NRM and Aurora Environmental (2014) have summarised the possible impacts of climate change and sea level rise (based on Intergovernmental Panel on Climate Change (IPPC) Fifth Assessment Report, 2014):

- Ocean heat content has risen. More than 90% of the extra heat trapped by greenhouse gases has been absorbed by the ocean, causing it to warm.
- Glaciers and ice sheets worldwide are shrinking and losing mass.
- Acidification of the marine environment may impact on vulnerable species.
- The extent of Arctic sea ice has decreased at rates unprecedented in the last 1,450 years.
- If emissions continue to track at the top of IPCC scenarios, global average sea level could rise by nearly 1m by 2100 (0.52-0.98m from a 1986-2005 baseline).
- If emissions track along the lowest scenario, then global average sea level could rise by 0.28-0.60m by 2100 (from a 1986-2005 baseline).
- Possible modification of the Leeuwin Current with subsequent impacts on life cycle and distribution of marine fauna (including species of commercial interest).

The Australian Government (2009, 2011) has stated that more general climate change risks and impacts associated with the coastal and marine environments will be variable but are likely to involve:

- Shoreline recession and realignment;
- Vertical accretion;
- Increased saline inundation of wetlands and estuaries;
- Modification and southward shift of habitat;
- Coastal squeeze, where built obstacles (roads or settlements) prevent the migration of some ecosystems such as salt marshes;
- Mobilisation of pollutants from near coastal dump sites and rubbish tips due to salt water intrusion;
- Nationally and internationally significant coastal environments at risk, including habitat for migratory birds;
- Impacts on estuaries, associated wetlands, coral reefs, constrained tidal flat communities and beaches where there is a lack of sediment replenishment; and
- Cumulative impacts of individual stressors could tip coastal and marine systems to a point beyond which the ecosystem cannot function in a predictable or sustainable way.

These impacts present risks for the Shire of Jerramungup coastline and the community needs to develop and implement strategies to mitigate or adapt over future decades (Coffey Environments *et al.*, 2009). One of the most challenging aspects of climate change are that due to complex interactions and the difficulty of scaling predictions to a regional level, there is a large amount of uncertainty about how exactly impacts will manifest. A first pass hazard assessment has been modelled for the Shire of Jerramungup coastline. A discussion of outcomes related to the Study is included in Section 4.

3.5 COASTAL HABITATS AND ECOSYSTEMS

Key habitats in the coastal zone (including marine systems less than 40 m depth) have been documented in *2016 Status Report of the Fisheries and Aquatic Resources* (Department of Fisheries, 2016) and include:

- **Rocky shores:** The most conspicuous of the marine habitats are the rocky shores. The south coast is exposed to the most extreme wave energy of the entire Australian coastline, due to the narrow continental shelf and lack of protection from offshore reefs and islands. Along this coast, granitic and gneissic slopes exposed to heavy wave action are usually smooth and populated with moderate to large numbers of gastropod molluscs, barnacles and macrophytes showing distinct vertical zonation.
- **Coastal Wetlands and Estuaries:** Including Wellstead Estuary, the Hunter River system (which includes *Baumea* freshwater ecosystem that are potential habitat for the threatened Australasian Bittern) and Tooregullup Swamp. An extract from the Department of Water South Coast Significant Wetlands dataset for the coastal areas south of Borden Bremer Road and east of the Fitzgerald River National Park to Gordon Inlet has been provided in Table 5.
- **Algae:** Macroalgae along the southwestern and southern coasts of Australia are highly diverse, with an estimated 62 % of macroalgal species endemic to the south coast. Algal assemblages are important as a food source, nursery grounds and shelter for a variety of organisms. Macroalgae also contribute to marine nutrient and carbon cycling.
- **Sand:** The seabed is largely composed of soft, unconsolidated sediments which provide an important habitat for benthic fauna, with sediment structure an important influence on the distribution, abundance and community of these species.
- **Seagrasses:** The diversity of seagrasses in temperate south-western Australia is the highest for any temperate region in the world and reflects the broad distribution of seagrasses in estuaries, coastal embayments and nearshore sheltered environments through to exposed coastal nearshore and offshore areas that are battered by ocean swells. Seagrasses perform the following important ecosystem functions: primary production, nutrient cycling, stabilising sediments and habitat provision.
- **Sponges:** In southwestern Australia, sponges are found in areas where algae are less dominant, which includes areas deeper than 30 m and caves.

TABLE 5: SOUTH COAST SIGNIFICANT WETLANDS –SHIRE OF JERRAMUNGUP COASTAL ZONE

NAME	UFI	SUITEID	SUITE	CATEGORY
Foster Beach	SEM0004	B31	Reef Dune Suite	Conservation Class
Reef Beach	SEM0003	B32	Meerup Suite	Conservation Class
Blue Lagoon And Associated Wetlands	BA21701073	B29	Blue Lagoon Suite	Conservation Class
Reef Beach	SEM0002	B30	Reef Dune Suite	Conservation Class
Warramurrup Swamp & Surrounds	BA21701081	B27	Marendiup Suite	Conservation Class
Boggy Spring Wetlands	SEM0006	B28	Boggy Spring Suite	Conservation Class
Lake Marendiup & Surrounds	BA21701095	B26	Marendiup Suite	Conservation Class
Toocalup Lake	BA21701078	B22	Qualimup Suite	Conservation Class
Qualinup Swamp	BA21701111	B21	Qualimup Suite	Conservation Class
Pullitup Swamp	BA21701026	B10	Manypeaks Suite	Conservation Class
Kelly's Creek Lake	BA21701047	B3	Swan Lake Suite	Conservation Class
North Gordon Inlet	BA21701066	B7	Manypeaks Suite	Conservation Class
Hunter River Lake	BA21701036	B2	Swan Lake Suite	Conservation Class
Un-Named Wetland	SEM0051	B9	Manypeaks Suite	Conservation Class
Tooregullup Swamp	BA21701025	B25	Qualimup Suite	Conservation Class
Cardiminup Swamp	BA21701080	B23	Qualimup Suite	Conservation Class
Bitter Water Swamp	SEM0053	B24	Qualimup Suite	Conservation Class
Un-Named-3	BA21701082	P24	Cordinup Suite	Conservation Class

3.6 COASTAL PROCESSES

The South Coast is characterised by ancient intrusive Proterozoic rocks with gneiss or granite headlands. The South Coast is a high-energy environment, heavily influenced by large swells generated in the Southern Ocean.

Beaches exposed to the prevailing south-westerly waves and winds experience energetic, rip dominated conditions. Many beaches are backed with extensive dune systems. The coastline has been characterised in Beaches of the Western Australian Coast: Eucla to Roebuck Bay (Short, 2006). Details specific to each coastal node are included, where appropriate in Section 7.

Detailed coastal processes and associated risks are outlined in *Jerramungup First Pass Coastal Hazard Assessment* (MP Rogers and Associates, 2017; See also Section 4).

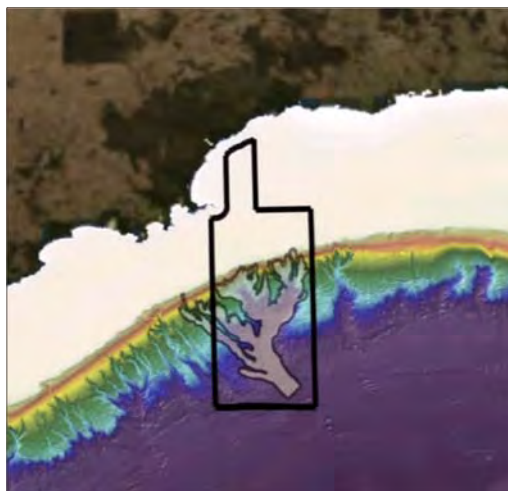
3.7 MARINE ENVIRONMENT AND RESOURCES

The marine area adjacent to the Shire of Jerramungup coast is within the South Coast Bioregion (Department of Fisheries, 2016) which is generally temperate but low in nutrients, due to the seasonal winter presence of the tail of the tropical Leeuwin Current and limited terrestrial run-off. Sea surface temperatures typically range from approximately 15°C to 21°C, which is warmer than would normally be expected in these latitudes due to the influence of the Leeuwin Current. The effect of the Leeuwin Current, particularly west of Albany, limits winter minimum temperatures (away from terrestrial effects along the beaches) to about 16 to 17°C. Summer water temperatures in 2012/13 were at a record high, which may have affected the recruitment of some species.

The marine habitats of the South Coast are similar to the terrestrial coastline, having fine, clear sand sea floors interspersed with occasional granite outcrops and limestone shoreline platforms and sub-surface reefs. A mixture of seagrass and kelp habitats occurs along the South Coast, with seagrass more abundant in protected waters and some of the more marine estuaries. The kelp habitats are diverse but dominated by the relatively small *Ecklonia radiata*, rather than the larger kelps expected in these latitudes where waters are typically colder and have higher nutrient levels.

Fish stocks in this region are predominantly temperate, with many species' distributions extending right across southern Australia. Tropical species are occasionally found, which are thought to be brought into the area as larvae as they are unlikely to form local breeding populations.

Bremer Canyon is a deep-sea canyon which lies 70km south of Bremer Bay. In recent years, researchers noticed that the area was a hotspot for marine life, including orca whales, sharks, dolphins, sperm whales and giant squid. The Bremer Canyon is one of the few canyons in the Albany group that has incised the continental shelf, providing a pathway for upwelling of nutrient rich waters to the shelf. This upwelling is thought to form the basis for aggregations of marine life around the Bremer and adjacent canyons. The Bremer offshore region has been the focus of a study undertaken in 2017 by the Marine Biodiversity Hub as part of the National Environmental Science Program and currently attracts visitors for research and ecotourism, who travel to the canyon via boat and aircraft between January and March.



Bremer Canyon and Bremer Commonwealth Marine Reserve

Source: Commonwealth of Australia (Geoscience Australia, 2017).



Killer Whales in the Bremer Canyon (Credit: Albany Advertiser)

3.8 INTERIM BIOGEOGRAPHIC REGIONALISATION FOR AUSTRALIA

The national and regional planning framework for the systematic development of a comprehensive, adequate and representative National Reserve System is provided by the Interim Biogeographic Regionalisation for Australia (IBRA) (Department of Environment and Energy, 2017). The Shire of Jerramungup coastal zone is within the Fitzgerald subregion (ESP1) of the Esperance Sandplain region. The subregion is the western section of the Esperance Sandplain and includes the Ravensthorpe Range, Fitzgerald River National Park, Cape Riche and Stirling Ranges. All these areas, like the Jerramungup coast are renowned for their biodiversity value, which is related to high species endemism, the areas mineralisation and evolution over millions of years. The subregion is characterised by metamorphosed sandstones, Eocene marine sediments with small areas of Proterozoic gneiss and Archaen greenstones, sand sheets with varying levels of lateritisation (Danks, 2004). Vegetation includes scrub heath, mallee heath, coastal dune scrub, mallee, woodlands on greenstone, Yate and York Gum woodlands on alluvial soils and Jarrah/Marri woodlands in the west (Danks, 2004).

3.9 GEOLOGY AND COASTAL GEOMORPHOLOGY

The Jerramungup coastline is underlain by Proterozoic rocks of the Albany-Fraser Orogen and consists mainly of the gneiss of the Birnanup Complex (Figure 2). These rocks are exposed in river beds and at the rocky outcrops along the coastline.

Calcareous sandstone, overlain by vegetated and active coastal dunes, are present along the coastline between the rocky outcrops. The sediments consist of predominantly fine to medium-grained, calcareous sand with shell fragments. The thickness of the coastal sediments is unknown but is expected to be highly variable.

During the period 1200 to 1400 million years ago, sediments were deposited along the southern flank of the Yilgarn Craton. These sediments were derived from the erosion of granites and greenstones of the Yilgarn Craton and were then deformed and intruded by bodies of molten granite.

Some of the older Yilgarn Craton rocks near the Orogen were also caught up in the movements and became part of the Albany-Fraser Orogen. The deformed sediments now form the peaks and ridges of the Stirling Range and the mountains to the north of Doubtful Island Bay which culminate in Mount Barren. The granites which intruded these sediments now form the Porongurup Range and ranges near Two Peoples Bay.

The geomorphology of the coastal section of the Shire is dominated by maritime influences, with the distinct landscape of granitic and gneissic headlands and intervening curved sandy beaches being evident along the entire coastline. The form of the coastline is controlled by either the orientation of gneissic layering or faults and joints, due to the younger deformation events described above.

DPIRD have mapped eight soil-landscape systems in the coastal zone (Figure 3; Department of Agriculture, 2004). The typical qualities of these soil-landscape systems are described in Table 6.

TABLE 6: SOIL LANDSCAPE SYSTEMS

SYSTEM NAME AND DESCRIPTION
Bremer System - Poorly drained coastal plain
King System - Dissected lateritic terrain with valleys and spurs
Lower Pallinup System - Major valleys with breakaways and rock outcrops
Meerup System - Coastal dunes
Mount Manypeaks System - Hills and headlands with rock outcrops
Hammersley System - Sandplain with swampy closed depressions
Jonacoonack System - Deeply incised valleys with breakaways, cliffs and wide valley floors
Whoogarup System - Moderately inclined to steep hills with wave cut platform present on East Mt Barren

Source: Department of Agriculture (2004) Soil and Landscape Mapping

3.10 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* provides guidance on matters of national environmental significance (MNES). MNES in the Shire of Jerramungup coastal area are listed in Appendix E and include:

- National Heritage Place: Fitzgerald River National Park.
- Threatened ecological communities: Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Endangered) and Subtropical and Temperate Coastal Saltmarsh (Vulnerable).
- Nationally important wetland: Yellilup Yate Swamp System (Pallinup Beach area).

3.11 VEGETATION

Pre-European Vegetation

Beard (1976) classified the vegetation of the Jerramungup coastal area into two botanical systems – Bremer and Qualup (Figure 4). The Bremer system is located along the coastal strip between Beaufort Inlet and Gordon Inlet and the Qualup system extends along the coast behind the coastal dunes and ranges.

The Qualup system comprises mallee and mallee-heath shrubland with sporadic Yate and York gum woodlands. Mallee heath with *E. tetragona* is the dominant vegetation type with lakes and swamps supporting woodlands of *E. loxophleba* and/ or *E. occidentalis*. In the deep sand sheet areas, the mallees are replaced by Banksias (*Banksia attenuata*, *B. coccinea* and *B. baxteri*). Other common species in the system include *Nuytsia floribunda*, *Lambertia inermis*, *Hakea cucullata* and *Hakea victoria*.

Plant communities in the Bremer vegetation system include low scrub and coastal scrub. *Agonis flexuosa* (peppermint) is the dominant species in both communities. The coastal scrub vegetation species include *E. preissiana* with some *Acacia* species and *E. decipiens* occurs further inland on weathered and leached sand.

Beard mapping was undertaken at a scale of 250,000 for the entire state, so it lacks detail, especially for an area that exhibits a high degree of endemism and microclimates.

Ken Newby has mapped the Jerramungup and Ravensthorpe areas at a scale that more appropriately demonstrates the areas diversity.

Vegetation described in the 1995 Coastal Management Plan is described in Table 7.

TABLE 7: COASTAL PLANT COMMUNITIES

COMMUNITY	DESCRIPTION
Granite Headlands	The exposed, windswept headland areas covered with a low to medium height, dense shrubland, often dominated by <i>Melaleuca pentagona</i> . Many species of the family Proteaceae occur in the Doubtful Islands area, notable the endemic Royal Hakea (<i>Hakea victoria</i>).
Dunes	A shrub alliance of Coastal Peppermint (<i>Agonis flexuosa</i>) and Wattles (<i>Acacia rostellifera</i> , <i>Acacia cyclops</i> , <i>Acacia cochlearis</i>) occur on the older and more sheltered areas of dunes. Foredunes are stabilised by shrubs 1-3 metres tall; <i>Melaleuca lanceolata</i> forms dense stands behind more protected beaches. Newly forming dunes are colonised by Hairy Spinifex (<i>Spinifex hirsutus</i>), Milkweed (<i>Euphorbia paralias</i>) and Coastal Pig Face (<i>Carpobrotus virescens</i>).
Limestone	There are various heath and scrub formations associated with limestone. Two of the most dominant species are Rigid Wattle (<i>Acacia cochlearis</i>) and <i>Melaleuca pentagona</i> . As well, there are tall open shrublands of Limestone Marlock (<i>Eucalyptus decipiens</i>) and Coastal Peppermint.
Sandplain	The northern sector of the coastal zone, which comprises shallow sand over clay, is dominated by mallee-heath. Tallerack (<i>Eucalyptus pleurocarpa</i>) is the most common mallee (less than 3 metres tall). A diverse heath community, mainly composed of proteaceous, myrtaceous and leguminous shrubs, forms the underlying vegetation (1-1.5 metres tall). In more dissected

COMMUNITY	DESCRIPTION
	country, along the margins of creeks and rivers, the sand lies over siltstone. Here, mallee-form eucalyptus, including <i>E. redunca</i> , <i>E. gardneri</i> and <i>E. nutans</i> .
Swamps and Depressions	Numerous depressions of various size are scattered along the near coastal areas. Sedges and small shrubs are present in the smaller depressions, and small trees (3-5 metres tall) of Swamp Banksia (<i>Banksia littoralis</i>) or <i>Melaleuca preissiana</i> are found around medium to large depressions. The shrub and sedge species are dependent on the depth of water when depressions are full.

Source: Jerramungup Coastal Management Plan, 2005.

3.12 FLORA AND FAUNA

The coastal area supports specially protected flora and fauna which, under the *Wildlife Conservation Act 1950* are deemed to be either rare, at risk of extinction, or otherwise in need of special protection. The species list has been sourced from NatureMap (DBCA, 2017a), with conservation significant species listed in Table 8. Conservation codes are described in Appendix F.

Some species are also listed as MNES under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as shown in Appendix E.

TABLE 8: SPECIES OF CONSERVATION SIGNIFICANCE

SPECIES	CONSERVATION STATUS
<i>Animals</i>	<i>Wildlife Conservation Act 1950</i>
<i>Potorous platyops</i> (Broad-faced Potoroo)	Presumed Extinct
<i>Macropus eugenii subsp. derbianus</i> (Tammar Wallaby (WA subsp.))	Priority 4
<i>Macropus irma</i> (Western Brush Wallaby)	Priority 4
<i>Parantechinus apicalis</i> (Dibbler)	Threatened
<i>Pseudocheirus occidentalis</i> (Western Ringtail Possum)	Threatened
<i>Setonix brachyurus</i> (Quokka)	Threatened
<i>Dasyurus geoffroyi</i> (Chudich)	Vulnerable
<i>Marine mammal</i>	
<i>Neophoca cinerea</i> (Australian Sea-lion)	Threatened
<i>Physeter macrocephalus</i> (Sperm Whale)	Threatened
<i>Birds</i>	
<i>Ardea modesta</i> (Eastern Great Egret)	Migratory birds protected under an international agreement
<i>Calidris alba</i> (Sanderling)	
<i>Calidris ruficollis</i> (Red-necked Stint)	
<i>Charadrius bicinctus</i> (Double-banded Plover)	
<i>Limosa lapponica</i> (Bar-tailed Godwit)	
<i>Pluvialis squatarola</i> (Grey Plover)	
<i>Tringa nebularia</i> (Common Greenshank)	
<i>Psophodes nigrogularis subsp. oberon</i> (Western Whipbird (Mallee))	Priority 4
<i>Calidris tenuirostris</i> (Great Knot)	Threatened

<i>Charadrius mongolus</i> (Lesser Sand Plover)	Endangered
<i>Leipoa ocellata</i> (Malleefowl)	
<i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)	
<i>Calyptorhynchus latirostris</i> (Carnaby's Black Cockatoo)	
Reptiles	
<i>Caretta caretta</i> (Loggerhead Turtle)	Threatened
<i>Dermochelys coriacea</i> (Leatherback Turtle)	
Invertebrates	
<i>Atelomastix culleni</i> (millipede)	Threatened
<i>Zephyrarchaea mainae</i> (Western Archaeid Spider)	
Plants	
<i>Lissanthe synandra</i>	Priority 1
<i>Trymalium litorale</i>	
<i>Eucalyptus retusa</i>	
<i>Schoenus</i> sp. Grey Rhizome (K.L. Wilson 2922)	
<i>Eucalyptus mcquoidii</i>	Priority 2
<i>Grevillea nivea</i>	
<i>Hibbertia acrotrichion</i>	
<i>Pultenaea brachyphylla</i>	
<i>Eucalyptus newbeyi</i> (Beaufort Inlet Mallee)	
<i>Sphaerolobium validum</i>	
<i>Thysanotus gageoides</i>	
<i>Xanthosia peduncularis</i>	
<i>Eucalyptus calcicola</i> subsp. <i>unita</i>	Priority 4
<i>Eucalyptus vesiculosa</i>	
<i>Leucopogon blepharolepis</i>	
<i>Thomasia quercifolia</i> (Oak Leaved Thomasia)	
<i>Thomasia solanacea</i>	
<i>Boronia clavata</i>	Threatened
<i>Eucalyptus nutans</i> (Red-flowered Moort)	

Notes: Conservation Codes: Appendix F. Source: NatureMap (DFCA, 2017a).

3.13 WEEDS, PESTS AND INVASIVE SPECIES

***Phytophthora* dieback**

The Fitzgerald River National Park is well known for its biodiversity, a value which it shares with the Shire of Jerramungup coastal areas. The biodiversity values of the region are highly vulnerable to infection by *Phytophthora* dieback. The single largest risk to biodiversity in the region is likely to be dieback infection.

DBCA (2017b) states:

- *Phytophthora* dieback is caused by a plant pathogen, which kills susceptible plants, such as banksias, jarrah and grass trees, by attacking their root systems.
- Dieback is a symptom of a *Phytophthora* infection, and affects more than 40 per cent of the native plant species and half of the endangered ones in the south-west of Western Australia.
- The plants die because they cannot take up the water and nutrients they need.
- It is not easy to detect as infected plants often appear to be dying from drought.
- There is no known cure for the disease.
- *Phytophthora* disease also affects many agricultural crops and garden plants.
- The pathogen is spread through the movement of infested soil and mud, especially by vehicles and footwear. It also moves in free water and via root-to-root contact between plants.
- It can decimate bushland by killing vulnerable plant species and changing the vegetation structure of bushland areas, possibly driving rare species toward extinction. Changes in the vegetation structure also represent habitat change to animal communities with flow-on effects to their survival potential.
- There are several species of *Phytophthora*, but *Phytophthora cinnamomi* is the most widespread and destructive. It was probably introduced by early European settlers in the soil of plants they brought with them. Spread was accelerated by extensive road building and movement of materials such as gravel in the mid-20th century.

The status of dieback in the Shire of Jerramungup is illustrated in Appendix G.

Weeds

Compared to many other parts of the Western Australian coastline, the vegetation of the Jerramungup Shire coastline is in good condition, having been buffered by large areas of good quality native vegetation. However, some weed species have become established in key areas often associated with disturbance (such as vehicle tracks). Weed species are generally opportunistic colonisers, meaning that they can quickly multiply in areas where soil is disturbed or competing vegetation is removed (e.g. after fire, vehicle tracks). Intact areas of vegetation are more resistant to weed invasion.

Hotspots for weed invasion include Beaufort Inlet and Pallinup Beach, Bremer Bay townsite, House Beach/ Corner Cove and Gordon Inlet. Doubtful Island Peninsula has previously been badly infested, but many areas of weeds (Victorian Tea-tree) appear to have been eradicated by the 2012 fires. We note that fire does not usually eradicate weed species and create vectors for introduction into weed free areas.

Weeds of concern in the coastal zone are identified in Table 9. Node assessments list weed occurrence (Section 7). Treatment of weeds is problematic as a sustained approach is required for both eradication and containment. If a program is not sustained, the weed populations can rebound in a short period of time. Weed control programs need to be carefully considered in this light, to ensure that lasting outcomes can be achieved.

TABLE 9: WEED SPECIES OF CONCERN

Sources: McQuoid and McMahon (2016). Belton and Taylforth (2005).

SCIENTIFIC NAME	COMMON NAME	RISK OF SPREAD	COMMENTS
<i>Lycium ferocissimum</i>	African Boxthorn	Medium	High priority weed for containment. Best controlled through local weed action groups or Green Army type teams.
<i>Leptospermum laevigatum</i>	Victorian Tea Tree	High	Seed easily spread. High priority weed for containment. Easily spread along roads and tracks. High priority for control.
<i>Acacia longifolia</i>	Sydney Golden Wattle	High risk in areas such as Point Henry and Bremer Bay townsite	High priority weed for eradication. Eradication of this weed is still potentially possible as its extent is limited to around the Bremer Bay townsite.
<i>Ehrharta calycina</i>	Veldt grass	High risk in areas such as Point Henry and Bremer Bay townsite	High priority weed for control in key areas. Increases flammability in areas such as Bremer Bay townsite and Point Henry. High priority for control.
<i>Eragrostis Carvula</i>	African Lovegrass	High risk in areas such as Point Henry and Bremer Bay townsite	High priority weed for control in key areas. Increases flammability in areas such as Bremer Bay townsite and Point Henry. High priority for control.
<i>Asparagus asparagoides</i>	Bridal Creeper	High	Spread is enhanced by birds. Physical removal not effective, best controlled biological controls
<i>Gomphocarpus fruticosus</i>	Narrowleaf Cotton Bush	Low	Declared weed already present in Bremer townsite, must be reported to DPIRD. Best controlled by community members or weed action groups.
<i>Tribulus terrestris</i>	Caltrop	High	Can be spread by footwear or vehicles Likely to spread along road verges once it is introduced, control through weed action groups or Shire.
<i>Cuscuta campestris</i>	Golden Dodder	Low	May be confused with native dodders but suspected to be at Dillon Beach, is a declared plant that must be reported to DPIRD.
<i>Echium plantagineum</i>	Paterson's Curse	Low	Low consequence in terms of coastal impacts but as a declared plant must be reported to DPIRD.
<i>Emex australis</i>	Double gee	Low risk – spread by vehicles and footwear	Lower risk in coastal zone but as declared plant must be reported to DPIRD. Best controlled by landholders.
<i>Solanum linnaeanum</i>	Apple of Sodom	Medium risk	Declared weed, found near the Pallinup River and a concern for wetlands.
<i>Polygala myrtifolia</i>	Polygala	Medium risk	High seed production and displaces local species.

Invasive Species

Invasive species listed as MNES are listed in Table 10.

Foxes and cats are the main species of concern as they prey on small native mammals and represent a severe threat to many species. Western Shield aerial baiting with 1080 is undertaken in the Fitzgerald River National Park (DBCA, 2017c). Once yearly 'Eradicat' baiting is now integrated into the DBCA Aerial Bait program for fauna conservation areas such as the Fitzgerald River National Park.

Feral bees are a concern as they compete with bird and mammal species for nest hollows. However, no active management is undertaken for bees due to the difficulty of implementation.

TABLE 10: INVASIVE SPECIES

SCIENTIFIC NAME	COMMON NAME
<i>Canis lupus familiaris</i>	Feral dog
<i>Capra hircus</i>	Feral goat
<i>Felis catus</i>	Feral cat
<i>Mus musculus</i>	House mouse
<i>Oryctolagus cuniculus</i>	Rabbit
<i>Rattus rattus</i>	Black rat
<i>Sus scrofa</i>	Feral pig
<i>Vulpes vulpes</i>	Fox
<i>Apis mellifera</i>	Feral bees (not MNES)

Source: EPBC Act Protected Matters Report, Appendix E.

3.14 ABORIGINAL HERITAGE

According to their traditional beliefs, Noongar people have lived in the South West of Western Australia since time immemorial (Department of Premier and Cabinet, 2017). Archaeological evidence from Perth and Albany confirms that the region has been occupied for at least 45,000 years, with some caves at Devil's Lair in the hills near Margaret River showing human habitation from 47,000 years ago. At the time of European settlement, the Goreng (Koreng) family group occupied the Gnowangerup – Bremer Bay area and spoke the Noongar (Nyungar) language. This local family group may have been quite small, as the aboriginal population of the entire south west corner was estimated as being 6,000 – 10,000 in 1829.

The Wagyl Kaip and Southern Noongar region refers to the Noongar dialect groups, Ganeang, Goreng and Minang from the Great Southern area. The Wagyl Kaip and Southern Noongar region includes the Shire of Jerramungup. The Wagyl Kaip timeline (South West Aboriginal Land and Sea Council, 2017) states:

We used the coastline, as well as the rivers, swamps and vegetation beyond it. Our traditional foods consisted of birdlife, eggs, plants, small and large animals like kangaroo, emu and goanna,

as well as estuarine fish. Traditionally, we lived in the coastal regions during the summer months and moved inland for shelter with the onset of winter.

The DPLH manage the Aboriginal Heritage Inquiry System (AHIS) which maps and lists sites registered under the *Aboriginal Heritage Act 1972* and shows ‘other heritage places’. A search of the AHIS shows 21 registered sites and 37 other heritage places in the Jerramungup local government area which are associated with the coast or coastal reserves (DPLH, 2017; Appendix H). Further sites may exist which are not listed (Cummings, 2012).

The *Aboriginal Heritage Act 1972* protects site or objects that are of significance to Aboriginal people, or have historical, anthropological or ethnographic interest. The Act protects Aboriginal sites whether or not they have previously been reported or recorded. It is an offence to excavate, destroy, damage, conceal, or in any way alter an Aboriginal site. Areas near water, wetlands and river systems are likely to have Aboriginal association or significance.

3.15 EUROPEAN HERITAGE

Seafarers were first attracted to the region in the early 1800s. The main activities in the area were centered on the Great Australian Bight; initially whalers and seal hunters used various natural ports as bases in their land hopping along the coast. This led to an increase in sandalwood cutting that in turn promoted exploration and eventual settlement.

Matthew Flinders visited the area in January 1802, aboard the ship *Investigator* which sailed between the Doubtful Islands proving that they were, in fact, islands. It is claimed that Flinders landed at House Beach and dug a well to obtain water in ‘Well Corner’. However, there is no mention of his having done so in his journals. The well was commonly referred to as ‘Whalers Well’ by early settlers but was not marked on maps prepared in 1895 and is now called ‘Flinders’ Well’.

Other early visitors to the area were the botanist Drummond in 1843 and the geologist Von Somner and the Gregory’s in 1849. John Septimus Roe first surveyed the townsite of Bremer Bay in 1848, with initial settlement by the Wellstead family occurring at nearby Peppermint Grove in the 1850s.

During the 1800s the Westerberg’s were fishing in the Wellstead Estuary and kept fish in pens until the Mouchemores, who had established ice works at Albany, transported the fish packed in ice by sea to Hopetoun (Belton-Taylforth, 2005). The 7000-people living in the Kundip and Ravensthorpe area also made a ready market for the fish. As early as 1895, the Wellstead’s caught fish at Bremer Bay and smoke-cured them for sale in the Goldfields.

The Heberle family arrived in 1936 and still hold a fishing lease today. After World War II, fishing (including salmon fishing) was an active industry along the coast. All beaches that could be reached by land were fished, including Reef and Foster Beaches where an ex-army tank or blitz wagons were used to assist operations. Before beaches were allocated to fishermen in 1960, the competition for schools of fish was often intense. Boats going over other people’s nets and brandishing of rifles was not unheard of (Belton-Taylforth, 2005). The fishermen worked together, however, to make a cutting through the limestone cliff at Dillon Bay to gain access onto the beach. The method used was gelignite, shovels and a ‘one-horse’ scoop.

In 1949, the War Service Land Settlement Scheme was introduced into the Jerramungup region. Mr. Colin Cameron supervised the Scheme that took over the area while it was still infested with rabbits. The Scheme at that time was considered daring and ingenious due to the remoteness and isolation of the district but resulted in clearing of many areas which were subsequently considered to contain poor soils for farming. In 1962 construction of the Marra Bridge across the Pallinup River facilitated the road transportation of super phosphate from Albany.

Increase in recreational activity along the coastal areas led to the establishment of the Bremer Bay settlement with an informal village at Dillon Bay (now abandoned).

3.16 RECREATIONAL VALUES AND TOURISM

Tourism is an important and developing industry in the region, with much of the visitation focused on coastal areas. Formal tourist infrastructure and developments are generally small-scale and focussed on natural and wilderness experiences, with formal tourism activities likely to have a relatively low environmental impact, due to approval requirements. Informal tourist visitation is likely to have a higher impact at peak times due to use of four-wheel drives and other off-road vehicles and a lack of ablution facilities. Whale watching, including expeditions to the largest known group of killer whales in the Southern Hemisphere at the head of the Bremer Canyon, and other marine wildlife experiences are also popular tourist activities.

Information about recreational use and tourist visitation is sketchy, due to different data collection methodologies and small sample sizes for the Shire of Jerramungup.

Coastal recreation surveys over the past 30 years have indicated that most visitors to the Shire's coast have come from the southern coast hinterland. A survey in 1984 by the (then) Department of Conservation and Environment showed 70% came from the Great Southern, 20% from Perth and the remainder from elsewhere in the State. A survey undertaken by Goeft and Alder in 2000 found a similar pattern (74% from regional Western Australia and most of the remainder from the Perth Metropolitan area). Only a few out-of-State and overseas visitors were recorded.

Belton-Taylforth (2005) stated that visitors surveyed in Jerramungup in 2000 stayed an average of 15 days and spent approximately \$100 per day per group. The main experiences that the visitors were looking for was peace and tranquility (29.4%), fun (19.6%), socialising (17.7%) and being close to nature (13.2%).

Tourism Research Australia (2016) have estimated visitation to the Shire of Jerramungup as shown in Table 11.

TABLE 11: ESTIMATED VISITATION TO THE SHIRE OF JERRAMUNGUP

ESTIMATED VISITATION TO THE SHIRE OF JERRAMUNGUP, 3 YEAR ANNUAL AVERAGE (2014/15/16)		
	VISITORS	NIGHTS
Domestic overnight	49,667	170,000
International	1,933	8,700
Total	51,600	178,700

Source: Tourism Research Australia, International and National Visitor Surveys, Year Ending December 2016

The types of activity that beach visitors did on the southern coast were in *Community Consultation Analysis – People of Indelible Character* (Green, 2001). The activities recorded are as follows:

- Collect shells
- Swim/float
- Climb rocks
- Rock pool hunting
- Build sand castles/sand sculptures
- Scuba/snorkel
- Fish/crab hunt
- Walk/run
- Surf/body board
- Beach cricket
- Volleyball/football/soccer Camp
Picnic/BBQ
- Sand board
- Jet ski/boating/sailing/kayaking/water skiing
- Whale watching
- Jetty jumping
- Motor bike/4 WD
- Sun bake
- Drawing/photography/art
- Horse riding
- Walking dogs

As much of the South Coast is remote or difficult to access, recreational beach and boat fishing tends to be concentrated around the main population and holiday centres. The major target species for beach and rock anglers are salmon, herring, whiting and trevally, while boat anglers target pink snapper, queen snapper, Bight redfish and King George whiting. To a lesser extent, recreational fishing is dinghy and shoreline based, with fishing of estuaries and rivers.

3.17 COMMERCIAL VALUES

Commercial Fishing

The major commercial fisheries of the South Coast Bioregion are the abalone fishery, the purse seine fishery targeting pilchards and other small pelagics, and the demersal gillnet fishery for sharks and scale fishes. Other smaller commercial fisheries are the long-standing beach seine fishery for Western Australian salmon and herring, a trap fishery targeting southern rock lobsters and deep-water crabs, and the intermittent scallop trawl fishery. There is also a commercial net fishery for finfish operating in a number of South Coast estuaries and commercial fishers also target demersal scale fish offshore with droplines and handlines under general commercial ‘wet line’ provisions. South Coast commercial fishing vessel operators often hold several licenses to create a viable year-round fishing operation.

Fishing boats rely on mooring and access to land at the Fishery Beach marina. Local users have indicated that this facility has reached capacity for mooring and jetty space and consideration for future growth is needed. The Department of Transport and key stakeholders (including the Shire of Jerramungup) are involved in considering future infrastructure needs at Fishery Beach marina.

Aquaculture

Abalone farming at Bremer Bay focuses on land-based ‘raceway’ culture of abalone, using pumped sea water. There is the potential for production of offshore abalone, grown out using purpose-built concrete structures located on the sea bed which is currently being trialled.

Maritime Activity

Seismic surveying has been conducted offshore to inform prospective oil and gas exploration in the western Great Australian Bight. At present though, no exploration drilling has been conducted.

3.18 POPULATION AND DEMOGRAPHICS

The Australian Bureau of Statistic’s estimate of the Shire of Jerramungup’s resident population in the 2015 census was 1079 people (576 male and 503 female) with a median age of 40.7 years. This is a slight decline on the 2002 census which indicated that 1228 people lived in the Shire. The population of the Shire in 2017 is 1126 people (Shire of Jerramungup pers. comm.)

In the 2001 census the Shire had a population of 1208; Jerramungup townsite had a population of 273, and Bremer Bay 241. Based on the 2006 population census there has been no major changes in population.

The Australian Bureau of Statistics have estimated resident populations for regional areas based on local government areas, which are included for the Shire of Jerramungup (Table 11) with projections from WA Tomorrow (Table 12; WAPC, 2015). Projections include a population range based on possible factors including economy, employment, births and deaths.

TABLE 12: POPULATION AND PROJECTIONS

YEAR	ABS	WA TOMORROW PROJECTION	AVERAGE ANNUAL GROWTH RATE (PROJECTION)
2001	1244		
2002	1245		
2003	1236		
2004	1228	1200	
2005	1249		
2006	1196	1200	
2009	1186		
2011		1090	
2015	1079		
2016		980 - 1110	-2.11% - 0.36%
2021		1050 - 1540	-0.37% - 3.52%
2026		400 - 4320	-6.46% - 9.62%

Source: Gray and Lewis (2010), Australian Bureau of Statistics (2017) and WAPC (2012 and 2015)

The Shire of Jerramungup Local Planning Strategy (Gray and Lewis, 2010) indicates that while the population predictions are for a stable number of people, the following needs to be considered:

- In Bremer Bay, there is a high level of absentee owners who do not occupy houses for the full year. There are therefore variations of population numbers throughout the year.
- There is a general lifestyle trend for people to move to regional areas that are located on the coast (especially retirees). Bremer Bay is considered a desirable retirement location which could result in population increases, and further increases in absentee owners.
- Population projections do not represent population pressure caused by peak visitation periods by tourists and seasonal workforces. Bremer Bay, experiences peak pressures due to seasonal visitation.
- The new Town Centre and Industrial area for Bremer Bay is likely to generate employment and population growth opportunities.
- Demand, population growth and increased tourists can be difficult to predict.

4 FIRST PASS COASTAL HAZARD ASSESSMENT

As part of the coastal management planning process, MP Rogers and Associates have compiled a *First Pass Coastal Hazard Assessment* (MP Rogers and Associates, 2017) for the Shire of Jerramungup coastline. The document is available on the Shire of Jerramungup web page.

The assessment identifies areas of the coastline and/or coastal assets within the Shire that could be at risk of impact by coastal hazards in the coming 100 years. MP Rogers and Associates (2017) completed a First Pass Hazard Assessment using available information and data. Modelling has identified areas likely to be at risk and where coastal hazard risk management and adaptation planning (CHRMAP) should be undertaken. The assessment has also outlined the data needed to undertake further modelling.

State Planning Policy 2.6: State Coastal Planning Policy (SPP2.6; WAPC, 2013) provides guidance on the assessment of coastal hazard risks for assets or infrastructure located in close proximity to the coast. This guidance outlines methodology to assess the potential extent of coastal hazard impacts and guides the development of appropriate coastal hazard risk mitigation and adaptation strategies.

The *First Pass Coastal Hazard Assessment* has:

- Identified areas of the coastline that may be impacted by coastal hazards over the following timeframes:
 - Imminent (0-5 years).
 - Expected (5-25 years).
 - Projected (25-100 years).
- Developed recommendations for data collection and identified areas which merit further assessment or development of a CHRMAP.
- Produced coastal hazard maps showing the areas potentially impacted in the nominated timeframes.

The coastal hazard assessment is described in (MP Rogers and Associates, 2017) with main findings summarised below.

4.1 COASTAL EROSION

Short and Medium Term (2022 & 2042)

The areas subject to short term coastal erosion hazards to 2022 are at risk of coastal erosion should the area experience a significantly severe storm event. These include the following areas:

- Car park and track at Little Boat Harbour.
- Car park at Short Beach.
- Access track and infrastructure at the western end of Dillon Beach.
- Sections of the golf course.

- Abalone and aquaculture infrastructure at the southern end of Back Beach.
- Several access tracks.

Of these, the aquaculture facility at the southern end of Back Beach appears the most significant in terms of potential infrastructure loss.

Please refer to the First Pass Coastal Hazard Assessment (MP Rogers and Associates, 2017) for more detail.

Longer Term (2117)

The areas potentially subject to coastal erosion hazards in the longer term allow for the impacts of coastal erosion due to severe storms, ongoing shoreline erosion and sea level rise. These include the following areas.

- Car park and track at Little Boat Harbour.
- Car park and road at Short Beach.
- Access track and infrastructure at the western end of Dillon Beach.
- A number of additional roads, tracks and access ways.
- Infrastructure at Fishery Beach.
- Sections of the golf course.
- Abalone and aquaculture infrastructure at the southern end of Back Beach.
- Car park and infrastructure near the Wellstead Estuary.
- Sections of the Bremer townsite.

The highest value infrastructure at greatest risk is located behind Back Beach (the abalone/aquaculture infrastructure and golf course) and the Bremer townsite. The behaviour of the Wellstead Estuary differs from the open coastline and a more refined estimate of processes is required (MP Rogers and Associates, 2017).

Please refer to the First Pass Coastal Hazard Assessment (MP Rogers and Associates, 2017) for more detail.



Source: MP Rogers and Associates (2017)

4.2 COASTAL INUNDATION

Coastal inundation hazard maps have been prepared for the area around Bremer Bay, where contour information is available (MP Rogers and Associates, 2017). Due to the low resolution of the contours data, only a 2117 map was prepared. To ensure it maintains a level of conservatism, the +4 mAHD contour was used for mapping, meaning the inundation zones therefore includes a factor of safety.

The coastal inundation map shows that sections of the Bremer Bay townsite may be at risk of inundation in the coming 100 years.



Source: MP Rogers and Associates (2017). Note: 3.2 mAHd represents the probable inundation risk in 2117.

4.3 RISK MANAGEMENT AND ADAPTATION HIERARCHY

SPP2.6 outlines a hierarchy of risk adaptation and mitigation options, with options that allow for a range of future strategies. The hierarchy of options is shown below.

HIERARCHY OF RISK ADAPTATION AND MITIGATION OPTIONS



Risk Management & Adaptation Hierarchy

Options include:

- **Avoid** – avoid new development within the area impacted by the coastal hazard.
- **Retreat** – the relocation or removal of assets within an area identified as likely to be subject to intolerable risk of damage from coastal hazards.
- **Accommodation** – measures which suitably address the identified risks.
- **Protect** – used to preserve the foreshore reserve, public access and public safety, property and infrastructure.

The assessment of options is generally done in a progressive manner, moving through the various options until an appropriate mitigation option is found.

The large majority of the Shire of Jerramungup shoreline is undeveloped, without significant coastal infrastructure. In these areas, the 'Avoid' principle is appropriate. New development should be situated outside of the coastal hazard zones.

For existing infrastructure, such as that around the Bremer Bay townsite, it is not possible to implement the 'Avoid' principle. In these areas, other adaptation or mitigation options may be appropriate and these should be investigated through the development of a CHRMAP. This should extend from Bremer Beach to Fishery Beach and include consideration of the Wellstead Estuary. It should also consider coastal erosion and inundation hazards.

For infrastructure which is required to be located in close proximity to the coast (for instance access roads, tracks or car parks), planned retreat is recommended. The timeframes for retreat should be determined as part of local CHRMAP for the proposed asset.

Actions:

- Undertake data collection to allow for more detailed modelling of coastal processes as per *First Pass Coastal Hazard Assessment* (MP Rogers and Associates, 2017).
- Incorporate coastal inundation hazard lines into the Shire of Jerramungup Local Planning Strategy and Local Planning Scheme as a trigger for consideration of planning and development applications and to guide future land use.
- Undertake CHRMAP for Bremer Bay townsite from Bremer Beach to Fishery Beach, including the Wellstead Estuary.
- Undertake specific CHRMAP for new areas of coastal related infrastructure or development.
- Undertaken ongoing monitoring of the erosion at Fishery Beach (and other areas where erosion becomes evident).

5 COMMUNITY AND STAKEHOLDER ENGAGEMENT

A communication strategy was developed to guide the preparation of the Shire of Jerramungup coastal management plan. The strategy comprised:

- Liaison and review via a steering committee that contained key stakeholders.
- Distribution of a letter to key stakeholders to introduce coastal management project.
- Interviews of key stakeholders.
- Online survey.
- Online survey (and paper version).
- A colouring competition.
- Public exhibition of the draft version of coastal management plan, with public submissions invited.
- A presence at community events (Bremer Bay Market Days) to allow for additional input on the draft management plan.
- Adoption by the Shire of Jerramungup Council.

Elements of stakeholder engagement are summarised below.

5.1 STEERING COMMITTEE

The Shire of Jerramungup appointed a steering committee to guide and oversee the development of the coastal management plan. The members of the Steering Committee are included in Table 13.

It is recommended that representation on the South Coast Management Group, with a local Coastal Action Group be fostered to assist the implementation of the management plan, especially where joint decision making, or advocacy is required.

TABLE 13: STEERING COMMITTEE MEMBERSHIP

Carolyn Daniel	Local Government	Councillor
Joanne Iffla	Local Government	Councillor
Craig Pursey	Local Government	Officer
Janna Kleszewski	Local Government	Officer
Nick Boegl	Department of Planning, Lands and Heritage	Coastal Officer
Jeni Liell-Cock	Department of Planning, Lands and Heritage	Regional Planning Officer
Astrid Kernen	Community Group Representative	Coastal Business Tour Operator
Anne Gadsby	Community Group Representative	South Coast NRM & Friends of Wellstead Estuary Group
Peter Masters	Department of Biodiversity, Conservation and Attractions	Senior Operations Officer- Ravensthorpe
Peter Collins	Department of Biodiversity, Conservation and Attractions	Fauna Conservation Officer/ DPaW Skipper
Fangjun Li	Department of Transport	Coastal Management Manager

Therese Bell	Community Group Representative	Fitzgerald Biosphere Group Bremer Bay Regional Trials Committee
Ron Pumphrey	Department of Planning, Lands and Heritage	Manager, Case Management, South West and Great Southern
Grantly Morton	Department of Biodiversity, Conservation and Attractions	Ranger

5.2 STAKEHOLDER INPUT

Interviews

Interviews were undertaken of the stakeholders included in Table 14.

TABLE 14: STAKEHOLDER INTERVIEWS

Bremer Bay Dive	Department of Planning, Lands and Heritage (including coastal and lands sections)	Shire of Jerramungup officers – including Town Planner, Project Officer, Ranger, Bushfire Risk Planning Coordinator
Bremer Bay Quad Tours	Fitzgerald River Biosphere Group (FBG)	South Coast Natural Resource Management Inc.
Department of Biodiversity, Conservation and Attractions	Friends of Wellstead Estuary Group (FoWEG)	South West Land and Seas Council (SWALSC)
Department of Fisheries	Landscape Ecologist	Tourism Western Australia
Volunteer Marine Rescue (local)	Department of Transport	

Note: Other stakeholders were contacted but did not respond to a request for an interview.

The key messages from stakeholder interviews are listed below.

What would you most like to achieve from this management plan review?

- Strong partnerships for joint management and resourcing.
- Better controls and consistency relating to access, camping and campfires.
- Better management of Little Boat Harbour (access and boat launching) and Marina (increased use and erosion management).
- Protection for sea dragons.
- Identify upgrades required to better cater for increased visitation.
- Emergency access for Volunteer Marine Rescue (e.g. at Little Boat Harbour).
- Control of unlicensed vehicles.
- Removal of squatters' shacks.
- Identifying opportunities for sustainable tourism activities.
- Integration of fire safety considerations into coastal management.

Issues and Comments

- Tenure (most public land is unallocated or unmanaged).
- On-ground management of coastal areas is important.
- Being proactive is key as visitation pressures increase.
- Guidance, restrictions and educational tools need to be in place (including policing, where necessary).
- Have noticed four-wheel drives driving recklessly, especially during peak use periods (e.g. Easter).
- Camping during peak periods is causing pressure on popular locations.
- People are accessing private land to get to the coast.
- Coastal safety (visitor risk, boating, rock fishing)

Gaps in Coastal Management

- Partnerships and resourcing for cross tenure management.
- Shire of Jerramungup has a small rate base and therefore, limited resources.
- Resources for policing.
- Camp hosting and user pay.
- Formal and well laid out camp areas (like Point Ann).
- Access to key (remote) beaches. Signage, fences.
- Additional policing e.g. rangers for shifts/ peak times.
- Information regarding coastal hazards, climate change adaptation.

What are the threatening processes of highest concern?

- Out of town visitors, who are often inexperienced in 4WD use.
- Growing recreational use, especially at peak times, Christmas, New Years, School holidays and Easter.
- Dieback introduction and spread.
- Multiple tracks and access management.
- Weeds.
- Fires.
- Rubbish.
- Coastal erosion and inundation (planning to deal with these in the future, including for estuaries).

Coastal areas of highest concern

- Dillon and House Beach are priorities as they are highly used and offer best opportunities for formalisation/interpretation.
- Catering for increased usage of marina at Fishery Beach.

Recommendations

- Engaging with 4WD, motorbike and quad bike users – how to engage? Code of Conduct?
- Involve community and local business owners in spreading information about code of coast and code off-road. Especially during peak times.
- Ongoing community consultation.
- Data collection and monitoring of Fishery Beach/ Marina.

- Look ahead at least 10 years.
- Upgrades to roads leading to Fitzgerald River National Park, Point Anne and Doubtful Islands Peninsula.
- Coordination of fire management (Department of Fire and Emergency Services, DBCA, Shire of Jerramungup and volunteer bushfire brigades).
- Incorporation of ‘fire safety places’ on Point Henry Peninsula.

5.3 CELEBRATION OF ACHIEVEMENTS ALONG THE COAST

Many coastal planning and management initiatives have been undertaken for the Jerramungup coast by the Shire of Jerramungup, other organisations and community. These include:

- Doubtful Islands Area Coastal Plan, Stage 1 (Craig, 1992);
- Beaufort Inlet and Wellstead Estuary Coastal Plan (Craig, 1994);
- Bremer Bay Coast Aquaculture Feasibility Study (Ecologia *et al.*, 1996);
- Jerramungup Coastal Management Plan (Shire of Jerramungup, 2005);
- Wellstead Estuary Management Plan (Department of Environment, 2006);
- Creation of the Friends of the Wellstead Estuary;
- Preparation of Bremer Bay Trails Master Plan;
- Site planning and construction of marina at Fishery Beach;
- Protection of nesting plovers through use of fences and bollards;
- Installation of viewing platforms, signs, fish cleaning stations, toilets, steps and shelters;
- Installation of information signs that comply with the National Aquatic & Recreational Signage Style Manual (Ellis *et al.*, 2006);
- Implementation of Bremer Bay walk trail (Fishery Beach);
- Bird surveys in riparian zones;
- Flora and condition survey of Wellstead Estuary Riparian Zone;
- Revegetation (e.g. Johns Cove, Townscape Committee);
- Development of a native garden guide (Friends of Wellstead Estuary);
- Publication of Fitzgerald Biosphere promotional map;
- Establishment of a NRM trailer and tools (Fitzgerald Biosphere Group);
- Bremer Bay Aquaculture Project Ocean Water Circulation System (MP Rogers & Associates, 1998);
- Summer Ranger (2008-2009); and
- Coastal rehabilitation and weed management

5.4 SURVEY

A survey was designed and released online via SurveyMonkey and Facebook and also made available in paper format in Jerramungup and Bremer Bay (including at the 2017 Easter markets). The survey is included in Appendix I.

103 responses to the survey were received and collated in SurveyMonkey software. Results are included in Appendix J and are summarised in Table 15.

TABLE 15: SURVEY RESPONSES

QUESTIONS	RESPONSES (NUMBER OF RESPONSES 103)
Where are you from?	Most people who responded were local (55%), followed by residents of the Great Southern (22%), Perth (17%), other parts of WA (4%), interstate (none) and overseas (1%). This result is potentially indicative of the timing of the survey which was a peak visitation period (Easter, 2017)
How often do you visit the coastline within the Shire of Jerramungup?	Most people responded that they visit the coast monthly (35%) with others visiting yearly (19%) weekly (18%) or daily (17%). Others visit fortnightly (5%) or it was their first visit (2%). Individual comments included that while some people didn't visit often, the coast was a drawcard and a prime attraction for holidays.
How long do you generally stay (or how long do you plan on staying if this is your first time)?	Most people indicated that they would stay 'a few days' (32%) with others indicating day trips (17%), a week (16%) or overnight (6%). Fewer people stay for a month (3%) or longer than a month (4%). Some individual comments indicate that they are permanent residents and have the pleasure of staying all year round.
Which coastal areas have you visited?	Results indicated that most people visit multiple beaches. The most highly visited beaches are: Little Boat Harbour, Dillon Bay, Native Dog Beach, Blossom's Beach, Bremer Beach and Short Beach. The least visited areas include: The Chimney, Red Rocks, Horatio Island, Sparkling Island and Air Blowholes.
What are your main activities when you visit the coast?	The most popular coastal activities included: Swimming (80%), relaxing (77%), fishing (77%), walking (64%), camping (59%), four-wheel driving (59%), surfing (35%) and boating (32%). Fewer people nominated: quadbikes/motorbikes (17%). 12% indicated that they had experienced the Bremer Canyon tour. Other activities mentioned included: bird watching, diving and snorkelling, enjoying nature and cultural activities.
What do you value most about the coast?	People indicated they enjoyed: the sandy beaches (86%), undeveloped/low key nature (81%), the environment (69%), wilderness experience (54%), adventure (51%), wave conditions (25%) and facilities (17%). Individuals also valued: species habitat, accessibility, unspoilt nature and seascapes, low level of development, peace, flexibility to do a range of things.

What are the biggest issues along the coast?	People were most concerned about: rubbish (72%), increased visitor numbers (44%), environmental damage (40%), pressure on beaches (34%), off road vehicles (33%), fire (26%), disease and weeds (26%), access (25%), protection of seabirds (23%), issues with facilities (20%), antisocial behaviour (19%), maintenance of infrastructure (19%), vandalism (17%), management of Fishery marina (15%) and land use conflict (12%). Fewer people were concerned with squatter's shacks (2%) or sea level rise (1%). Other matters of concern include: unrestrained dogs, loss of pristine nature, track closure, boat ramp constraints, big bins for campers, education and awareness raising, mobile phone reception, need for joint management with Aboriginal groups, road conditions, coastal safety. Suggestions included: hosting beach clean-up days, camp hosts, studies by students.
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5.5 COMMUNITY ENGAGEMENT

A stall was set up at the 2017 Easter market day, with Aurora Environmental and Shire of Jerramungup officers attending to discuss coastal issues with residents and visitors. Surveys were distributed during the event. The stall included maps of the coast, including tenure and photographs of coastal areas. Concurrently, a colouring competition was held with art work and prizes supplied by Western Australian artist Barb Green. Three winners were chosen from three age groups. The winning entries are included in Appendix K. The competition proved to be a positive way to engage with children and their parents or guardians.

5.6 PUBLIC COMMENT PERIOD

The advertising period of the Shire of Jerramungup - Draft Coastal Management Plan was between 4 December 2017 and 25 January 2018. The draft management plan and supporting documents were loaded onto the Shire of Jerramungup website, with notifications sent to stakeholders and the community via email and Facebook. Eight submissions were received (Appendix L).

A survey (online and hard copy) was made available to stakeholders, seeking feedback on key items in the Draft Management Plan (Appendix M). Thirty three responses were received. Survey statistics and responses are also included in Appendix M.

Face to face engagement was facilitated via a stall hosted by the Shire of Jerramungup at the Bremer Bay Christmas and January Market Days.

Where appropriate, changes have been made to the Coastal Management Plan document, in response to submissions. The Shire of Jerramungup resolved to adopt the management plan on 21 March 2018.

6 COASTAL MANAGEMENT ISSUES AND RECOMMENDATIONS

6.1 THREATENING PROCESSES – BIODIVERSITY & LANDSCAPE

The *Fitzgerald Biosphere Recovery Plan* (Department of Environment and Conservation, 2012) outlined processes threatening the biodiversity values of the Fitzgerald Biosphere, which also apply to the Shire of Jerramungup coast. Threatening processes include:

- *Phytophthora cinnamomi* dieback and other plant diseases;
- Inappropriate fire regimes;
- Predation by feral cats and foxes;
- Environmental weeds;
- Loss, fragmentation and degradation of habitat;
- Competition and habitat modification by invasive fauna (rabbits, feral bees, pigs, goats and invasive native species);
- Salinisation and altered hydrology;
- Extreme and random events (novel diseases, wildfires, climatic extremes and severe weather); and
- Climate change.

In addition to these stressors, there are issues which affect effective management, landscape and visual values, introduce safety risks or at odds with social equality. These include:

- Tenure and governance;
- Squatters shacks;
- Management of access and off-road vehicles;
- Visitor risk;
- Commercial use of public land; and
- Facilities and communication.

These issues are discussed below. Due to the complicated interaction of these issues, progress in managing stressors, risks and issues will only be achieved through an integrated and partnership based approach to coastal management.

6.2 DIEBACK MANAGEMENT

Phytophthora dieback is a water mould that kills susceptible plants and represents a severe threat to biodiversity in coastal ecosystems. The disease can be spread through movement of contaminated soil via recreational activities, road and drainage works.

Project Dieback, run by Natural Resource Management Western Australia and supported by GAIA Resources, South Coast NRM and the Government of Western Australia has developed a *Phytophthora* dieback management and investment framework including identification of interpreted areas, disease

points, dieback management activities, risk areas and priority protection areas (PPA) (South Coast NRM, 2014). The Doubtful Island Peninsula, Tooregullup Beach and Gordon Inlet areas are intrinsically linked to the values and management of the Fitzgerald River National Park and have been identified, with the National Park as a PPA (Appendix G). PPAs are subject to a process of desktop analysis, on-ground assessment, threat analysis, management planning and implementation of risk reduction plans. Activity tasks are likely to include a combination of access controls, installation of signage and hygiene infrastructure, containment programs and phosphite treatment. Activities are subject to funding and partnerships, with lead organisations including State government agencies (such as DBCA), Dieback Steering Committee, Local Area Reference Groups, South Coast NRM Inc, local government and tertiary institutions such as Murdoch University.

South Coast NRM Inc. and the Fitzgerald Biosphere Group are actively implementing dieback works, undertaking community engagement and providing training.

Project Dieback has produced resources such as:

- Information brochures (susceptible species, washing down vehicles, hygiene, horse hygiene, bee keeping); and
- A signage system to inform people of dieback status and risk in key areas.

Information about these resources can be found at <http://www.dieback.net.au/>

Actions:

- That dieback information be incorporated into coastal risk signage across the Shire of Jerramungup coast.
- Foster partnerships between key managers such as the Shire of Jerramungup, the DBCA, South Coast NRM Inc. and the Fitzgerald Biosphere Group to promote dieback hygiene, access management, information sharing and training to reduce the risks associated with the introduction and spread of dieback.

6.3 WEEDS AND INVASIVE SPECIES

Invasive species include terrestrial and aquatic plants (weeds), animals (introduced/feral) and diseases (e.g. canker) which are competitors, predators, pathogens and parasites of native species. Invasive species disrupt natural systems and contribute to a loss of biodiversity.

Some weed species proliferate in along the coast and are highly opportunistic in disturbed areas (Box Thorn, Sydney Golden Wattle, Victorian Tea Tree, Pyp Grass, Watsonia, Taylorina and *Cotyledon orbiculata*) or are extremely difficult to control (Bridal Creeper, Blackberry, Arum Lily).

- Weed management is essential if biodiversity is to be maintained, especially after fire.
- Invasive species control on a large scale is expensive and time consuming. Catching infestations when they are small and manageable is preferable.
- Foxes and cats are preying on small to medium weight range mammals. DBCA is trialing cat baits and uses aerial baits for foxes in the conservation estate.

- Rabbit grazing results in reduced ground cover and changes in ecology communities. Feral goats, can also cause problems.
- Invasive species control is challenging, time consuming and requires ongoing commitment. An integrated approach to invasive species management is more likely to be successful than an uncoordinated and haphazard approach.

Control methods from *Southern Weeds and Their Control* (Moore and Wheeler, 2008) and/ or Herbiguide (2017) should be used in eradication programs.

Once yearly Eradicat baiting is now integrated into the DBCA Aerial Bait program for fauna conservation areas such as the Fitzgerald River National Park.

Partners such as South Coast NRM Inc. and Green Skills have historically been invaluable partners involved in management of weeds and pests. Government funded programs such as the Green Army provide training and a labour source for practical projects in coastal areas. Novel ideas such as engaging with tourists and visitors to spend an extra day while on holidays undertaking weed eradication should be encouraged.

Actions:

- Monitor and treat high priority weeds as described for coastal nodes (Section 7).
- Coordinate between land managers to prioritise infested areas, types of pests and funding for a sustained approach to pest control.
- Support community groups and organisations who can assist with pest management.
- Use weed treatment methodology as outlined in Herbiguide (2017) and *Southern Weeds and Their Control* (Moore and Wheeler, 2008).
- Explore novel ways to engage with visitors e.g. via ecotourism to contribute to weed and pest management.

6.4 FIRE MANAGEMENT

- Fire management on coastal land requires careful planning as loose sandy soils can be particularly prone to erosion when vegetation is removed.
- Poor fire management may result in threats to life and property values.
- Frequent wildfires can lead to adverse habitat changes and some significant species require habitat that has been unburnt for a long time.
- Infrequent burning can lead to high fuel loads which may result in intense wildfires.
- Aboriginal people used to burn areas for hunting or as they moved camp, resulting in a mosaic of burning across the landscape. Traditional burning is hindered by other considerations such as fragmentation of land and weed invasion.

- The Shire of Jerramungup has specifications and requirements for firebreak construction on private land, impose fire bans to reduce the risk of unplanned fire, have a statutory responsibility to establish and maintain local voluntary Bush Fire Brigades.
- DBCA undertakes hazard reduction burning in some areas of conservation estate and provides advice and assistance to land managers regarding fire management. The Department is also responsible for management of fire on unmanaged reserves and unallocated Crown land (outside townsites) under a memorandum of understanding with DPLH. However, few resources are provided for this purpose.
- Gas barbecues are provided at some coastal locations to reduce the risk associated with open fires and destruction of native vegetation.

The Shire of Jerramungup has adopted a Bushfire Management Risk Plan for Point Henry. Although subject to further risk assessment, the concept of ‘neighbourhood safe places’ at coastal nodes such as Blossom’s Beach and Short Beach are being considered as a way to manage emergency access during fire events. There is also a concept where a fire shelter and memorial structure could be constructed at Blossom’s Beach (pending funding).

Actions:

- Develop concept of ‘Neighbourhood Safe Places’ on Point Henry Peninsula with a fire shelter and memorial at Blossom’s Beach.
- Foster partnerships between land managers for a coordinated approach to fire management, suppression, controlled burns and visitor risk.
- Record and map fire history in coastal reserves.

6.5 CAMPING

Formal camping in caravan parks and camp grounds is well catered for in the Bremer Bay area with two caravan parks and a bush camp. Informal camping is popular in many of the coastal reserves and can increase pressure on reserves during peak periods due to a lack of facilities (or overloading of existing facilities).

- Visitation of campers using four-wheel drives, campervans, caravans, and motor home are increasing and facilities are not always suited to this use (e.g. effluent disposal, informal and ad hoc camping).
- Land managers are unable to adequately manage the majority of informal camping locations because of the remoteness, distance from management bases and the resources needed.
- Many informal camping locations are on UCL or UMR that has limited or no management presence.
- People are attracted to informal camping locations because they can “do whatever they want there” (SCMG, 2000a) leading to some areas being highly degraded by a small number of visitors.

- Technology (e.g. internet and global positioning systems) allow many people to identify access to coastal sites.
- Travel booklets which promote free camping exacerbate problems for land managers by increasing the number of people who visit areas with insufficient facilities.
- Problems occurring at informal camping locations include stripping of vegetation for fire fuel, soil erosion, random disposal of waste water and grey water, overcrowding, conflict between pedestrians and vehicles, inappropriate access, motorcycle and unregistered vehicle use, rubbish dumping, increased bushfire risk and loss of environmental integrity (SCMG, 2000a).
- There are health risks associated with the random disposal of human waste and grey water. Few locations have ablutions suitable for medium to long term camping.
- For many people, informal camping is the only affordable holiday option and it appears that it is only a small proportion of visitors who do not respect the camp sites. Many regular users are custodians who clean up after other users.
- A blackwater disposal point is available for public use in Bremer Bay.

Actions:

- Support development of camping facilities on private land using Shire of Jerramungup planning approval process, where appropriate.
- Develop an 'informal camping guide' tailored to the Jerramungup coast which outlines where facilities are (or are not provided) and the need to take rubbish out.
- Trial 'camp hosts' at House Beach.
- Develop and implement a camping area design/ upgrade for House Beach (after tenure has been formalised).

6.6 DOGS AND HORSES

Consultation indicates that while some people are concerned about dog control and access to popular beaches (or those that support nesting sea birds) many support allowing dogs on beaches (if they are under control). Currently, the highly visited beaches such as John Cove, Fishery Beach, Little Boat Harbour, Main Beach and Blossom's Beach either have prohibitions on dogs or require them to be on leashes. Signage and policing by the Shire of Jerramungup occurs in these areas.

If dogs are kept under control, prohibitions are unlikely to be required for other coastal areas such as the Doubtful Islands area, Back Beach, between Dillon Beach and Beaufort Inlet.

The Doubtful Islands and Dillon Bay areas are popular with horse riders. Uncontrolled horse use in inappropriate areas can cause erosion, facilitate the spread of dieback, introduce weeds and damage native vegetation. However, along with sports such as motorbike riding, horse riding can also be well managed in suitable areas. It is recommended that the Shire of Jerramungup engage with horse riding groups in the area to identify potentially suitable areas for horse riding.

Actions:

Dogs on beaches:

- Enforce current dog prohibitions and/or controls at selected beaches (John Cove, Fishery Beach, Little Boat Harbour, Main Beach and Blossom's Beach).
- Promote responsible dog visitation at other coastal areas (e.g. via signage or camping information, where appropriate).

Horse riding in coastal areas:

- Engage with local horse riding groups to determine areas suitable for horse riding.
- Develop and promote a code of conduct for coastal horse riding.

6.7 ACCESS AND OFF-ROAD VEHICLES

Access to the coast is possibly the single most difficult issue related to minimising risk. Proliferation of tracks, potential introduction and spread of dieback and erosion are difficult to control and manage. This has been demonstrated by the efforts made by the DBCA to control access to the Fitzgerald River National Park and Doubtful Islands area during wet weather, when dieback is at most risk of introduction and spread. Efforts to install gates and get vehicles to stay on designated tracks has been expensive, time consuming and ultimately, not successful.

DBCA is currently working with the Shire of Jerramungup to plan for the upgrade of Pabelup Drive and Point Ann Road to provide more sustainable access to the coast. It is hoped that by sealing this road the risk of dieback introduction and spread will be reduced and that visitors will utilise the road rather than access points such as Gordon Inlet Drive during unfavourable conditions.

The *Control of Vehicles (Off-Road Areas) Act 1978* makes it an offence to drive off-road vehicles (not licensed under the *Road Traffic Act 1974*) such as dune buggies and trail bikes on Crown land except in those areas specifically set aside for the purposes outlined in the Act. Driving of vehicles across Crown land can damage vegetation, which is an offence under the *Land Administration Act 1997*. However, in practical terms, policing of off-road vehicles is difficult and rarely able to be enforced. Instead, trying to raise awareness about the vulnerability of the coast and how to best access fragile areas without doing damage is more likely to achieve positive results.

Previous planning has recommended the investigation of creation of a gazetted area for off-road vehicle use at Reef Beach. Pending resolution of native title settlement, this remains a valid investigation to assist in providing a location for this type of recreation. However, addressing risks associated with emergency access and safe use of the area may be challenging.

The Friends of Wellstead Estuary have had success in the seasonal protection of vulnerable bird nesting areas through erection of signage and fencing at Main Beach. Continuation of these activities, with support from the Shire of Jerramungup, is recommended.

Due to the difficulties associated with access control, the most cost-effective way to approach management is via sharing of information through signage and promotion of codes of best practice, such as Code Off-Road (South Coast NRM Inc; Appendix D).

The local Trails Committee is proposing to prepare a trails masterplan as part of an investigation to provide multiple use trails in the Bremer Bay area, including the coastal zone. It is recommended that this plan consider access for various modalities, including walkers, mountain bikes and horses.

Recommendations:

- Progress upgrade of Pabelup Drive and Point Ann Road.
- Provide information regarding 'Code Off-road' with Australian Standard coastal safety signage.
- Where possible, prevent proliferation of tracks and erosion through well maintained and designed barriers and signage.
- Seasonally protect nesting areas of vulnerable bird species through signage and delineation (Main Beach).
- Expand on the existing Trails Masterplan to cater for multiple users (walkers, mountain bikes and horses) around Bremer Bay, including the coastal zone.

6.8 VISITOR RISK MANAGEMENT

- The number of people visiting the coast is increasing.
- Growing population, extreme activities and use of equipment (four-wheel drives, quad bikes, motorbikes, jet skis, surf kites) have heightened the level of risk to visitors to the coast.
- Vehicle and pedestrian tracks have been created in coastal areas which may be dangerous due to deterioration or poor siting.
- Vehicle users may place themselves at risk in remote areas of the coast by becoming bogged, disoriented or stranded due to steep inclines or inability to access assistance.
- Large waves and high energy swells are an inherent danger along the coast, with the potential for fatalities occurring from people being swept off rocks while fishing or exploring.
- Safety issues have not been fully surveyed by land managers. Some risks have been identified in the preparation of this management plan. However, the assessment was not exhaustive.

Recommendations:

- Install a system of signs which comply with the Australian Coastal Safety Guidelines (Surf Life Saving Australia and Surf Life Saving Association of Australia), International Organisation for Standardisation (ISO Standards), Australian Standards and the National Aquatic and Recreational Signage Style Manual (Ellis et al., 2006) to advise of risks, code of the coast and code off-road.

- Undertake visitor risk assessments (safety audits) and implement visitor risk plans for coastal locations. Priority areas include: Dillon Beach, Little Boat Harbour, Blossom’s Beach and Banky Beach.

6.9 SQUATTERS’ SHACKS

The current State policy relating to squatters shacks was established in 1989 with the main objective being that no new unauthorised shacks or structures would be permitted on unmanaged reserves and unallocated Crown land. There have been several reviews of the policy including a 2011 Legislative Council Standing Committee on Environmental and Public Affairs report with no substantial change in the principles agreed in 1989. *State Planning Policy (State Coastal Planning Policy)* supports the removal of unlawful shacks from coastal crown land.

The following is a summary of the main policy principles:

1. No new illegal shacks will be permitted on reserved or unallocated Crown land along the State’s coastline.
2. Existing owners of shacks on Crown land or unvested reserves will be permitted to remain for a period of six years² provided that:
 - i) there are no extraneous circumstances which require shacks to be removed sooner;
 - ii) the shacks are not situated on reserved land which has been subject to a management plan under the *Conservation and Land Management Act 1984* (CALM Act).
3. The six year period is to allow for the reasonable usage of existing investment while deterring extensive improvements or redevelopment. The six years will be calculated from the commencement date of arrangements for particular areas.
4. This six year tenancy is subject to:
 - i) no services being provided by State or Local Government;
 - ii) the sites being left in a clean and tidy condition upon completion of occupancy and the cost of removal of the shack and rehabilitation of the site being borne by the shack owner;
 - iii) no further clearing or making of access roads being undertaken;
 - iv) no transfer of shacks or occupancy rights being permitted;
 - v) no improvements or extensions apart from those sanctioned by the local government for safety or health reasons being undertaken;

² Although current policy suggests that existing ‘shack owners’ be granted 6 years leases the option remains for DPLH (subject to funding) to initiate action under the LAA to seek the removal of structures within 90 days of notice being given to the ‘owner’. Note: proposed amendments to the LAA will seek to strengthen these provisions of the law.

- vi) State, Federal and Local Governments being indemnified against damage to property or persons resultant from the poor condition of the shacks;
 - vii) the payment of an annual fee to the local government or other body managing the reserve or Crown land, to cover progressive rehabilitation and management of shack areas;
 - viii) the land not being required for another purpose at an earlier time, in which case the owner(s) would be issued with a notice for removal of the structure within 90 days;
 - ix) there being no entitlement for compensation as a result of a notice for removal (of a shack), whether the notice be issued at the conclusion of the six-year period or at an earlier time.
5. The Government recognises that professional fishermen merit an exemption from the policy and are permitted to continue to operate from shack areas. However, formalised tenure to a fisherman's shack will only be granted in the form of a lease in conjunction with fishing licenses under the control of DPIRD and subject to conditions laid down by DPLH.

The policy is targeted for a Departmental review but the timing of this has not been determined.

There are no squatters' shacks on reserves managed by the Shire of Jerramungup. Shacks exist on private (freehold) land and UMR. UMR is ultimately the responsibility of DPLH.

Action:

- DPLH to initiate process for notification and ultimately, shack removal on Crown land (UMR).

6.10 RECREATIONAL USE AND TOURISM OPPORTUNITIES

Tourism activities, if carried out sustainably have the potential to provide benefits to the coastal zone and the economy of the Shire of Jerramungup. Ventures that promote the values of the coast, foster awareness and engage visitors are likely to have a positive outcome.

The Shire of Jerramungup has joined with other local government authorities to form a Tourism Marketing Partnership for the 'Amazing South Coast'.

Over recent years, there has been significant development of recreational and potential tourism activities which enhance user interaction with the coastal zone:

- Bremer Canyon tours
- Multiple use trails
- Quad bike tours
- Stand-up paddle board hire
- Bicycle hire
- Snorkelling and scuba diving
- Kayaking and canoeing
- Land based whale watching (e.g. Point Ann and Rock Cairn Lookout)
- Service provision at key nodes (e.g. coffee and hire of recreational equipment at the Paperbark Park)
- Potential for use of the Bremer Bay airport as a tourist trail

The development and linking of businesses that support recreational and tourism activities is an important aspect of building the economic resilience of Bremer Bay and the Shire of Jerramungup. This includes provision of services related to accommodation, related services and information.

Careful management is also needed, especially for operations such as Bremer Canyon tours. At the current time there appears to be limited mechanisms to manage the number of operators, how they utilise the canyon resource and how they interact with the wildlife while there. Seasonal or relatively poorly defined tourism resources could easily be overwhelmed if not adequately managed.

Tourism ventures on private and public land are subject to approvals and conditions set by the Shire of Jerramungup under its Local Planning Scheme.

Action:

- Investigate mechanisms for sustainable use of Bremer Canyon and interaction with associated wildlife.
- Facilitate the development of sustainable recreational activities in the coastal zone.
- Consider environmental and social factors in the approval process for tourist ventures related to coastal use.
- Facilitate the coordination and development of tourist information and activities which will encourage visitors to value and protect the coast.
- Promote the 'Amazing South Coast', including the Shire of Jerramungup coast line by being part of the 'Tourism Marketing Partnership', a collaboration between the Shire of Jerramungup and neighbouring local government authorities and Great Southern Development Commission.
- Consider development of the Rock Cairn Lookout as an iconic visitor location with interpretation of Aboriginal and European cultural heritage, whale watching, coastal values and Bremer Canyon. This would require detailed planning and design to achieve a quality outcome similar to the Point Ann facilities.

6.11 COMMERCIAL USE

Commercial uses of the Shire of Jerramungup Coast include:

- Tourist operators;
- Commercial fishing;
- Aquaculture; and
- Maritime.

The main commercial coastal node is the marina at Fishery Beach. Commercial users have indicated that the facility has reached capacity for mooring and jetty space and consideration for future growth is needed. The Department of Transport has discussed upgrades to the boat ramp, jetty and marina expansion with the Shire of Jerramungup. Upgrades are likely to be provided via funding (e.g. via Recreational Boating Facilities Scheme and Royalties for Regions). DoT is currently conducting a

strategic review of the Fishery Beach marina and is committed to undertake further investigations to determine future options for facilities.

- DoT is undertaking a strategic review of facilities. Initiate meetings with stakeholders to consider the future needs of commercial operators at Fishery Beach marina.

Commercial Fishing

Professional fishing is controlled by the DPIRD and provides economic benefits to the district. Fishing boats rely on mooring and access to land and transport at the Fishery Beach marina.

Beach based commercial fishing has been in decline and it appears that there is not currently an economic base for fishing of salmon. However, formal leases and licences are currently held at various locations along the coast. Bona fide fishing shacks appeared to be well maintained and are generally not causing management issues, even in relatively remote locations. The access to the fishing lease at Dillon Bay is in poor condition and liaison with the fishermen to determine appropriate action is recommended.

Actions:

- Liaise with commercial fishermen regarding coastal management issues where they apply (e.g. degraded access at Dillon Bay).

Aquaculture

In addition to the land based abalone production, there is the potential for offshore abalone growing, using purpose-built concrete structures located on the sea bed.

Action:

- The Shire of Jerramungup, DPIRD and aquaculture proponents will consider any proposal for expansion and additional uses related to aquaculture considering the government's position on aquaculture (Department of Fisheries, 2015) and management of social and environmental impacts.

Maritime Activity

Future exploration drilling (and other activities based on mining, oil or gas) will be subject to either Western Australian or Australian Government approvals. Zoning outlined for the Bremer Marine Park will guide where activities can occur and under what conditions.

6.12 PROVISION OF FACILITIES

Facilities

The challenges related to installation of infrastructure include:

- Initial cost of construction;
- Ongoing cost of maintenance;
- Impact of additional visitation; and
- Impact of coastal hazards (i.e. erosion, inundation and sea level rise).

The Shire of Jerramungup and DBCA are the two most active land managers in the management plan area. Neither are well resourced to provide or maintain additional facilities, so prioritising resources can be a challenge.

One of the key values of the Jerramungup coast is the remoteness, where visitors can enjoy a wilderness type environment. In keeping with the remoteness of much of the Shire of Jerramungup coast and the challenges posed by cost and maintenance, provision of additional facilities are only recommended for key nodes as outlined in Section 7. Key nodes which would benefit from additional investment or upgrades include areas where visitation is high enough to warrant facilities such as toilets and delineation of camping or parking (e.g. where environmental, safety and health risks are high):

- House Beach;
- Back Beach;
- Fishery Beach;
- Little Boat Harbour;
- Blossom's Beach; and
- Native Dog Beach.

In terms of infrastructure, it is best to provide fewer, high quality items and a high level of maintenance compared to having more infrastructure that is unable to be adequately maintained.

Toilets

Several locations along the coast have drop toilets, which have a limited lifespan and need to be at least 100m from the ocean, wells, bore, river, creek dam or lake (to prevent health risk and nutrient export). When replacement is required, it is recommended that the drop toilets are replaced with composting toilets at:

- Native Dog Beach;
- Blossom's Beach;
- Little Boat Harbour; and
- Short Beach.

If access for maintenance is likely to be an issue, drop toilets can be retained at House Beach.

Several locations require consideration for works or upgrades based on management of visitor risks. These recommendations are high priorities as life and health are potentially at stake.

In addition, key nodes such as the Rock Cairn area may lend itself to being transformed into an iconic lookout and site for interpretation. Undertakings such as this constitute a 'special project' and are likely to attract funding and will require specialised design.

Signage

Signage is important for several reasons:

1. It educates and informs;
2. Warns coastal users of dangers, safety issues and other relevant information for specific areas;
3. Demonstrates duty of care to warn of dangers, prohibitions and other safety information;

4. Is a cost effective alternative to the provision of active surveillance or other information sharing resources.

The *National Aquatic and Recreational Signage Style Manual* (Ellis *et al.*, 2006) provided guidance on the style and design of coastal safety signage, which should form the basis for a standard layout.

While signs are important, the proliferation of signage is undesirable, as it detracts from the visual amenity of a location and can also cause confusion. Signage should be used sparingly and redundant signs removed.

Actions:

- Focus on maintaining high quality infrastructure through a budget supported maintenance schedule.
- Assess on-site effluent systems to ensure they are suitable for the location (e.g. drop toilets) or that composting toilets are used (e.g. when closer than 100m to sensitive receptor). Replace existing structures at end of useful life and as resources allow.
- Erect signage compliant with Australian Standards at key points in coastal reserves to provide information including site name, risks, facilities and activities (according to National Aquatic and Recreational Signage Style Manual; Ellis *et al.*, 2006). Provide interpretive signs where appropriate. Remove redundant signs.
- Consider identified impacts from coastal processes when planning new (or replacing existing) infrastructure.



Australian Standard Coastal Safety Signage



Reduce, rationalise and consolidate signage

Design

Development of any coastal node needs to be subject to a design process to ensure that it is functional, protects environmental and social values and enhances the visitor experience. Design work should be undertaken by suitably qualified practitioners, in line with the scope of the work to be undertaken.

Sites such as the road access, parking areas, camping areas and associated walk trails that service nodes such as Native Dog Beach, Blossoms Beach, Little Boat Harbour and House Beach require a high standard of design to ensure sustainable use and make ongoing management as simple as possible.

It is highly desirable that design elements (such as signs, furniture, delineation tools and car park) within coastal reserves are:

- Well designed (functional);
- Consistent;
- High quality;
- Provide a sense of place;
- Durable, cost effective and resistant to vandalism.

DBCA has a design team which can provide advice to local government authorities and other land managers. It is highly recommended that advice be sought and high standards be adopted for design and elements within the Shire of Jerramungup coastal reserves.

The South Coast Management Group has prepared a *Coastal Management Specification Manual* (Green Skills, 2010) which provides information such as technical drawings and practical advice about coastal treatments.

Actions:

- Adopt a high standard of design for sites which require installation of infrastructure, including landscape design where appropriate.
- Use existing design and specification manuals to plan node development and ensure a high standard of implementation.

6.13 CONSULTATION, EDUCATION AND AWARENESS RAISING

The purpose of consultation and raising awareness in the community and with stakeholders is to enhance understanding and stewardship and encourage behaviour that promotes sustainable use and management of the coastal and marine environment. This means that awareness raising goes beyond providing information. It should promote discussion, reflection and result in behaviour change and improved on-ground outcomes.

All awareness raising activities should work towards achieving the vision and goals outlined for the Shire of Jerramungup coast (Section 1.4) so that the following is enhanced:

- Relationships and resilience: Formation and strengthening of relationships between coastal users and other stakeholders to build resilience to risks related to climate change, natural processes and human impacts.
- Environment: Protection of biodiversity and environmental health.
- Understanding and behaviour: knowledge linked to emotional values can lead to behaviour change on the coast.

- Social and cultural appreciation: Where trust and respect form the basis for coastal use and management.
- Safety: Raising awareness about risks and dangers related to the coastal zone.


The community can be engaged at different levels and stages of coastal management processes and can participate in decision making at different levels, as shown in Table 16.

Activities which can engage, educate and improve coastal management include:

- Coastal based activities for all ages and cultures.
- Notification of proposed coastal management initiatives via newspapers, community forums, special events, internet portals and social media.
- Distribution of information regarding best practice (e.g. Code of the Coast, Code Off-road, dieback risk reduction).

Action: Land managers and stakeholders promote community awareness and education through activities and sharing of information.

TABLE 16: PUBLIC PARTICIPATION SPECTRUM

	1. Inform	2. Consult	3. Involve	4. Collaborate	5. Empower
Public participation goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
Promise to the public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example of techniques					
	<ul style="list-style-type: none"> • Fact sheets • Web sites • Open houses 	<ul style="list-style-type: none"> • Public comment • Focus groups • Surveys • Public meetings 	<ul style="list-style-type: none"> • Workshops 	<ul style="list-style-type: none"> • Citizen advisory Committees • Consensus building • Participatory decision making 	<ul style="list-style-type: none"> • Citizen juries • Ballots • Delegated decisions
Increasing impact on the decision 					

7 COASTAL NODE ASSESSMENT AND RECOMMENDATIONS

7.1 ASSESSMENT METHODOLOGY

A 'Coastal Familiarisation-Management and Condition Survey' was initially carried out by the South Coast Management Group Coastal Planning Officer in 2003 (Barb Green, 2003). The group developed a methodology to assess and compare coastal nodes. A similar assessment methodology was used in the 2017 assessment of the Shire of Jerramungup coastline. To reduce subjectivity, criteria for each management 'attribute' was developed, as shown below.

Criteria

The following criteria are based on results which would indicate that a node was in 'excellent' condition. Not all attributes apply to all locations e.g. bins may not be considered necessary at some locations, or a boat launching area may not be present. In these situations, the attribute is not given a score.

Rubbish Bins	Easy to locate and access, sufficient number to cope with amount of rubbish, receptacles are in good condition, receptacles are uniform
Fencing/Barriers	Present where necessary, in good condition no breaks or damage, uniform materials
Toilets/showers	Clean and tidy, well maintained
Signage	Positive messages, uniform, educational/directional
Boat Launching	Safe and accessible in all conditions, adequate parking for trailers, stable access
Shade	Built shade is available, natural shade is well used
Camping Areas	Informative signage, ablutions, ground firm, provides good beach access, no damage to surrounding vegetation, degradation minimal
Barbecues	Free, clean, working order
Caretaker	Living in (seasonally, casually or permanently)
Car Parking	Clearly defined, no overflow, adequate turning space, well placed
Vehicle Access	Vehicle access clearly defined, roads/tracks in good condition, vehicles not causing degradation, no conflict with pedestrian access
Pedestrian Access	Pedestrian access clearly defined from town to location, tracks/paths in good condition, no conflict with vehicle access
Beach Access	Clearly defined, in stable condition/orientation, not causing further degradation, adequate access throughout area.
Dune Stability	Instability being managed
Vegetation Cover	Between 60 and 100% cover in non-accessible areas, vegetation cover consists, in the majority, of native coastal species.
Weeds	Weeds being managed, weed cover is significantly less than natural vegetation cover.

Visual Appeal Site has scenic outlook, clean and tidy, management presence obvious

Calculation of Survey Results

Each attribute is rated against the given criteria with a score of 0 to 4. A score of 0 indicates the attribute is in a very poor state and/or is poorly managed. A score of 4 indicates the attribute is in an excellent state and/or is well managed. A score of 1, 2 or 3 indicates the level to which the attribute meets the criteria for excellent condition in relation to a score of 0 and 4.

No score is given if the attribute is not applicable to the node.

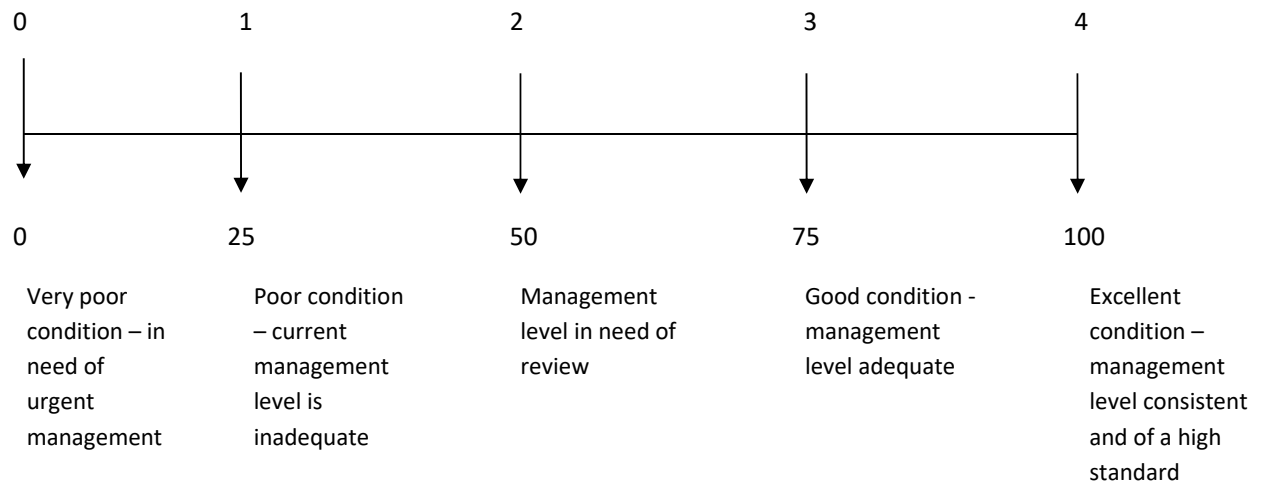
Method of Calculation

- Add attribute scores together from data sheets. (e.g. 1 + 4 + 3 + 2).
- The number of relevant attributes is counted (e.g. 8 of the 18 attributes).
- Multiply 'b' by 4 (=total possible score for this site)
- Divide 'a' by 'c'.
- The resultant survey score between 1 and 100.

Each location can then be scaled according to its survey result.

The higher the number the better the condition and management level for the location (according to attributes).

Scale



7.2 GORDON INLET & TOOREGULLUP BEACH

Description

Gordon Inlet is located on the northern most extremity of the Shire of Jerramungup's coast. It borders the Shire of Ravensthorpe. Access is via Gordon Inlet Road which is a formed gravel road and is often in poor condition. Repairs were undertaken of the road after fires in 2012 but use in wet weather have caused deterioration and increased risk of spreading dieback. DBCA and Shire of Jerramungup efforts to close the roads during wet conditions have not succeeded, with vehicles bypassing or damaging access gates.

A campsite near the inlet mouth contains a corrugated iron shack and informal camping area. Tooregullup Beach extends southwards in an arc from Gordon Inlet. Access to the beach is either via a four-wheel drive track from Gordon Inlet Road at the north or from a series of 4WD tracks from the south. Trigelow Beach is to the north of Gordon Inlet and in the Shire of Ravensthorpe.

While the Gordon Inlet and Tooregullup Beach areas are in the locality known as 'Fitzgerald River National Park' they are not part of the National Park and comprise an Unmanaged Reserve (UMR).

A proclaimed fishing area exists on the southern section of the beach, although salmon fishing does not appear to be a viable fishery in recent times. The area is popular for camping and recreational fishing during warmer months. Southern Tooregullup Beach contains five clusters of squatter's shacks which are located on private property.

Gordon Inlet is a significant refuge for water birds with opportunities for viewing of threatened species shore birds and migrant waders.

Issues:

- Squatters shacks.
- Access.
- Dieback risk.
- Environmental weeds.
- Bird species habitat.
- Aboriginal heritage sites.



The shack at Gordon Inlet is in poor condition with rubbish scattered in the camping area.



Gordon Inlet is fed by the Gairdner River. It is shallow, saline and breaks open to the ocean every few years. The bar can remain open to the ocean for months.



Track alignment around the inlet depends on water levels.



Tooregullup Beach is in an erosional phase, as characterised by a narrow beach and eroding dunes.

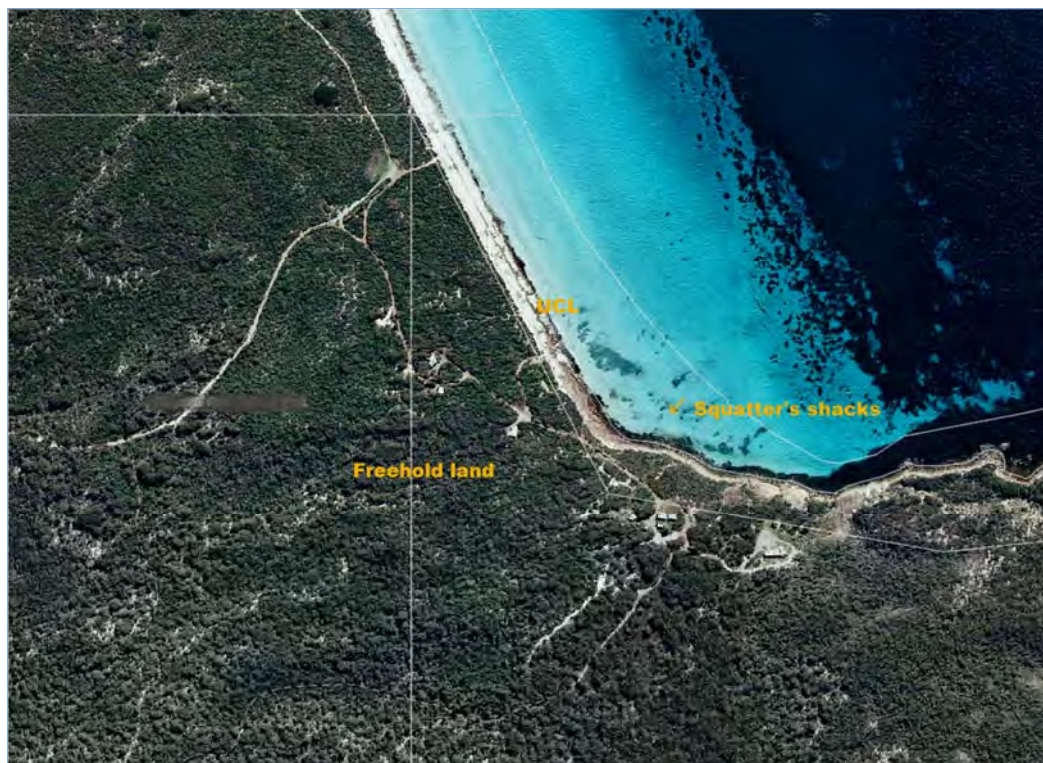


The southern end of Tooregullup Beach has five clusters of squatter's shacks which are located on private land. The shacks do not comply with building or effluent disposal standards.

Tenure

The Gordon Inlet and Tooregullup Beach areas comprises UMR and unallocated crown land (UCL). The southern portion of Tooregullup Beach also comprises freehold land. The squatter's shacks are on private land.

RESERVE NUMBER	32666
VESTING	UMR
ORG GAZL DATE	28/06/1974
RESERVE CLASS	C
LEGAL AREA HA	9760
DETAIL TEXT	1063/73
CURRENT PURPOSE	Government requirements
RESPONSIBLE AGENCY	Department of Planning, Lands and Heritage



Assessment

Name of Location:		Gordon Inlet & Tooregullup Beach	
Date: 15/3/2017		Surveyed by: Melanie Price	
Attribute		Comments	
Values	Inlet provides refuge and foraging areas for significant bird species Aboriginal Heritage Proclaimed Fishing Zone Whale watching	Migratory bird species (such as Sanderling, Red-necked Stint and Common Greenshank) 'Other Aboriginal Heritage Places' 4610, 4949, 4988, 4989, 4990, 4991, 4992: Artefacts and scatters. The southern end of Tooregullup Beach has a commercial fishing zone.	
Threatening Processes	Dieback, erosion	Risk of dieback disease introduction and spread. Erosion related to vehicle access.	
Level of Use	Medium. Used for beach fishing and four-wheel driving.	Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities. Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities. High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities	
Coastal Processes	Inlet openings seasonally, dune erosion	With Gordon Inlet at northern point, Tooregullup extends south for 8km to the northern rocks of Whalebone point. Wave height decreases from north to south. Rips commonly occur along the northern section, grading into a more continuous low tide terrace along the southern section. Beach is narrow with steep and eroding dunes, indicating that the area is in an erosion phase.	
Score Action Required?			
Signage	0	High priority	Install Coastal Safety signage (compliant with Australian standards(AS)) where Gordon Inlet Road becomes a four-wheel drive track. Advise of coastal risk, dieback risk, code of the coast, take rubbish out.
Toilets/ showers	-	-	Not present or recommended
Rubbish bins	-	-	Not present or recommended
Dogs	-	-	Dogs not prohibited
Fencing/ barriers	-	-	Not present or recommended
Boat Launching	-	-	Informal, from beach
Shade	-	-	Not present or recommended

Camping Areas	0	-	Informal, behind coastal foredunes next to Inlet. Would benefit from delineation. Squatter shack area at south of Tooregullup not available to all users.
Barbecues	-	-	Not present or recommended
Caretaker	-	-	Not present or recommended
Car parking	-	-	Informal
Vehicle Access	-	-	Gordon Inlet Road is formed gravel but often in poor condition and only suitable for four-wheel drives. Sandy four-wheel drive tracks to Inlet and beach
Pedestrian Access	-	-	Informal
Beach Access	3	-	Informal
Dune Stability	-	-	Erosion is evident along the beach due (mostly) to natural processes
Vegetation Cover	3	-	Good condition, with minor disturbance in some areas
Weeds	2	High priority	Boxthorn and Victorian Tea Tree need to be monitored and removed.
Visual Appeal	2	High priority	Visual appeal is low to medium. Camping location would benefit from removal of squatter's shack and associated rubbish. Shacks do not have appropriate effluent disposal systems or meet building codes.
4WD Access to Beach	Y	-	Four-wheel drive access to beach at point that varies with level of inlet. Access to southern end of Tooregullup via well defined four-wheel drive track
Disabled Access to node	-	-	No
Survey Result	42	Similar to 2000 score (35)	Score indicates that management in the area requires attention: Removal of shack at Gordon Inlet. Removal of squatter's shacks at southern end of Tooregullup Beach. Installation of AS compliant signage.
Overall: Area is popular for four-wheel drivers and fishers. Access is via a 4WD track. During wet weather, there is an increased risk of dieback introduction and spread. Recommend that an AS compliant sign be installed where Gordon Inlet Road becomes a sandy track to indicate coastal risk, code of the coast, dieback risk and to take rubbish out. Recommend: Monitoring and removal of weeds and monitoring of coastal erosion.			

Recommendations

Location	Previous Recommendations 2005	Status and Recommendations	2017 Achievability, Responsibility and Timing	Priority, and
Gordon Inlet	Retain Gordon Inlet Road for access via 4WD vehicles only.	Road is currently a graded gravel road, mostly in poor (4WD only) condition. Maintaining as four-wheel drive road prevents access by higher volumes of people, but does not address dieback spread risk. Recommend retain status quo but with improvements at key points (e.g. clay areas).	DBCA (in Fitzgerald River National Park) and DPHL/ Shire of Jerramungup in R32666 (UMR).	
	Progress and finalise arrangements with CALM (now DBCA) for transfer of management orders for reserves at Gordon Inlet.	This action has not been pursued by DBCA. Tenure may be dependent on Native Title Settlement process.		
	Allow continued access to Tooregullup Beach via Gordon Inlet.	This recommendation retains the status quo and is still a valid management outcome.	Existing condition and therefore achievable, DBCA/DPLH.	
	Install entry signage near Gordon Inlet requesting vehicles to stay on tracks, warning of dangers and advising on safety, and requesting all rubbish be removed.	Install AS compliant signage where Gordon Inlet Road becomes a sandy track.	Achievable. Shire of Jerramungup in consultation with DBCA and DPLH.	
	Liaise with CALM (now DBCA) to ensure the access track to Gordon Inlet is closed to traffic in wet conditions and following rainfall.	Although attempted, exclusion of vehicles from Fitzgerald River National Park and Gordon Inlet Road due to wet conditions has not been achieved. Recommend examination and/ or installation of signage advising of dieback risk and appropriate management. Also upgrade of clay track areas which exacerbate risk of dieback introduction and spread.	High priority but has not been achievable to date. Signage is likely to be more achievable. DBCA Short term (1 – 5 years)	
		Monitor and control weeds such as Boxthorn.	High priority, achievable with funding and	

			partnerships. Shire of Jerramungup and partners. Short term (1 – 5 years)
		Removal of shack at Gordon Inlet camping area.	Medium priority, achievable with funding and partnerships. DPLH and partners. Short term (1 – 5 years)
Tooregullup Beach	Manage access tracks at southern end of Tooregullup Beach.	Tracks are in relatively good condition, although there are three beach access points. Recommend annual monitoring to detect and address track proliferation.	Medium Priority. Monitoring is achievable. DPLH and partners.
	Liaise with the Department of Indigenous Affairs regarding Aboriginal Heritage issues in the locality.	Department of Planning, Lands and Heritage will now provide advice on Aboriginal heritage and land matters.	Achievable. DPLH, DBCA. Ongoing
	Liaise with CALM to determine the presence of and if necessary, control an introduced snail population in the locality.	Snails do not appear to have been a coastal issue in recent times. Should they become an issue in the future, management action will need to be considered.	No action required at this time. DBCA. As required.
		Remove squatter's shacks in line with WA Squatter Shack Policy, noting that in this area, shack's are on private land.	Achievable but problematic due to tenure. Low priority, medium term. Private landholder, DPLH. Medium term 5 – 10 years
Tenure: UCL and UMR may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this area requires a partnership approach.			

7.3 HOUSE BEACH - CORNER COVE

Description

House Beach is a popular destination for campers and fishers. The area is accessed by Doubtful Islands Road (from the north) or by Bremer and Peppermint beaches (from the west). While only suitable for four-wheel drives, people often tow boats and caravans to House Beach via Doubtful Islands Road. While road reserves exist in the area, the actual road follows historic tracks which cross privately owned land. Local users note that in the 1960s to 1990s, the approximately 3.5km of clay on Doubtful Island Road was typically impassable for most of the four wettest months of the year (May, June, July and August). In more recent times the clay road is typically impassable for much of November, December and January, as well (Greg Heberle, pers. Comm.).

The House Beach area contains a relatively informal camping area with approximately 15 camping sites. However, during peak holiday periods, the camping areas are used beyond capacity and people tend to park under the trees, which causes compaction of the trees' roots and contributes to loss of understorey. Much of the camping area is on private land (see section below regarding tenure).

The 1995 Jerramungup Coastal Management Plan states:

In 1981, a lease (Location No. 2060, 0.3 ha) was excised from part of Reserve No. 3272 at House Beach, for the purpose of "the reconstruction of the A. Y. Hassell homestead". On expiry of the lease in 1991, it was renewed for a further 10-year period for "residential" purposes. The lease, as it stands, poses a number of management issues for the House Beach area. A major concern is that the existence of a lease for residential purposes could set a precedent. Furthermore, the excision of the lease from the reserve means that only 1.7 ha remains for camping and recreation activities, and for a professional fisherman's camp. In 1980, it was noted by the Acting Divisional Surveyor that "the Northern portion of reserve 3272 [where the residential lease now stands] is comprised of some attractive Peppermint areas that have been regularly used by campers". The leasehold area remains the preferred location for camping activities, however, the area is now fenced off and access denied.

The structure built on the lease bears only superficial resemblance to the original A. Y. Hassell homestead, which burnt to the ground in about 1980. The "new" building uses different materials (zincalume rather than corrugated iron) and appears bigger than the original. The general view is that the new building has no historical significance, other than that it is owned by descendants of A. Y. Hassell. The attractive, sheltered cove provided at House Beach is one of the principle destinations for campers and tourists in the Doubtful Islands area. Management and the provision of facilities at House Beach is exacerbated by the limited area available to the Shire for vesting, and the fact that much of the beach's hinterland is private property.

A fishing camp with a small shed exists close to the beach. However, it does not appear to coincide with an active lease.

There are multiple walk trails down to House Beach which are causing erosion. At the western end of House Beach, there is a beach boat launching area. Vehicles also enter the beach from the eastern end. The rocky headland to the east of the beach has multiple vehicle tracks.

Issues:

- Proliferation of access tracks.
- Lack of clarity regarding tenure and leases.
- Status of lease needs to be reviewed.
- Camping area poorly defined and mostly on private land.
- Some infrastructure in poor condition (e.g. pit toilet).



The House Beach camping area comprises interlinking informal tracks. The camping area is full during peak periods such as school holidays. During these times, people create new camp spots on the periphery of the camping area.



A beach boat launching area is located on the western portion of the beach.



Multiple pedestrian tracks to the beach are causing erosion.



The Shire of Jerramungup has installed a new pit toilet in the camping area.



The rocky headland has multiple vehicle tracks.

Tenure

The beach portion of House Beach is UCL with adjacent land being UMR (R 3272), a special lease and the balance comprising freehold land. The special lease on land parcel 2060 is described as a 'replacement of residential lease'. (311/106622 FNA3687: DPI 560/1896/01RO Tengraph, 2017). A sign at the entry to the area reads 'special lease for reconstruction by Hassell Family of AY Hassell DI Bay Homestead. Built 1893'. A fishing shack, in poor condition also exists adjacent to the special lease. Leases in the area need to be reviewed, with a view for broader community access and management.

RESERVE NUMBER	3272
RESERVE CLASS	C
LEGAL AREA HA	1.7004
DETAIL TEXT	560/96
CURRENT PURPOSE	LANDING PLACE
LU1	JETTY
VESTING	UMR
RESPONSIBLE AGENCY	DEPARTMENT OF PLANNING, LANDS AND HERITAGE



Assessment

Name of Location: House Beach			
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Commercial fishing Recreation Aboriginal heritage		Boat launching for recreational and commercial users. Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 4463 (mythological), 4948, 4941 (artefacts and scatters).
Threatening Processes	Erosion, damage to vegetation, dieback introduction and spread.		
Level of Use	Medium - high. Used for camping, boat launching, fishing and four-wheel driving.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities. Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities

Coastal Processes	Beach between rocky headlands		House Beach and Corner Cove are located in a 700m long northeast-facing bay immediately west of Whalebone Point. The beach is a 150m long pocket of sand wedged at the base of steeply descending bedrock slopes and bordered by steeply sloping headlands. The beach receives low energy waves and has a steep reflective shore. The bay contains seagrass meadows.
	Score	Action Required?	
Signage	0	High priority	Install AS compliant Coastal Safety signage at entry to camping area and at boat launching area. Advise of coastal risk, code of the coast, take rubbish out.
Toilets/ showers	2	-	A new toilet has been constructed at the camping area. The old pit toilet located adjacent to the boat launching area should be replaced or decommissioned.
Rubbish bins	-	-	Not present or recommended. People are requested to take rubbish out.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	2	-	Fencing has recently been installed to protect dunes from campsite users and to delineate access.
Boat Launching	-	-	Informal, from beach.
Shade	-	-	The existing trees provide shade, but are at risk due to compaction of roots and removal for firewood.
Camping Areas	0	-	Some camp locations have been delineated, but an overall plan needs to be developed for the area. During peak periods, the camping area overflows and people create new camping locations. This area would benefit from having a camp host during summer and school holidays.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	This area would benefit from having a camp host during summer and school holidays.
Car parking	-	-	Informal.
Vehicle Access	-	-	Vehicle access is uncontrolled and consultation indicates that use of unlicensed vehicles can sometimes cause safety and amenity issues for other users.
Pedestrian Access	-	-	Informal. Multiple tracks to beach are causing erosion.
Beach Access	2	-	At east and west of beach. Access at east is very eroded.

Dune Stability	-	-	Erosion is evident due to indiscriminate use of vehicles which have created multiple tracks.
Vegetation Cover	1	High priority	Most areas in good condition, with disturbance in areas used for camping. Delineation of camping areas should be combined with rehabilitation.
Weeds	0	High priority	Boxthorn and bridal creeper high priority for monitoring and treatment/ removal.
Visual Appeal	2	High priority	Visual appeal is compromised by erosion and poor layout of camping area.
4WD Access to Beach	Y	-	Vehicles access beach at both east and western end. Boats are launched at the western end.
Disabled Access to node	N	-	No.
Survey Result	32	Lower than score in 2000 (41)	Score indicates that management in the area requires urgent attention.
Overall: Area is popular for boat launching, camping, four-wheel drives and fishers. Professional design of camping area and rehabilitation is highly recommended. Camp hosts during busy time may assist in management of area. Recommended that an AS compliant sign be installed at entry to camping area and boat launching area to indicate coastal risk, code of the coast, dieback risk and to take rubbish out. Treatment and monitoring for weeds and erosion is recommended. Vehicle and pedestrian access to beach needs review. Tracks on headland need to be rationalised.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
House Beach/ Corner Cove	Seek vesting of Reserve No. 3272 (Shire of Jerramungup).	This action has not been completed and the Reserve may be subject to South West Native Title Settlement.	Medium priority. Shire of Jerramungup in consultation with DPLH.
	The lease at house beach should not be automatically reviewed. Consideration should be given to recognizing the historical significance of the building and broader access to the building by the public, while accommodating the need of increased camping and visitation to the overall area.	Review status of leases at House Beach.	Medium Priority. DPHL and DPIRD.
		Develop and implement a camp area design to protect	High Priority. Achievable with adequate resources.

		vegetation. Needs to be consistent with reserve boundaries and to a standard similar to DBCA camping facilities.	DPLH in partnership with Shire of Jerramungup and DBCA.
		Rationalise vehicle and pedestrian tracks to beach.	High Priority. DPLH and Shire of Jerramungup
		Rationalise vehicle tracks on headland.	High priority. DPLH and Shire of Jerramungup
		Decommission or upgrade pit toilet at boat ramp	Medium priority. DPLH and Shire of Jerramungup
		Trial camp host at House Beach.	DPLH, DBCA and Shire of Jerramungup
		Monitor and manage weeds.	High Priority. Achievable with adequate resources. Shire of Jerramungup in partnership with DPLH and DBCA (and potentially other partners).
Tenure: Reserve 3272 and UCL may be subject to the Native Title Settlement process. Regardless of the outcome of that process, the management of this area requires a partnership approach.			

7.4 DOUBTFUL ISLANDS PENINSULA

Description

The Doubtful Islands Peninsula encompasses Peppermints, Doubtful Island and Drage's beaches and the rocky headland of Point Hood. When accessed via Doubtful Islands Road, tracks traverse a large area of freehold land (Figure 1b). Although there are road reserves through the freehold land, the historic tracks do not align with them. As noted in the previous section, access via Doubtful Islands Road is sometimes problematic due to inundation of clayey sections of the track. Vehicles also access the area from the north via Gordon Inlet and Tooregullup Beach. Bremer Beach provides access from the west.

The area is popular with visitors with notable locations including an informal lookout at Point Hood, the Chimneys and (air) Blowholes. These locations are relatively remote but are regularly visited by people who have four-wheel drives. The rest of the peninsula has some rough 4WD tracks which terminate at cliff tops. These areas appear to have a much lower visitation rate. Dogs are not prohibited across the peninsula.

Peppermint and Doubtful Island beaches allow for informal beach camping, surfing and recreational fishing (beach and rock). Commercial fishing in proclaimed fishing zones has historically occurred at Peppermint and Doubtful Island beaches. There is a Fishing Lease with associated buildings on Doubtful Island Beach. The southern end of Doubtful Island Beach has a cluster of squatter's shacks (approximately 5 groups of structures).

Vegetation on the peninsula has high biodiversity value and is susceptible to dieback disease introduction and spread. A bushfire in 2012 burnt the eastern portion of the peninsula (including Drage's squatter shack). The shack may not be rebuilt, in accordance with the State Squatter's Shack Policy (Department of Lands pers. comm., 2017).

Issues:

- Proliferation of access tracks and season inaccessibility.
- Risk of dieback introduction and spread.
- Visitor risk.
- Squatter's shacks.



Doubtful Islands and Point Hood viewed from Doubtful Islands Beach.



Drage's Beach – Fire in 2012 burnt the squatter's shack, which will not be replaced.



The Blowholes – Wave surge causes wind to rush up crevices in the rocks. A valid attraction, but it has no interpretation or guidance regarding visitor risks and the car park is poorly laid out. The Blowholes themselves are not easy to identify and barriers around them are in poor repair.



Point Hood – Lookout to the Doubtful Islands. Provides a scenic vantage point. Needs to have multiple turning circles rationalised.



The Chimneys require signage about coastal risk and to interpret the site. Carpark layout is not adequate. Multiple access tracks are self-rehabilitating but require monitoring.



Tracks to the Doubtful Islands Peninsula cross private land, are not signposted and increase risk of dieback spread. Clayey portions of the tracks are sometimes not trafficable when wet.

Tenure

The beach portion of Peppermint and Doubtful Islands beaches is UCL. A large proportion of the land is freehold.

RESERVE NUMBER	23516	32666
ORG GAZL DATE	6/06/1952	28/06/1974
RESERVE CLASS	A	C
LEGAL AREA HA		9760
RESERVE NAME	DOUBTFUL ISLANDS NATURE RESERVE (ISLANDS) INCLUDING SEAL ROCK	DOUBTFUL ISLANDS PENINSULA
DETAIL TEXT	1266/52	1063/73
CURRENT PURPOSE	FLORA & FAUNA	GOVERNMENT REQUIREMENTS
VESTING	VEST WA WILDLIFE AUTHORITY	UMR
RESPONSIBLE AGENCY	DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS	DEPARTMENT FOR PLANNING, LANDS AND HERITAGE



Assessment

Name of Location:	Doubtful Island Peninsula (Doubtful Island Beach, Drage's Beach, Point Hood, Chimney, Blowholes, Peppermint Beach)		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Commercial fishing Recreation values Biodiversity values Aboriginal heritage		Doubtful Island Beach has a commercial fishing lease. Peppermint Beach has a Proclaimed Fishing Area. High biodiversity values - vegetation Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 4999, 4997, 4996, 4995, 4994, 4998
Threatening Processes	Erosion, damage to vegetation from vehicles, dieback risk		
Level of Use	Medium - High. Used for camping, fishing, surfing and four-wheel driving.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities

Coastal Processes	Long sandy beaches between rocky headlands. Much of the peninsula comprises granite cliffs	Peppermint Beach is located on the eastern side of Bremer Bay and faces west-southwest. The curving 2.5km beach is protected along its southern section by the protruding western end of Point Hood. Wave size increases from south to north, with rip dominated surf in the north (permanent rip against northern rocks). Beach is backed by generally vegetated parabolic dunes. Doubtful Island Beach is 2.4km long with low vegetated rocky slopes at either end. It faces north east and receives low refracted waves around Point Hood. The beach is backed by a low 200-300m wide barrier with a circular lake behind the beach. Drage's Beach is only 80m long, bordered by steep vegetated slopes and granite at each end. The rest of the peninsula comprises granite cliffs.	
	Score	Action Required?	
Signage	0	High priority	Install AS compliant Coastal Safety signage at key access points (e.g. Peppermint and Doubtful Island beaches, Blowholes and Chimneys carparks). Advise of coastal risk, code off-road and take rubbish out. Interpretation at Blowholes would benefit visitors. Dieback risk signage is recommended to raise awareness about the risk of introduction and spread.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended. People need to take rubbish out.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	Where present, in poor repair. Needs re-evaluation at Blowholes.
Boat Launching	-	-	
Shade	-	-	
Camping Areas	0	-	Informal. During peak periods, camping occurs indiscriminately, with people creating new camping locations. Camping occurs on the coast at Peppermint Beach and also 400m inland.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	-	-	Informal in most locations. Point Hood lookout has turning circles that would benefit from rationalisation. Chimneys and

			Blowholes carparks have some delineation, but poor layout.
Vehicle Access	-	-	Vehicle access is via four-wheel drive tracks. In some places, multiple tracks have been created, with older, eroded tracks now rehabilitating slowly. Monitoring of these is recommended, with action to block off and rehabilitate if reuse commences. Drage's Beach tracks are steep and eroding. A side track in this area terminates close to a cliff and needs to be closed at a safe distance from the drop off.
Pedestrian Access	-	-	Mostly informal. Better delineation of access for pedestrians to Chimneys and Blowholes is desirable.
Beach Access	-	-	Informal.
Dune Stability	4	-	Erosion is evident in a few places due to indiscriminate use of vehicles which has created multiple tracks. However, many of the tracks are in serviceable condition.
Vegetation Cover	3	High priority	Most areas in good condition. The peninsula is at high risk of dieback introduction and spread. Dieback risk signage will assist in raising awareness.
Weeds	1	High priority	Victorian tea tree and Boxthorn previously reported. Fire in 2012 has burnt some areas of weeds (e.g. Drage's) where they have not reoccurred. However, monitoring and removal, is recommended.
Visual Appeal	4	-	Visual appeal high, but multiple tracks, overgrown pedestrian access and visitor risk issues detract from amenity. Squatters' shacks, while mostly tidy, are unsightly, do not meet building codes or have adequate on site effluent disposal. Removal as per WA State Squatter's Shack policy is recommended.
4WD Access to Beach	Y	-	Doubtful Islands Beach and Peppermint Beaches are accessible to four-wheel drives.
Disabled Access to node	N	-	No.
Survey Result	50		Score indicates that some management aspects in the area require urgent attention.
Overall: Area is popular for camping, surfing, four-wheel drives and fishers. Squatters' shacks should be removed, in line with WA Squatter's Shack Policy. While development of access to Blowholes and Chimneys is desirable, it is not considered a high priority until visitor risks can be properly addressed and managed. Recommend that an AS compliant signage be installed at key locations to indicate coastal risk, code off-road, dieback risk and to take rubbish out. Treatment and monitoring for weeds and erosion is recommended. Multiple tracks need to be monitored, with treatments for rehabilitation, if required.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
General		Tracks from Gordon Inlet Road and Doubtful Island Road which lead to the Doubtful Islands area are often in poor condition after rain due to clayey conditions. Upgrades to the clayey sections of tracks, with appropriate drainage would reduce dieback risk and facilitate access. However, land tenure is problematic and resources are limited. Upgraded access would also allow more visitation to areas that do not have facilities to accommodate current visitation.	High priority, but with significant constraints. DPLH, DBCA, Shire of Jerramungup.
	Vehicular tracks to the numerous fishing spots and lookouts along the cliffs should terminate in turning circles.	This action has not been undertaken and is not considered to be a priority.	
	Doubtful Island Peninsula: Sections of tracks which are eroding should be consolidated, rerouted or closed.	Where multiple tracks occur, the eroded track that is no longer used is passively rehabilitating. Monitoring needs to occur, with remedial action should more tracks be created.	Monitoring and potential rehabilitation: High priority, achievable. DBCA, DPLH with assistance from partners such as Shire of Jerramungup.
	Install warning signs regarding dangers of steep rocks in the area.	AS compliant signage should be installed at key points (Blowholes, Chimney, Peppermint Beach and Doubtful Islands Beach). Signage to warn of coastal risks, stay on designated tracks, dieback risk, take rubbish out.	High priority, achievable. Short term (1 – 5 years). Shire of Jerramungup with assistance from partners.
		Doubtful Bay Road and associated tracks are in poor condition, with clayey areas impassable during wet	High priority, short term (1 – 5 years). Highest priority areas requiring attention are within

		conditions. While the desire to upgrade tracks is understandable and a worthy management aspiration, there are significant difficulties relating to land tenure and expense. Also, provision of upgraded access would allow more visitation to an area that does not have the facilities to accommodate current demand. If resources allow, inundated areas of tracks, especially in clayey soils, should be improved to reduce risk of dieback introduction and spread.	Fitzgerald National Park (DBCA managed land) and UMR. If funding can be secured, a partnership approach could improve the tracks and reduce the risk of dieback spread.
Peppermint Beach		Monitoring and management of weeds (Boxthorn).	Monitoring and potential rehabilitation: High priority, achievable. DBCA, DPLH with assistance from partners such as Shire of Jerramungup. Medium term.
Doubtful Island Beach	Manage beach access tracks, identify duplicate tracks and close/rehabilitate those that are unnecessary.	This remains a valid management recommendation.	High priority, achievable. DPLH with assistance from partners such as Shire of Jerramungup. Short term (1 – 5 years).
	Encourage day-visitors to Doubtful Islands Beach to utilise their own recreational and picnic facilities.	Install AS compliant signage to inform.	
		Commence process for removal of squatter's shacks, in line with WA Squatter's Shack Policy.	Achievable but problematic due to tenure. Low priority, medium term. DPLH.
Drage's Beach	Close the track on the headland south of Drage's Beach and convert to a walking trail.	This remains a valid management recommendation.	Achievable if resources can be assigned. Low priority, medium term. DPLH.
		Install drainage treatments on the severely eroded track that leads down to Drage's Beach.	Low priority. DPLH.

Point Hood	Close one of the turning circles at Pt Hood and allow single lane track only.	This remains a valid management recommendation.	Achievable if resources can be assigned. Low priority, medium term. DPLH.
	Install entry signage near the entrance to Pt Hood requesting vehicles to stay on tracks, warning of dangers and advising on safety (in particular cliffs, Chimney and Blowholes), and requesting all rubbish be removed.	AS compliant signage (see above).	High priority, achievable. Short term (1 – 5 years). Shire of Jerramungup with assistance from partners.
	Install warning signs regarding dangers of steep rocks in the area.	AS compliant signage (see above).	High priority, achievable. Short term (1 – 5 years). Shire of Jerramungup with assistance from partners.
		Remove debris associated with the burnt squatter's shack at Drage's Beach.	Low priority, achievable. Short term (1 – 5 years). DPLH with assistance from partners.
Chimney and Blowholes	Manage access to the Chimneys area and close/rehabilitate unnecessary tracks.	Car parks and walk trails are poorly laid out and would benefit from redesign, but only after visitor risk issues (access, walk trails and signage) have been addressed.	Low priority, medium timeframe. Achievable if resources could be allocated. DPLH.
	Sections of the track that are eroding should be consolidated, rerouted or closed and rehabilitated.	Tracks are self-rehabilitating. Monitor to ensure this continues. Or if more tracks are created, rationalise and rehabilitate.	Monitoring and potential action achievable if resourced. High priority, ongoing. DPLH.
	Install warning signs regarding the dangers associated with the Chimney and Blowholes.	AS compliant signage (see above).	High priority, achievable. Short term (1 – 5 years). Shire of Jerramungup with assistance from partners.
Tenure: UMR and ULC may be subject to the Native Title Settlement process. Regardless of the outcome of that process, the management of coastal areas requires a partnership approach.			



The Chimneys and Blowholes – Multiple tracks (some of which are rehabilitating naturally).



Multiple tracks associated with Drage's Beach and Point Hood



Drage's Beach – Shack has burnt down. Multiple tracks are eroding and need to be rationalised

7.5 BREMER BEACH

Description

Bremer Beach is a 6 km long south-southeast facing sandy zetaform beach between the rocky headlands of the Point Hood and the northern edge of Main Beach and John Cove. Bremer Beach is used heavily, with a focus on surfing, fishing and four-wheel driving. Some user conflict occurs when the beach is used by four-wheel drives at high tide, when the beach and vehicle access is narrow. Four-wheel drives use Bremer Beach to access the Doubtful Islands Peninsula, House Beach and north to Gordon Inlet.

The beach supports a proclaimed fishing zone.

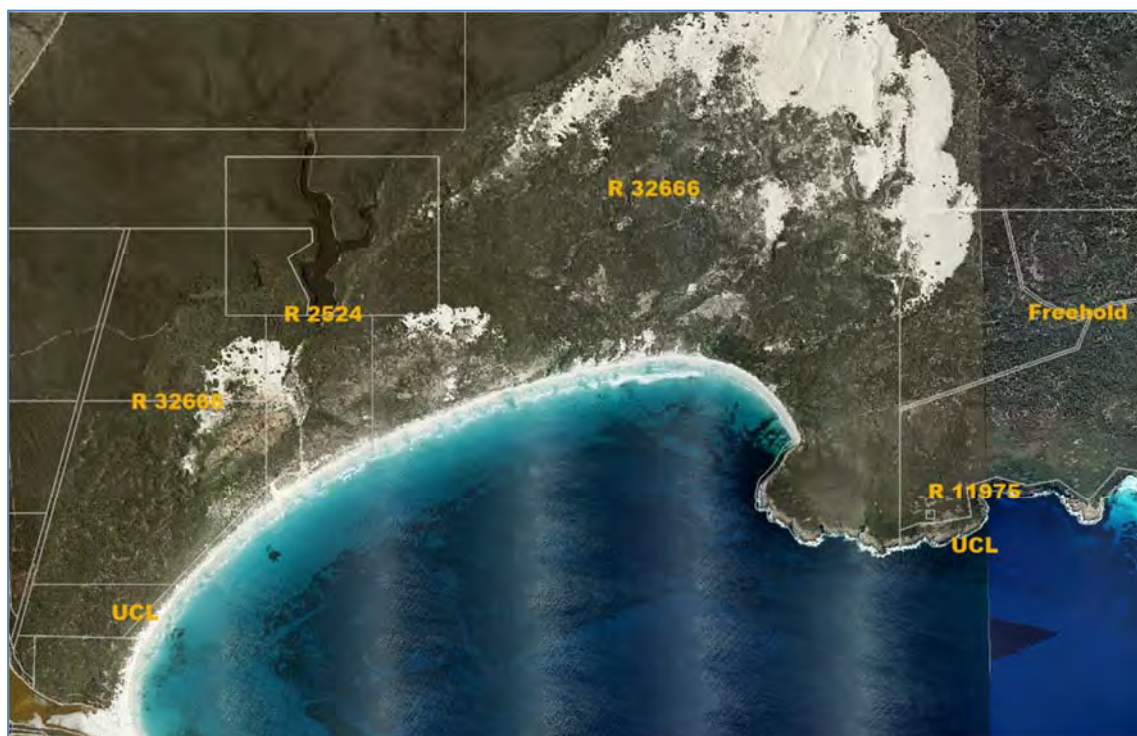
Management Issues:

- Proliferation of four-wheel drive tracks behind foredunes.
- Protection of migratory and resident bird nesting habitat.
- Reduction of potential user conflict (especially four-wheel drive use).

Tenure

Bremer Beach comprises UMR and a reserve with management orders in favour of Water Corporation.

RESERVE NUMBER	32666	2524	11975
ORG GAZL DATE	28/06/1974		17/12/1909
RESERVE CLASS	C	C	C
LEGAL AREA HA	9760	300.7321	0.4047
DETAIL TEXT	1063/73	1166/94	1812/989
CURRENT PURPOSE	GOVERNMENT REQUIREMENTS	WATER	TRIGONOMETRICAL STATION
VESTING	UMR	VEST MINISTER FOR WATER RESOURCES	UMR
RESPONSIBLE AGENCY	DEPARTMENT OF PLANNING, LANDS AND HERITAGE	WATER CORPORATION	DEPARTMENT OF PLANNING, LANDS AND HERITAGE



Assessment

Name of Location:	Bremer Beach		
Date: 14/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Commercial fishing Recreation Biodiversity values Aboriginal heritage		Bremer Beach includes a proclaimed fishing zone. High biodiversity values – vegetation. Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 4947 (Bremer Bay 2: quarry), 5755 (James Cove, Bremer Bay: artefacts and scatters) and 4958 (James Cove; artefacts and scatters).
Threatening Processes	Erosion of foredunes, damage to vegetation from vehicles, dieback risk.		
Level of Use	High. Used for fishing, surfing and four-wheel driving (and camping during peak times).		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Long sandy beach between rocky headlands.		
	Score	Action Required?	
Signage	0	High priority	Install AS compliant Coastal Safety signage at key access points (e.g. near Main Beach and track that leads to Peppermint Beach). Advise of coastal risk, code off-road, nesting birds and to take rubbish out. Dieback risk signage will raise awareness of risk of introduction and spread.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended. People need to take rubbish out.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	
Boat Launching	-	-	
Shade	-	-	
Camping Areas	-	-	Informal. During peak periods, camping occurs indiscriminately.
Barbecues	-	-	Not present or recommended.

Caretaker	-	-	Not present or recommended.
Car parking	-	-	Informal. Cars park on the beach while fishing, surfing or swimming.
Vehicle Access	3	-	Four-wheel drive vehicles access the area via the beach (Main Beach) and the headland at James Cove which has a track to Peppermint Beach. People use the beach as access to the Doubtful Islands Peninsula and beyond, particularly when Gordon Inlet and Doubtful Islands roads are in poor condition.
Pedestrian Access	-	-	Informal.
Beach Access	3	-	Access is via Main Beach (Wellstead Estuary mouth).
Dune Stability	2	Low priority	When vehicles access the beach at high tide, they often use or create tracks behind the fore dunes. Erosion is evident in a few places due to this. However, the tracks are in a serviceable condition in a dynamic environment and do not appear to be proliferating. Monitoring of this should occur. Action may be needed if bird nesting areas are identified beyond Main Beach.
Vegetation Cover	-	-	Most areas in good condition.
Weeds	-	-	None observed during assessment. Monitor.
Visual Appeal	4	-	Visual appeal high.
4WD Access to Beach	Y	-	Via Main Beach/ John's Cove (west) and track over headland at Point Hood to Peppermint Beach.
Disabled Access to node	N	-	No.
Survey Result	70		Score indicates that management is generally adequate. Management actions mostly involve monitoring.
Overall: Area is popular for surfing, four-wheel drives and fishers. Recommend that an AS compliant signage be installed at key locations to indicate coastal risk, code off-road, dieback risk and to take rubbish out. Tracks behind foredunes need to be monitored, with treatments for rehabilitation, if required.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017	Priority, Responsibility and Timing
Bremer Beach	Protect and rehabilitate the foredune vegetation.	Monitor: • Weeds.		Medium priority, ongoing. Achievable. DPLH and Water

		<ul style="list-style-type: none"> Tracks behind foredunes and rationalise if they proliferate. 	Corporation with partners, where applicable.
Tenure: UMR and UCL may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this area requires a partnership approach.			

7.6 PAPERBARK PARK, JOHN COVE & MAIN BEACH

Description

John Cove and Main Beach comprise a 500 m long sandy beach that fronts the Wellstead Estuary, terminating against the rocks of the western headland, where low wave to calm conditions usually prevail. The beach is partially washed away following break out of the Wellstead Estuary and over-washed by high waves. There is road access to the southern corner of the beach, which was historically used to launch fishing boats. However, launching now mostly occurs at the Fishery Beach marina. There is a proclaimed fishing zone along this section of coast, although the fishery does not appear to be active at the current time. A Surf Life Saving Club was established in Bremer Bay in 1962, patrolling this beach (Short, 2006). Unfortunately, it is no longer active. There are no patrolled beaches in the Shire of Jerramungup. Paperbark Park is a grassed area slightly inland from John Cove where infrastructure such as tables, shady trees and barbeques area provided.

Access to the area is provided by Bremer Bay Road which is sealed and also incorporates a dual use path for pedestrians and cyclists.

John Cove is well managed with delineation of access to the beach from the bitumised car park. A picnic area and toilets are associated with the beach at the end of Bremer Bay Road. To the south, a protected cove has timber steps which provide access to the beach. The area is used for swimming lessons and provides a focal point for family visits. Vehicles are not allowed to drive into the John Cove beach area. Community groups have fenced off dunes which has allowed rehabilitation of these areas. Dogs are not permitted in this area (as indicated by signage).

Vehicles access Main Beach, including the Wellstead Estuary bar area. When the bar is open to traffic, vehicles can access Bremer Beach and Gordon Inlet Road. When the estuary mouth is open to the ocean, these areas can only be accessed via Doubtful Islands Road. The area is significant for vulnerable birds, such as the Hooded Plover (*Thinornis rubricollis*) and seasonal fences are erected to protect nesting areas from vehicle access.

Management Issues:

- Protection of vegetation and migratory and resident bird nesting habitat.



The shallow Wellstead Estuary is fed by the Bremer River. The sandbar at the inlet mouth only opens after heavy rain events. Coastal hazard assessment indicates that in the future, the inlet may be subject to inundation due to sea level rise.



A partnership approach has been taken to protecting nesting areas of vulnerable birds



The southern portion of John Cove has access via a wooden stair system.



The John Cove car park and associated paths to the beach are well delineated.



The sandy John Cove Beach is a 'no vehicle', 'no dog' area. Swimming lessons are held here.



Paperbark Park picnic area is well serviced with gas BBQ, rubbish bins, picnic tables and toilets.

Tenure

Reserve Number	27093	21496	21646	28770	4120
Org Gazl Date	20/12/1963	14/02/1936	5/02/1937	3/11/1967	20/07/1923
Reserve Class	C	C	C	C	C
Legal Area	7.0618	32.021	403.6494	0.3726	44.1436
Reserve Name	John Cove	Caravan Park and Wellstead Estuary Foreshore	Wellstead Estuary and Town Beach	Main Beach	
Detail text	117/63	2974/1989	01631-1998-01RO	4353/989	4740/22
Current Purpose	PUBLIC UTILITY RECREATION & PARKING	CARAVAN PARK CAMPING & RECREATION	RECREATION & CAMPING	FISH CLEANING FACILITIES	CAMPING
LU1	GOVERNMENT REQUIREMENTS	CAMPING	CAMPING	FISH PROCESSING	CAMPING

LU2	PARKING	CARAVAN PARK	RECREATION		
LU3	RECREATION	RECREATION			
Vesting	VEST SHIRE OF JERRAMUNGUP WPL 21YRS FROM 1.7.1982	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP	VEST: SHIRE OF JERRAMUNGUP	VEST SHIRE OF JERRAMUNGUP WPL 5YRS FROM 1.7.1982	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP
Notes	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 42 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.		WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 5 YEARS	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.



Assessment

Name of Location:	John Cove and Main Beach		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Commercial Recreation	fishing	John Cove and Main Beach includes a proclaimed fishing zone Popular recreation area

	Natural Aboriginal heritage	values	Wellstead Estuary and migratory and resident shore birds Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 22887 (Bremer Bay Camp), 35876 (Bremer Bay Reburial Site), 4676 (John Cove 3: artefacts and scatters) and 4663 (John Cove 2: artefacts and scatters).
Threatening Processes	Erosion of foredunes, damage to bird nesting areas from vehicles and dogs		Foredunes in this area have been protected with fencing. Seasonal fencing is erected to protect bird nesting areas. Dogs are prohibited at John Cove and need to be on a leash at Main Beach.
Level of Use	High. Used for swimming, picnicking, fishing, surfing and four-wheel driving.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Sandbar for Wellstead Estuary		Sandbar breaches after heavy rain and may stay open for extended periods of time.
	Score	Action Required?	
Signage	4	-	Area contains interpretive signage regarding nesting birds, Connecting Lives - Landscapes, Wellstead Estuary & walk trail. Interpretive signage contains some AS compliant Coastal Safety signage elements but vegetation is obscuring some of the information. Remove redundant signage.
Toilets/ showers	4	-	Present and in good condition
Rubbish bins	4	-	Present and in good condition. Peak usage sometimes causes rubbish overflow.
Dogs	4	-	Dogs prohibited at John Cove and need to be on a leash at Main Beach
Fencing/ barriers	4	-	Dunes are protected by fencing, which delineates beach access
Boat Launching	-	-	Sometimes occurs on beach, but most boats launched from Fishery Beach marina
Shade	2	Low priority	The beach area at John Cove would benefit from shade structures for events such as swimming lessons.
Camping Areas	-	-	No camping allowed
Barbecues	4	-	Present and in good condition at picnic area

Caretaker	-	-	
Car parking	4	-	Well delineated, bitumised car park for John Cove and picnic area. People park informally on Main Beach.
Vehicle Access	4	-	Four-wheel drive vehicles access Main Beach to get to Gordon Inlet Road and Bremer Beach.
Pedestrian Access	4	-	Formalised at John Cove.
Beach Access	3	-	Track entry onto beach has signage and traffic instructions
Dune Stability	4	-	Breaches of the sandbar mean that the area is very dynamic. Fencing of foredunes has assisted in protection vulnerable areas.
Vegetation Cover	4	-	Most areas in good condition.
Weeds	3	Low priority	Minor weeds such as Euphorbia
Visual Appeal	-	-	Visual appeal high
4WD Access to Beach	Y	-	Via Bremer Bay Road
Disabled Access to node	N	-	Not formally, but access would be possible in some areas
Survey Result	93	2000 score: 55 Main Beach, 75 John Cove.	The score indicates that this area is well managed, and is able to cater for most peak periods of use.
Overall: Area is popular for surfing, four-wheel drives and fishers. The area is well managed and is a valuable community resource. Community partnerships have been developed to protect dune vegetation and bird nesting areas			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
John Cove		Install AS compliant signage and remove redundant signs.	High priority, short term (1 – 5 years), achievable, Shire of Jerramungup.
	Prohibit dogs from John Cove and Main Beach from the western end of the dune rehabilitation area to the east end of John Cove inclusive.	This has been implemented with signage and policing by the Shire of Jerramungup ranger.	
		Consider shelter for events such as swimming lessons at southern end of John Cove. Consider	Low priority, short term (1 – 5 years), achievable, Shire of Jerramungup.

		structures which will have an expected service span of 10 – 20 years (in line with coastal hazard risk for the area).	
Main Beach	Protect and rehabilitate the foredune vegetation.	This action has been effectively implemented. Monitor fencing and barriers.	High priority, short term (1 – 5 years), achievable, Shire of Jerramungup.
		Continue to foster community partnerships to protect migratory and resident shore bird nesting and foraging areas.	

7.7 ROCK CAIRN LOOKOUT

Description

This highly scenic lookout area provides interpretation for historic sealing, whaling and the rock cairn, which was used to signal passing vessels when there was cargo to pick up in Bremer Bay (around 1880). The site is serviced by Cuneo Road which comprises formed gravel. The lookout provides spectacular views across Bremer Bay and would be an ideal location to focus local and visitor attention on coastal values, including the Bremer Canyon.

The area has some supporting car parks, wooden stairs to coastal vantage points, rubbish bins, bollards and low-key picnic facilities. In the last 10 years, effort has been invested in closing four-wheel drive tracks and formalising the area. This work should continue, with upgrades to promote this location.

Management Issues:

- Potential design and construction of iconic lookout infrastructure and interpretation.
- Rationalisation and upgrade of car parks and facilities.
- Potential installation of trails: Bremer Bay Trails Masterplan – Wellstead Estuary, Rock Cairn and Back Beach Loop.



Vistas from the rock cairn lookout are spectacular and this area could be upgraded to provide an iconic lookout and interpretive location for Bremer Bay, the coast and Bremer Canyon.



Constructed walkways provide formal access to some beach areas.

Tenure

RESERVE NUMBER	511
RESERVE CLASS	C
LEGAL AREA	640.5455
STATUS	CURRENT
RESERVENO	R 511
DETAIL TEXT	01977-2001-01RO
CURRENT PURPOSE	RECREATION
VESTING	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP
NOTES	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.



Assessment

Name of Location:	Rock Cairn Lookout		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Historic and cultural Scenic		Highly scenic lookout with Aboriginal and European cultural value. Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 22887 (Bremer Bay Camp), 4676 (John Cove 3: artefacts and scatters) and 4663 (John Cove 2: artefacts and scatters)
Threatening Processes	Vehicle and pedestrian delineation		Old four-wheel drive tracks and informal parking area detract from the amenity of the area.
Level of Use	Medium to High. Used as lookout, but possibly underutilised due to lack of signposting and promotion		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Granite Headland		
	Score	Action Required?	

Signage	2	High priority	The lookout is poorly signposted from Bremer Bay Road. The node has some signage, including interpretive. Install AS compliant Coastal Safety signage at car park. Rationalise existing signs. This location has the potential to become an iconic lookout for Bremer Bay.
Toilets/ showers	2	Medium priority	If the location is promoted as an iconic visitor lookout, additional facilities should be considered.
Rubbish bins	3	-	Serviced by Shire of Jerramungup.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	3	-	Some fencing and barriers present and in good condition.
Boat Launching	-	-	
Shade	-	-	Not present. Depending on possible upgrade, the location would benefit from an interpretive shelter.
Camping Areas	-	-	No camping.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	2	High priority	Formalise parking areas with professional landscape design.
Vehicle Access	2	High priority	The formed gravel road is suitable for most traffic. If the area was developed as an iconic lookout and interpretive area, sealing of the road is recommended.
Pedestrian Access	2	High priority	The area has been identified for installation of a pedestrian/ cyclist trail in the Bremer Bay Trails Masterplan. This could assist in either using or closing old four-wheel drive tracks.
Beach Access	-	-	Informal.
Dune Stability	-	-	Not applicable.
Vegetation Cover	3	-	Mostly good condition. Rehabilitation of rationalised four-wheel drive tracks would benefit the area.
Weeds	1	High priority	Victorian tea tree needs to be controlled and monitored.
Visual Appeal	3	-	Visual appeal is high, but could be improved through proper node/ landscape planning.
4WD Access to Beach	-	-	No.
Disabled Access to node	-	-	Area could incorporate universal access to some areas.
Survey Result	58		Score indicates that management in the area requires attention.

Overall: Area is popular as a look out, but potentially underutilised. The node has high potential to provide an iconic lookout for Bremer Bay, the coast and Bremer Canyon (noting some constraints for space). To achieve this, a high level of planning and infrastructure would be required (i.e. similar to Point Ann).

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Rock Cairn Lookout	Close and rehabilitate all 4WD tracks on the headland.	While most tracks have been closed, rehabilitation would still benefit the site (including closure of some informal car parking areas).	
		Implement planning and construction of the Bremer Bay Trails Masterplan – Wellstead Estuary, Rock Cairn and Back Beach Loop.	High priority. Achievable with funding. Shire of Jerramungup with partners. Planning: Short term (1-5 years). Implementation: Medium term (5 – 10 years).
		Consider development of this site as an iconic lookout with interpretation of Aboriginal and European cultural heritage, whale watching, coastal values and Bremer Canyon. This would require a feasibility study (as space is limited), detailed planning and design to achieve a quality outcome similar to the Point Ann facilities.	High. Achievable with funding and high-level planning. Shire of Jerramungup with partners. Planning: Short term (1-5 years). Implementation: Medium term (5 – 10 years).
		Monitor and control Victorian tea tree.	High.

7.8 BACK BEACH

Description

Back Beach is a long sandy beach in close proximity to the Bremer Bay townsite. Access to the beach is currently available via White Trail Road (sealed) and a four-wheel drive track mid-way along the beach.

An off-shore reef creates dangerous currents and the beach is used mainly for fishing rather than swimming. Dogs are permitted on this beach.

A golf course has been established behind the foredunes of the beach. At the southern end of the beach, an aquaculture precinct has been constructed, which contains abalone farms. The aquaculture zone provides easements through the beach to supply access for sea water. Expansion of the precinct and associated activities should be considered in light of the *Aquaculture in Western Australian - Statement of Commitment* (Department of Fisheries, 2015) and other environmental considerations (including biosecurity). The coastal hazard assessment indicates that this beach could be subject to erosion due to storms and sea level rise (MP Rogers and Associates, 2017).

Management Issues:

- Closure of unnecessary four-wheel drive access.
- Possible expansion of aquaculture precinct.
- Consideration of coastal hazard assessment outcomes for coastal erosion.



Back Beach viewed from Rock Cairn Lookout.



Abalone farming areas require access to the ocean to supply water.

Tenure

RESERVE NUMBER	511
RESERVE CLASS	C
LEGAL AREA HA	640.5455
RESERVENO	R 511
DETAIL TEXT	01977-2001-01RO
CURRENT PURPOSE	RECREATION
VESTING	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP
NOTES	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.



Assessment

Name of Location:	Back Beach		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Recreation Aquaculture Marine biodiversity		Area used for beach fishing, dog walking and four-wheel driving. The abalone farm relies on access to the coast for sea water. Back Beach Bommie is an important location for marine fauna, including sponges and nudibranchs.
Threatening Processes	Erosion from vehicle access Dieback		Risk of dieback disease introduction and spread.

Level of Use	Medium. Used for beach fishing and four-wheel driving.	<p>Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities</p> <p>Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities</p> <p>High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.</p>	
Coastal Processes	Long sandy beach, book ended by granite headlands	<p>Back Beach extends south of the John Cove headland for 3 km to the northern base of 162 m high Tooreburup Hill. The beach faces east-southeast, looking out the bay mouth. It is protected by its orientation and Black Point, with refracted waves averaging about 1 m. These combine with the medium to coarse sand to maintain a steep reflective beach, with a surging break and high tide cusps. A 1 km long section of shore parallel beach rock occupies the centre of the beach. A vegetated foredune parallels the beach, with the Bremer Bay golf course located behind the centre of the beach.</p>	
	Score	Action Required?	
Signage	2	High priority	Has some signage, including interpretive for Back Beach Bommie and marine life. Install AS compliant Coastal Safety signage at southern entry car park. Advise of coastal risk, code off-road. Rationalise existing signs.
Toilets/ showers	2	Medium priority	Drop toilet. Replace with composting when this unit has reached end of useful life or remove if cemetery ablutions are constructed.
Rubbish bins	-	-	None present. People need to take rubbish away.
Dogs	-	-	Dogs are permitted.
Fencing/ barriers	-	-	
Boat Launching	-	-	
Shade	-	-	Not present or recommended.
Camping Areas	-	-	No camping which is enforced by Ranger during peak times.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	
Car parking	3	-	A semi-formal car park is located at the southern end of the beach. Informal parking on the beach.

Vehicle Access	-	-	Access to the beach is via White Trail Road (sealed), then four-wheel drive tracks.
Pedestrian Access	-	-	Informal.
Beach Access	2	High priority	Four-wheel drive access to beach at southern, middle (off White Trail Road) and historically at northern end near the rock cairn lookout. Rock cairn lookout track should be closed (if previous closure has not been maintained) and converted to a walk trail.
Dune Stability	3	-	The dunes appear to be relatively stable.
Vegetation Cover	3	-	Good condition.
Weeds	-	-	Monitoring recommended.
Visual Appeal	3	-	Visual appeal is high.
4WD Access to Beach	3	-	4WDs can access beach.
Disabled Access to node	-	-	No.
Survey Result	66	2000 score: 30	Score indicates that management in the area requires some attention, but is generally suitable for current use.
Overall: Area is popular for day visitation with medium usage. Access to the beach is via a 4WD track. The drop toilet should be replaced with a composting toilet at the end of its useful life. Recommend that an AS compliant sign be installed at the southern entry from White Trail Road to indicate coastal risk, code off-road and to take rubbish out. Rationalisation of signage will increase visual appeal. Closure of middle and northern four-wheel drive access points are recommended (if previous closure has not been maintained). Monitoring for weeds is recommended. Future expansion of the abalone farm, including access across the beach will require careful management and consultation.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Back Beach	It is recommended that the remaining access track to the north of Back Beach be closed and rehabilitated. The focus for access to Back Beach will therefore be concentrated on the better quality access point south of the beach.	Northern four-wheel drive track to the rock cairn lookout has been closed. Investigate transformation into a walk trail (if suitable).	Medium priority for closure of mid track. High priority for closure of northern track. Achievable by Shire of Jerramungup
	Dogs to be permitted	This recommendation has been implemented, with signage to support.	
		Consolidate signage into AS compliant signage and remove extra signs. Incorporate	High priority, short term (1 – 5 years). Achievable.

		interpretive signs into a unit with AS compliant signage.	Shire of Jerramungup.
		Consider any proposals to expand aquaculture in light of <i>Aquaculture in Western Australian Statement of Commitment</i> (Department of Fisheries, 2015) and other environmental considerations.	Shire of Jerramungup and Department of Primary Industries and Regional Development.
		Replace drop toilet with composting toilet or remove if cemetery ablutions are constructed.	Medium priority at end of drop toilet's useful life. Short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Investigate protection of Back Beach Bommie from fishing as it is an important location for marine fauna, including sponges and nudibranchs.	Medium priority Short term (1 – 5 years). Achievable. Shire of Jerramungup and DPIRD

7.9 FISHERY BEACH & MARINA

Description

Fishery Beach comprises a bay with a constructed marina which comprises a rock breakwater, jetty and boat launching ramp. It is the main boat launching and mooring facility in the district and the beach area to the west is also a popular swimming location for families. The marina was constructed in 1996 by the then Department of Transport and has resulted in some erosion at the opposite (western) end of the bay. This first occurred when the breakwater was installed and is attributed to the changed current pattern. After investigating (Department for Planning and Infrastructure and Planning, 2007), Department of Transport supervised the construction of a rock groyne adjacent to the boat ramp in May 2017. It is hoped that this will deflect sediment build up in the boat ramp area.

The Department of Transport has undertaken a survey of coastal areas across WA (Seashore, 2017) and identified Fishery Beach as a coastal erosion hotspot (Appendix N). The study recommends management options in the face of potential erosion hazards, including fencing to restrict access to the western dune face with accommodation of erosion (as there is no infrastructure to protect in the area).

With an increase in marine based activities including commercial fishing, tourist operations for the Bremer Canyon, whale watching and recreational boating, the facilities are under increasing pressure. The jetty is not large enough to cater for the multiple large vessels that are increasingly using the area. In addition, moorings are limited. The 2017 - 2018 State Government budget outlined a strategic planning program for the Fishery Beach marina. The Department of Transport and Shire of

Jerramungup have been working together to progress investment in upgrades to the existing boat ramp, jetty and marina expansion. Subject to funding, detailed design of a boat ramp upgrade will commence shortly.

The headland next to the marina was excavated to provide rock material for construction of the breakwater which has provided the carpark for vehicles with boat trailers. However, sand from annual dredging of the boat ramp area has been stockpiled there, which results in reduced amenity. The Shire of Jerramungup has advised that the sand will be retained as fall protection in the quarry area.

Access to the beach area is good, with sealed roads and additional car parking areas. The area also has facilities such as a fish cleaning station and ablution block.

Glasse Island is a nature reserve which is 800m off shore.

The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013) recommends the installation of a Bremer Bay Beaches Caravan Park to Fishery Beach Marina Loop.

Management Issues:

- Increasing pressure for larger vessels and mooring locations.
- Monitoring of erosion in western portion of bay (in response to installation of new rock groyne).



Aerial photo taken prior to installation of rock groyne adjacent to boat ramp (16 April 2017). Note erosion on western side of bay.



Installation of the new rock groyne (left; May 2017) is hoped to reduce sand deposits on the boat ramp area. Note erosion in rear left.



While informal, the car park works well, even in peak times. The sand which has been stockpiled from the annual dredging process is suitable for reuse (potentially in coastal rehabilitation works).



Fishery beach has facilities such as an ablution block and fish cleaning station.

Tenure

RESERVE NUMBER	46171	511	31909
ORG GAZL DATE			30/03/1973
RESERVE CLASS	C	C	A
LEGAL AREA HA	9.5939	640.5455	4
RESERVE NAME	FISHERY BEACH MARINA	BACK BEACH & FISHERY BEACH	GLASSE ISLAND NATURE RESERVE
DETAIL TEXT	01038-1992-02RO	01977-2001-01RO	3256/72
CURRENT PURPOSE	HARBOUR PURPOSES	RECREATION	CONSERVATION OF FLORA & FAUNA
VESTING	MINISTER FOR TRANSPORT	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP	NATIONAL PARKS AND NATURE CONSERVATION AUTHORITY
NOTES	TO HIGH WATER MARK	WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.	



Assessment

Name of Location:	Fishery Beach and Marina		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Commercial Recreational Cultural heritage		The Fishery Beach marina and associated recreational node are highly valued for all weather boat launching and safe family use. Registered Aboriginal sites and 'Other Aboriginal Heritage Places': 4982, 4602 (Fishery Beach 1: midden/ scatter), 4603 (Fishery Beach 2: artefacts/ scatters) and 1009 (Fishery Beach 3: artefacts/ scatters).
Threatening Processes	Erosion, aging infrastructure		Erosion of the western part of the bay has resulted in sand being deposited in the boat ramp area. Recent groyne construction is hoped to have addressed this.
Level of Use	High. The marina, boat launching and beach areas have high visitation for commercial and recreational use. The beach offers safe and sheltered conditions for family swimming.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities. High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.
Coastal Processes	Erosion due to changed coastal energy (marina breakwater)		Fishery Beach is a small beach located on the headland at the southern end of Back Beach. The 250 m long beach is bordered by sloping rocky points and faces north resulting mostly low wave to calm conditions that maintain a low energy reflective beach with seagrass growing close to shore.
	Score	Action Required?	
Signage	2	High priority	Has signage, including interpretive. Consolidate signage and install AS compliant Coastal Safety signage at boat launching facility. Advise of coastal risk, code of the coast, small craft launching. Rationalise existing signs.
Toilets/ showers	4	-	The beach has a toilet block which is in good condition.
Rubbish bins	4	-	Serviced by Shire of Jerramungup.
Dogs	4	-	Dogs not allowed (signage).
Fencing/ barriers	3	-	Present and in good condition. Some maintenance attention required for barriers at western car park.
Boat Launching	4	-	A boat ramp provides safe and accessible access. The recent installation (May 2017) of an additional rock groyne adjacent to the boat ramp will hopefully reduce sand being deposited in the boat ramp area. New operators with larger vessels may wish to use the facilities (jetty and moorings). However, the space is limited and it may be

			difficult to cater for multiple larger vessels with the current facilities.
Shade	-	-	Trees provide shade adjacent to the ablutions block. A fish cleaning facility provides shelter in the boat trailer car park.
Camping Areas	-	-	No camping.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	2	High priority	The main parking area is slightly uphill from the boat ramp and marina. This provides parking for vehicles with trailers. Although unmarked, the area seems to work well, even in busy conditions. Marking of car bays is likely to benefit users. This material could be reused for coastal rehabilitation projects (or others as required). Limited parking is available next to the boat ramp. Some parking is also available adjacent to the ablution block. Sand dredged from the boat ramp area has been stockpiled in the carpark.
Vehicle Access	4	-	Access to the area is via Swarbrick Road, which has been sealed, as is the boat ramp and marina areas.
Pedestrian Access	3	-	Pedestrian access is not separated from roads and boat ramp. However, there are alternative areas where families can park for safe and direct access to the beach.
Beach Access	-	-	A track/ stairway provides access from the western car park. A boardwalk provides access from the ablution block area.
Dune Stability	2	-	Installation of the breakwater changed the dynamics of water flow in the bay, which is yet to reach equilibrium. However, DoT has installed a rock groyne to prevent siltation of the boat ramp area. Monitoring needs to occur to determine the success of this project.
Vegetation Cover	3	-	Mostly good condition.
Weeds	-	-	No significant weeds.
Visual Appeal	4	-	Visual appeal is mostly good but the trailer parking area detracts.
4WD Access to Beach	-	-	4WDs cannot access beach.
Disabled Access to node	-	-	No (boardwalk could partially provide access but ends in location where further access for wheel chairs would not be possible).
Survey Result	81		Score indicates that management in the area is generally sufficient. However, long term planning is required to address the future needs of jetty and mooring facilities.

Overall: Area is popular for day visitation with high usage. Recommend that signage be rationalised, with an AS compliant sign at the entry to the beach, near the boat launching area to indicate coastal risk (cliff erosion). Ongoing monitoring of erosion. Investigate trail linkage.

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Fishery Beach and Marina	Maintain the existing level of recreational access to the beach.	Access to the beach has been maintained.	
	Designate Fishery Beach as an area prohibited to dogs.	This has been achieved, is communicated by signage and is policed by the Shire of Jerramungup Ranger.	
	Develop a walk trail from the car park to the headland at the west end of Fishery Beach to the attractive scenic lookout.	The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013) recommends the installation of a Bremer Bay Beaches Caravan Park to Fishery Beach Marina Loop.	Medium priority, medium term (5 – 10 years). Achievable with funding and community partnerships. Shire of Jerramungup.
		Monitor erosion on western side of beach and effect of new rock groyne adjacent to boat ramp.	High priority, ongoing. Department of Transport.
		Rationalise signs and install AS compliant coastal safety signage.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Fix barriers/ bollards at western car park.	Medium priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Investigate expansion of jetty and future requirements for other facilities, with key stakeholders.	High priority, short term (1 – 5 years). Achievable. Department of Transport with Shire of Jerramungup.
		Investigate reuse of sand spoil which is located in the car park.	Medium priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.

7.10 SHORT BEACH

Description

Short Beach is a popular family beach with well-developed car park, beach access, toilet and picnic facilities. The beach provides swimming and snorkelling opportunities.

Management Issues:

- Completion of car parking area.
- Consideration of coastal hazard assessment for potential coastal erosion.



Short Beach



Part of the car park has been sealed.



There are defined pedestrian access points to the beach.



The beach has amenities such as a shelter and drop toilet.

Tenure

The Short Beach coastal area is UCL which may be subject to the Native Title settlement process. The area behind the beach is a reserve with management orders in favour of the Shire of Jerramungup.

RESERVE NUMBER	45279
ORG GAZL DATE	17/03/1998
RESERVE CLASS	C
LEGAL AREA	7.0961
STATUS	CURRENT
DETAIL TEXT	467/1998
CURRENT PURPOSE	PUBLIC RECREATION
VESTING	VEST: SHIRE OF JERRAMUNGUP
TYPE	Subject to 20A



Assessment

Survey of Coastal Nodes - Shire of Jerramungup Coastal Management Plan 2017			
Name of Location:	Short Beach		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Recreation		
Threatening Processes	Sea level rise (long term)		
Level of Use	Medium to High. Used by family groups for swimming, snorkelling and beach fishing.		<p>Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities</p> <p>Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities</p> <p>High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities</p>
Coastal Processes	Sandy beach with reef, between rocky headlands		Short Beach is a 500 m long east-facing beach bordered and backed by steeply rising vegetated slopes and headlands (Short, 2006). A rock reef lies about 50 m off shore

			and parallels most of the beach, resulting in low waves at shore and a steep reflective beach.
	Score	Action Required?	
Signage	2	High priority	Has some signage, including interpretive. Install AS compliant Coastal Safety signage at car park. Advise of coastal risk, code of the coast. Rationalise existing signs.
Toilets/ showers	3	Medium priority	Drop toilet. Replace with composting when this unit has reached end of useful life.
Rubbish bins	-	-	Not present or recommended
Dogs	3	-	Dogs permitted if on leash (signage)
Fencing/ barriers	4	-	Present and in good condition.
Boat Launching	-	-	
Shade	4	-	Gazebo provides shade.
Camping Areas	-	-	No camping which is enforced by Ranger during peak times.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	3	Medium priority	The car park has been partly sealed. The area could be improved with further sealing and management of stormwater.
Vehicle Access	4	-	The area is serviced by Short Beach Road, which is sealed.
Pedestrian Access	4	-	Access to the beach is delineated by fencing and barriers.
Beach Access	-	-	
Dune Stability	4	-	Stability is good.
Vegetation Cover	4	-	Good condition.
Weeds	4	-	No serious weeds. Monitoring recommended.
Visual Appeal	4	-	Visual appeal is high in this well managed area.
4WD Access to Beach	4	-	4WDs cannot access beach.
Disabled Access to node	-	-	No.
Survey Result	92	Score in 2000: 93	Score indicates that management in the area is very good. Management recommendations relate to maintenance and upgrades.
Overall: Area is popular for day visitation with medium to high usage. The drop toilet should be replaced with a composting toilet at the end of its useful life. Recommend that an AS compliant sign be installed at the car park to indicate location, coastal risk, code of the coast and to take rubbish out. Completion of sealing of car park would improve amenity. Monitoring for weeds is recommended.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Short Beach	Prevent vehicular access to Short Beach and rehabilitate closed tracks.	This has been successfully implemented.	
	Remodel the squatter's shack to a public sheltered facility for picnic tables and chairs.	The squatter's shack has been removed. A gazebo now provides shelter and picnic facilities.	
		Rationalise signage and install AS compliant Coastal safety signage with location, warnings and other information.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Seal the remainder of the carpark, with design for stormwater management.	High priority, medium term (5 - 10 years). Achievable. Shire of Jerramungup.
		Monitor for weeds and condition of fencing and barriers.	Medium priority, ongoing. Achievable. Shire of Jerramungup.
		For any future planning, consider the time frames and risks associated with the Coastal Hazard Assessment.	High priority, ongoing. Shire of Jerramungup
Tenure: The UCL may be subject to Native Title Settlement process.			

7.11 POINT GORDON & BLACK POINT**Description**

Point Gordon and Black Point have high significant vegetation with high biodiversity values which is susceptible to dieback introduction and spread.

Although close to the town of Bremer Bay, Point Gordon and Black Point are relatively 'remote' due to unsigned entry and rough 4WD access tracks. However, access has increased since the subdivision of the Point Henry area. Tracks cross over freehold land and terminate in four poorly defined car parks along the rocky coastline. These areas provide access to rock fishing locations.

Management Issues:

- Reduction of risk associated with dieback introduction and spread.

- Historic tracks traverse privately owned land.
- Legal access is an unmade road reserve.
- There is no signage to inform visitors.



Tenure

The Point Gordon and Black Point area contains UCL and UMR which may be subject to the Native Title settlement process. Some of the UCL is directly abutting the coast.

RESERVE NUMBER	4121
ORG GAZL DATE	3/05/1901
RESERVE CLASS	B
LEGAL AREA	70.0106
DETAIL TEXT	3875/989
CURRENT PURPOSE	GOVERNMENT REQUIREMENTS
RESPONSIBLE AGENCY	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE



Assessment

Name of Location:	Point Gordon & Black Point		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Remote area Biodiversity - vegetation		Undeveloped coastal area, accessible only by rough 4WD tracks but in close proximity to Bremer Bay and Point Henry special rural subdivision. High vegetation values.
Threatening Processes	Dieback, erosion		Risk of dieback disease introduction and spread. Erosion of shallow soils along vehicle tracks.
Level of Use	Low. Used for rock fishing and four-wheel driving.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Granite coast with no sandy beaches.		
	Score	Action Required?	
Signage	2	High priority	Install AS compliant Coastal Safety signage at 4WD entry. Advise of coastal risk, code of the coast, dieback risk.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	None present.
Boat Launching	-	-	Not suitable.
Shade	-	-	Not present or recommended.
Camping Areas	-	-	Informal.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	-	-	Informal.
Vehicle Access	2	High priority	Rough and eroded 4WD tracks. While a road reserve exists to the reserve, it is unmade. Historic/ current tracks pass through private land. Consider liaison with landowners to determine course of action. Monitor tracks to prevent track proliferation (with track modifications where required).

Pedestrian Access	-	-	Informal.
Beach Access	-	-	Informal to rock fishing areas.
Dune Stability	-	-	
Vegetation Cover	3	-	Good condition, but high risk of dieback introduction and spread.
Weeds	-	-	Monitoring recommended.
Visual Appeal	-	-	Eroded tracks and informal car parks detract from visual amenity.
4WD Access to Beach	-	-	No access to beach.
Disabled Access to node	-	-	No.
Survey Result	58		Score indicates that there is little active management in the area: Signage at entry would benefit users. Increase knowledge regarding risk of dieback (interpretive signage). Monitor tracks. Liaise with existing landowners regarding tracks that cross over private property.
Overall: While close to Bremer Bay and Point Henry rural residential area, this area is relatively remote due to restricted access. Installation of AS compliant signage and dieback risk signage would benefit users. Eroded tracks should be monitored to detect and prevent track proliferation.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Point Gordon/Black Point	Availability of legal access.	While a road reserve has been created, it is currently unmade. Vehicle access is via historic tracks which traverse private property. Liaison with landowners is recommended. While legal access is desirable, construction and reduction of risks associated with the coast are likely to be high and therefore are a low priority.	Liaison is a high priority. Construction of new road or tracks are a low priority. DPLH.
	A coastal walk trail could provide pedestrian access to this promontory.	The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013) does not contain a recommendation for a trail in this area. While a valid management option, it is not considered a high priority.	

		Install AS compliant Coastal Safety signage at 4WD entry. Advise of coastal risk, code of the coast and dieback risk.	High priority, short timeframe (1 – 5 years). Achievable. Shire of Jerramungup.
		Monitor four-wheel drive track condition, with action if required.	Medium priority, ongoing. Achievable. Shire of Jerramungup.
Tenure: UCL and UMR may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this area requires a partnership approach.			

7.12 BANKY BEACH

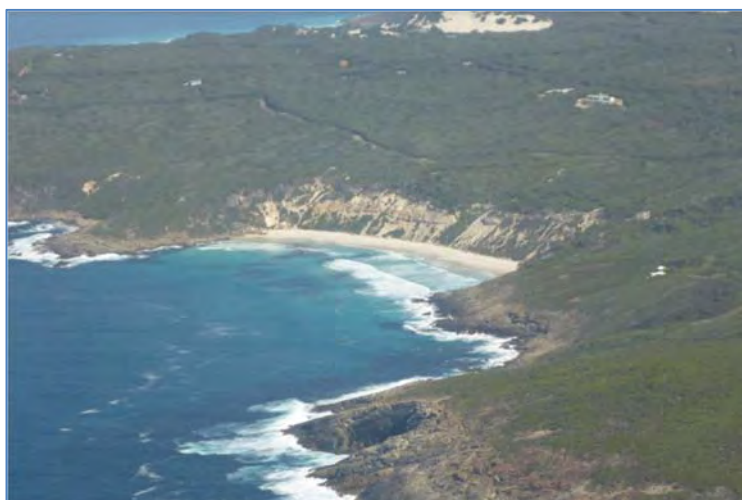
Description

Banky Beach comprises a sandy beach book ended by granite and backed by a steep limestone cliff up to 30 metres high. This is an exposed, southeast-facing beach, which receives waves averaging over 1.5 m which break across a 100 m wide surf zone and a rock reef off the western end. Two permanent boundary rips and a third central rip against the reef dominate the surf and result in hazardous conditions. Access is via Point Gordon Road, which is gravel.

Access to the beach is problematic due to the steep cliffs which are crumbling and eroded by the wind and weather. Access to this beach has significantly deteriorated since previous assessments, with the area presenting a significant visitor risk due to instability of the cliffs.

Management Issues:

- Significant visitor risk (unstable cliffs).
- Access is poor and needs to be prevented to risk areas.
- Inadequate signage to inform visitors.



Sandy beach backed by poorly consolidated limestone cliffs.



The existing look out point, which has a seat, is hazardous. This site is not suitable for visitors due to the risk of cliff collapse.



The cliffs comprise poorly consolidated limestone which is prone to erosion.

Tenure

The coastal portion of Banky Beach is UCL which may be subject to the Native Title settlement process.

Reserve Number	39968
Org Gazl Date	8/05/1987
Reserve Class	C
Legal Area	3.6744
Detail text	521/987
Current Purpose	RECREATION
Vesting	SHIRE OF JERRAMUNGUP



Assessment

Name of Location:	Banky Beach		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values			Dramatic place to visit, but visitor risk is high.
Threatening Processes	Eroding limestone cliffs.		

Level of Use	Low.	<p>Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities.</p> <p>Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities</p> <p>High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.</p>	
Coastal Processes	Eroding limestone cliffs.	350m long beach between two 40m high headlands with steep 20 - 30m high active capped scarps behind. This is an exposed south east facing beach which receives high wave energy across a rock reef on the western end. Rips create hazardous conditions (Short, 2006).	
	Score	Action Required?	
Signage	2	High priority	Has old sign 'steep cliff - erosion occurs'. Replace with AS compliant signage.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	None present. Recommend brushing entry of existing tracks to discourage entry to the area.
Boat Launching	-	-	Not suitable.
Shade	-	-	Not present or recommended.
Camping Areas	-	-	No camping which is enforced by Ranger during peak times.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	-	-	Informal on existing gravel road entry.
Vehicle Access	4	-	The formed gravel road is suitable for most traffic.
Pedestrian Access	0	High priority	Access leads to eroded and steep cliff area which comprises a significant visitor risk. Visitors need to be dissuaded from visiting by closing the tracks.
Beach Access	-	-	Erosion has made access hazardous.
Dune Stability	1	-	Very unstable, but other than discouraging entry, rehabilitation is not considered to be a viable alternative.
Vegetation Cover	-	-	Eroded along cliff face, but best to leave to natural rehabilitation.

Weeds	-	-	
Visual Appeal	-	-	Visual appeal is medium as erosion detracts.
4WD Access to Beach	-	-	Historically, vehicles accessed the beach. However, this would now be impossible/hazardous due to erosion.
Disabled Access to node	-	-	No.
Survey Result	44		Score indicates that management in the area requires urgent attention (due to visitor risk).
Overall: Access to this node should be discouraged due to the hazardous eroding cliffs and associated access ways. AS compliant signage installation and brushing of access tracks would be a helpful deterrent. Remove bench on eroded lookout point.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Banky Beach	Formalise walk path to the beach.	Access to this node should be discouraged due to the hazardous eroding cliffs and associated access ways. Brush paths to reduce access.	High priority, short term (1 – 5 years). Achievable. DPLH.
	Monitor dune blowout at the west end of the beach.	Prevent access, where possible (e.g. via brushing). See above.	
		AS compliant signage installation to warn of risks and recommend that people do not access.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Remove bench on eroded lookout point.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
Tenure: UCL may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this area requires a partnership approach.			

7.13 POINT HENRY

Description

The rocky coast with no sandy coastal areas and although it is close to Bremer Bay and the Point Henry rural residential subdivision, is relatively remote due to rough four-wheel drive tracks. The tracks terminate at ten points, which provide access to rock fishing or informal sightseeing areas. The area contains significant vegetation with high biodiversity values which is susceptible to dieback introduction and spread.

Management Issues:

- Reduction of risk associated with dieback introduction and spread.
- There is no signage to inform visitors.



Point Henry and Sparkling Island



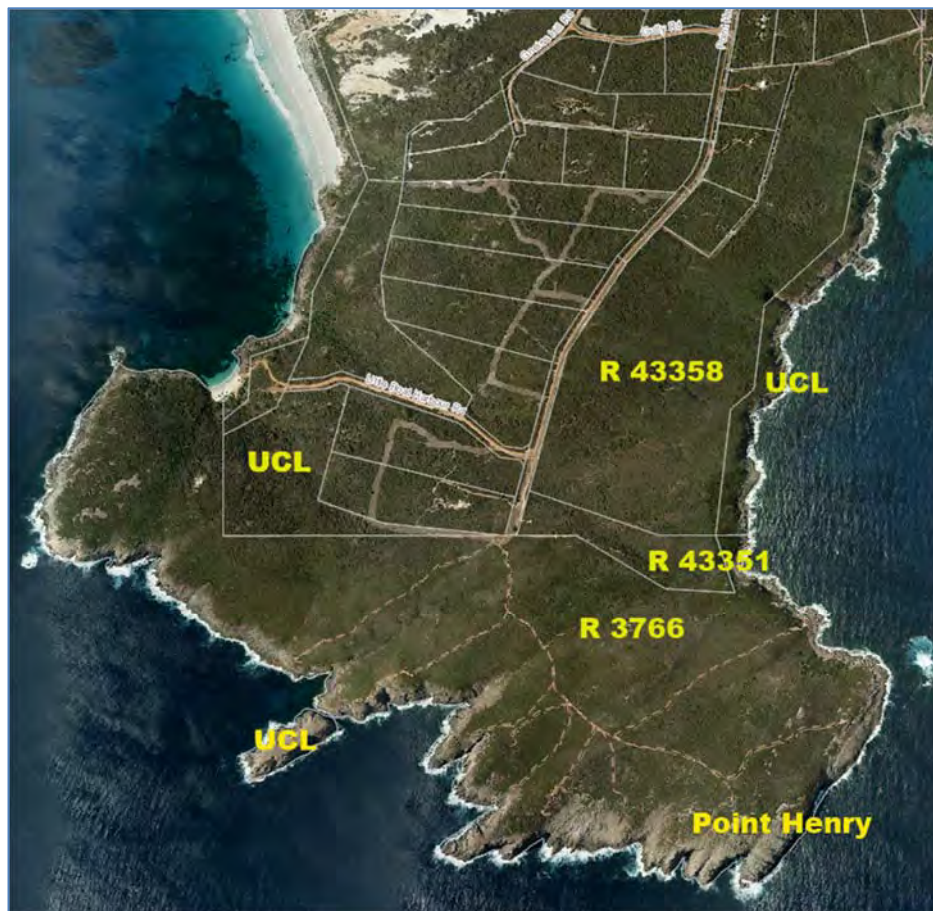
Tracks terminate in rocky informal parking bays.

Tenure

Point Henry contains UCL and UMR which may be subject to the Native Title settlement process, some of which is directly abutting the coast. Sparkling Island is UCL.

RESERVE NUMBER	3766	43351	43358
ORG GAZL DATE		30/05/1995	30/05/1995
RESERVE CLASS	B	C	C
LEGAL AREA	202.3428	10.8086	91.0615
RESERVENO	R 3766	R 43351	R 43358
DETAIL TEXT	7331/96	2363/1994	2364/1994

CURRENT PURPOSE	PUBLIC UTILITY	WATER SUPPLY	PUBLIC RECREATION
LU1	GOVERNMENT REQUIREMENTS	WATER SUPPLY	PUBLIC RECREATION
VESTING	UMR	VEST:SHIRE OF JERRAMUNGUP	VEST:SHIRE OF JERRAMUNGUP
TYPE		Subject to 20A	Subject to 20A



Assessment

Name of Location:	Point Henry		
Date: 16/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Biodiversity (vegetation)		
Threatening Processes	Dieback, erosion		Risk of dieback disease introduction and spread. Newly dead Banksia species were observed during

		assessment, but cause of death is not known. Erosion of shallow soils along vehicle tracks.
Level of Use	Low. Used for rock fishing and four-wheel driving.	Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities. Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities. High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.
Coastal Processes	Granite coast with no sandy beaches. Associated with Sparkling Island	
	Score	Action Required?
Signage	0	-
		Install AS compliant Coastal Safety signage at main 4WD entry point. Advise of coastal risk, code of the coast, dieback risk.
Toilets/ showers	-	-
		Not present or recommended.
Rubbish bins	-	-
		Not present or recommended.
Dogs	-	-
		Dogs allowed.
Fencing/ barriers	-	-
		Not present or recommended.
Boat Launching	-	-
		Not suitable.
Shade	-	-
		Not present or recommended.
Camping Areas	-	-
		Informal.
Barbecues	-	-
		Not present or recommended.
Caretaker	-	-
		Not present or recommended.
Car parking	-	-
		Informal.
Vehicle Access	3	
		Bitumen to the end of Point Henry Road. Then rough 4WD track, which is considered suitable for the remoteness of the area. Challenging access is likely to reduce the risk of dieback introduction and spread.
Pedestrian Access	-	-
		Informal.
Beach Access	-	-
		Informal access to rocky coast.
Dune Stability	-	-
Vegetation Cover	3	-
		Good condition, but evidence of death of species susceptible to dieback.
Weeds	-	-
		Monitoring recommended.
Visual Appeal	3	-
		Visual appeal is high, but eroded tracks detract.

4WD Access to Beach	-	-	No beach.
Disabled Access to node	-	-	No.
Survey Result	56		Score indicates that management in the area, while low is mostly in line with usage. AS compliant coastal signage and dieback awareness signage would benefit users.

Recommendations

Location	Previous Recommendations	Status and Recommendations 2017	Priority, Responsibility and Timing
Point Henry	Vehicular tracks to the numerous fishing spots and lookouts along the headlands should be rationalised and the remaining should terminate in turning circles.	Approximately 10 tracks currently exist on the Point. Focus needs to be on reduction of risk of dieback introduction and spread. Signage would benefit potential users of the area (see below).	
	One track to Sparkling Island, and one or two tracks to the Point Henry area should be upgraded for use by conventional vehicles. The 2005 plan indicated that conventional vehicle access was available to some areas on the headland.	While a valid recommendation, there are other higher priority actions that could be pursued by land managers and partners. In addition, The UMR is subject to the South West Native Title Settlement process and will entail consultation with claimants for activities of this nature.	
	Warning signs need to be erected to caution people about the dangerous steep rocks.	Install AS compliant Coastal Safety signage at 4WD entry. Advise of coastal risk, code of the coast and dieback risk.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
Tenure: UCL and UMR may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of Point Henry requires a partnership approach.			

7.14 LITTLE BOAT HARBOUR

Description

Little Boat Harbour is a small beach, sheltered from the prevailing southerly winds which is used for beach boat launching. Use of this area for launching of sea rescue vessels has been highlighted.

The beach is also popular for swimming and family activities. A dive trail has been established off the beach.

Access is via a formed gravel track which is generally suitable for access by two-wheel drive vehicles. A car park has been established near the beach. The existing car park is not well designed as it is steep with insufficient room to cater for peak use. As a result, vehicles also park on the beach, creating potential conflicts and safety issues for other beach users. An additional car park exists further up the hill but remains largely unused as people are not willing to walk further and negotiate the steep road.

Several concept plans have been prepared for the area, with one adopted by the Shire of Jerramungup for future detailed design investigation (Appendix O). The concept involves an extension of the parking area to allow for boats with trailers. This plan would eliminate the need for vehicles to travel along the beach. However, due to the steep hill rising behind the beach, further planning is required to determine the ability of the area to cater for turning circles required for boat launching. In addition, there is a creek that drains to the rear of the foredunes at Little Boat Harbour, in the location where the parking area would most likely be placed. Additional constraints include forecasted erosion as predicted by hazard modelling and tenure (as the beach area is UCL with the reserve behind with management orders in favour of the Shire of Jerramungup). Tenure of the beach area is currently UCL and therefore subject to Native Title settlement. Planning for future works need to consider all of these issues. Council have resolved to investigate options, including engineering studies, to determine the most appropriate method of improving parking facilities at this location.

It is suggested that the principle of providing a parking area at the beach is worthwhile, but execution is likely to be costly, have environmental impacts and detract from the intimate nature of the beach.

Management Issues:

- High use during peak periods increases visitor risk and user conflict.
- A concept plan for facilities has been adopted for further consideration and design. However, there are a number of issues, including tenure which are problematic.
- Consideration of coastal hazard assessment for potential coastal erosion.



Little Boat Harbour is an intimate beach, but high demand, especially during peak periods increases visitor risk and the potential for user conflict.



Traffic during peak use periods cause congestion.



Boat launching in a limited space, with vehicles negotiating soft sand, increases the risk of injury for other beach users. Sea rescue personnel have highlighted the importance of emergency launching access for this site.



Coastal hazard assessment:

LEGEND:

—	HORIZONTAL SHORELINE DATUM (HSD)
—	2022 EROSION HAZARD LINE
—	2042 EROSION HAZARD LINE
—	2117 EROSION HAZARD LINE

While a first pass and conservatively estimated, coastal hazard assessment indicates that there is a significant risk for erosion within a relatively short timeframe.

Tenure

The land immediately adjacent to the coast is UCL which may be subject to the Native Title settlement process.

Reserve Number	39969	3766
Org Gazl Date	8/05/1987	
Reserve Class	C	B
Legal Area ha	3.8108	202.3428
Detail text	522/987	7331/96
Current Purpose	RECREATION	PUBLIC UTILITY
Land Use		GOVERNMENT REQUIREMENTS
Vesting	SHIRE OF JERRAMUNGUP	



Assessment

Name of Location:	Little Boat Harbour		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Recreational use, emergency access for marine rescue, marine biota		Area provides a sheltered beach during south-westerly weather conditions, emergency access for marine rescue boat launching, dive trail and presence of leafy sea dragons.
Threatening Processes	User conflict/ visitor risk. High visitation for a small area.		Visitation during peak times results in grid lock due to limited space (car park and beach). Vehicles driving on beach present visitor risk due to soft sand and presence of families.

Level of Use	<p>High. Used for day trips, diving, snorkelling, fishing, four-wheel drives and launching of small boats.</p> <p>A concept plan has been developed to create a new car parking area (to allow for boat launching). However, detailed design may indicate that there is not adequate space for the purpose. In addition, the expansion could detract from the existing qualities of the beach which include its intimate size and scale.</p>		<p>Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities.</p> <p>Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities</p> <p>High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.</p>
Coastal Processes	Protected sandy beach between rocky headlands		100m long beach faces north west and is protected from prevailing conditions. Beach receives low wave energy which maintains a steep reflective cusped beach, with seagrass meadows. The beach is accessed by a relatively steep hill.
	Score	Action Required?	
Signage	2	High priority	Has some signage, including interpretive. Install AS compliant Coastal Safety signage at car park. Advise of coastal risk, code of the coast, small craft launching. Rationalise existing signs.
Toilets/ showers	2	Medium priority	Drop toilet. Replace with composting when this unit has reached end of useful life.
Rubbish bins	3	-	Service by Shire of Jerramungup.
Dogs	3	-	Dogs not allowed (signage).
Fencing/ barriers	3	-	Present and in good condition.
Boat Launching	2	High priority	Beach launching occurs from the beach. During busy periods, launching is not safe for other users due to vehicle movements through soft sand. As people do not wish to use the upper car park, vehicles and trailers are left on beach, which is not large enough for demand.
Shade	-	-	Not present or recommended.
Camping Areas	-	-	No camping which is enforced by Ranger during peak times.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.

Car parking	2	High priority	Two formal car parks (upper and lower). Informal parking on the beach. People tend not to use upper car park as it is up a steep hill. Lower carpark is small and steep and does not cater for busy periods. Beach parking is undesirable on such a small beach.
Vehicle Access	2	High priority	The formed gravel road is suitable for most traffic. However, the descent to the beach is one lane and steep. Drainage from the road requires monitoring and modification, if required.
Pedestrian Access	2	High priority	Access to beach is shared by pedestrians and vehicles in a narrow area, which is undesirable.
Beach Access	2	High priority	Single access point to beach.
Dune Stability	3	-	Previous storms have eroded a section of the beach. Coastal hazard assessment indicates that area could be subject to significant erosion in short to medium term.
Vegetation Cover	3	-	Good condition.
Weeds	-	-	Monitoring recommended.
Visual Appeal	3	-	Visual appeal is high, but at risk from current level of use.
4WD Access to Beach	0	-	4WDs can access beach, but creates a hazardous situation.
Disabled Access to node	-	-	No.
Survey Result	63		Score indicates that management in the area requires attention: Future planning, parking, boat launching access, vehicles on beach and installation of signage.
Overall: Area is popular for day visitation with high usage. The site is not able to cater for usage during peak times. Access is for 2WD but is steep and prone to erosion. The drop toilet should be replaced with a composting toilet at the end of its useful life. Recommend that an AS compliant sign be installed at the entry from Native Dog Road to indicate coastal risk, code of the coast and to take rubbish out. Monitoring for weeds, foredune and blowout erosion and weeds is recommended.			

Recommendations

Location	Previous Recommendations (2005)	Status and Recommendations	2017 Pros and Cons, Priority, Responsibility and Timing
Little Boat Harbour	The beach is frequently used for boat launching purposes. Development of a low-key parking area will remove vehicles from the beach and ease reported conflicts between boat launching and	Council to consider developing more detailed design based on adopted concept but needs to keep in mind: technical requirements for trailers, tenure (UCL), erosion risk hazard, dramatically altering the	High priority, immediate action recommended. Shire of Jerramungup with land manager DPLH.

	<p>passive recreation. It is recommended that Council further investigate options for car parking at this location, including both engineering and environmental studies as necessary.</p>	<p>intimate nature of the beach and environmental impacts (e.g. stream and vegetation).</p> <p>The following options were considered and presented to the community and stakeholders:</p> <ol style="list-style-type: none"> 1. Maintain current access: does not address current congestion and visitor risk. 2. Prohibit non-boat related vehicle access to the beach at all times (vehicles to park in car parks provided). 3. Prohibit non-emergency trailer parking on beach at all times (vehicles to park in upper car park). 4. Prohibit all vehicles, including non-emergency trailer launching and parking during peak times (school holidays). That is, no vehicles on beach during peak times. 5. Launching of boats for emergencies would be permitted. <p>Feedback regarding preferences was mixed. In light of input received, the Shire of Jerramungup resolved to consider installing Australian Standard signage at the entry points to the beach to raise awareness regarding safety concerns and vehicle manoeuvrability.</p>	
	<p>Locate signs near the car park indicating 'car park' and 'vehicles permitted beyond this point for boat launching purposes only'.</p>	<p>Install appropriate signage to AS. Remove signs not currently needed.</p>	<p>High priority. Short term (1 – 5 years). Achievable. Shire of Jerramungup.</p>
	<p>Provide a walk path to the beach from the upper car</p>	<p>The Shire of Jerramungup has adopted a concept plan for the</p>	<p>Medium priority for investigation, medium</p>

	park. No designated walk path has been established to date. The upper car park is apparently under utilised due to the distance from the beach and the steep incline/decline associated with accessing the beach. Investigations into improved parking and access at the location are proposed.	area (Appendix O) which requires more detailed planning, consultation and costing.	timeframe (5 – 10 years). Difficult to resolve issues, including current tenure. Shire of Jerramungup with land manager DPLH.
	Designate Little Boat Harbour as an area prohibited to dogs. As there is a limited area available for passive recreation on the beach. Dogs are currently prohibited at this location under an existing Shire of Jerramungup local law.	Dogs are currently not allowed at Little Boat Harbour supported by signage and monitoring by Shire of Jerramungup Ranger.	
		At the end of its useful life, replacement of current drop toilet with a composting system (as per concept plan).	Medium priority, medium term (Shire of Jerramungup).
		Drainage from the road requires monitoring and modification, if erosion is still occurring.	High priority, short term, Shire of Jerramungup.
		Investigation into construction of a walk trail between Little Boat Harbour and Blossoms Beach (as per concept plan) and consistent with The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013).	Medium priority in medium to long term (5 – 20 years). Achievable with funding. Shire of Jerramungup with Trails Committee.
Tenure: UCL may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this coastal area requires a partnership approach.			

7.15 NATIVE DOG BEACH & BLOSSOM’S BEACH

Description

Blossom’s and Native Dog Beaches share an access road (Native Dog Road) which is sealed to the start of the beach access points and is accessible by two-wheel drives. The rocky headland at Native Dog Beach is accessed by a gravel track which leads to a carparking area with toilet/ lookout and a carpark on the rocky headland.

Blossom’s Beach is a relatively exposed 750 m long sandy, west-facing beach that receives waves that increase up the beach from about 1 m to 1.5 m. The waves maintain a continuous low tide terrace in the south grading to a wider bar with rips in the north, and permanent rips against the northern rocks. The beach is backed by a mixture of vegetated dunes, areas of dune deflation and a central active parabolic dune, that have all climbed up over the backing bedrock and have blown up to 3 km inland almost to the leeward shore of Bremer Bay. While the blowout is a natural phenomenon, sand mobility and erosion could be exacerbated by vehicle use. Ongoing monitoring would benefit management decisions and aerial photos indicate that the footprint of the blowout has not changed significantly between 2005 and 2017.

Native Dog Beach is a 300 m long southwest-facing sandy beach which is bordered by a 20 m high headland in the south and a rugged rock platform in the north. Waves average over 1.5 m and break across a 150 m wide surf zone, which is drained by permanent rips against each headland. Steep vegetated transgressive dunes extend up to 2 km inland and link with the Blossom’s Beach dunes.

These areas are popular with families for fishing, surfing and picnicking. Dogs are permitted at these beaches.

Management Issues:

- High vehicle use on Blossom’s Beach during peak periods increases visitor risk and potential user conflict.
- Consideration of coastal hazard assessment for potential coastal erosion.
- Poorly delineated parking at headland and Native Dog lookout/ toilet.
- Potential confusion over status of vehicle access to Blossom’s Beach (four-wheel or two-wheel drive).
- Erosion of foredunes from foot traffic and vehicles parking on beach (Blossom’s).



Native Dog and Blossom's Beach: Popular for fishing and surfing.



While naturally occurring, the erosion of sand in the blowout is being exacerbated by vehicle use.



LEGEND:

—	HORIZONTAL SHORELINE DATUM (HSD)
—	2022 EROSION HAZARD LINE
—	2042 EROSION HAZARD LINE
—	2117 EROSION HAZARD LINE

While conservatively estimated, the coastal hazard assessment indicates that there is a significant risk for erosion hazard within a relatively short timeframe.

Tenure

The land immediately adjacent to the coast is UCL which may be subject to the Native Title settlement process.

	Native Dog Beach	Rocky Headland	Blossom's Beach
Reserve Number	46774	39967	46625
Org Gazl Date		8/05/1987	
Reserve Class	C	C	C
Legal Area ha	50.0869	5.3707	74.7139
Current Purpose	PARKLAND	RECREATION	PUBLIC RECREATION
Vesting	MANAGEMENT ORDER SHIRE OF JERRAMUNGUP	SHIRE OF JERRAMUNGUP	VEST: SHIRE OF JERRAMUNGUP
Type	Subject to 20A		



Assessment

Name of Location:	Native Dog Beach		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Recreational use		
Threatening Processes	Non delineation of parking has led to expansion beyond desired areas		Parking at Native Dog Beach is poorly delineated.
Level of Use	High. Used for day trips, surfing and fishing.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Strong rips and large swells		The 300m long south-west facing beach is bordered by a 20m high headland in the south and a rugged rock platform in the north.

	Score	Action Required?	
Signage	2	High priority	Remove redundant existing signage and replace with AS compliant Coastal Safety signage. Advise of coast risk and to take rubbish out. Lookout has interpretive signage.
Toilets/ showers	2	Low priority	Drop toilet. Replace with composting when this unit has reached end of useful life.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs allowed.
Fencing/ barriers	2	Medium priority	Current fencing and barriers are poorly designed and should be replaced based on a DBCA style design.
Boat Launching	-	-	Not available at this location.
Shade	-	-	Not necessary.
Camping Areas	-	-	No camping area, enforced by Ranger.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	1	-	Poorly delineated adjacent to toilet, lookout and rock parking area. Recommend delineation, including of rock lookout area. Redesign and formalise these areas without detracting from amenity (DBCA standard design).
Vehicle Access	2	Medium priority	Shared access with Blossom's Beach. Bitumen to within 100m of road termination. Informal track to beach carpark, lookout and parking. Some areas (near southern walk trail) need to be rationalised.
Pedestrian Access	-	-	Formed trail from toilet area to lookout and carpark.
Beach Access	4	-	Formed trail for part of the way to the beach.
Dune Stability	3	-	Mostly good.
Vegetation Cover	3	-	Mostly in good condition. Rehabilitation of rationalised access areas would benefit. Monitoring recommended.
Weeds	-	-	No significant weeds recorded.
Visual Appeal	3	-	Visual appeal of area is generally high. However, previous works to delineate parking detract.
4WD Access to Beach	3	-	No access to beach, but cars access rocky lookout.
Disabled Access to node	-	-	No.

Survey Result	63		Score indicates that management in the area requires attention with respect to delineation of car parking areas and installation of signage.
Overall: Area is popular for day visitation, surfing and fishing. Access is two-wheel drive via a bitumen road, then informal track. Infrastructure includes a toilet, lookout, trail to the beach, interpretive signage and car parking. Area would benefit from carpark redesign and delineation using DBCA standards, or similar. Recommend that an AS compliant sign be installed at informal track entry.			

Name of Location:	Blossom's Beach		
Date: 16/4/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Heritage, recreational use		Other heritage place '4601 (Blossoms Beach) Aboriginal Heritage Inquiry System, 2017)
Threatening Processes	Mobile dunes are eroding (but spatially stable). Visitation during peak times results in potential visitor risk and puts pressure on coastal node.		Erosion of mobile dunes. Access to Blossoms is four-wheel drive, but often accessed by two-wheel drives. Blossoms Beach can be crowded during peak times (e.g. Christmas, New Year, Easter and school holidays) which increases visitor risk and potential for user conflict.
Level of Use	High. Used for day trips, surfing, informal camping, fishing, four-wheel drives and off-road vehicles.		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Exposed sandy beach		Approximately 750m long, west facing which receives waves that increase up the beach. Waves maintain a continuous low tide terrace in the south grading to a wider bar with rips in the north and a permanent rip against the northern rocks. The beach is backed by a mixture of vegetated dunes, areas of dune deflation and a central active parabolic dune that has blown up to 850 m inland.
	Score	Action Required?	
Signage	2	High priority	Install AS compliant Coastal Safety signage. Advise of coastal risk, code of the coast and to take rubbish out.
Toilets/ showers	2	High priority	Drop toilet. Scheduled for replacement in 2018 financial year.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs allowed.

Fencing/ barriers	3	-	Present in some areas.
Boat Launching	-	-	Not available at this location.
Shade	-	-	Not present or recommended.
Camping Areas	-	-	Informal camping but Ranger polices during peak times.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Not present or recommended.
Car parking	-	-	Informal. If access track is to be two-wheel drive, carpark will be required behind foredunes.
Vehicle Access	1	High priority	Access from Native Dog Road is 4WD, although road is sometimes graded and some two-wheel drive access is attempted. Recommend that either 4WD or 2WD access is chosen and track maintained to that status. AS compliant advisory signage at track entry would benefit users.
Pedestrian Access	2	High priority	Informal walk trail from car park at Native Dog Road. Recommend formalising this trail. Attempt to separate pedestrians from traffic at entry to Blossom's Beach needs to be reinstated.
Beach Access	-	-	Informal. Current access has limited the number of tracks to beach (1 track), which is good.
Dune Stability	2	Low priority	Mobile dunes are eroded. However, the footprint of the blowout is stable. Foredunes on beach are subject to access (vehicles back into dunes and pedestrian) which has caused some erosion and multiple tracks. Monitoring recommended.
Vegetation Cover	2	Low priority	Foredune vegetation is incipient and therefore relatively resilient to disturbance. Monitoring of foredunes is recommended to identify if erosion worsens.
Weeds	-	-	Monitoring recommended.
Visual Appeal	2	Low priority	Visual appeal of area is medium. Heavy use can result in reduced amenity.
4WD Access to Beach	3	-	4WDs can access beach via a single track. An attempt has been made to separate vehicles and pedestrians, but would benefit from maintenance/ upgrade.
Disabled Access to node	-	-	No.
Survey Result	53		Score indicates that management in the area requires attention with main track

			maintenance, replacement of drop toilet and installation of signage.
Overall: Area is popular for day visitation with high usage. Access is via a track that is 4WD, but often accessed by 2WD. The drop toilet should be replaced with a composting toilet at the end of its useful life. Recommend that an AS compliant sign be installed at the entry from Native Dog Road to indicate coastal risk, code of the coast and to take rubbish out. Monitoring for weeds, foredune and blowout erosion and weeds is recommended.			

Recommendations

Location	Previous Recommendations	Status and 2017 Recommendations	Priority, Responsibility and Timing
Native Dog Beach & Blossom's Beach	Retain the headland parking area between Blossoms and Native Dog beaches in their current configuration and progress planned minor upgrading works to the access road.	Redesign car park at lookout/toilet area. Delineate headland carpark to prevent enlargement and stop vehicle intrusion into vegetation (without compromising visual amenity).	Medium priority, medium term (5 – 10 years). Achievable with funding and appropriate design. Shire of Jerramungup.
	Continue to monitor the sand blowout behind Blossoms Beach.	Comparison of air photos indicates that the blowout has had a similar footprint between 2005 and 2017. Monitoring recommended.	Low priority, ongoing. Achievable. Shire of Jerramungup.
		Formalise a walk trail from the headland to Blossom's Beach to allow people to park and walk.	Medium priority, medium term (5 – 10 years). Achievable with funding and appropriate design. Shire of Jerramungup and Trails Committee.
		Replace drop toilets with composting units at the end of structures' useful life.	High priority and scheduled for 2018. Shire of Jerramungup.
		Install AS compliant Coastal Safety signage at beach entry. Advise of coastal risk, code of the coast and four-wheel drive etiquette. Remove redundant signs.	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Determine if current access to Blossom's Beach is to be four-wheel or two-wheel drive and incorporate information into AS	Low priority. Ongoing. Shire of Jerramungup.

		compliant signage. Continue to maintain road drainage. If two-wheel drive, a car park will be required behind the foredunes.	
Tenure: UCL may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of these areas requires a partnership approach.			

7.16 DILLON BEACH & STREAM BEACH

Description

Dillon Beach forms a sandy bay along the northern and western portions of Dillon Bay. It faces south-south east and extends for nearly 7km. The wave energy decreases to the western end of the beach. Access is via Dillon Bay Road (gravel) which leads to a network of four-wheel drive tracks. The gravel part of the road extends to within 2km of the beach, after which access is four-wheel drive only.

The area has a commercial fishing lease on the western end of Dillon Beach. This is associated with a Proclaimed Fishing Zone. Access associated with the lease is in poor, eroded condition.

Day visitors access the western end of the beach adjacent to poorly consolidated limestone cliffs which show signs of fresh rock falls. A network of four-wheel drive tracks occurs at the top of the cliffs. Some work has rationalised the multiple tracks and prevents access to the old tracks near the cliffs edge, but review is needed as new tracks have recently been created. The area is also used for fishing, camping and whale watching.

Informal camping areas occur behind fore dunes. This area would benefit from rationalisation.

Stream Beach is accessed by a steep sandy track which has eroded the scarp face. Vehicles often get bogged and need to be towed out.

Landowners adjacent to the eastern portion of Dillon Beach report that people access private farmland in an effort to get to the coast (e.g. via O'Dea Road).

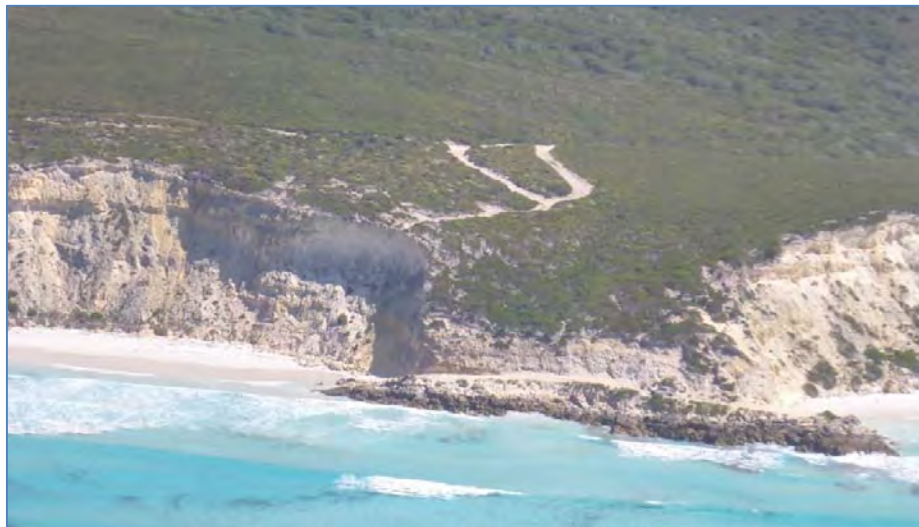
The area near Bitterwater Creek is a designated count site for Birds 2020. Hooded and Red-capped Plovers nest in this area.

Management Issues:

- The poorly consolidated limestone cliffs represent a visitor risk.
- Multiple tracks require monitoring and rationalization (when detected).
- Camping areas behind foredunes would benefit from delineation.
- Visitors would benefit from AS compliant signage to inform.



Some multiple tracks have been rationalised but are slow to rehabilitate.



The access road along the beach to the western end cuts through an eroding cliff with risk of rock fall. Above this area, an informal lookout is adjacent to an undercut cliff face. Both these features present a significant visitor risk.



Despite historic work on track rationalisation, new tracks have recently been created for no apparent reason.



The cliff at the western end of the beach indicates evidence of recent rock falls, which represents a significant visitor risk.



The western end of the beach is popular for day visitors.



Access to the fishing lease is steep and severely eroded.



LEGEND:

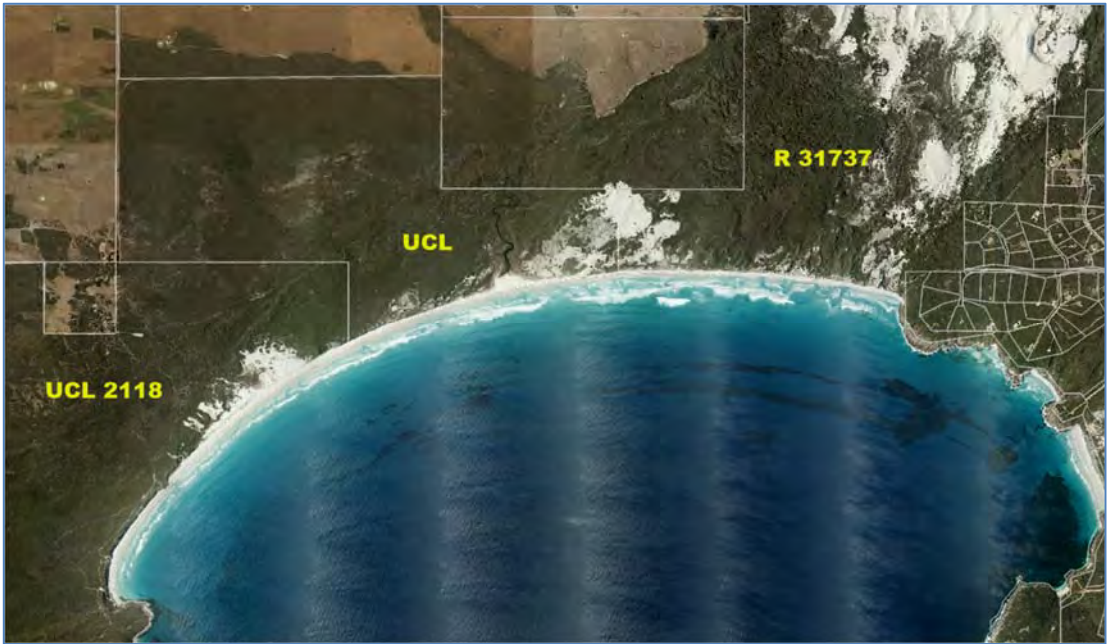
—	HORIZONTAL SHORELINE DATUM (HSD)
—	2022 EROSION HAZARD LINE
—	2042 EROSION HAZARD LINE
—	2117 EROSION HAZARD LINE

While conservatively estimated, the coastal hazard assessment indicates that there is a significant risk for erosion hazard within a relatively short timeframe.

Tenure

Reserve Number	UCL 2118
Vesting	No management orders. UCL
Responsible Agency	Department of Lands
Note:	DBCA have lodged an interest to reserve this UCL (Ref: 2006/004245 on Tengraph, DMP). Freehold portion of UCL at Dillon Bay for Caravan Park (Ref: 02182-1951/05 Job 071726. Area is to west of Bitter Water Creek. Fishing Lease on western extremity of Dillon Beach
Reserve Number	31737
Org Gazl Date	19/01/1973
Reserve Class	A
Legal Area (ha)	287979.376
Reserve Name	Fitzgerald River National Park
Detail text	3137/54 V4 And V6; 2614/75 V6

Current Purpose Vesting Responsible Agency	National Park
	National Parks Authority of WA Act 1976
	Department of Biodiversity, Conservation and Attractions
Tenure: UCL 2118 may be subject to the Native Title settlement process. Regardless of the outcome of that process, the management of Dillon Beach requires a partnership approach.	



Stream Beach tenure

Assessment

Name of Location:	Dillon Beach and Stream Beach		
Date: 13/3/2017	Surveyed by:	Melanie Price	
Attribute		Comments	
Values		Contains: portion of Fitzgerald River National Park (Conservation estate and National Heritage Place). Registered Aboriginal sites: 5026 Stream Beach - artefacts/ scatters, 5156 Cardiminup 1 - artefacts/ scatters, 4611 Cardiminup 4 - artefacts / scatter, midden/ scatter, arch deposit, camp. Also 'other heritage sites' 598 (Hazel Stream), 5027 (Burminup Creek), 5025 Ned's Well), 5020 (Miller's Dam), 4977 (Cardiminup 2), 4978 (Cardiminup 3) and 4979 (Wellsteads).	
Threatening Processes	Multiple tracks, erosion, visitor risks	The poorly consolidated cliffs adjacent to the fisher's lease at the western end of Dillon Bay present a risk to visitors both from material falling from the cliff and a lookout which has become eroded. It is a high priority to manage the visitor risks in this area. Multiple four wheel drive tracks are still being created, despite on ground works to rationalise. The track adjacent to the fisher's lease is very eroded. Stream beach is accessed by a steep sandy track which has eroded. People sometimes try to cross private land to reach the coast.	
Level of Use	High. Used for day trips, camping, fishing, four-wheel drives and off road vehicles. Fishing lease at western end of Dillon Bay. Medium for Stream Beach	Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities	
Coastal Processes	Eroding limestone cliff faces. Exposed beach in northern portion. Lower wave energy to the west.		
	Score	Action Required?	
Signage	2	High priority	Remove scattered existing signage and replace with AS compliant Coastal Safety signage. Advise of unstable cliffs, reduce multiple tracks and to take rubbish out.
Toilets/ showers	2	Low priority	No facilities available. Installation not recommended until visitor risk and tenure are resolved.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs allowed.

Fencing/ barriers	2	Medium priority	Barriers to reduce multiple tracks have been successful, but new tracks have recently been created. Monitoring and maintenance recommended.
Boat Launching	-	-	No formal boat ramp at this location.
Shade	-	-	Not present or recommended.
Camping Areas	2	Low priority	Informal camping areas with grass. Would benefit from delineation.
Barbecues	-	-	Not present or recommended.
Caretaker	-	-	Fishermen seasonally.
Car parking	-	-	Informal.
Vehicle Access	1	High priority	4WD only after Dillon Bay Road. Advisory signage at track entry would benefit users. Rationalisation of multiple tracks recommended.
Pedestrian Access	-	-	Informal.
Beach Access	-	-	Informal.
Dune Stability	2	-	Some areas prone to erosion, notably track adjacent to fishing lease and some four wheel drive tracks.
Vegetation Cover	2	-	Mostly in good condition. Rehabilitation of closed tracks limited where soil is shallow. Monitoring recommended.
Weeds	-	-	Monitoring recommended.
Visual Appeal	2	Low priority	Visual appeal of camping areas is medium. If rubbish removal occurs (often by local custodians) appeal is acceptable. Coast has high visual appeal.
4WD Access to Beach	3	-	4WD can access beach.
Disabled Access to node	-	-	No.
Survey Result	50		Score indicates that management in the area requires attention with respect to visitor risk management, rationalisation of tracks and installation of signage
Overall: Area is popular for day visitation. Access is via multiple tracks that would benefit from rationalisation. Minimal infrastructure has been installed and additional infrastructure is only recommended if visitor risk issues can be satisfactorily addressed. Recommend that an AS compliant sign be installed at end of Dillon Bay Road (gravel section), to indicate that visitors need to keep to existing tracks. Monitoring for weeds is recommended.			

Recommendations

Location	Previous Recommendations	Status and 2017 Recommendations	Priority, Responsibility and Timing
Dillon Beach	Develop the Dillon Beach area for day visitor activities. Provide toilets, picnic tables and gas cooking facilities.	This recommendation is not supported. While it could be possible to install facilities, visitor risks associated with the instability of the limestone cliffs is a deterrent. Tenure is also problematic.	
	Provide formal access to Dillon Beach	The 2005 recommendation is not supported. A road reserve has been formalised to allow access to the area. However, creating two-wheel drive access to the beach is not recommended as destination (particularly cliffs) present a visitor risk.	Low priority, long term timeframe (10+ years). DPLH.
		Access to lookout at top of scarp presents a visitor risk and action is recommended to delineate and keep people at a safe distance from the cliff edge.	High priority, immediate action required. DPLH.
	Rationalise and maintain only one 4WD track west of the whale watching area, to the fisherman's lease and Stream Beach. Some tracks should be closed, and other sections rerouted to prevent further water and wind erosion of the track.	Monitor closed duplicate tracks and close new tracks that are created, across Dillon Beach area.	High priority, short timeframe (1 – 5 years). Achievable with funding and partnership approach (e.g. engage Green Army or similar). DPLH.
		Track to fisher's shack is heavily eroded. Liaise with lease holder to incorporate erosion control and drainage management.	Medium priority, short timeframe (1 – 5 years). DPLH and fisher's lease licence holder.
	Rehabilitate areas of denuded vegetation. It is recommended that revegetation and	Closed tracks would benefit from brushing, however, due to nature of the vegetation in the area, brush may be difficult to source. Barriers to	

	rehabilitation concentrate on areas disturbed due to vehicle access and use of the beach by people. Natural areas of dune blowout and naturally occurring dune movements should not need to be actively managed.	vehicles and brushing adjacent to barriers is likely to be most effective (see action above).	
		Informal camping areas would benefit from delineation and partial rehabilitation. Recommend using a similar landscape design approach to DBCA standards.	Low priority, medium timeframe (5 – 10 years). DPLH and other partners such as Shire of Jerramungup.
		<p>Install AS compliant coastal safety signage at:</p> <ul style="list-style-type: none"> - Start of four-wheel drive track (end of gravel road). - Entry point to cliff risk area – Stay away from cliff and cliff edge - Top of Stream Beach warning of steep track, erosion and collision risk - At dead end roads such as O’Dea Road, informing people that the coast is not accessible from that point. 	High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.

7.17 CAPE KNOB & RED ROCKS

Description

The coastline around Cape Knob has high biodiversity values, is remote, rugged and contains cliffs and caves. The area to the north of Cape Knob comprises a mobile dune which, due to the prevailing winds is moving to the north east. Sand drift is largely a natural process and the dunes are consuming native vegetation and the existing four-wheel drive track, including the track to Red Rocks.

The Cape Knob area is accessible by a rough 4WD track which emanates from Dillon Bay Road. A track also links to the eastern end of Foster Beach, via the blowout.

Cape Knob is a remote area with relatively low visitation. The main activities are four-wheel driving, sightseeing and rock fishing.

Management Issues:

- One of the main values of this area is its remoteness and beauty.
- Reduce risk of dieback introduction and spread.



Cape Knob is visually dramatic and remote due to rough four-wheel drive access.



The Cape Knob area has striking rock formations and a rugged coastline.



The blowout is moving north east, driven by prevailing winds. It is engulfing some of the four-wheel drive tracks.



The track to Red Rocks has been engulfed by a steep sand dune.



Cape Knob

Tenure

Tenure: UCL 2117 may be subject to the Native Title settlement process. Regardless of the outcome of that process, the management of Cape Knob and surrounding areas requires a partnership approach.

Reserve Number	UCL 2117	R 11978
Vesting	No management orders. Unallocated Crown Land	
		Trigonometrical Station
Responsible Agency	Department of Lands	Department of Lands
Note:	DBCA have lodged an interest to reserve this area (Ref: 2006/004245 on Tengraph, DMP)	



Assessment

Name of Location:	Cape Knob & Red Rocks		
Date: 13/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Biodiversity, scenic values, remoteness		Cape Knob is listed as 'another heritage place' (Aboriginal Heritage System, 2017) for locations 26458 (Rock Shelter) and 5028.
Threatening Processes	4WD and off-road vehicle access and track erosion. Dieback risk on incoming tracks.		
Level of Use	Low. Used for camping, fishing, 4WD and off-road vehicles		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities
Coastal Processes	Granitic headland		
	Score	Action Required?	
Signage	0	High priority	AS compliant Signage placed prior to entry to the mobile dunes could assist in informing visitors about risk of dieback, mobile dune, rough track, remote conditions, coastal visitation risk and 'take rubbish home'.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	Not present or recommended.
Boat Launching	-	-	Not suitable.
Shade	-	-	Not necessary at remote location.
Camping Areas	-	-	Informal rocky areas.
Barbecues	-	-	Not necessary at remote location.
Caretaker	-	-	Not necessary at remote location.
Car parking	-	-	Informal.
Vehicle Access	3	-	Track is rough and in some parts, being consumed by mobile dune. However, it is adequate for remoteness of location. Advisory signage at mobile dune entry would benefit users.
Pedestrian Access	-	-	Informal. Future potential for walk trails should be explored in consultation with Aboriginal custodians.

Beach Access	-	-	Informal.
Dune Stability	-	-	Windblown sand/ mobile dune is a natural phenomenon, which is exacerbated by 4WD access. However, impacts appear to be manageable at this stage.
Vegetation Cover	-	-	Vegetation is in excellent condition, but susceptible to dieback introduction and spread.
Weeds	-	-	No invasive weeds were noted during assessment. Monitoring recommended.
Visual Appeal	3	-	High natural visual amenity.
4WD Access to Beach	-	-	No beach access, but people access rocks along coast.
Disabled Access to node	-	-	No.
Survey Result	50		Score indicates that management in the area is minimal. Management is mostly suitable for this remote area.
Overall: Area is remote with no facilities. Access is via rough track and mobile dune system. Recommend that an AS compliant sign be installed at mobile dune entry, to indicate that track may be impassable due to mobile dune and that visitors need to be prepared for remote conditions. Remoteness is one of the greatest assets of this area, so improved access is not recommended.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017	Priority, Responsibility and Timing
Cape Knob and Red Rocks	Retain only low-key 4WD access to the Cape Knob area.	This remains a valid management recommendation and represents the status quo.		
	Install signage at the entrance to the Cape Knob area requesting 4WD's keep to existing tracks and protect vegetation, warning of dangers and requesting rubbish be removed.	This remains a valid management recommendation. Install AS compliant coastal safety signage at start of blowout to inform of coastal risks and safety, code of the coast, dieback risk and removal of rubbish.		High priority, short term (1 – 5 years). Achievable. Shire of Jerramungup.
		Explore opportunities for joint management via the Native Title Settlement process		
Tenure: UCL and UMR may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of this coastal area requires a partnership approach.				

7.18 FOSTER BEACH

Description

Foster Beach is one of the highest energy beaches on the south coast (Short, 2006). The beach faces directly into the southwest waves which average over 2 m. The area has a surf zone which is dominated by large beach rips. Much of the beach is backed by high ridges of partially cemented sand and limestone which are susceptible to erosion. Winds have blown sand up through valleys and over the backing bedrock slopes which rise rapidly to 100m. Vegetated areas beyond the blowouts comprise coastal scrub-heath with high biodiversity values which are susceptible to dieback.

Access is via Minarup Road which is a 4WD track with sections that are impassable after wet weather. Informal access is also via the southern boundaries of private property from Warramurup Road. Landowners report that people seeking entry to the coast often try to cross private land if they cannot find obvious access points. Eastern access to Foster Beach is via a blow-out adjacent to Cape Knob. The western access to the beach navigates a steep and erodible scarp, which historically led to duplicate tracks being established. Actions from the previous coastal management plan have seen the successful rationalisation and stabilisation of the scarp track. This needs to be monitored and maintained to prevent further erosion.

Foster Beach is soft with vehicle access often problematic if tyre pressure is not lowered. Fishing and sightseeing are the main activities at the beach.

Issues:

- Access
- Dieback risk
- Environmental weeds



The western end of Foster Beach.



Previous track rehabilitation has prevented erosion on steep slopes. Monitoring and maintenance is recommended.



A track at the eastern end of Foster Beach leads to the blowout adjacent to Cape Knob.

Tenure

Reserve Number	27102	UCL 2117
Org Gazl Date	10/01/1964	
Reserve Class	C	
Legal Area (ha)	16200	

Detail text	990/63	
Current Purpose	Common & Recreation	
LU1	Common	
LU2	Recreation	
Vesting	No management orders. Unmanaged Reserve	No management orders. Unallocated Crown Land
Responsible Agency	Department of Lands	Department of Lands



Assessment

Name of Location:	Foster Beach		
Date: 13/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Values	Biodiversity, Aboriginal site		High value native vegetation, prone to dieback. Aboriginal site: 5017 Minarup 1 - Artefacts/scatters
Threatening Processes	4WD and off road vehicle access and track erosion. Dieback risk on incoming tracks.		

Level of Use	Medium. Used for camping, fishing, 4WD and off road vehicles	Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities	
Coastal Processes	High energy beach facing directly into south west conditions. Wind blows sand to the north east to form blowouts. Strong rips in this area.		
	Score	Action Required?	
Signage	0	High priority	AS compliant Signage placed on Minarup Road could assist in informing visitors about risk of dieback, bogging risk after rain, proximity to private property/ remote conditions and 'take rubbish home'.
Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	3	-	Fencing of tracks has been effective and should be monitored and maintained.
Boat Launching	-	-	Not suitable.
Shade	-	-	Not necessary at remote location.
Camping Areas	-	-	Beach is relatively exposed with high scarp. On beach camping only.
Barbecues	-	-	Not necessary at remote location.
Caretaker	-	-	Not necessary at remote location.
Car parking	-	-	Informal, on beach.
Vehicle Access	3	High priority for monitoring	4WD only. Some sections of track from Borden-Bremer Road (Minarup Road) are in poor condition, especially after rain. Track is adequate for remoteness of location but increases risk of dieback spread. Advisory signage at road entry would benefit users. Steep descent to Foster Beach increases risk of erosion. Previous track treatments have reduced multiple tracks. Informal look out on scarp track. People try to access coast via private land from Borden Bremer Bay Road.
Pedestrian Access	-	-	Informal, via beach.
Beach Access	-	-	Informal.

Dune Stability	3	-	Windblown sand is a natural phenomenon on this beach, which is exacerbated by 4WD access. However, impacts appear to be manageable at this stage. Requires monitoring.
Vegetation Cover	-	-	High value vegetation within reserve, which is susceptible to dieback.
Weeds	2	High priority for monitoring and removal	Victorian tea tree is becoming established on Minarup. High priority for treatment/removal.
Visual Appeal	-	-	High natural visual amenity.
4WD Access to Beach	3	-	4WD can access beach. Monitoring is a high priority.
Disabled Access to node	-	-	No.
Survey Result	58		Score indicates that management in the area is minimal. However, track management down scarp has been effective and should be monitored. Site is suitable as a remote area.
Overall: Area is remote with no facilities. Access is via rough track. Recommend that an AS compliant sign be installed on Minarup Road, to indicate that track may be impassable after wet conditions and that visitors need to be prepared for remote conditions. Remoteness is one of the greatest assets of this area, so improved access is not recommended.			

Recommendations

Location	Previous Recommendations	Status and 2017 Recommendations	Priority, Responsibility and Timing
Foster Beach	Retain low key 4WD and off-road vehicles access to and along the beach	This recommendation maintains the status quo. Monitoring of the western track is required, especially the descent to Foster Beach down the scarp. Repair and maintenance of track treatments is a high priority.	Monitoring and maintenance of track to western end of beach via scarp – High priority 1-5 years DPLH and partnership approach pending Native Title settlement process.
		AS compliant signage at entry to Minarup Road: Dieback awareness, coastal safety, reduce track damage, take rubbish out.	High priority. Short time frame (1-5 years). Shire of Jerramungup, with partners.
		Victorian tea tree is becoming established along Minarup Road. Monitoring and control is recommended.	High priority. Short time frame (1 – 5 years). DBCA and partners.

Tenure: UCL and UMR may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of Foster Beach requires a partnership approach.

7.19 REEF BEACH

Description

Reef Beach is a high-energy beach which faces southwest. It has offshore reefs which have produced a series of cusped bays along the beach, extending into a massive sand sheet aligned with the south-westerly wind. The dune extends up to 5 km inland with an area of 1,500 ha and perimeter of 26 km (Short, 2006). There are no foredunes along much of this beach. Swimming and surfing are dangerous here due to the rips and current associated with the offshore reef.

A rough 4WD track called Reef Beach Road traverses outcropping limestone and provides access to the western end of beach from the Borden Bremer Bay Road. Warramurrup Road is a track that provides access to the eastern end of the beach. The area attracts campers, fishers and off-road vehicle users.

The Offshore Angling Club has a small lease behind a foredune for a club house. However, it appears that this club is no longer active and the shack is in poor condition. No ablutions or other facilities are provided in the area. Current custodians comprise people who have been visiting the area for decades and who informally clean up and remove rubbish. At peak periods, dozens of four-wheel drives or off-road vehicles can be observed along the beach and driving in the dune and blowout system.

Issues:

- Status of lease to the Offshore Angling Club
- Condition of access increased risk of dieback introduction and spread
- Off-road vehicle use



The shack is in poor condition and there are no suitable ablution facilities.



Multiple tracks around the Offshore Angling Club Shack.



Reef Beach with blowout and camping areas associated with Offshore Angling Club shack.



The blowout extends 5 km inland

Tenure

Reserve Number	14988	27102	28122	26097
Org Gazl Date	19/09/1913	10/01/1964	10/06/1966	10/01/1964
Reserve Class	C	C	C	C
Legal Area (ha)	45	16200	0.4346	15.8546
Detail text	3222/989	990/63	2994/65	344/57
Current Purpose	RECREATION & CAMPING	COMMON & RECREATION	RECREATION CLUB PREMISES	DOG PROOF FENCE
LU1	CAMPING	COMMON	CLUBS	FENCE
LU2	RECREATION	RECREATION	RECREATION	
Vesting	VEST: SHIRE OF JERRAMUNGUP		VEST SHIRE OF JERRAMUNGUP WPL 21YRS FROM 1.7.1982 WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS.	

Responsible Agency	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE
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Assessment

Name of Location:	Reef Beach		
Date: 12/3/2017	Surveyed by:	Melanie Price	
Attribute			Comments
Threatening Processes	Multiple tracks, erosion, visitor risks, rubbish, dieback risk on incoming tracks.		The large blowout is a natural feature. While its spread could be exacerbated by wind erosion and use by vehicles, its area has not changed significantly since 2005.
Level of Use	Medium. Used for camping, fishing and 4WD drives and off-road vehicles		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.
Coastal Processes	High energy beach flanked by granite headlands. Large blowout (natural and stable).		
	Score	Action Required?	
Signage	0	High priority	No signage. Recommend sign 50m in on Reef Beach Road to advise of rough track,

			remote conditions, no services, take rubbish out. Also dieback risk.
Toilets/ showers	-	-	If shack and lease are retained, a condition of the lease should be the installation of a composting toilet. Signage to indicate community responsibility for maintenance.
Rubbish bins	-	-	Not present or recommended. Entry signs to indicate that rubbish needs to be taken out.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	2	Medium priority	Current fencing and barriers are poorly designed and should be replaced based on a DBCA style design.
Boat Launching	-	-	Not available at this location.
Shade	-	-	Not necessary in remote location.
Camping Areas	2	Medium priority	Offshore Fisher's shack does not have adequate ablutions for the level of use and club does not appear to be active. Debris and rubbish around shack. Other informal camping areas behind foredunes.
Barbecues	-	-	Not necessary in remote location.
Caretaker	-	-	Not necessary in remote location.
Car parking	-	-	Informal.
Vehicle Access	3	Low priority	4WD only. Tracks from Borden-Bremer Road. Reef Beach Road is not signposted, is very rough and impassable after rain. Warramurup Road contains sections which are in poor condition, especially after rain. Tracks are adequate for remoteness of location, but increase the risk of dieback spread. Advisory signage at track entry would benefit users.
Pedestrian Access	-	-	Informal.
Beach Access	3	-	Access is adequate for remote location.
Dune Stability	3	-	Blowout is active but stable.
Vegetation Cover	2	-	Area around shack is eroded to limestone base but not considered a high priority for revegetation.
Weeds	-	-	Monitoring recommended.
Visual Appeal	2	Low priority	The area around the shack is often left with rubbish after campers. Some people who have a long history at the site clean up after others.
4WD Access to Beach	3	-	4WDs can access beach.
Disabled Access to node	-	-	No.

Survey Result	56	Score indicates that management in the area is minimal and some aspects of condition are 'poor'.
Overall: Area is remote with little or no facilities. Access is via rough track. Minimal infrastructure has been installed. The shack encourages camping with inadequate facilities for ablutions. Rubbish removal from around shack recommended. Recommend that an AS compliant sign be installed 50m in from Borden Bremer Bay Road on Reef Beach Road, to indicate that track may be impassable after wet conditions and that visitors need to be prepared for remote conditions. Remoteness is one of the greatest assets of this area, so improved access is not recommended. Monitoring for weeds is recommended.		

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Reef Beach	Retain low key 4WD and off-road vehicles access to and along the beach. Duplicate tracks should be closed and rehabilitated.	This recommendation supports the status quo. Rationalisation of tracks adjacent to the leased shack area will improve amenity and reduce erosion.	Medium priority. 5-10 years. Achievable. Partnership approach depending on outcomes of Native Title Settlement process.
	The Offshore Angling Club should assist the Shire by conserving the environment in which they are located, and in particular, by staying to designated tracks.	Review of the lease is needed and contact with the Offshore Angling Club initiated. If the Club is no longer active then lease may need to be terminated.	Medium priority. 5 – 10 years. Achievable. Shire of Jerramungup and Offshore Angling Club.
		Shack area does not support basic toilet amenities necessary for a site that encourages camping. Removal of shack or provision of composting toilet is recommended.	High priority. 1 – 5 years. Partnership approach depending on outcomes of Native Title Settlement process. Shire of Jerramungup and Offshore Angling Club.
	Further investigate, in liaison with DBCA and the local community, the demand for, and potential of, gazettement a formal Off-Road Vehicle area on the dune area behind Reef Beach.	Refer to Section 6.7. While consideration of creating a gazetted area under the <i>Control of Vehicles (Off-road Areas) Act 1978</i> could be undertaken, experience in WA indicates that fewer gazetted areas exist in light of visitor risks and lack of management resources. In addition, the current tenure of the blow out area means that	Creation off gazetted off road area is a low priority and is unlikely to be supported due to remoteness, difficulty of emergency access and general safety considerations. Also, area is subject to Native Title Settlement process. DPLH, DBCA and Shire of Jerramungup.

		<p>settlement of Native Title will be required prior to a significant change of land use.</p> <p>Promote responsible vehicle use in the area via Code Off-road.</p>	
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7.20 PALLINUP BEACH – BEAUFORT INLET

Description

Beaches of the Western Australian Coast (Short, 2006) describes Pallinup Beach as a long sandy beach which forms the mouth of the Beaufort Inlet (which is fed by the Pallinup River). The beach extends to the east of the Beaufort Inlet and can be accessed from the south of the inlet (via City of Albany reserves) or via the Pallinup Estuary Road (off Borden Bremer Bay Road). The entrance from Pallinup Estuary Road is degraded in parts and suitable for 4WD access only. Portions of the 4WD access tracks to Pallinup Beach have become degraded over time and duplicate tracks have been established to bypass degraded areas.

The western end of the beach contains informal camping and parking, with no facilities provided. There are some access tracks along the inlet edge, which are duplicated in places.

Crown reserves around the mouth of the Pallinup River have been identified in DBCA South Coast Regional Management Plan 1992 – 2002 to become conservation reserves. These reserves are 14988 (Pallinup River Mouth), 21647 (Beaufort Inlet), 22353, 27102 (Pallinup Beach) and 33257.

Issues:

- Condition of access increases risk of dieback introduction and spread
- Track proliferation



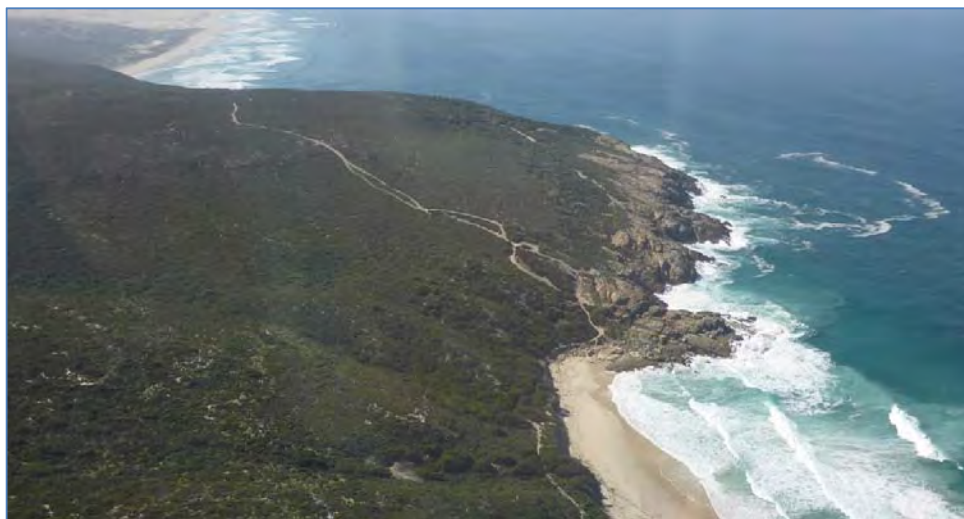
Looking east from the City of Albany side of Beaufort Inlet. The Shire of Jerramungup Reserve is on the north (upper) side of the estuary sandbar.



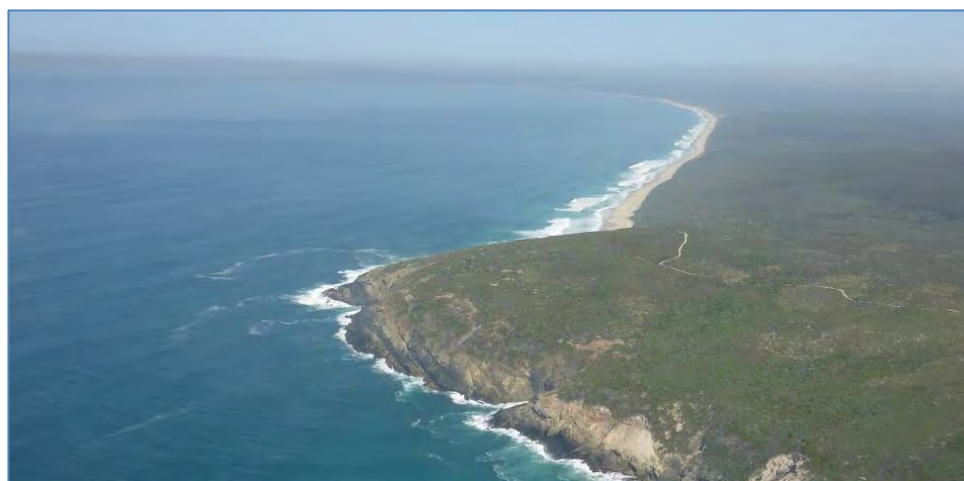
Shire of Jerramungup Reserve (Reserve 14988)



Entry to Pallinup Beach from granite headland. This access track is washed out and presents a visitor risk for 4WD vehicles. Signage needs to be installed to warn of risk.



Eroded track at eastern end of Pallinup Beach that is no longer safe to access by four-wheel drives.



Pallinup Beach viewed from the east.

Tenure

Reserve Number	14988	27102
Org Gazl Date	19/09/1913	10/01/1964
Reserve Class	C	C
Legal Area (ha)	45	16200
Detail text	3222/989	990/63
Current Purpose	RECREATION & CAMPING	COMMON & RECREATION
LU1	CAMPING	COMMON
LU2	RECREATION	RECREATION
Vesting	VEST: SHIRE OF JERRAMUNGUP	
Responsible Agency	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE



Assessment

Name of Location:	Pallinup Beach and Beaufort Inlet		
Date:	Surveyed by:	Melanie Price	
Attribute			Comments
Values			Reserve contains: A wetland which is part of the Yellilup Yate Swamp System (nationally important wetland).
Threatening Processes	Multiple tracks, 4WD and off-road vehicle use, Dieback risk on incoming tracks		At the eastern end of Pallinup Beach, access tracks to the beach from the granite headland have become a potential visitor risk. Recommend signs be installed to indicate that tracks are impassable.
Level of Use	Medium		Low use: Used by few people (less than 10 per day) or very seasonally or for a narrow range of activities Medium use: Used by a moderate amount of people (10 - 50 people per day), seasonally or for a moderate number of activities High use: Used by a high number of people (more than 50 per day), most of the time or for a high number of activities.
Coastal Processes			Informal camping adjacent to Beaufort Inlet. Area subject to changes related to flooding and inundation.
	Score	Action Required?	
Signage	0	High priority	No signage. Recommend AS compliant sign 50m in on Pallinup Estuary Road to advise of rough track, remote conditions, no services, take rubbish out. Also, advisory sign regarding impassable track on granite headland at eastern end of Pallinup Beach.

Toilets/ showers	-	-	Not present or recommended.
Rubbish bins	-	-	Not present or recommended.
Dogs	-	-	Dogs not prohibited.
Fencing/ barriers	-	-	Review area to determine if barriers may assist to reduce multiple tracks/ access to beach and inlet.
Boat Launching	-	-	Access for small craft provided at Millers Point for Beaufort Inlet.
Shade	-	-	Not required at this remote location.
Camping Areas	2	Low priority	Informal.
Barbecues	-	-	Not required at this remote location.
Caretaker	-	Low priority	Not required at this remote location.
Car parking	2	Low priority	Informal.
Vehicle Access	2	Low priority	4WD only. Track from Borden-Bremer Road (Pallinup Estuary Road) is not signposted, is very rough and impassable after rain. Track proliferation at Inlet bar.
Pedestrian Access	-	-	Shared.
Beach Access	2	Low priority	4WD can access beach.
Dune Stability	2	Low priority	Rationalisation of tracks will improve dune stability and condition.
Vegetation Cover	2	Low priority	Rationalisation of tracks will improve vegetation cover and condition.
Weeds	-	-	Monitoring for weeds such as Victorian Tea Tree and Boxthorn recommended.
Visual Appeal	-	-	Could be improved if tracks rationalised.
4WD Access to Beach	-	-	Yes.
Disabled Access to node	-	-	No.
Survey Result	50		Score indicates that management in the area is minimal and some aspects of condition are 'poor'.
Overall: Area is remote with no facilities. Access is via rough track. Medium use indicates that while facilities could be installed, this area is not a high priority compared to other sectors of the coast. Recommend that an AS compliant sign be installed 50m in from Borden Bremer Bay Road on Pallinup Estuary Road, to indicate that track may be impassable and that visitors need to be prepared for remote conditions. Recommend rationalisation of tracks and delineation of camping and parking areas. Monitoring for weeds needs to be ongoing. Remoteness is one of the greatest assets of this area, so improved access is not recommended.			

Recommendations

Location	Previous Recommendations	Status and Recommendations	2017 Priority, Responsibility and Timing
Pallinup Beach	Retain low key 4WD access to and along the beach.	This recommendation supports the status quo. Rationalisation of tracks in Reserve 14988 and access to the beach and inlet will improve visual amenity, safety and prevent erosion.	High priority. 1-5 years. Shire of Jerramungup in Reserve 14988
	Close Pallinup Estuary Road during wet conditions for dieback disease hygiene and erosion control.	Enforcing closure has not been attempted and is likely to be difficult to enforce. Road is self-closing during wet conditions. Include information in signage about risks of dieback.	Track closure desirable but difficult to achieve. Signage - High priority. Achievable. 1-5 years Shire of Jerramungup, in consultation with DBCA and other partners.
	Realign and upgrade sections of Pallinup Estuary Road to prevent further water erosion of the track.	While this is a valid management aspiration, in reality, it would be difficult and costly to achieve. Entry tracks should be managed to ensure that they are readily accessible via 4WD, depending on seasonal conditions. Tracks may not be passable in wet weather, which will reduce the risk of dieback spread.	Medium priority. 5-10 years. Difficult to achieve. Shire of Jerramungup and coastal management partners.
	Develop a site management plan for a camping area at Pallinup Beach.	A valid management goal, but other areas should receive a higher priority for management planning and action.	Low priority. 10 – 15 years. Shire of Jerramungup for Reserve 14988. Partnership approach for Reserve 27102, pending Native Title Settlement process.
	Promote a policy of 'take rubbish home'.	AS compliant Signage on the Pallinup Estuary Road could address this issue with signage to address coastal safety, dieback risk and code of the coast.	High priority. 1-5 years. Shire of Jerramungup
Tenure: Reserve 27102 may be subject to Native Title Settlement process. Regardless of the outcome of that process, the management of Pallinup Beach requires a partnership approach.			

7.21 LOCATION, MANAGEMENT LEVEL AND CONDITION ACCORDING TO SCALE

Assessment Result	Location	
	2000	2017
Very poor condition – in need of management presence urgently (0-12.5)		
Poor condition – management level inadequate (12.5-37.5)	Drage's Beach Back Beach Dillon Beach	Doubtful Island Peninsula (including Drage's Beach, Doubtful Island Beach, Chimneys, Blowholes and Peppermint Beach) House Beach and Corner Cove Tooregullup Gordon Inlet
Management level in need of review (37.5-62.5)	House Beach/ Corner Cove Doubtful Island Beach Chimneys Blow Hole Peppermint Beach John Cove Banky Beach Little Boat Harbour Blossoms Native Dog Beach	Pallinup Beach Reef Beach Foster Beach Cape Knob Dillon Bay Stream Beach Blossoms Beach Little Boat Harbour Point Henry Banky Beach Point Gordon Rock Cairn Lookout
Good condition – management level adequate (62.5-87.5)	John Cove Picnic Area Fishery Beach Fishery Beach Groyne	Bremer Beach Native Dog Beach Short Beach Fishery Beach Fishery Beach Marina Back Beach
Excellent condition – management level consistent and of high standard (87.5-100)	Short Beach	John Cove Main Beach

8 IMPLEMENTATION

8.1 RECOMMENDED ACTIONS AND PRIORITIES

A summary of recommended strategies, actions, priorities and timing is provided in Appendix A. These recommendations will be organised into an action plan which will be overseen by the Shire of Jerramungup with input from the South Coast Management Group, potentially a Coastal Action Group, with representatives of land managers and key stakeholders.

While each action has been assigned a priority, it is likely that only a few actions will be feasible to implement during the life of this management plan, due to resourcing constraints. Where possible, supported actions should be incorporated into the various land manager's and/or stakeholders budget and operational plans. For the Shire of Jerramungup, applicable actions can be inserted into the Shire's Community Strategic Plan and/or Corporate Business Plan.

Any works are subject to approval from the appropriate land manager.

The factors considered in determining action priorities has included:

- Does the strategy or action protect or restore a high value asset or underpin its protection or restoration?
- Does the strategy or action reduce or remove a high threat or is it essential to underpin threat abatement?
- Is the strategy or action technically feasible? That is, is there strong evidence or experience to support this action contributing to an improvement in the resource condition, as measured by the resource condition indicators?
- Is there a risk that the strategy or action may have direct or indirect impacts on other aspects of the coastal zone? That is, is the action likely to be beneficial or detrimental to other users or the environment?
- Is there support from the community for the strategy or action? That is, are people likely to be committed/ supportive regarding implementation of the action?
- Will the strategy or action address causes rather than the symptoms of threats to natural resources?

Value has been added to the prioritisation process by applying the following points to potential actions. The action or project (Strang *et al.*, 2010) should:

- Provide a strong basis for a business case for future funding.
- Highlight that budget amount and longevity is a crucial determinant of the optimal management strategy.
- Provide confidence about using public money as cost-effectively as possible through the choice of appropriate actions based on the public and private benefits they generate.
- Provide a robust, transparent basis to enable strategic direction setting, debate and discussion about the future of the coastal assets in question.
- Build on existing knowledge, integrating biological, physical, social and economic factors with institutional and political risks, and costs to assess the cost-effectiveness of actions.
- Help to highlight and prioritise limitations in current knowledge to inform decision making.

- Provide consistency, ensuring that actions ultimately funded via the strategy will be sufficient to deliver the desired outcome(s).

8.2 RESPONSIBILITIES AND PARTNERS

The recommendations of the Shire of Jerramungup coastal management plan will be undertaken in partnership by the various land managers (DPLH, Shire of Jerramungup and DBCA) with the community and other stakeholders. Land managers have different levels of resourcing available and operational priorities, so the priorities outlined in the action sheet reflect the risk and need for the action, not commitment of land managers for implementation.

Coastal zone land managers will support coastal community groups and increase capacity to undertake planning and on-ground works such as coastal restoration, protection and educational activities.

8.3 RESOURCES AND FUNDING

It is recognised that the implementation of this Plan will require additional resources to be sought and allocated by the land managers. This Plan recommends that members of the Jerramungup community are engaged and recruited to assist in the implement of the recommendations of this strategy through supporting stakeholders and 'Friends of' groups. Some actions may be accomplished through community actions and grant funding will also be sought wherever possible.

Funding sources for coastal management are available:

- Coastal Adaptation and Protection (CAP) grants (Department of Transport);
- Coastal Management Plan Assistance Program (Western Australian Planning Commission);
- Coastwest (Western Australian Planning Commission);
- Community Action and Capability Grants (State NRM);
- National Landcare Programme (Australian Government);
- Local Government Financial Assistance Grants (Department of Local Government, Sport and Cultural Industries); and
- Lotterywest funding.

Grants may be available for transformational projects (e.g. Royalties for Regions).

The WA Coastal Zone Strategy also provides information about funding opportunities (Government of Western Australia (2017) <https://www.planning.wa.gov.au/10223.aspx>). Grant availability is constantly changing. The local government grants directory can provide information at: <https://www.dlhc.wa.gov.au/AdviceSupport/Pages/LG-Grants-Directory.aspx>

Where seed funding can be sourced, leveraging of time and money can provide significant funds for projects and activities.

The success of most of the actions is dependent on the coordination and partnership of multiple stakeholders.

8.4 INDICATIVE COSTS

Costs for coastal activities will vary widely depending on site conditions, scale of project, source of materials and desired outcomes. An estimate of costs for some coastal activities is included in Appendix P.

9 MONITORING, EVALUATION AND REVIEW

Implementation of this Management Plan is not compulsory and depends on the good will and partnership of all stakeholders. Effective implementation will depend on the availability of resources, both personnel, financial and the ability to cooperate and collaborate.

Recommendations for which the Shire of Jerramungup is responsible should be incorporated into the Shire of Jerramungup Corporate Business Plan, with a score card (or similar) in the Annual Report so that Council can consider performance against the adopted action list. Council also needs to be responsible for advocacy, nurturing partnerships, budget deliberations and active support of on-ground works, for areas which are under its control.

Traditionally, the DPLH has not had sufficient funding to meaningfully assist in on-ground management of UCL and UMR. Similarly, the DBCA receives very limited funding for management of fire and pests. Advocacy by stakeholders to the State government will assist in raising awareness regarding the need to better resource the management of public lands.

It is recommended that the implementation of this coastal management plan is audited annually by the Shire of Jerramungup, with input from partners such as the South Coast Management Group and a Coastal Action Group (if established). Depending on designated responsibility, outstanding actions will be incorporated into the Shire's Corporate Business Plan and annual budget where resources allow.

This management plan should be reviewed in 10 years and updated as required.

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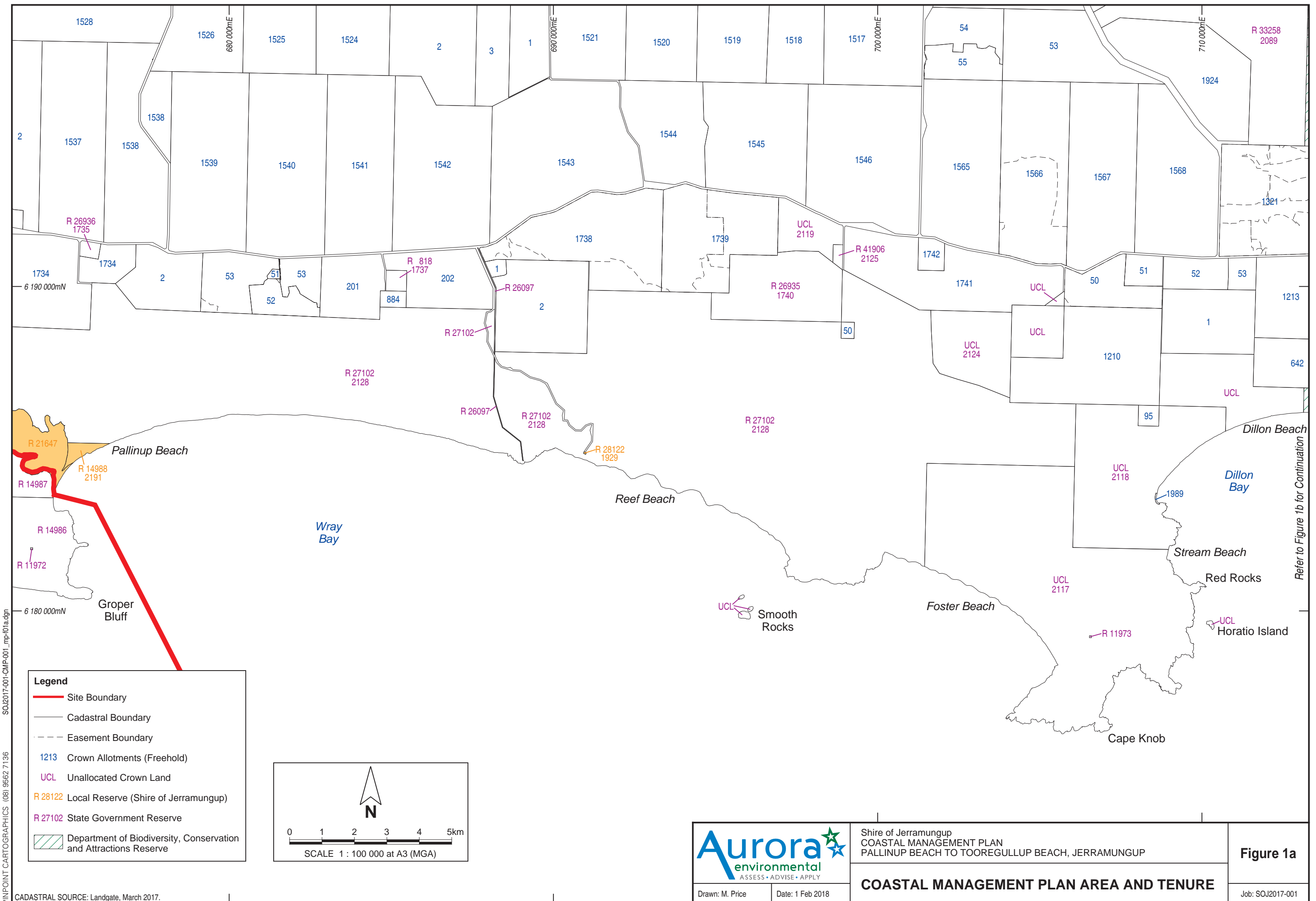
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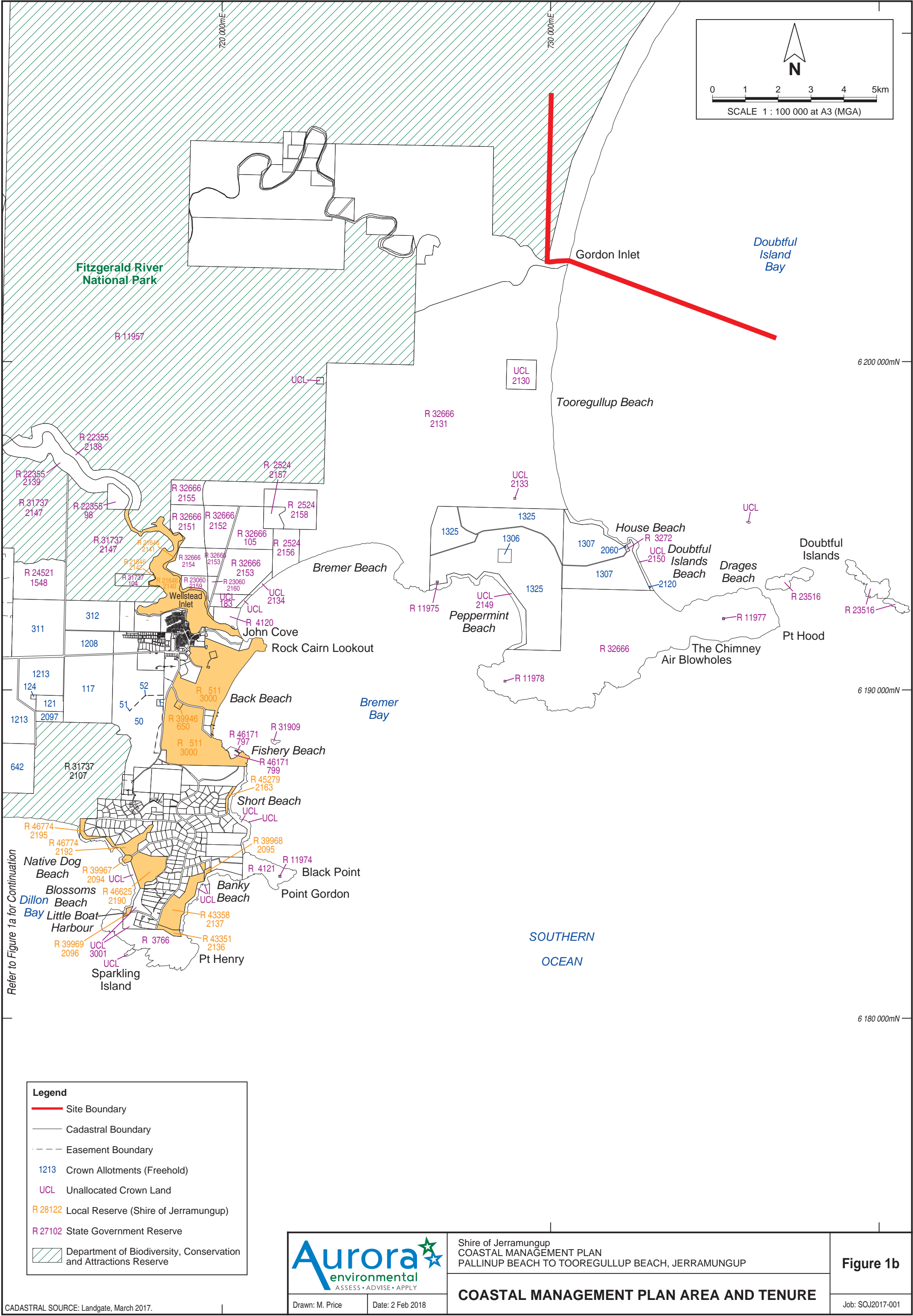
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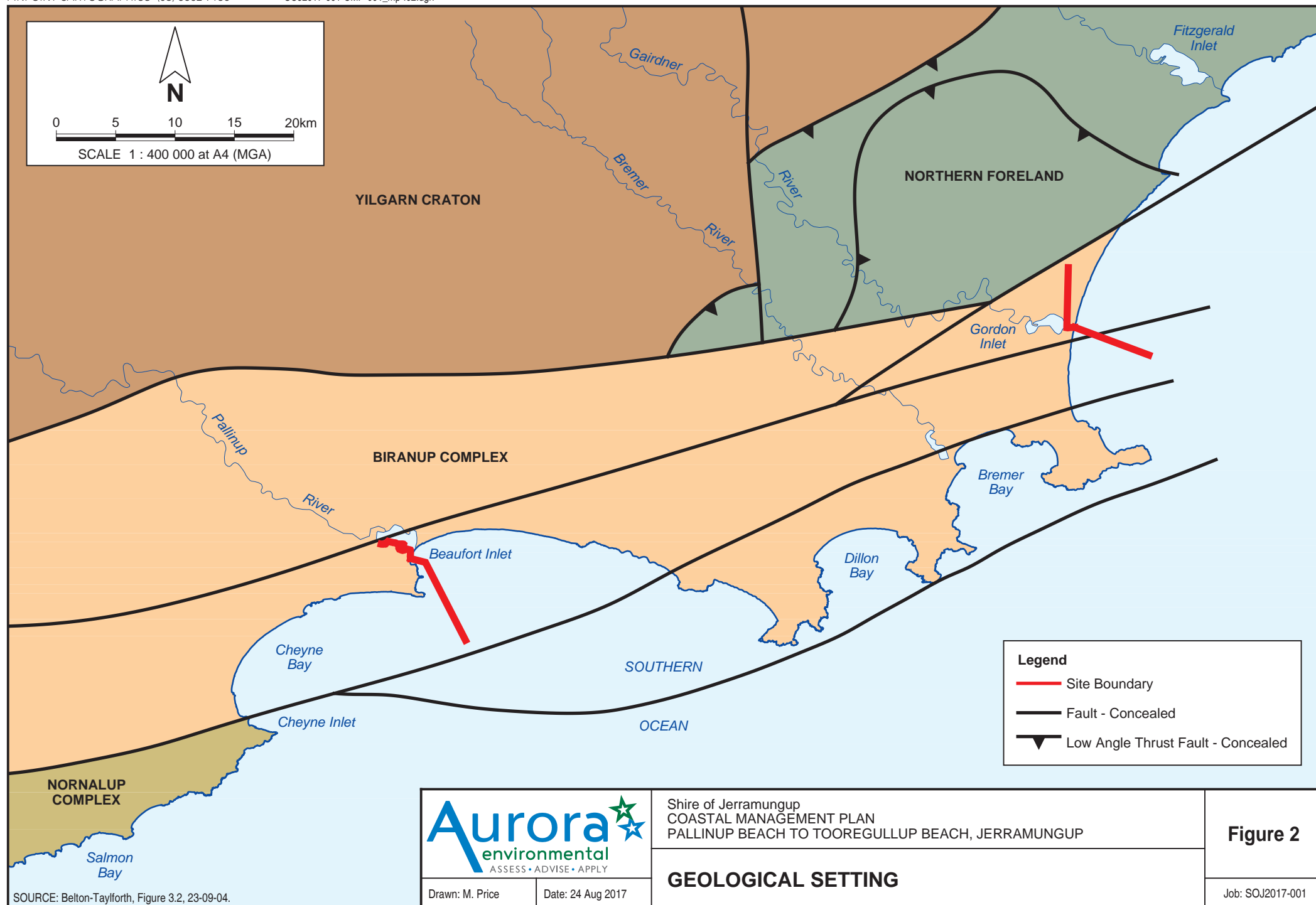
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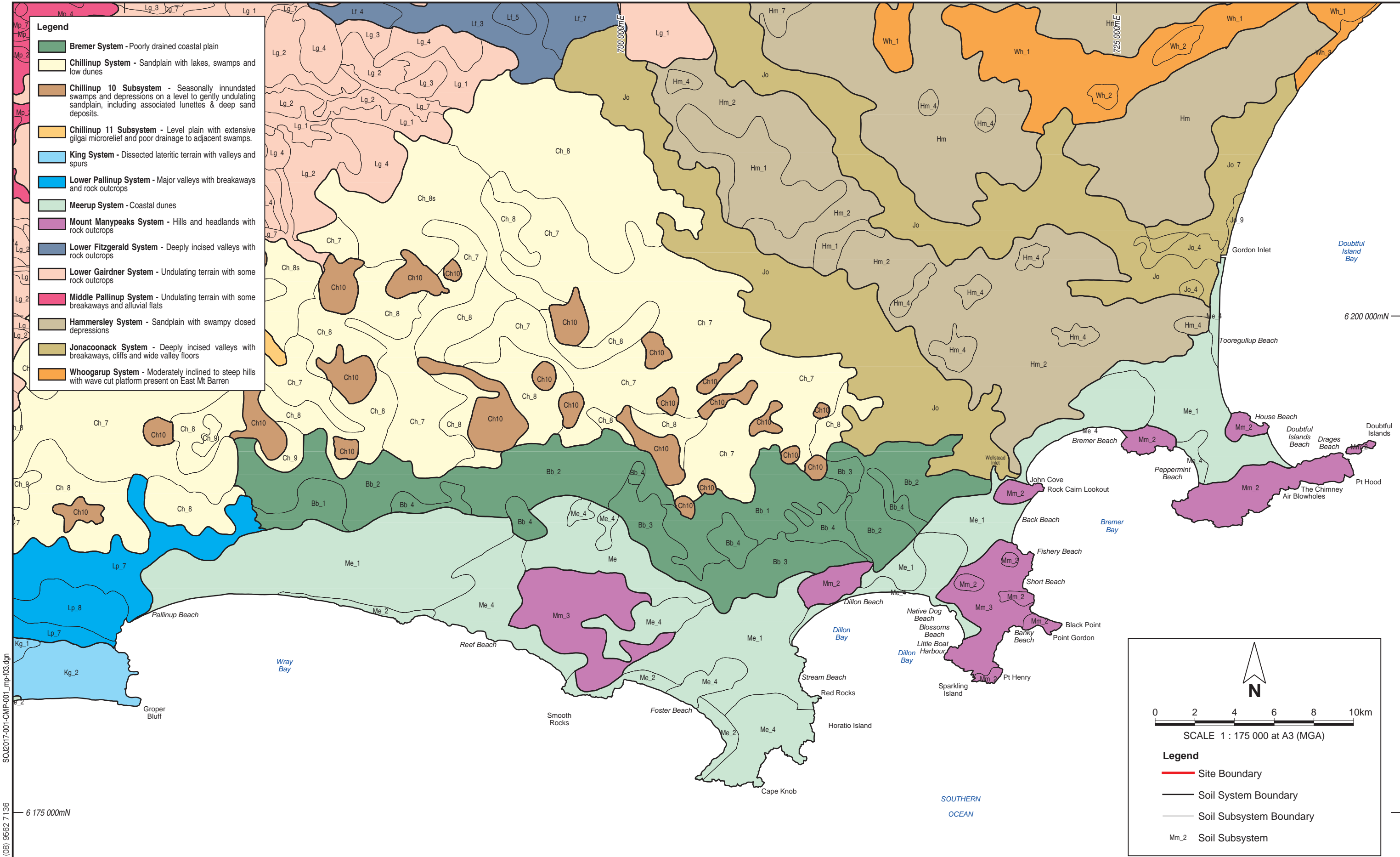
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FIGURES








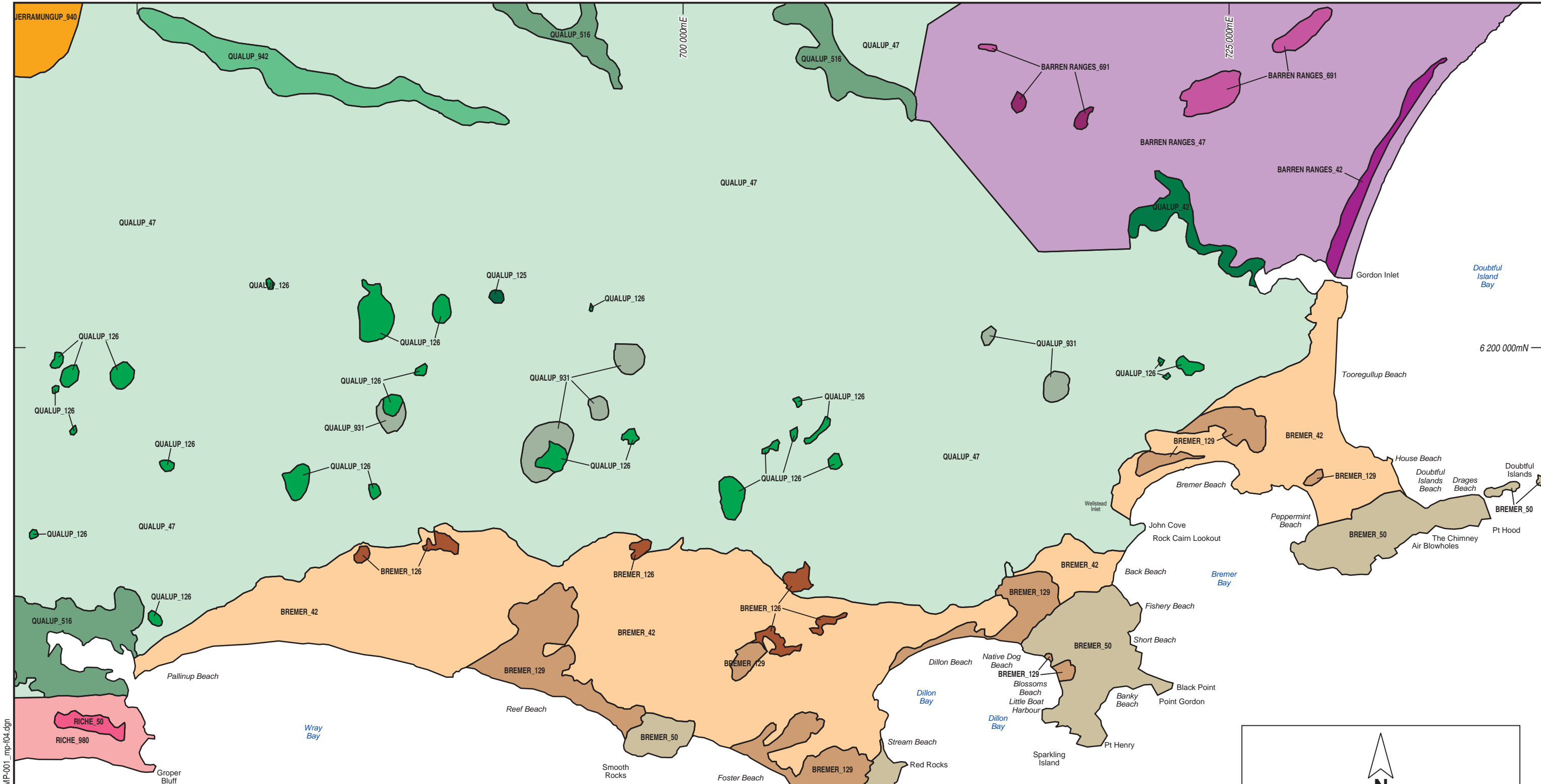


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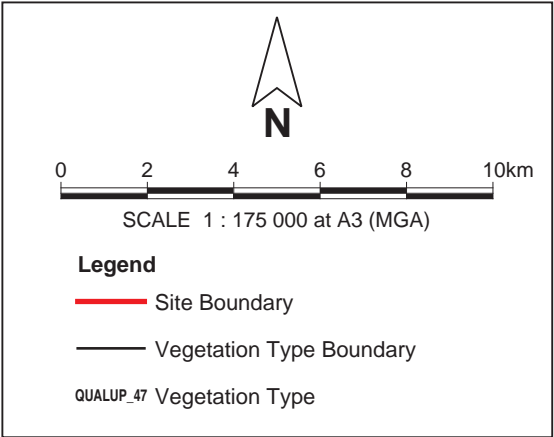
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 ASSESS • ADVISE • APPLY	Shire of Jerramungup COASTAL MANAGEMENT PLAN PALLINUP BEACH TO TOOREGULLUP BEACH, JERRAMUNGUP		Figure 3
	LAND SYSTEMS		
Drawn: M. Price	Date: 2 Feb 2018		Job: SOJ2017-001



Vegetation Assoc.	Original Association Description	NVIS Level 5 (ASSOCIATION)
125	Bare area/ salt lake	
126	Bare area/ freshwater lake	
129	Bare area/ Sand drift	
129	Bare area/ lake	
Bremer_42	Shrublands; mallee & acacia scrub on south coastal dunes	<i>Agonis flexuosa</i> , <i>Eucalyptus decipiens</i> tree/7;c; <i>M Acacia cochlearis</i> , <i>Acacia</i> sp., <i>Hakea corymbosa</i> shrub/4;c
Qualup_42	Shrublands; mallee & acacia scrub on south coastal dunes	<i>Agonis flexuosa</i> , <i>Eucalyptus angulosa</i> , <i>Acacia cyclops</i> mallee, shrub/4;l; <i>G Acrotriche cordata</i> , <i>Adriana quadripartita</i> , <i>Boronia crenulata</i> shrub, forb/2;c
Qualup_47	Shrublands; tallerack mallee-heath	<i>Nuytsia floribunda</i> , <i>Eucalyptus tetragona</i> , <i>Eucalyptus decipiens</i> tree, mallee/6;l; <i>M Adenanthos cuneatus</i> , <i>Agonis obtusifolia</i> , <i>Calothamnus pinifolius</i> shrub, <i>xanthorrhoea</i> 3;c; <i>G Banksia repens</i> , <i>Banksia media</i> , <i>Anigozanthos humilis</i> shrub, forb/2;c
Bremer_50	Shrublands; dwarf scrub on granite (south coast)	<i>M Banksia media</i> shrub, forb/3;l
Qualup_516	Shrublands; mallee scrub, black marlock	<i>Eucalyptus uncinata</i> , <i>Eucalyptus redunca</i> , <i>Eucalyptus flockitinae</i> mallee/6;l; <i>M Banksia calyei</i> , <i>Hakea laurina</i> , <i>Hakea crassifolia</i> shrub/4;c

Vegetation Assoc.	Original Association Description	NVIS Level 5 (ASSOCIATION)
Barren Ranges_691	Shrublands; <i>Dryandra quercifolia</i> & <i>Eucalyptus</i> spp. thicket	<i>Eucalyptus preissiana</i> , <i>Dryandra quercifolia</i> , <i>Banksia lehmanniana</i> mallee, shrub/3;d
Qualup_931	Medium woodland; yate	<i>Eucalyptus occidentalis</i> , <i>Eucalyptus decipiens</i> tree, mallee/7;g; <i>Anthocercis genistoides</i> , <i>Astroloma compactum</i> , <i>Brachysema lanceolatum</i> shrub, forb/2;r
Jerramungup_940	Mosaic: Shrublands; mallee scrub, black marlock / Shrublands; tallerack mallee-heath	<i>Eucalyptus redunca</i> mallee/6;l; <i>M Adenanthos cuneatus</i> , <i>Agonis obtusifolia</i> , <i>Calothamnus pinifolius</i> shrub/4;l
Qualup_942	Mosaic: Medium woodland; yate / Shrublands; mallee scrub, black marlock	<i>Eucalyptus annulata</i> , <i>Allocasuarina huegeliana</i> tree/7;l; <i>M Acacia acuminata</i> shrub/4;l
Riche_980	Shrublands; jarrah mallee-heath	<i>Eucalyptus marginata</i> , <i>Eucalyptus preissiana</i> , <i>Banksia attenuata</i> mallee, shrub/5;l; <i>M Agonis</i> sp., <i>Allocasuarina humilis</i> , <i>Comesperma</i> sp. shrub, <i>xanthorrhoea</i> 3;c
Barren Ranges_47	Shrublands; tallerack mallee-heath	<i>Eucalyptus tetragona</i> , <i>Eucalyptus</i> sp. mallee/5;l; <i>M Banksia</i> sp., <i>Calothamnus</i> sp., <i>Lambertia inermis</i> shrub, mallee/4;l; <i>G Andersonia</i> sp., <i>Conospermum</i> sp., <i>Conostylis</i> sp. shrub/1;c
Qualup_931	Medium woodland; yate	<i>Eucalyptus occidentalis</i> , <i>Eucalyptus decipiens</i> tree, mallee/7;g; <i>Anthocercis genistoides</i> , <i>Astroloma compactum</i> , <i>Brachysema lanceolatum</i> shrub, forb/2;r



APPENDIX A

Actions

Appendix A: Actions

Actions									
Issue 1 (primary)	Issue 2 (secondary)	Issue 3 (tertiary)	Specific Action	Measure(s)	Assignable	Realistic	Time-bound	Area	Priority
Governance	South Coast Management Group		Strengthen the existing partnership with the South Coast Management Group to maintain partnerships with land managers, supporting organisations and groups to maximise the ability to manage the coastal zone.	Active engagement with the South Coast Management Group. Number of stakeholders actively attending meetings. Number of land managers actively contributing to decision making.	Shire of Jerramungup and key stakeholders	A steering committee would greatly increase the chances of action implementation. However, establishing and running a committee can be time consuming for those involved.	Short term (1 - 5 years)	All	High
Governance	Funding		Seek funding (with seed funds) with key stakeholders, based on ongoing budget commitments and use of action programs (e.g. Green Army)	Annual budget for coastal works. Number of grant applications. Number of grants secured.	Shire of Jerramungup (with partners and stakeholders)	The budget and funding environment is currently competitive. However, if projects are based on strategic planning with community involvement, they are more likely to be successful.	Ongoing	All	High
Dieback	Signage	Education/Awareness	Incorporate dieback information into Australian Standard compliant signage across the Shire of Jerramungup coast.	Number of signs with dieback information installed.	Shire of Jerramungup	Planning and funding required. Will provide cost effective value.	Short term (1 - 5 years)	All	High
Dieback	Partnerships	Shire of Jerramungup	That partnerships between key managers such as the Shire of Jerramungup, the Department of Biodiversity, Conservation and Attractions, South Coast NRM Inc. and the Fitzgerald Biosphere Group are fostered to promote dieback hygiene, access management, information sharing and training to reduce the risks associated with the introduction and spread of dieback.	Number of meetings, number of land managers attending meetings and contributing to management outcomes.	Shire of Jerramungup, DPLH, DBCA	Essential but lack of resources may hinder equitable partnerships.	Short term (1 - 5 years)	All	High
Weeds		Shire of Jerramungup	Monitor and treat high priority weeds as described for coastal nodes (Section 7).	Areas mapped and treated for priority weeds.	Shire of Jerramungup, DPLH, DBCA	Long term approach and resources required.	Short term (1 - 5 years)	All	High
Pests		Shire of Jerramungup	Coordinate between land managers to prioritise infested areas, types of pests and funding for a sustained approach to pest control.	Number of meetings and documented outcomes.	Shire of Jerramungup, DPLH, DBCA	Long term approach and resources required.	Short term (1 - 5 years)	All	High
Weeds		Shire of Jerramungup	Support community groups and organisations who can assist with pest management.	Number of community members involved and number of activities held.	Shire of Jerramungup, DPLH, DBCA	Long term approach and resources required.	Short term (1 - 5 years)	All	High
Weeds			Use weed treatment methodology as outlined in <i>Herbiguide</i> (2017) and <i>Southern Weeds and Their Control</i> (Moore and Wheeler, 2008).	Documentation of treatments undertaken.	Shire of Jerramungup, DPLH, DBCA and partners	Long term approach and resources required.	Ongoing	All	High
Weeds			Explore novel ways to engage with visitors e.g. via ecotourism to contribute to weed and pest management.	Trialing of novel methods (e.g. donate a day on holiday)	Shire of Jerramungup, DPLH, DBCA	Would require mentors and coordinators to organise.	Ongoing	All	High
Fire		Shire of Jerramungup	Foster partnerships between land managers for a coordinated approach to fire management, suppression, controlled burns and visitor risk.	Number of meetings held: Shire of Jerramungup , DBCA and DPLH on steering committee with documented outcomes. Outcomes reported.	Shire of Jerramungup, DBCA, DFES, DPLH	Long term approach and resources required.	Ongoing	All	High
Fire			Develop concept of Neighbourhood Safe Places on Point Henry with a fire shelter and memorial at Blossom's Beach.	Development of concept plan, endorsed by Shire of Jerramungup and partners.	Shire of Jerramungup, DFES, DPLH	Rea, but subject to risk assessment.	Short term (1-5 years)	Point Henry	Medium
Fire			Record and map fire history in coastal reserves.	Digital or paper maps prepared and available for use.	Shire of Jerramungup, DBCA, DFES, DPLH	Long term approach and resources required.	Ongoing	All	Medium
Camping			Support development of camping facilities on private land using Shire of Jerramungup planning approval process, where appropriate.	Number of applications. Number of camps established.	Shire of Jerramungup	There are examples of standards to apply for camping on private land.	Medium (5 - 10 years)	Private land	Medium
Camping			Develop an 'informal camping guide' tailored to the Jerramungup coast which outlines where facilities are (or are not provided), how to safely dispose of effluent and the need to take rubbish out.	Production and distribution of guide.		Planning and funding required.	Medium (5 - 10 years)	All	Medium

Appendix A: Actions

Camping			Trial 'camp hosts' at House Beach.	Number of camp hosts, number of weeks hosted. Evaluation of camp host program after first season.	Shire of Jerramungup, DBCA (training).	Planning, training and support needed.	Medium (5 - 10 years)	House Beach	Medium
Camping			Develop and implement a camping area design/ upgrade for House Beach (after tenure has been formalised).	Production and implementation of camping and management design. Tenure resolution.	Shire of Jerramungup, DPLH	Tenure needs to be clarified. Will require significant funding for planning and implementation.	Short term (1 - 5 years)	House Beach	High
Dogs			Enforce current dog prohibitions and/or controls at selected beaches (John Cove, Fishery Beach, Little Boat Harbour, Main Beach and Blossom's Beach).	Number of checks by ranger. Number of infringement/ warnings.	Shire of Jerramungup	Current activity.	Ongoing	All	High
Dogs	Signage		Promote responsible dog visitation in coastal areas through incorporation into AS compliant signage.	Incorporation into AS compliant signage and number of signs installed.	Shire of Jerramungup	Requires planning and funding as part of larger signage project.	Short term (1 - 5 years)	All	High
Horses	Trails Committee	Steering Committee	Engage with local horse riding groups to determine areas suitable for horse riding.	Number of meetings and documented outcomes.	Shire of Jerramungup	Requires engagement with equine community.	Medium term (5 - 10 years)	All	Low
Horses		Steering Committee	Develop and promote a code of conduct for coastal horse riding.	Number of meetings and documented outcomes.	Shire of Jerramungup	Requires engagement with equine community.	Medium term (5 - 10 years)	All	Low
Access			Progress upgrade of Pabelup Drive and Point Ann Road.	Km of road upgraded	DBCA, Shire of Jerramungup	Requires funding and planning for drainage management etc.	Medium term (5 - 10 years)	Pabelup Drive and Point Ann Road	High
Access			Increase awareness to minimise impacts of four-wheel drives and off road vehicles using 'Code Off-Road'.	Number of pamphlets distributed. Information and awareness events (e.g. Easter Markets, advertising in local press, etc.).	Shire of Jerramungup	Provision of Code to community and visitors.	Short term (1 - 5 years)	All	High
Access	Signage		Provide information regarding Code Off-road, dieback and Australian Standard coastal safety signage.	Signs provided at locations (Shire has map). Brochure distribution for visitors and locals.	Shire of Jerramungup	Resource exists.	Short term (1 - 5 years)	All	High
Access	Maintenance	Monitoring	Where possible, prevent proliferation of tracks and erosion through well maintained and designed barriers and signage.	Monitored tracks and number of interventions required.	Shire of Jerramungup, DBCA, DPLH	Needs to be scheduled and documented.	Short term (1 - 5 years)	All	High
Access	Tracks and Trails		Develop a Strategic Trail Plan that assesses existing tracks and trails in coastal areas for a public trails system for walkers, cyclists and horses. Promotion via map (webpage, app or paper).	Expansion of existing Trails Masterplan. Development of trails mapping and/or app.	Shire of Jerramungup, Trails Committee	Trails group will require support.	Medium term (5 - 10 years)	All	Medium
Access	Off-road vehicles		Investigate the possibility of a gazetted off-road vehicle area at Reef Beach blow out (subject to native title settlement)	Documented investigation of risks and potential suitability for activity.	DPLH	Has significant issues relating to tenure and safety management.	Long term (10 - 15 years)	Reef Beach	Low
Access			Seasonally protect nesting areas of vulnerable bird species through signage and delineation (Main Beach).	Measure of metres of fencing, percentage cover of native vegetation, number of locations protected. Installation of seasonal fencing.	Friends of the Wellstead Estuary with support from the Shire of Jerramungup.	Already occurring at Main Beach.	Ongoing	Main Beach	High
Visitor Risk Management	Signage		Install a system of signs which comply with the Australian Coastal Safety Guidelines (Surf Lifesaving Australia et al., 2007), International Organisation for Standardisation (ISO Standards), Australian Standards and the National Aquatic and Recreational Signage Style Manual (Australian Water Safety Council et al., 2006) to advise of risks, code of the coast and code off-road.	Funding sought. Planning for signs. Number of signs installed.	Shire of Jerramungup, DBCA, DPLH.	Will require funding, planning and implementation.	Short term (1 - 5 years)	All	High
Visitor Risk Management			Undertake visitor risk assessments (safety audits) and implement visitor risk plans for coastal locations. Priority areas: Dillon Beach, Banky Beach, Little Boat Harbour and Doubtful Island Peninsula.	Number of safety audits.	Shire of Jerramungup, DBCA, DFES, DPLH.	Essential to demonstrate due diligence in future management.	Short term (1 – 5 years).	All	High

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Squatters Shacks			Reserve managers to initiate process for notification and ultimately, shack removal in accordance with State Squatter Shack Policy.	Number of meetings, number of notifications issued, shacks removed.	DPLH	Likely to be time consuming but necessary to comply with State policy in the long term.	Short term (1 - 5 years)	All	Low
Commercial Fishing			Initiate meetings with stakeholders to consider the future needs of commercial operators at Fisheries Beach Marina.	Meetings held with action outcomes progressed.	Department of Transport.	Realistic and necessary.	Short term (1 - 5 years)	All	High
Commercial Fishing	Access		Liaise with commercial fishermen regarding coastal management issues where they apply (e.g. degraded access at Dillon Bay).	Documented meeting outcomes.	DPLH, DPIRD	May be problematic if fishers are not actively operating.	Short term (1 - 5 years)	All	Medium
Aquaculture			The Shire of Jerramungup, DPIRD and aquaculture proponents will consider any proposal for expansion and additional uses related to aquaculture considering the government's position on aquaculture (Department of Fisheries, 2015) and management of social and environmental impacts.	Documented meeting outcomes.	DPIRD and Abalone producers	Realistic and part of the planning approvals process.	Short term (1 - 5 years)	All	Medium
Recreation	Tourism		Investigate mechanisms for sustainable use of Bremer Canyon and interaction with associated wildlife.	Development of Code of Conduct through stakeholder engagement.	Key stakeholders include DPIRD, DBCA, Shire of Jerramungup, researchers and tourist operators.	May be difficult if not supported by statutory requirements, but worthwhile to develop a Code.	Short term (1 - 5 years) ⁰	Bremer Canyon	Medium
Recreation	Tourism		Facilitate the development of sustainable recreational activities in the coastal zone.	Number of activities which are being sustainably undertaken. Number of nodes being utilised.	Shire of Jerramungup and partners	Through Trails Masterplan, business operators and key projects.	Ongoing	All	High
Tourism			Facilitate the coordination of tourism and associated services related to the coast.	Meetings held to improve coordination and information associated with coastal tourism and associated services.	Shire of Jerramungup and partners	Products such as trails maps with additional information relating to best practice (e.g. dieback, weeds, erosion).	Short term (1 - 5 years)	All, with focus on highest use areas	High
Tourism			Consider environmental and social factors in the approval process for tourist ventures related to coastal use.	Number of tourist proposals assessed and supported.	Shire of Jerramungup with partners such as DBCA	Necessary via approvals process.	Ongoing	All	High
Tourism			Facilitate the development of tourist information and activities which will encourage visitors to value and protect the coast.	Preparation and distribution of information (number of products, numbers distributed).	Shire of Jerramungup and other stakeholders	Realistic using existing information and networks.	Ongoing	All	Medium
Facilities			Focus on maintaining high quality infrastructure through a budget supported maintenance schedule.	Annual budget allocated to infrastructure and maintenance.	Shire of Jerramungup and other land managers	Dependent on budget allocation by land managers.	Ongoing	All	High
Facilities	Toilets		Assess on-site effluent systems area to ensure they are suitable for the location (e.g. pit toilets) or that composting toilets are used (e.g. when closer than 100m to sensitive receptor).	Development of on-site effluent system renewal program.	Shire of Jerramungup	Realistic using current guidelines for on-site effluent disposal.	Short term (1 - 5 years)	All	High
Facilities	Toilets		Replace existing on-site effluent disposal systems at end of useful life and as resources allow, with preference for composting systems.	On-site effluent system renewal program. Budget to support implementation plan.	Shire of Jerramungup	Different sites will need to be assessed and replacement scheduled over 10 years.	Medium term (5 - 10 years)	All	Medium
Facilities	Signage		Develop and implement a plan to erect Australian Standard signage at key points in coastal reserves to provide information including site name, risks, facilities and activities (according to National Aquatic and Recreational Signage Style Manual, 2006). Indicative locations provided to Shire of Jerramungup through the management planning process.	Number of signs installed.	Shire of Jerramungup	An achievable project if funding can be secured.	Short term (1 - 5 years)	All	High
Facilities	Signage		Provide interpretive signs where appropriate.	No. of signs installed. Develop an overarching interpretation plan.	Shire of Jerramungup	Realistic with development of overarching interpretation plan.	Ongoing	All	Low
Facilities	Signage		Remove redundant signs.	No. of signs removed/ rationalised.	All land managers	Achievable.	Ongoing	All	Medium

Appendix A: Actions

Facilities	Design		Adopt a high standard of design for sites which require installation of infrastructure, including landscape design where appropriate.	Number of sites with good design implemented.	All land managers	Achievable with funding and planning.	Ongoing	All	High
Facilities	Design		Use existing design and specification manuals to plan node development and ensure a high standard of implementation (e.g. DBCA).	Design template developed.	All land managers	Achievable with funding and planning.	Ongoing	All	
Access	Dieback		Retain Gordon Inlet Road for access via 4WD vehicles only, but with improvements at key points to reduce risk of dieback introduction and spread.	Access retained and improvements made.	DBCA, DPHL and Shire of Jerramungup	Exclusion has not been effective. Improvement at key points will require resources and follow-up.	Short term (1 - 5 years)	Gordon Inlet	Medium
Access			Allow continued access to Tooregullup Beach via Gordon Inlet.	Access retained.	DPLH	Status quo.	Ongoing	Gordon Inlet	Low
Signage			Install AS compliant and dieback risk signage where Gordon Inlet Road becomes a sandy track.	Signs installed.	Shire of Jerramungup, DPLH, DBCA	Achievable.	Short term (1 - 5 years)	Gordon Inlet	High
Weeds	Monitoring		Monitor and control weeds (Boxthorn).	Extent of weed infestation	DPLH and Shire of Jerramungup	Needs to be done as part of strategic approach to weed management.	Short term (1 - 5 years)	Gordon Inlet	High
Infrastructure			Removal of shack at Gordon Inlet camping area	Shack removed.	DPLH and partners	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Gordon Inlet	High
Access			Annual monitoring to detect and address track proliferation onto Tooregullup Beach	Multiple tracks rationalised if required	Shire of Jerramungup, DPLH, DBCA	Achievable.	Short term (1 - 5 years)	Tooregullup Beach	High
Signage			Install AS compliant, protection of seabirds and dieback risk signage.	Signs installed.	Shire of Jerramungup, DPLH, DBCA	Achievable.	Short term (1 - 5 years)	Tooregullup Beach	High
Access			Monitor tracks annually to detect and address track proliferation.	Number or length of tracks treated. Documentation of treatments undertaken.	DPLH and partners	Realistic but requires coordination and resourcing.	Short term (1 - 5 years)	All	High
Tenure			Shire of Jerramungup to seek vesting of Reserve No. 3272.	Tenure change for Reserve 3272.	DPLH and Shire of Jerramungup	Clarification required of status of Reserve in light of Native Title Settlement.	Short term (1 - 5 years)	House Beach	High
Tenure	Land use		Review status of leases at House Beach.	Review documented. Liaison with DPLH and lease holders.	DPLH, DPIRD and Shire of Jerramungup	Outcomes depend on details in leases.	Short term (1 - 5 years)	House Beach	Medium
Camping			Develop and implement a camp design to protect vegetation. Needs to be consistent with reserve boundaries and to a standard similar to DBCA camping facilities.	Adopted design. Implementation of design. Funding allocated.	DPLH and Shire of Jerramungup	Dependent on tenure being resolved, funding and budget allocation by land managers.	Short term (1 - 5 years)	House Beach	High
Access			Rationalise vehicle and pedestrian tracks to beach.	No. of tracks removed/closed	DPLH and Shire of Jerramungup	Realistic if part of integrated planning.	Short term (1 - 5 years)	House Beach	High
Access			Rationalise vehicle tracks on headland.	No. of tracks removed/closed	DPLH and Shire of Jerramungup	Realistic if part of integrated planning.	Short term (1 - 5 years)	House Beach	High
Camping			Trial camp host at House Beach.		DPLH, DBCA and Shire of Jerramungup	Realistic if part of integrated planning.	Short term (1 - 5 years)	House Beach	High
Weeds			Monitor and manage weeds.	Extent of weed infestation and area treated annually.	DPLH and Shire of Jerramungup	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	House Beach	High
Toilets			Decommission or upgrade pit toilet at boat ramp	Installation of new toilet (or refurbish existing)	DPLH, DBCA and Shire of Jerramungup	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	House Beach	High
Access			Upgrades to the clayey sections of Gordon Inlet Road and Doubtful Island Road, with appropriate drainage would reduce dieback risk and facilitate access.	Length of track upgraded with drainage works	DPLH and Shire of Jerramungup	Land tenure is problematic and resources are limited. Upgraded access would also allow more visitation to areas that do not have facilities to accommodate current visitation.	Short term (1 - 5 years)	Doubtful Island Peninsula	High
Access			Monitoring of tracks needs to occur, with remedial action should more tracks be created.	Number or length of tracks treated. Documentation of treatments undertaken.	DPLH	Realistic but requires coordination and resourcing.	Short term (1 - 5 years)	Doubtful Island Peninsula	High

Appendix A: Actions

Weeds			Monitoring and management of weeds (Boxthorn).	Extent of weed infestation and area treated annually.	DPLH	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	Peppermint Beach	High
Access			Manage beach access tracks, identify duplicate tracks and close/rehabilitate those that are unnecessary.	Number of tracks/ length closed and rehabilitated. Documented monitoring outcomes.	DPLH	Realistic but requires coordination, resourcing and ongoing monitoring.	Short term (1 - 5 years)	Doubtful Island Beach	Medium
Access			Close the track on the headland south of Drage's Beach and convert to a walking trail.	Closure of tracks (number or length).	DPLH	Realistic, but resources need to be allocated.	Medium term (5 - 10 years)	Drage's Beach	Low
Access			Install drainage treatments on the severely eroded track that leads down to Drage's Beach.	Treatments installed.	DPLH	Potentially difficult and costly to achieve.	Short term (1 - 5 years)	Drage's Beach	Low
Access			Rationalise the turning circles at Pt Hood and allow single lane track only.	Closure of tracks (number or length).	DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Point Hood	Low
Infrastructure			Remove debris associated with burnt squatter's shack at Drage's Beach.	Debris removed.	DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Drage's Beach	Low
Infrastructure			Car parks and walk trails are poorly laid out and would benefit from redesign, but only after visitor risk issues (access, walk trails and signage) have been addressed.	Car park designs approved and funded.	DPLH	Realistic, but resources need to be allocated.	Long term (10 - 15 years)	Chimney and Blowholes	Low
Access			Multiple tracks are self-rehabilitating. Monitor to ensure this continues. Or if more tracks are created, rationalise and rehabilitate.	Number of tracks/ length closed and rehabilitated. Documented monitoring outcomes.	DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Chimney and Blowholes	Low
Weeds			Monitor for weeds.	Extent of weed infestation documented.	DPLH	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	Bremer Beach	Medium
Access			Monitor tracks behind foredunes.	Number of tracks/ length closed and rehabilitated. Documented monitoring outcomes.	DPLH	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	Bremer Beach	Medium
Signage			Remove redundant signs.	No. of signs removed	Shire of Jerramungup	Realistic if part of integrated planning and implementation.	Short term (1 - 5 years)	John Cove	High
Infrastructure			Consider shelter for events such as swimming lessons at southern end of John Cove.	Document consideration of design, cost and consultation with stakeholders.	Shire of Jerramungup	Dependent on cost, durability and demonstrated benefit.	Short term (1 - 5 years)	John Cove	Low
Infrastructure			Monitor protected foredune vegetation and fencing.	Measure of metres of fencing, percentage cover of native vegetation, number of locations protected. Installation of seasonal fencing. Photo monitoring.	Shire of Jerramungup	Realistic with assistance from stakeholders.	Short term (1 - 5 years)	Main Beach	High
Partnerships			Continue to foster community partnerships to protect migratory and resident shore bird nesting and foraging areas.	Number of meeting through existing networks. Review of existing actions and planning for new actions, if identified.	Shire of Jerramungup	Realistic with assistance from stakeholders.	Short term (1 - 5 years)	Main Beach	High
Access			While most tracks have been closed, rehabilitation would still benefit the site (including closure of some informal car parking areas).	Documentation of current status and determination of closure priorities. Resourcing allocated.	Shire of Jerramungup	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Rock Cairn Lookout	High
Access			Implement planning and construction of the Bremer Bay Trails Masterplan – Wellstead Estuary, Rock Cairn and Back Beach Loop.	Prioritisation of various trails with associated timeframes. Allocation in Shire budget. Construction and ongoing maintenance. Funding sought and secured.	Shire of Jerramungup	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Short term (1 - 5 years)	Rock Cairn Lookout	High

Appendix A: Actions

Tourism	Infrastructure		Consider development of the Rock Cairn Lookout as an iconic visitor location with interpretation of Aboriginal and European cultural heritage, whale watching, coastal values and Bremer Canyon. This would require detailed planning and design to achieve a quality outcome similar to the Point Ann facilities.	Feasibility study completed. Seek and secure funding. Design for stakeholder input. Implementation staged.	Shire of Jerramungup	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Short term (1 - 5 years)	Rock Cairn Lookout	High
Weeds			Monitor and control Victorian tea tree.	Monitor extent of weed infestation and area treated annually.	Shire of Jerramungup	Realistic if part of integrated planning and implementation. Involve stakeholders/ community.	Short term (1 - 5 years)	Rock Cairn Lookout	High
Access			Close four-wheel drive access mid-way along beach and direct traffic to southern access.	Sustained closure of track with no vehicle access (monitor).	Shire of Jerramungup	Realistic, but resources need to be allocated with monitoring.	Short term (1 - 5 years)	Back Beach	Medium
Access			Close northern four-wheel drive track to the Rock Cairn lookout and transform into a walk trail (if suitable).	Sustained closure of track with no vehicle access (monitor). Construction of walk trail.	Shire of Jerramungup	Realistic if part of integrated planning and implementation. Involve stakeholders/ community.	Short term (1 - 5 years)	Back Beach	High
Signage			Consolidate signage into AS signage and remove extra signs. Incorporate interpretive signs into a unit with AS signage.	Development and implementation of a coastal signage strategy.	Shire of Jerramungup	Realistic if part of integrated planning and implementation. Involve stakeholders/ community.	Short term (1 - 5 years)	Back Beach	High
Infrastructure			Replace drop toilet with composting toilet.	Flows on from strategic planning and review of toilets in coastal areas. Toilet replaced.	Shire of Jerramungup	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Short term (1 - 5 years)	Back Beach	Medium
Marine Protection			Investigate protection of Back Beach Bommie from fishing as it is an important location for sea dragons, sponges and nudibranchs.	Number of meetings with stakeholders. Development and implementation of protection initiatives.	Shire of Jerramungup, DPIRD	Signage and awareness raising can be first step.	Short term (1 - 5 years)	Back Beach	Medium
Access	Trails		The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013) recommends the installation of a Bremer Bay Beaches Caravan Park to Fishery Beach Marina Loop.	Development of feasibility and cost schedule.	Shire of Jerramungup, DPIRD	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Medium term (5 - 10 years)	Fishery Beach	Medium
Monitoring			Monitor erosion on western side of beach and effect of new rock groyne adjacent to boat ramp.	Monitoring outcomes documented and shared with stakeholders.	Department of Transport	Realistic.	Ongoing	Fishery Beach	High
Infrastructure			Investigate reuse of sand spoil which is located in the car park.	Document re-use options, with coastal related project preferred.	Shire of Jerramungup	Realistic.	Short term (1 - 5 years)	Fishery Beach	Medium
Access	Maintenance		Fix barriers at western car park	Barriers repaired.	Shire of Jerramungup	Realistic.	Short term (1 - 5 years)	Fishery Beach	Medium
Signage			Consolidate signage into AS signage and remove extra signs. Incorporate interpretive signs into a unit with AS signage.	Number of signs consolidated and/ or removed.	Shire of Jerramungup	Realistic.	Short term (1 - 5 years)	Fishery Beach	Medium
Facilities			Investigate expansion of jetty and future requirements for other facilities, with key stakeholders.	Number of stakeholder meetings. Documentation of options and feasibility.	Department of Transport	Planning by DoT likely to commence in 2017- 2018.	Short term (1 - 5 years)	Fishery Beach	High
Facilities			Bitumise the remainder of the carpark, with design for stormwater management.	Carpark sealed, with drainage infrastructure.	Shire of Jerramungup	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Short Beach	Medium
Weeds	Facilities	Monitoring	Monitor for weeds and condition of fencing and barriers.	Monitoring documented. Implementation measures documented, if required.	Shire of Jerramungup	Realistic if part of integrated planning and implementation.	Ongoing	Short Beach	Medium
Facilities			For any future planning, consider the time frames and risks associated with the Coastal Hazard Assessment.	Consideration of plan in light of coastal hazard assessment information. Incorporation of information into planning process.	Shire of Jerramungup	Realistic.	Ongoing	Short Beach	High

Appendix A: Actions

Access			Liaise with landowners regarding access across private land. While legal access is desirable, construction and reduction of risks associated with the coast are likely to be high and therefore are a low priority.	Number of documented meetings with landowners.	Shire of Jerramungup	Construction of legal access is likely to be costly and have environmental impacts, so therefore problematic.	Short term (1 - 5 years)	Point Gordon/ Black Point	Low
Access			Monitor four-wheel drive track condition, with action if required.	Documentation of monitoring, with action if required. Traffic count may assist in quantification.	Shire of Jerramungup	Realistic if part of integrated approach with planning and implementation.	Ongoing	Point Gordon/ Black Point	Medium
Access			Access to this node should be discouraged due to the hazardous eroding cliffs and associated access ways. Brush paths to reduce access.	Exclusion measures implemented.	DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Banky Beach	High
Visitor Risk Management			Remove bench on eroded lookout point and brush to deter access.	Bench removed and area brushed.	DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Banky Beach	High
Signage			Install AS compliant, 'Code Off-road' and dieback risk signage at entry to Point Henry.		DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Point Henry	High
Infrastructure			The Shire of Jerramungup has adopted a concept plan for the area (Appendix M) which requires more detailed planning, consultation and costing.	Consideration of design parameters (e.g. turning circle requirements), environmental impacts (vegetation and creek) and coastal hazard (e.g. beach retreat). Safety is first measure needed.	Shire of Jerramungup and DPLH	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Short term (1 - 5 years)	Little Boat Harbour	Medium
Visitor Risk Management			Council to consider developing more detailed design based on adopted concept, but needs to keep in mind: technical requirements for trailers, tenure (UCL), erosion risk hazard and environmental impacts (e.g. stream and vegetation). As an interim measure, signage will be installed to promote safe access on the beach. Should this not be sufficient, the following options can be considered: 1. Maintain current access: does not address current congestion and visitor risk. 2. Prohibit non-boat related vehicle access to the beach at all times (vehicles to park in car parks provided). 3. Prohibit non-emergency trailer parking on beach at all times (vehicles to park in upper car park). 4. Prohibit all vehicles, including non-emergency trailer launching and parking during peak times (school holidays). That is, no vehicles on beach during peak times. 5. Launching of boats for emergencies would be permitted.	Implementation of signage, with other options implemented if required (considering safety, cost, design and long term coastal hazard information).	Shire of Jerramungup and DPLH	Complex issue with social, environmental and practical implications.	Short term (1 - 5 years)	Little Boat Harbour	High
Signage			Depending on implementation of options above, install appropriate signage to AS. Remove signs not currently needed.	Signage installed/ rationalised. Number of signs removed.	Shire of Jerramungup and DPLH	Realistic as part of larger signage project.	Short term (1 - 5 years)	Little Boat Harbour	High
Infrastructure			At the end of its useful life, replacement of current drop toilet with a composting system (as per concept plan)	Upgrade of toilets.	Shire of Jerramungup and DPLH	Realistic as part of strategic consideration of coastal toilets.	Short term (1 - 5 years)	Little Boat Harbour	High
Access			Investigation into construction of a walk trail between Little Boat Harbour and Blossoms Beach (as per concept plan) and consistent with The Cycle and Shared-use Trail Plan for Bremer Bay and Point Henry (McQuoid, 2013).	Report on walk trail feasibility. Documented consultation with stakeholders.	Shire of Jerramungup and DPLH	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Medium to long term (5 - 20 years)	Little Boat Harbour	Low
Access			Drainage from the road requires monitoring and modification, if erosion is still occurring.	Documented monitoring. Development of drainage design modification, if required. Seek funding for implementation (Shire budget).	Shire of Jerramungup and DPLH	Realistic, but resources need to be allocated.	Short term (1 - 5 years)	Little Boat Harbour	High

Appendix A: Actions

Infrastructure			Redesign car park at lookout/ toilet area. Delineate headland carpark to prevent enlargement and stop vehicle intrusion into vegetation (without compromising visual amenity).	Develop of design. Funding of design. Implementation of design.	Shire of Jerramungup and DPLH	Dependent on cost, stakeholder support and demonstration of benefit against other initiatives.	Short term (1 - 5 years)	Native Dog Beach	Medium
Access	Monitoring		Monitoring blowout, foredune vegetation	Aerial photo comparison. Areas eroded, compared to previous years.	Shire of Jerramungup	Footprint of blowout has been relatively stable (although dunes have eroded vertically).	Ongoing	Blossom's Beach	Low
Access			Formalise a walk trail from the headland to Blossom's Beach to allow people to park and walk.	Investigation of alignment, seeking of funding and completion of walk trail.	Shire of Jerramungup	Realistic.	Medium term (5 - 10 years)	Blossom's Beach	Medium
Infrastructure			Replace drop toilets with composting units at the end of structures' useful life.	Upgrade of toilets.	Shire of Jerramungup	Realistic as part of strategic consideration of coastal toilets.	Medium term (5 - 10 years)	Native Dog and Blossom's Beach	Medium
Access			Determine if current access to Blossom's Beach is to be four-wheel or two-wheel drive and incorporate information into AS signage. Continue to maintain road drainage. If two-wheel drive, a car park will be required behind the foredunes.	Ongoing maintenance of road conditions if two wheel drive. Investigate feasibility and costs associated with two wheel drive carpark behind foredunes.	Shire of Jerramungup	If walk trail can be established to beach, road in can be maintained as four wheel drive track.	Medium term (5 - 10 years)	Blossom's Beach	Low
Access			Maintain/upgrade the access at the foredune that separates vehicles from pedestrians	Reinstate/ redesign access so that people are separated from vehicles.	Shire of Jerramungup	Realistic.	Short term (1 - 5 years)	Blossom's Beach	Medium
Signage			Remove redundant signs.	No. of signs removed	Shire of Jerramungup	Realistic.	Short term (1 - 5 years)	Native Dog and Blossom's Beach	Medium
Infrastructure			Development of two wheel drive access and facilities at Dillon Bay is not supported due to visitor risk issues (instability of limestone cliffs) and land tenure issues.	Ongoing stakeholder communication regarding risk and mitigation.	DPLH	Status quo.			
Access			Access to lookout at top of scarp presents a visitor risk and action is recommended to delineate and keep people at a safe distance from the cliff edge.	Measures installed to protect visitors, e.g. signs, barriers, etc	DPLH	Urgently required.	Immediately	Dillon Beach	High
Access			Monitor closed duplicate tracks and close new tracks that are created, across Dillon Beach area.	Document annual monitoring. Action for remediation, if required.	DPLH and Shire of Jerramungup	Forward planning can be achieved through monitoring and engagement with NRM partners.	Short term (1 - 5 years)	Dillon Beach	High
Access			Liaise with fishing lease holders to incorporate erosion control and drainage management into the eroded track at the west end of Dillon Beach.	Document meeting outcomes with fishers and other stakeholders. Consider options for implementation.	DPLH and Shire of Jerramungup	May be problematic if fishers are not actively operating.	Short term (1 - 5 years)	Dillon Beach	High
Infrastructure			Informal camping areas would benefit from delineation and partial rehabilitation. Recommend using a similar landscape design approach to DBCA standards.	Provision of defined camping area	DPLH	Achievable, but low priority.	Medium term (5 - 10 years)	Dillon Beach	Low
Access			Retain low key 4WD and off-road vehicles access to and along the beach with monitoring of descent to western end of Fosters Beach. Repair and maintain previous track treatments.	Documentation of annual monitoring of track condition, with works organised as required.	DPLH	Forward planning can be achieved through monitoring and engagement with NRM partners.	Short term (1 - 5 years)	Fosters Beach	High
Weeds	Monitoring		Monitor and control Victorian tea tree along Minarup Road.	Document extent of weed infestation and areas treated annually.	DPLH	Forward planning can be achieved through monitoring and engagement with NRM partners.	Short term (1 - 5 years)	Fosters Beach	High
Access			Rationalise tracks adjacent to the leased shack area to improve amenity and reduce erosion.	Determine/ document tracks to be closed and implementation.	DPLH	Forward planning/ implementation can be achieved via engagement with NRM partners.	Medium term (5 - 10 years)	Reef Beach	Low
Tenure			Review the lease associated with the shack. If the Offshore Angling Club is no longer active then lease may need to be terminated.	Initiation of lease review. Action based on status of Offshore Angling Club. Rationalisation of lease.	Offshore Angling Club and Shire of Jerramungup	Requires following a lease review process and contact with Club (if still active).	Medium term (5 - 10 years)	Reef Beach	Medium

Appendix A: Actions

Infrastructure			Remove the shack to reduce visitor risk or upgrade shack and provide composting toilet	Removal of shack, debris and rubbish.	Offshore Angling Club and Shire of Jerramungup	Realistic, but resources need to be allocated.	Medium term (5 - 10 years)	Reef Beach	High
Access			Investigate creation of gazetted area for off road users under the <i>Control of Vehicles (Off-road Areas) Act 1978</i> when land tenure is clarified.	Document stakeholder consultation.	DPLH (with Shire of Jerramungup)	Not a high priority at the current time. Dependent on Native Title Settlement and risk management analysis.	Long term (10 - 15 years)	Reef Beach	Low
Access			Close Pallinup Estuary Road during wet conditions for dieback disease hygiene and erosion control.	Closure based on seasonal conditions. Measure of traffic via count.	DPLH (Shire of Jerramungup)	Difficult to achieve. AS compliant signage may help.	Medium term (5 - 10 years)	Pallinup Beach	Low
Access			Realign and upgrade sections of Pallinup Estuary Road to prevent further water erosion of the track.	identification of problem areas. Feasibility on remediation works.	Shire of Jerramungup and DPLH	Difficult to achieve.	Medium term (5 - 10 years)	Pallinup Beach	Low
Infrastructure			Develop and implement a site management plan for a camping area at Pallinup Beach.	Camping area created.	Shire of Jerramungup	Not a high priority at the current time. Dependent on Native Title Settlement and risk management analysis.	Medium term (5 - 10 years)	Pallinup Beach	Low
Access			Retain low key 4WD access to and along Pallinup beach.		Shire of Jerramungup	Status quo.	Medium term (5 - 10 years)	Pallinup Beach	Medium
Access			Rationalise tracks within Reserve 14988.	Number of tracks/ area rationalised/ rehabilitated.		Works can be achieved through forward planning and engagement with NRM partners.	Medium term (5 - 10 years)	Pallinup Beach	Medium
Planning - CHRMAP			Incorporate coastal hazard assessment information and mapping into the Shire of Jerramungup Local Planning Strategy and Local Planning Scheme as a trigger for consideration of future planning and development proposals.	LPS mapping incorporates hazard mapping.	Shire of Jerramungup	Achievable.	When LPS is updated.	All	High
Planning - CHRMAP			Undertake CHRMAP for Bremer Bay townsite from Bremer Beach to Fishery Beach, including the Wellstead Estuary.	Completion of hazard mapping.	Shire of Jerramungup	Funding likely to be required.	Long term (10 - 15 years)	Bremer Beach to Fishery Beach, including the Wellstead Estuary	Medium
Planning - CHRMAP			Specific CHRMAP should be considered for new areas of coastal related infrastructure or development.	Assessment of new development.	Shire of Jerramungup	Part of the development approval process.	Ongoing	All	High
Monitoring			Ongoing monitoring of the erosion at Fishery Beach (and other areas where erosion becomes evident).	Reporting and dissemination of information regarding monitoring outcomes.	Department of Transport (and Shire of Jerramungup)	Achievable.	Ongoing	Fishery Beach and other locations (to be determined).	Medium to High
Education & awareness			Land managers and stakeholders promote community awareness and education through activities and sharing of information.	Number of activities/ events. Number of people engaged.	Shire of Jerramungup with partners	Achievable.	Ongoing		Medium

APPENDIX B

Coastal Related Plans

Coastal Related Documents - Shire of Jerramungup

Title	Author	Year
Coastal Management Plan	Department of Conservation and Environment	1984
Draft Management Plan – Pallinup/Beaufort Inlet Area – Bulletin 178	Environmental Protection Authority	1987
Wellstead Estuary – The Estuary of the Bremer River – Estuarine Studies Series No. 1.	Environmental Protection Authority	1987
Beaufort Inlet and Gordon Inlet – Estuarine Studies Series No. 4.	Environmental Protection Authority	1988
South Coast Region: Regional Management Plan 1992-2002	Department of Conservation and Land Management	1992
Doubtful Islands Area Coastal Plan Department of Planning & Urban Development		1994
Jerramungup Coastal Management Plan	Shire of Jerramungup	1995
Southern Shores 2001-2021	South Coast Management Group	2001

Other Strategic Documents

- *WA Coastal Zone Strategy* (2017) Government of Western Australia.
- *The Western Australian South Coast Macro Corridor Network – A Bioregional Strategy for Nature Conservation* (Wilkins *et al.*, 2006) Department of Conservation and Land Management and South Coast NRM Inc.
- *Great Southern Strategic Plan for Maritime Tourism* (2010) Great Southern Development Commission.
- *Oceans of Opportunity: A Proposed Strategic Framework for Marine Waters of Western Australia's South Coast* (2010) Department of Environment and Conservation (2010). Supporting report to the South Coast Draft Regional Marine Strategic Plan 2010.
- *South Coast Draft Regional Marine Strategic Plan* (2010) Department of Environment and Conservation. Strategic Regional Plan.
- *Wellstead Estuary Management Plan* (2006) Department of Water and Department of Environment and Conservation. The plan details five strategies which recommend specific actions and suggest long term resource condition targets and short-term management action targets.
- *Threatened Species and Communities Regional Strategic Management Plan* – Gilfillan, S., Mitchell, P., Newell, J., Danks, A. and Comer, S. (2009) South Coast Threatened Species and Communities Regional Strategic Management Plan. Department of Environment and Conservation, Albany
- *Fitzgerald Biosphere Recovery Plan* – Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological

Communities Recovery and Biodiversity Conservation, Western Australian Department of Environment and Conservation, Albany.

- *South Coast Regional Management Plan* – Department of Conservation and Land Management (1992) South Coast Regional Management Plan: Management Plan No. 24, Department of Conservation and Land Management, Perth, Western Australia.
- *Fitzgerald River National Park Management Plan* – Department of Conservation and Land Management (1991) *Fitzgerald River National Park Management Plan*, Department of Conservation and Land Management, Perth, Western Australia.

APPENDIX C

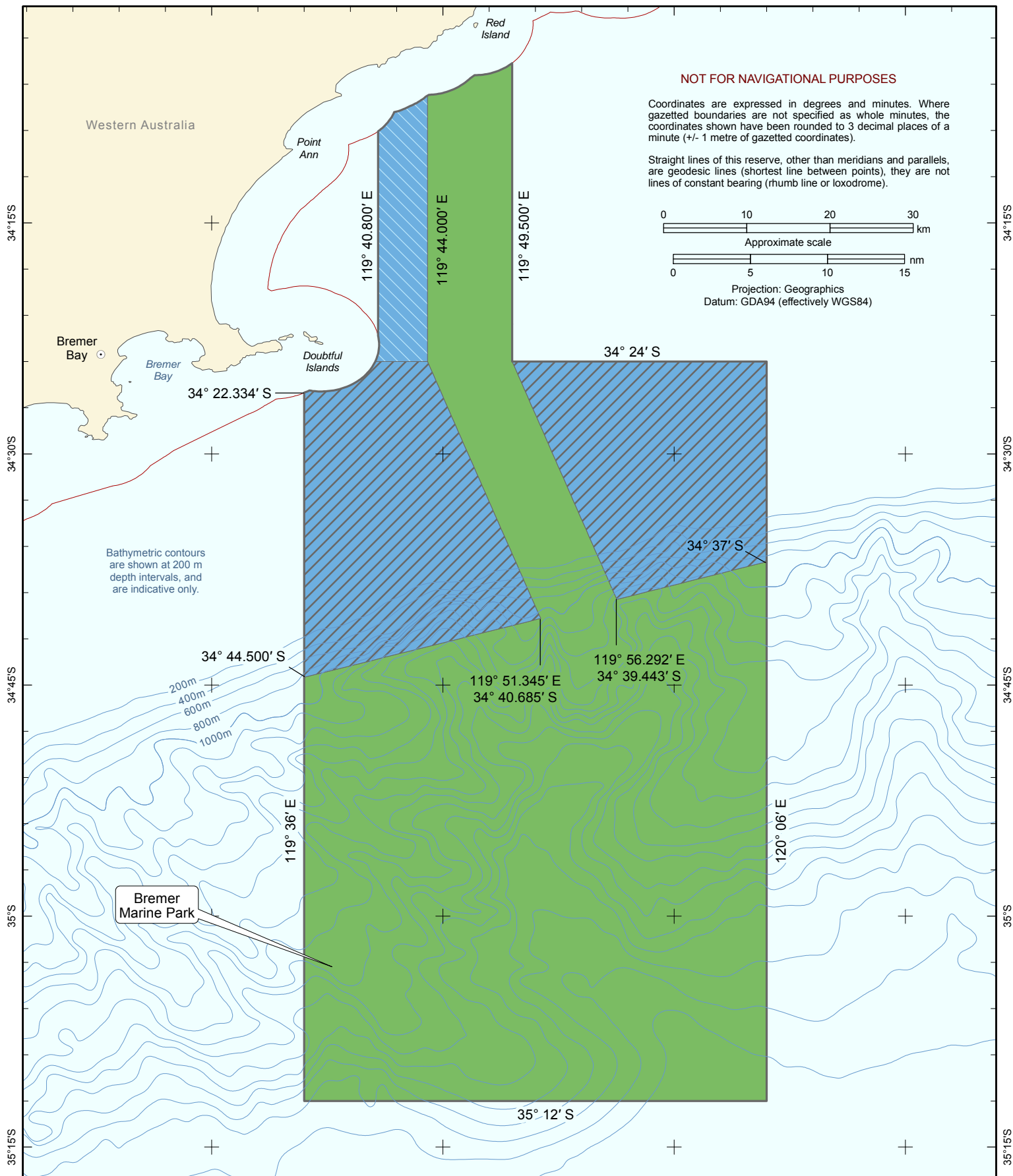
Bremer Bay Marine Park

119°30'E

119°45'E

120°E

120°15'E



Bremer Marine Park

Draft South-west Network Management Plan 2017

Zoning

- National Park Zone (IUCN II)
- Special Purpose Zone (Mining Exclusion) (IUCN VI)
- Special Purpose Zone (Trawl) (IUCN VI)

Maritime boundaries

- Limit of coastal waters

Australian Government data sources:
 DoEE (2017) : Australia's Network of Marine Parks (Draft)
 DoEE (2014) : Collaborative Australian Protected Areas Database
 Geoscience Australia (2014) : Australian Maritime Boundaries (AMB) v 3.0
 Geoscience Australia (2006) : GEODATA TOPO 250K
 Geoscience Australia (2005) : Australian Bathymetry and Topography

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 Australian Government Department of the Environment and Energy

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Overview of the proposed rules for activities (refer to the draft plan for full details)							
Activity		Special Purpose Zone (Trawl) (IUCN VI)	Special Purpose Zone (IUCN VI)	Special Purpose Zone (Mining Exclusion) (IUCN VI)	Multiple Use Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)	National Park Zone (IUCN II)
GENERAL USE AND ACCESS	Ballast water discharge and exchange	✓	✓	✓	✓	✓	✓
	Disposal of waste from vessels	✓	✓	✓	✓	✓	✓
	Camping	A	A	A	A	A	A
	Recreational use (non-fishing, nature watching, boating, etc.)	✓	✓	✓	✓	✓	✓
	Non-commercial remote piloted aircraft, drones etc.	A	A	A	A	A	A
COMMERCIAL SHIPPING	Anchoring	✓	✓	✓	✓	X ^B	X ^B
	Vessel transiting	✓	✓	✓	✓	✓	✓
	Dropline	A	A	A	A	A	X
	Hand collection (including using hookah, scuba, snorkel)	A	A	A	A	A	X
	Hand net (hand, barrier, skimmer, cast, scoop, drag, lift)	A	A	A	A	A	X
	Longline (demersal, auto-longline)	A	A	A	X	X	X
	Longline (pelagic)	A	A	A	A	A	X
	Minor line (handline, rod & reel, trolling, squid jig, poling)	A	A	A	A	A	X
	Net (demersal)	A	A	A	X	X	X
	Net (pelagic)	X	X	X	X	X	X
	Purse seine	A	A	A	A	A	X
	Trap, pot	A	A	A	A	X	X
	Trawl (demersal)	A	X	X	X	X	X
	Trawl (midwater)	A	A	A	A	A	X
	Trotline	A	A	A	X	X	X
COMMERCIAL AQUACULTURE	Aquaculture	A	A	A	A	A	X
COMMERCIAL MEDIA	Commercial media	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C
COMMERCIAL TOURISM	Non-fishing related tourism (including nature watching, scuba/snorkel tours)	A	A	A	A	A	A
	Charter fishing tours (including spear diving tours)	A	A	A	A	A	X
	Commercial aviation tours (up to 3000 m above sea level)	A	A	A	A	A	A
RECREATIONAL FISHING	Recreational fishing (including spear-fishing)	✓	✓	✓	✓	✓	X
MINING	Mining operations including exploration	A ^D	A	X	A ^E	X	X
	Construction and operation of pipelines	A	A	A	A	A	A
STRUCTURES AND WORKS	Moorings, excavation and maintenance	A	A	A	A	A	A
	Disposal of dredged material	A	A	A	A	X	X
	Artificial reefs	A	A	A	A	A	A ^F
	Fish aggregating devices	A	A	A	A	A	X
RESEARCH AND MONITORING	Research	A	A	A	A	A	A
NATIONAL SECURITY AND EMERGENCY RESPONSE	National security and emergency response	✓	✓	✓	✓	✓	✓

- ✓ Activity is allowed.
X Activity is not allowed.
A Authorisation required.
B Anchoring is not allowed except in anchoring areas determined under r.12.56 of the EPBC Regulations.
C News-of-the-day reporting is allowable subject to terms determined by the Director, and subject to the Director being notified.
D Mining operations are not allowed in the Special Purpose Zone (Trawl) (IUCN VI) of the Bremer Marine Park.
E Mining operations are not allowed in the Multiple Use Zone (VI) of the Geopraphe Marine Park.
F Activity is allowable only if authorised by the Director for the restoration of habitats.

Note:

- Anchoring by commercial fishing vessels is not allowed in the National Park Zone (II), except in anchoring areas determined under the EPBC Regulations.
- Fishing gear must be kept stowed and secured at all times during transit through, or while stopping and anchoring in, a zone in which fishing operations are not authorised.
- Disposal of waste from vessels must comply with MARPOL requirements

Further information

If you have questions regarding the draft plans or the public comment process, please visit the Australian Marine Parks website parksaustralia.gov.au/marine, send an email to marinereserves@environment.gov.au, or call 1800 069 352.



Australian Government
Parks Australia

APPENDIX D

Code Off Road – Bremer Bay

Code Off-road

Drive Lightly

Coastal ecosystems are some of our most fragile, and need special care when enjoying them. Beach driving especially has the potential to impact negatively on animals such as shorebirds, whose nests and young are difficult to see and who may be resting after long migration flights.

Drive Lightly with **The Code Off-road** and respect our coastal environment:

Stay on Track – There's no need to deviate when heading to the beach; damage to vegetation and soils can be irreversible, and once a new track is made, other vehicles will follow which leads to coastal erosion and loss of vegetation. On beaches, driving in others wheel ruts minimises impact on the beach, and is easier going for both you and your vehicle.

Dogs Are Only Man's Best Friend – Dogs can disturb nesting shorebirds causing parents to abandon the nest. Dogs and other pets are not permitted in National Parks and 1080 poison is regularly laid, which is fatal to dogs. When driving in areas where domestic animals are allowed, please keep your pet under control at all times.

Watch for Wildlife – Be aware and keep your eyes peeled for wildlife. You may see shorebirds on sandy beaches, estuaries and wetlands, reptiles basking at the side of the track, birds and kangaroos. Bring binoculars, there's heaps to see!

Picnic In, Pack It Out – It's pretty simple with rubbish, what goes in must go out again! It's not acceptable to bury or burn rubbish, or to throw food scraps into the bush. Carry rubbish bags in your vehicle and be prepared to carry out the rubbish of other, less thoughtful people.

Toilet Etiquette - Practice good personal hygiene in the bush and prevent the spread of nasties such as Giardia and Gastroenteritis as well as unpleasant surprises for other travellers. Use toilet facilities if they are available. Carry a trowel to bury solid waste and toilet paper at least 100m from any watercourse and at least 30cm deep.



**DIEBACK
FREE**



**DIEBACK
INFESTED**

Deliver Us From More Dieback – Many of our unique plant species including coastal heaths are susceptible to Phytophthora dieback (*Phytophthora cinnamomi*) – plant death caused by a microscopic soil-borne water mould. The pathogen kills many coastal species and vegetation types. It is spread by the transportation of infested soil and plant material. There are many areas that are free of Dieback and you can help stop its spread if you:

- ▶ clean any mud and soil off your vehicle before and after your trip
- ▶ avoid travelling in wet and mud conditions
- ▶ keep to established tracks and roads
- ▶ respect track closures
- ▶ pay attention to signage highlighting Dieback issues in local areas



For more information www.dieback.net.au

A GUIDE TO SAFE | SPECTACULAR | RESPONSIBLE OFF-ROAD DRIVING ON THE WA SOUTH COAST

Bremer Bay

Champion Camper



- ▶ Always camp in designated camping areas and do not create new camp sites, this impacts native vegetation and creates a fire risk
- ▶ Coastal vegetation takes a long time to grow and is easily damaged - bring firewood with you rather than collecting it nearby
- ▶ Remember fires are never permitted during total fire bans, during certain periods of the year and at any time within certain National Parks. Always check local regulations first.
- ▶ Where allowed, light fires in designated fireplaces, keep it small and make sure it's properly extinguished before you leave.

Code Off-road

**Damaging, Delinquent &
Downright Dangerous.**

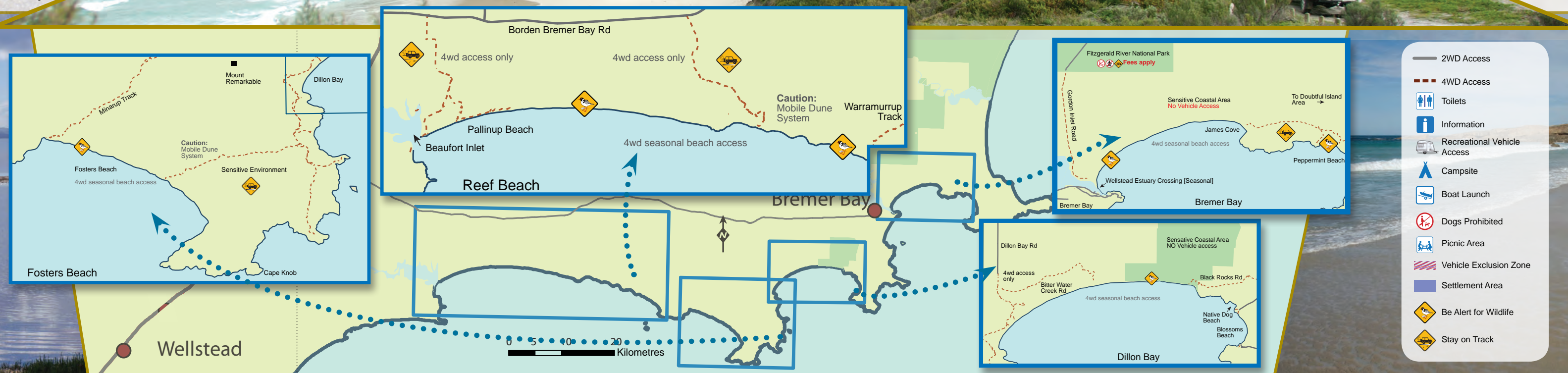
Did you know that although road licensed vehicles (4WD and motorbikes) are permitted in most areas, unlicensed off-road vehicles (e.g. quad bikes and trail bikes) are only permitted to be ridden in designated areas and private land with the owner's permission. Most of us are responsible drivers but there is a small minority who let the side down. All normal road rules apply when driving in off-road areas, and examples of behaviour which will get you into trouble include:

- ▶ Damage to vegetation, the landscape and heritage and cultural sites
- ▶ Disturbance to local wildlife
- ▶ Disrespecting other beach users
- ▶ Damage to signs, fences, bollards

Contact details:

In national parks, call the Department of Parks and Wildlife (DPaW) Ranger, and on other public land call either the Shire Ranger or the WA Police.

WA Police:	131 444
DPaW Albany:	9842 4500
Shire Office:	9835 1022
Shire Ranger:	0429 351 022



Always tell someone where you are going and your expected return time, and arrange to have a way to get in touch with someone other than yourself if possible. Although it is not always easy to do, try to avoid going out alone. If you are going out with a group, make sure you have a way to get in touch with someone other than yourself if possible. If you are going out with a group, make sure you have a way to get in touch with someone other than yourself if possible.

Up the creek without a Paddle – River and creek crossings can look deceptively shallow. If in doubt, always stop and walk the crossing, if you can't walk across don't attempt to drive. Wheel axle height is a good guide as to how deep you should go.

Beach Etiquette – When driving on the beach, aim to travel at, but not above the high tide mark, and check tidal and weather conditions on the day. Avoid driving over piles of seaweed, be especially careful on high-energy beaches and remember all beaches are different and can change daily. Slow down when passing other beach users and pass behind fishermen.

drive slowly, be aware of your surroundings , respect others and avoid driving at night.

Passing Points – Are there to enable vehicles to pass without damaging vegetation. Please use them, and resist the temptation to create new ones.

Safe Travel – Always drive slowly on coastal off-road tracks and beaches; enjoy your drive and the surroundings! Your vehicle will thank you for it and you have time to make decisions. Driving with your seat belt on is not just a legal requirement; it helps you to control the vehicle on uneven

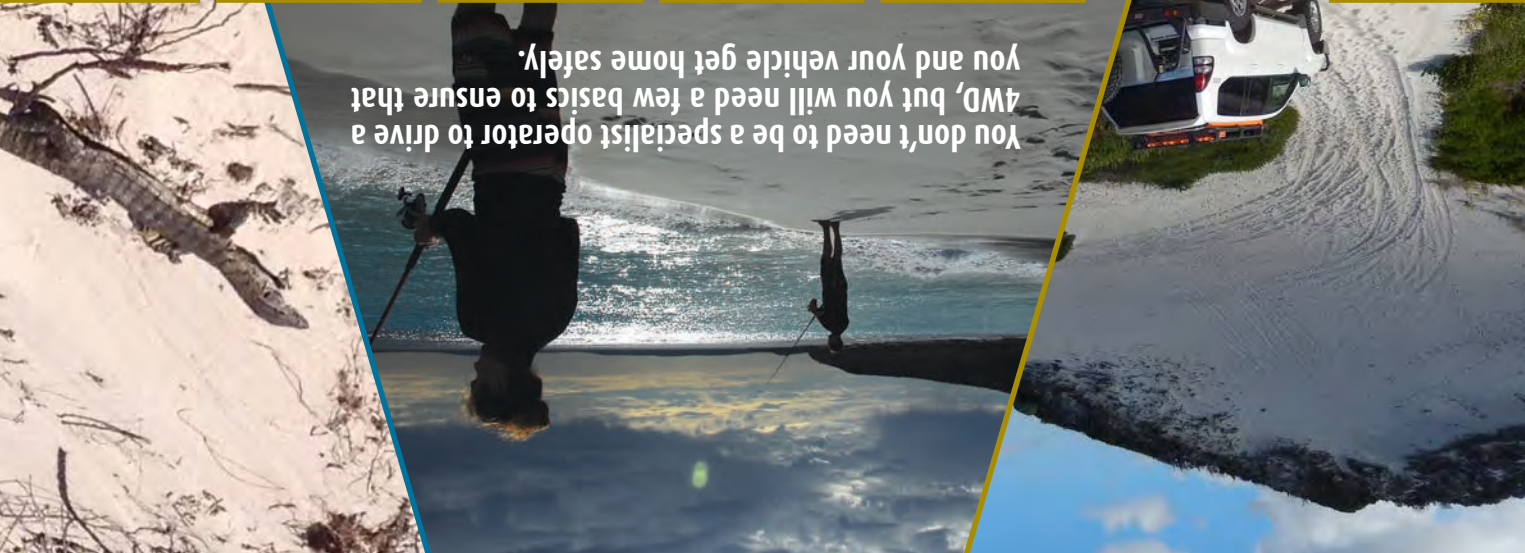
Visibility – Sun glare may reduce visibility on beaches, so consider polarised sunglasses. Off-road tracks are full of blind corners and hill crests. Play it safe; braking to avoid losing momentum. Use difflouk in soft sand if available on your vehicle.

Engage 4WD – Keep things under control by engaging 4WD and locking hubs before entering off-road tracks or sandy beaches (refer to vehicle manual). Generally, in sandy conditions second or third gear in low range will see you through, but when engaged in 4WD avoid sharp turns or sudden speeds. Always carry an air compressor with a gauge for this purpose.

Training – Consider undertaking 4WD training through a registered provider or joining a 4WD club – there are several in the region, Perth and other major Australian centres. Guaranteed fun will be had and you'll pick up great driving skills for life.

Awareness – Always carry a map of the area you are travelling in. Take notice of any signage at entry points and note emergency contact and location ID.

Good off-road Safe driving...



code off-road - Trip Preparation!

KEEP SAFE WITH THE CODE OFF-ROAD AND THINK ABOUT THE FOLLOWING:

Maintenance – Make sure that your vehicle is maintained in good working order, and check it over before setting out.

Supplies – You might be loaded up with fishing gear, but remember to make room for basic supplies such as water, food, first aid kit, extra fuel as well as vehicle maintenance equipment.

Recovery - The suggested minimum kit essentials for a 4WD would include:

- ▶ air compressor with gauge
- ▶ tow rope, make sure there are strong attachment points on your chassis - not tiedown points
- ▶ jack and a jack plate or air exhaust jack
- ▶ bow or 'D' shackles
- ▶ vehicle tool kit
- ▶ rigger's gloves
- ▶ recovery tracks
- ▶ a shovel
- ▶ tarp

Photo Credits: Gareth Stoakes, John Tucker, Albany 4WD Club, South Coast NRM, Geoff Taylor and Brett Dal Pozzo.



code off-road

A GUIDE TO SAFE | SPECTACULAR | RESPONSIBLE OFF-ROAD DRIVING ON THE WA SOUTH COAST



APPENDIX E

EPBC Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/06/17 11:24:40

[Summary](#)

[Details](#)

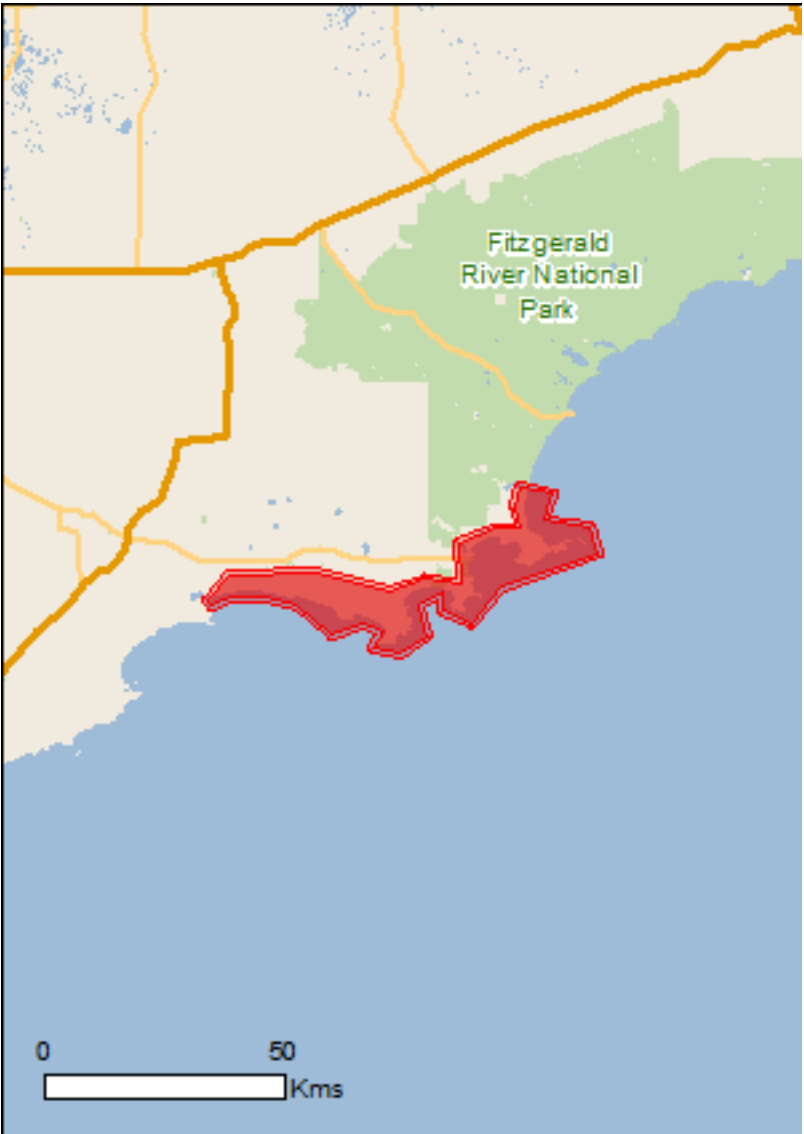
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 1.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	57
Listed Migratory Species:	38

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	69
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	14
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

National Heritage Properties		[Resource Information]
Name	State	Status
Natural		
Fitzgerald River National Park	WA	Listed place

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.	

Name	Status	Type of Presence
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat known to occur within area
Dasyornis longirostris Western Bristlebird [515]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Mammals

Name	Status	Type of Presence
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat may occur within area
Plants		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Endangered	Species or species habitat may occur within area
Banksia pseudoplumosa False Plumed-Banksia [82760]	Endangered	Species or species habitat likely to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat known to occur within area
Caladenia bryceana subsp. bryceana Dwarf Spider-orchid [64503]	Endangered	Species or species habitat likely to occur within area
Chordifex abortivus Manypeaks Rush [64868]	Endangered	Species or species habitat may occur within area
Conostylis misera Grass Conostylis [21320]	Endangered	Species or species habitat may occur within area
Darwinia collina Yellow Mountain Bell [17296]	Endangered	Species or species habitat may occur within area
Darwinia oxylepis Gillam's Bell [13188]	Endangered	Species or species

Name	Status	Type of Presence
habitat may occur within area		
Darwinia wittwerorum Wittwer's Mountain Bell [15626]	Endangered	Species or species habitat may occur within area
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat may occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area
Persoonia micranthera Small-flowered Snottygobble [64939]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		
[Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel	Endangered	Species or species

Name	Threatened	Type of Presence
[1060]		habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Thalasseus bergii Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land

[Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species

[Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species

Name	Threatened	Type of Presence
Notiocampus ruber Red Pipefish [66265]		habitat may occur within area Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stigmatopora olivacea a pipefish [74966]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Breeding known to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		

Name	Status	Type of Presence
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves		[Resource Information]
Name		State
Doubtful Islands		WA
Fitzgerald River		WA
Glasse Island		WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Yellilup Yate Swamp System	WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-34.463736 118.899581,-34.462038 118.900268,-34.423531 118.941467,-34.421832 119.104202,-34.450148 119.240157,-34.430894 119.308135,-34.435991 119.377486,-34.37594 119.37268,-34.352701 119.440658,-34.352701 119.486663,-34.321517 119.478423,-34.288052 119.486663,-34.29883 119.549148,-34.339662 119.531982,-34.349867 119.617126,-34.390674 119.633605,-34.443353 119.449584,-34.499395 119.395339,-34.47902 119.341781,-34.451847 119.342468,-34.469397 119.295089,-34.518633 119.310882,-34.54635 119.263503,-34.5373 119.211318,-34.513541 119.231231,-34.498829 119.193465,-34.515804 119.131667,-34.470529 119.067809,-34.458641 119.008758,-34.458641 118.944213,-34.472228 118.906448,-34.463736 118.899581

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX F

Conservation Codes

CONSERVATION CODES

For Western Australian Flora and Fauna

Specially protected fauna or flora¹ are species² which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such.

Categories of specially protected fauna and flora are:

T Threatened species

Published as Specially Protected under the *Wildlife Conservation Act 1950*, and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN Endangered species

Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU Vulnerable species

Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX Presumed extinct species

Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA Migratory birds protected under an international agreement

Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.

CD Conservation dependent fauna

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.

OS Other specially protected fauna

Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

2 Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

¹ The definition of flora includes algae, fungi and lichens

² Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

APPENDIX G

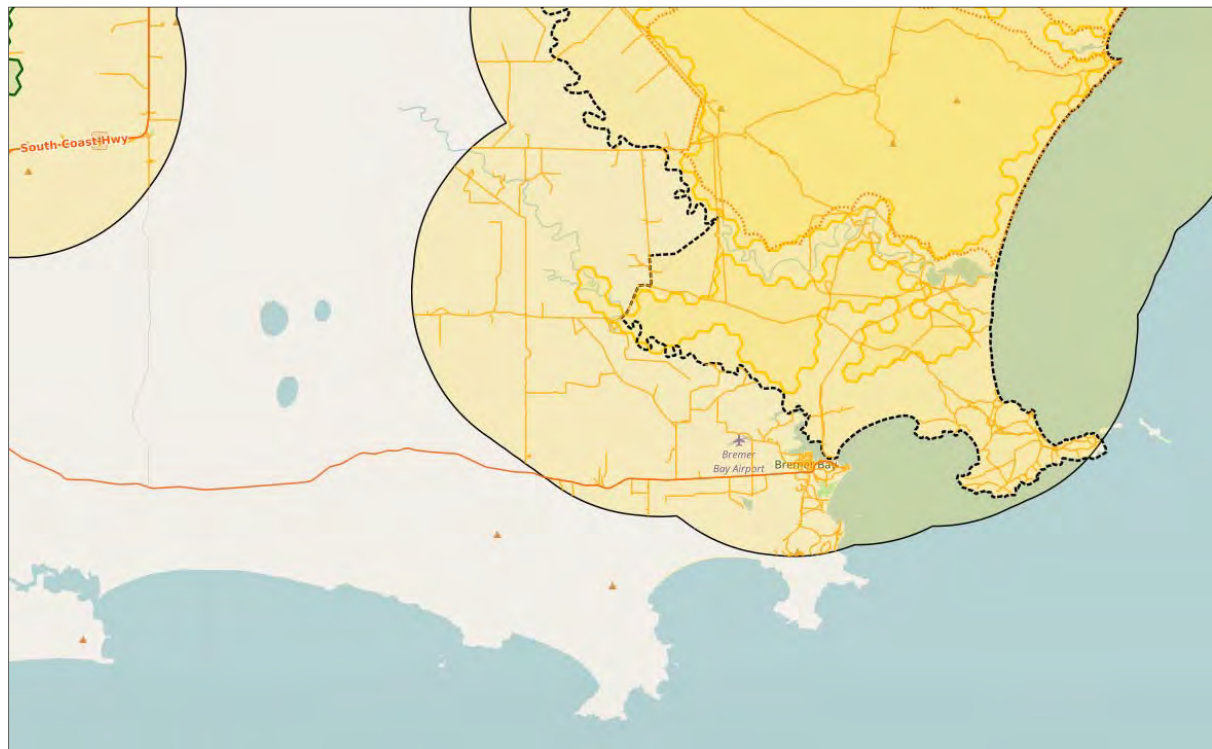
Phytophthora Dieback

Phytophthora Dieback

Source: Dieback Information Delivery and Management Systems (DIDMS) Project Dieback. Natural Resource Management, Western Australia.

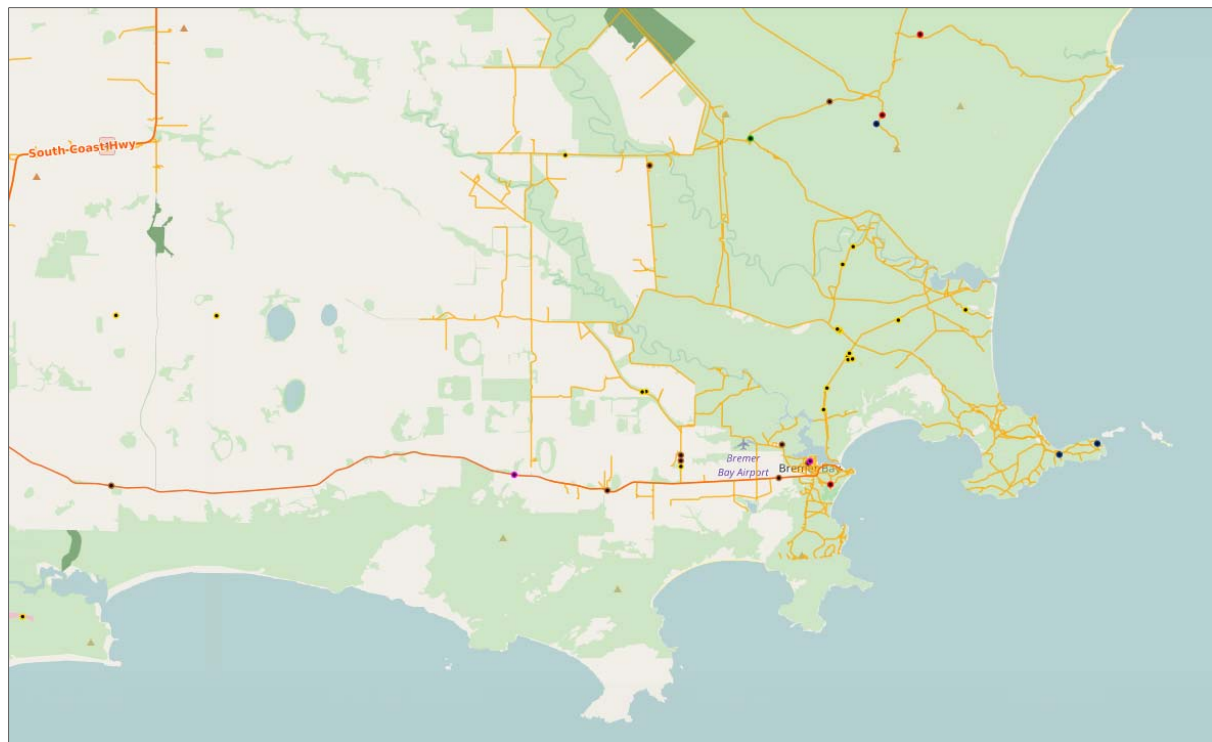
<https://didms.gaiaresources.com.au/data/editor/viewdata/>

Priority Dieback Protection Areas



- ☒ Priority Protection Areas (State)
- ☒ 1 Uninfested High Value Hotspot
- ☒ 2 Uninfested High Value Landscape
- ☒ 3 Infested High Value Hotspot
- ☒ 4 Supplementary Uninfested High Value Landscapes
- ☒ 5 PPA Asset Boundaries Refined
- ☒ 6 PPA Management Boundaries Refined
- ☒ 7 Assets (incl. 10km buffer)

Disease Points and Confidence Mapping



☒ Disease Confidence Mapping *P. cinnamomi* to 2008 June 30

- ☒ 1 High Confidence Infested *Pc* to 2008
- ☒ 2 Moderate Confidence Infested *Pc* to 2008
- ☒ 3 Low Confidence Infested *Pc* to 2008
- ☒ 4 Unmappable to 2008
- ☒ 5 Uninterpretable to 2008
- ☒ 6 Low Confidence Uninfested to 2008
- ☒ 7 Moderate Confidence Uninfested to 2008
- ☒ 8 High Confidence Uninfested to 2008

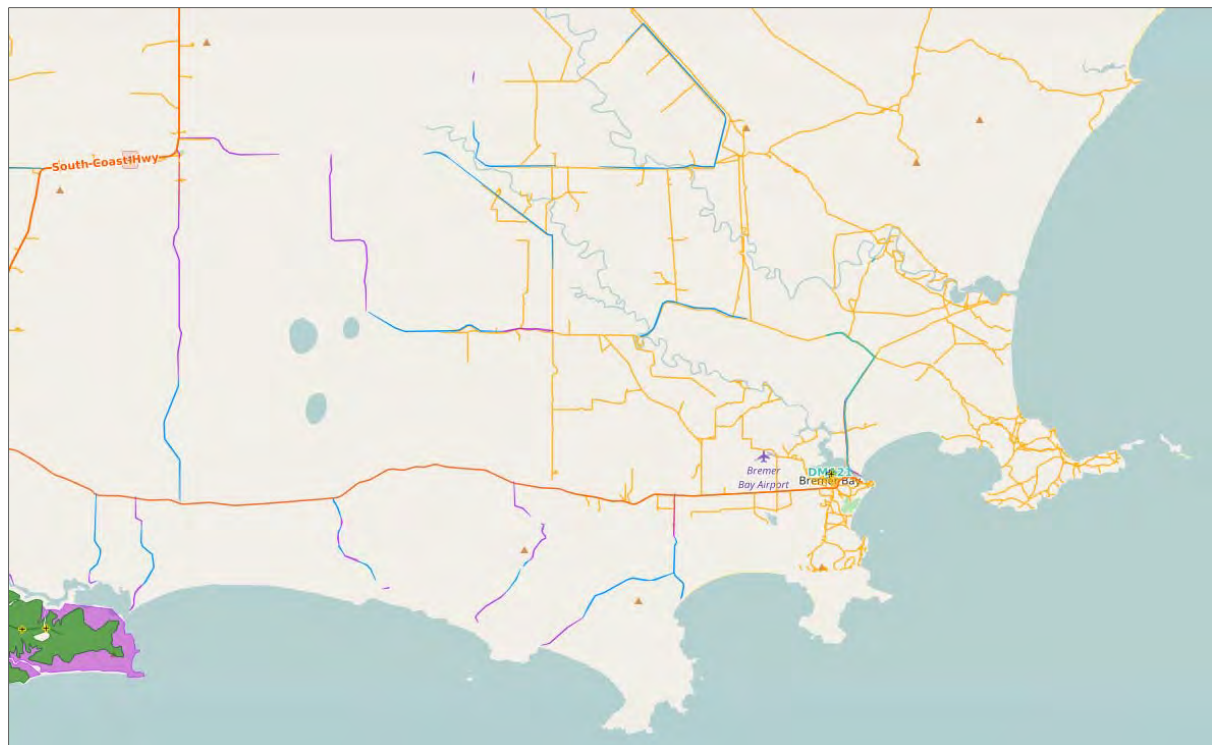
☒ Disease points across all land, coarse scale

- ☒ 1 *Phytophthora cinnamomi* (all years to 2016 June 30)
- ☒ 2 *Phytophthora multivora* (all years to 2016 June 30)
- ☒ 3 *Phytophthora inundata* (all years to 2016 June 30)
- ☒ 4 *Phytophthora nicotianae* (all years to 2016 June 30)
- ☒ 5 *Phytophthora pseudocryptogea* (all years to 2016 June 30)

☒ Disease points public land only, fine scale

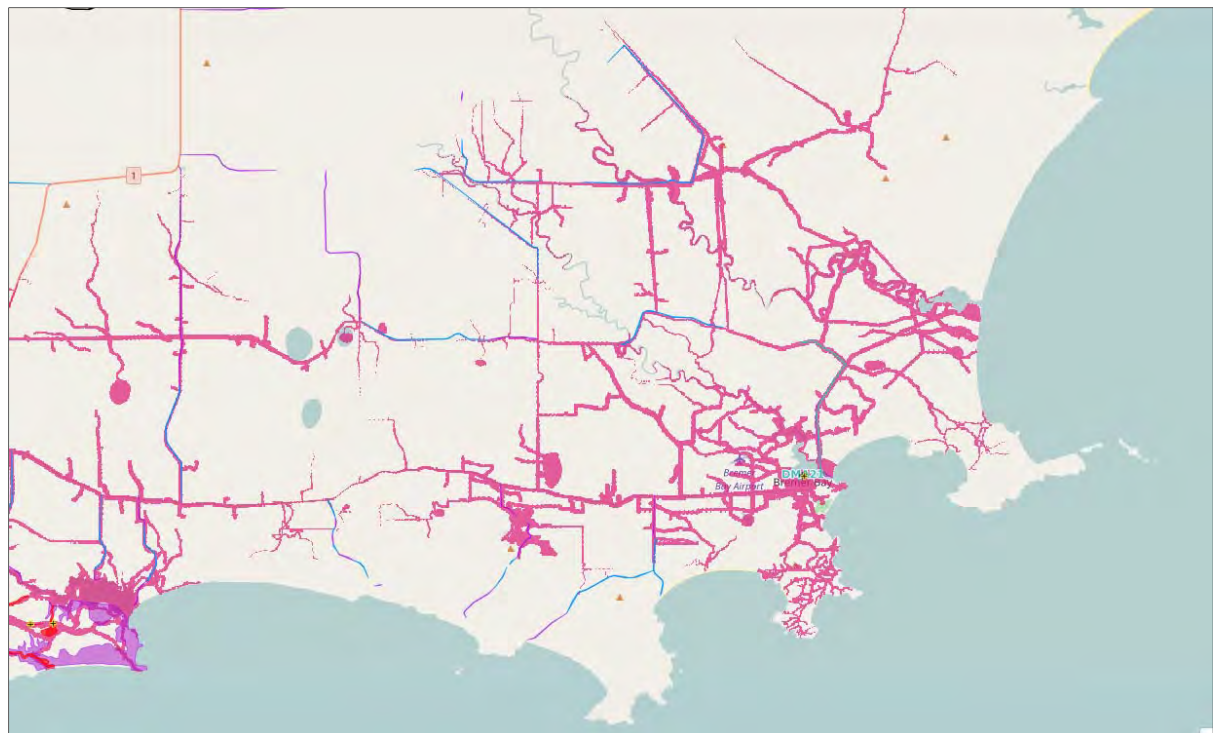
- ☒ 1 *Phytophthora cinnamomi* on Public Land (all years to 2016 June 30)
- ☒ 2 *Phytophthora multivora* on Public Land (all years to 2016 June 30)
- ☒ 3 *Phytophthora inundata* on Public Land (all years to 2016 June 30)
- ☒ 4 *Phytophthora nicotianae* on Public Land (all years to 2016 June 30)
- ☒ 5 *Phytophthora pseudocryptogea* on Public Land (all years to 2016 June 30)
- ☒ 6 *Armillaria luteobubalina* (all years to 2014 June 30)

Dieback Management Activity, Disease Points and Interpreted Areas



- ☒ Dieback Management Activity
 - ☒ Dieback Management Lines
 - ☒ Dieback Management Points
 - ☒ Dieback Management Polygon
- ☒ Disease points
 - ☒ + 1 *Phytophthora cinnamomi* positive
 - ☒ + 2 *Phytophthora multivora* positive
 - ☒ + 3 *Phytophthora inundata* positive
 - ☒ + 4 *Phytophthora nicotianae* positive
 - ☒ + 5 *Phytophthora cryptogea* positive
 - ☒ + 6 *Armillaria luteobalina* positive
 - ☒ • Disease sample negative
- ☐ Management Boundary
 - ☐ Management Boundary
- ☒ *P. cinnamomi* Disease Interpreted Areas
 - ☒ 1 Infested
 - ☒ 2 Uninfested
 - ☒ 3 Uninterpretable
 - ☒ 4 Not Yet Resolved
 - ☒ 5 Temporarily Uninterpretable
 - ☒ 6 Excluded
- ☒ Survey Effort
 - ☒ Survey Effort

Hazard Dispersion Model



- ✓ Hazard Dispersion Model Phytophthora
- ✓ South Coast NRM Hazard to 2016

APPENDIX H

Aboriginal Heritage Inquiry System



Search Criteria

25 Registered Aboriginal Sites in Custom search area (2); 699851.25mE, 6175548.91mN z50 (MGA94) : 738209.95mE, 6204078.53mN z50 (MGA94)

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Aboriginal Affairs by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at heritageenquiries@daa.wa.gov.au and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Wagyl Kaip Southern Noongar People ILUA

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines and Petroleum (DMP) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMP, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at <https://www.dpc.wa.gov.au/lantu/Claims/Pages/SouthWestSettlement.aspx>.

Further advice can also be sought from the Department of Aboriginal Affairs (DAA) at heritageenquiries@daa.wa.gov.au.



Copyright

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Coordinate Accuracy

Accuracy is shown as a code in brackets following the coordinates. Map coordinates (Latitude/Longitude and Easting/Northing) are based on the GDA 94 Datum. The Easting/Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '500000mE:Z50' means Easting=500000, Zone=50.

Terminology (NB that some terminology has varied over the life of the legislation)

Place ID/Site ID: This is a unique ID assigned by the Department of Aboriginal Affairs to the place

Status:

- o **Registered Site:** The place has been assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*
- o **Other Heritage Place which includes:**
 - **Stored Data / Not a Site:** The place has been assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972*
 - **Lodged:** Information has been received in relation to the place, but an assessment has not been completed at this stage to determine if it meets Section 5 of the *Aboriginal Heritage Act 1972*

Status Reason: e.g. Exclusion - Relates to a portion of an Aboriginal site or heritage place as assessed by the Aboriginal Cultural Material Committee (ACMC). e.g. such as the land subject to a section 18 notice.

Origin Place ID: Used in conjunction with Status Reason to indicate which Registered Site this Place originates from.

Access and Restrictions:

- o **File Restricted = No:** Availability of information (other than boundary) that the Department of Aboriginal Affairs holds in relation to the place is not restricted in any way.
- o **File Restricted = Yes:** Some of the information that the Department of Aboriginal Affairs holds in relation to the place is restricted if it is considered culturally sensitive. This information will only be made available if the Department of Aboriginal Affairs receives written approval from the informants who provided the information. Download the [Request to Access Restricted Information](#) letter and form.
- o **Boundary Restricted = No:** place location is shown as accurately as the information lodged with the Registrar allows.
- o **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the place is located. If you are a landowner and wish to find out more about the exact location of the place, please contact DAA.
- o **Restrictions:**
 - **No Restrictions:** Anyone can view the information.
 - **Male Access Only:** Only males can view restricted information.
 - **Female Access Only:** Only females can view restricted information

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.



List of Registered Aboriginal Sites with Map

Site ID	Site Name	File Restricted	Boundary Restricted	Restrictions	Status	Status Reason	Origin Place ID	Site Type	Knowledge Holders	Coordinates	Legacy ID
1009	FISHERY BEACH 3	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		720542mE 6187297mN Zone 50 [Reliable]	S02859
4463	HOUSE BEACH	No	No	No Gender Restrictions	Registered Site			Mythological		731242mE 6194947mN Zone 50 [Reliable]	S02777
4611	CARDIMINUP 4.	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter, Midden / Scatter, Arch Deposit, Camp, Other: ?		716642mE 6188647mN Zone 50 [Unreliable]	S02463
4629	BREMER BAY BURIAL	No	No	No Gender Restrictions	Registered Site			Skeletal Material / Burial	*Registered Knowledge Holder names available from DAA	719113mE 6191324mN Zone 50 [Reliable]	S02364
4947	BREMER BAY 2	No	No	No Gender Restrictions	Registered Site			Quarry		724442mE 6194847mN Zone 50 [Reliable]	S01651
4956	HUNTER RIVER 3	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		723142mE 6196447mN Zone 50 [Unreliable]	S01670
4957	KEEN'S	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		721242mE 6204947mN Zone 50 [Unreliable]	S01671
4980	WELLSTEAD ESTUARY	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		716942mE 6192497mN Zone 50 [Reliable]	S01630
4985	CARVER'S RUN	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		725142mE 6204147mN Zone 50 [Reliable]	S01635



Aboriginal Heritage Inquiry System

Aboriginal Sites Database

Site ID	Site Name	File Restricted	Boundary Restricted	Restrictions	Status	Status Reason	Origin Place ID	Site Type	Knowledge Holders	Coordinates	Legacy ID
4987	GORDON INLET 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		727542mE 6204447mN Zone 50 [Reliable]	S01637
4994	PEPPERMINT BEACH 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		729242mE 6192647mN Zone 50 [Reliable]	S01644
4998	STOTLY SOAK	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		728442mE 6193347mN Zone 50 [Reliable]	S01648
4999	DOUBTFUL ISLAND BAY	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		734142mE 6192347mN Zone 50 [Reliable]	S01649
5010	DEVIL CREEK 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		700341mE 6204997mN Zone 50 [Unreliable]	S01605
5017	MINARUP 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		702641mE 6185647mN Zone 50 [Unreliable]	S01612
5021	MARANDIUP 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		706642mE 6189647mN Zone 50 [Unreliable]	S01616
5026	STREAM BEACH	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		708642mE 6181847mN Zone 50 [Unreliable]	S01621
5152	HUNTER RIVER 2	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		722542mE 6195397mN Zone 50 [Unreliable]	S01489
5156	CARDIMINUP 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		716142mE 6187947mN Zone 50 [Unreliable]	S01493



Aboriginal Heritage Inquiry System

Aboriginal Sites Database

Site ID	Site Name	File Restricted	Boundary Restricted	Restrictions	Status	Status Reason	Origin Place ID	Site Type	Knowledge Holders	Coordinates	Legacy ID
5340	HUNTER RIVER EAST	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		723742mE 6196847mN Zone 50 [Unreliable]	S00944
22705	Bremer Bay Lizard Traps	No	No	No Gender Restrictions	Registered Site			Man-Made Structure, Hunting Place		719333mE 6191535mN Zone 50 [Reliable]	
22706	Bremer Bay Artefact Scatter 1	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		719266mE 6191491mN Zone 50 [Reliable]	
22708	Bremer Bay Artefact Scatter 2	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter, Man-Made Structure		719308mE 6191524mN Zone 50 [Reliable]	
22709	Bremer Bay Artefact Scatter 3	No	No	No Gender Restrictions	Registered Site			Artefacts / Scatter		719424mE 6191376mN Zone 50 [Reliable]	
35876	Bremer Bay Reburial Site	No	No	No Gender Restrictions	Registered Site			Skeletal Material / Burial		720500mE 6191540mN Zone 50 [Reliable]	



Legend

Selected Heritage Sites

-  Registered Sites
-  Aboriginal Community Occupied
-  Aboriginal Community Unoccupied
-  Town
-  Search Area

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APPENDIX I

Community Survey

7. What are the biggest issues along the coast?

- ☐ Rubbish
- ☐ Issues with facilities
- ☐ Access
- ☐ Anti-social behaviour
- ☐ Environmental damage
- ☐ Off-road vehicles
- ☐ Vandalism
- ☐ Land use conflict
- ☐ Sea level rise
- ☐ Protection of sea birds (e.g. Hooded Plover)
- ☐ Management of fisheries
- ☐ Marina
- ☐ Increased visitor numbers
- ☐ Pressure on beaches
- ☐ Fire
- ☐ Maintenance of infrastructure
- ☐ Disease and weeds
- ☐ Squatter's shacks
- ☐ Other (please specify)

8. Do you have any suggestions or ideas for improving coastal management within the Shire?

9. Any other comments?

Please return this survey to:

Email: melanie.price@auroraenvironmental.com.au

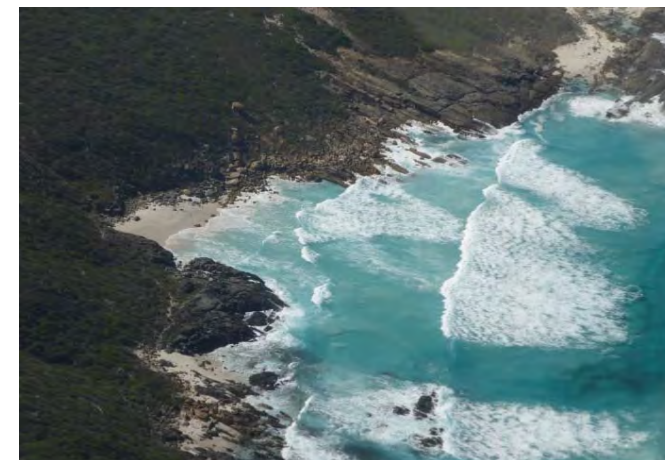
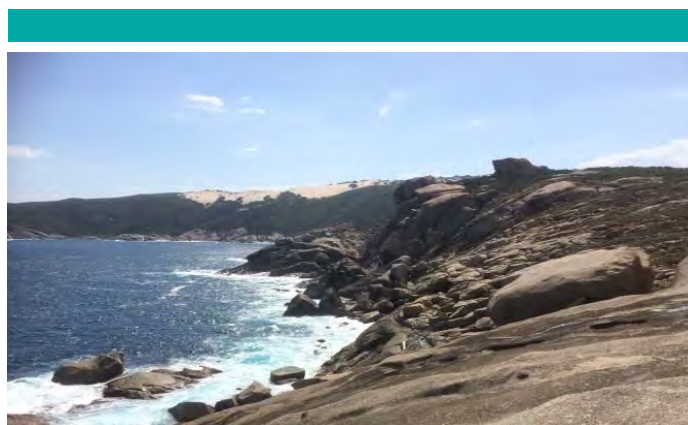
Post:

Postage Paid

Shire of Jerramungup

8 Vasey Street, JERRAMUNGUP WA 6337

You can call to discuss coastal management issues with Melanie Price of Aurora Environmental on 0447 446 343



Shire of Jerramungup

Coastal Management Plan Review Survey

The Shire of Jerramungup is currently undertaking a review of its Coastal Management Plan to provide planning direction and to address ongoing management issues. The Plan will address coastal management in Crown reserves between Pallinup Beach and Tooregullup Beach.

The Shire wants to know the views and opinions of the local community and other stakeholders. As such, we would like to invite members of the public to complete the following community survey.

This survey is also available online at:
www.surveymonkey.com/r/RQXDVYG

1. Where are you from?

- ☐ Local
- ☐ Great Southern
- ☐ Perth
- ☐ Another part of Western Australia
- ☐ Interstate
- ☐ Overseas

2. How often do you visit the coastline within the Shire of Jerramungup?

- ☐ Daily
 - ☐ Weekly
 - ☐ Fortnightly
 - ☐ Monthly
 - ☐ Yearly
 - ☐ This is my first time
 - ☐ Other (please specify)
-

3. How long do you generally stay (or how long do you plan on staying if this is your first time)?

- ☐ Day trip
 - ☐ Overnight
 - ☐ A few days
 - ☐ A week
 - ☐ A month
 - ☐ Longer than a month
 - ☐ Other (please specify)
-

4. Which coastal areas have you visited?

- ☐ Pallinup Beach
 - ☐ Reef Beach
 - ☐ Foster Beach
 - ☐ Cape Knob
 - ☐ Horatio Island
 - ☐ Red Rocks
 - ☐ Stream Beach
 - ☐ Dillon Bay
 - ☐ Native Dog Beach
 - ☐ Blossoms Beach
 - ☐ Little Boat Harbour
 - ☐ Sparkling Island
 - ☐ Point Henry
 - ☐ Banky Beach
 - ☐ Point Gordon
 - ☐ Black Point
 - ☐ Short Beach
 - ☐ Fishery Beach (Marina)
 - ☐ Back Beach
 - ☐ John Cove
 - ☐ Bremer Beach
 - ☐ Peppermint Beach
 - ☐ Air Blowholes
 - ☐ The Chimney
 - ☐ Point Hood
 - ☐ Doubtful Islands
 - ☐ Drages Beach
 - ☐ Doubtful Islands Beach
 - ☐ House Beach
 - ☐ Tooregullup Beach
 - ☐ Gordon Inlet
 - ☐ Wellstead Estuary
 - ☐ Wellstead Estuary Mouth
 - ☐ Other (please specify)
-

5. What are your main activities when you visit the coast?

- ☐ Swimming
- ☐ Surfing
- ☐ Walking
- ☐ Windsurfing
- ☐ Fishing
- ☐ Camping
- ☐ Kitesurfing
- ☐ Boating
- ☐ Relaxing
- ☐ 4 Wheel driving
- ☐ Quad bikes / motorbikes
- ☐ Bremer Bay Canyon experience
- ☐ Other (please specify)

6. What do you value most about the coast?

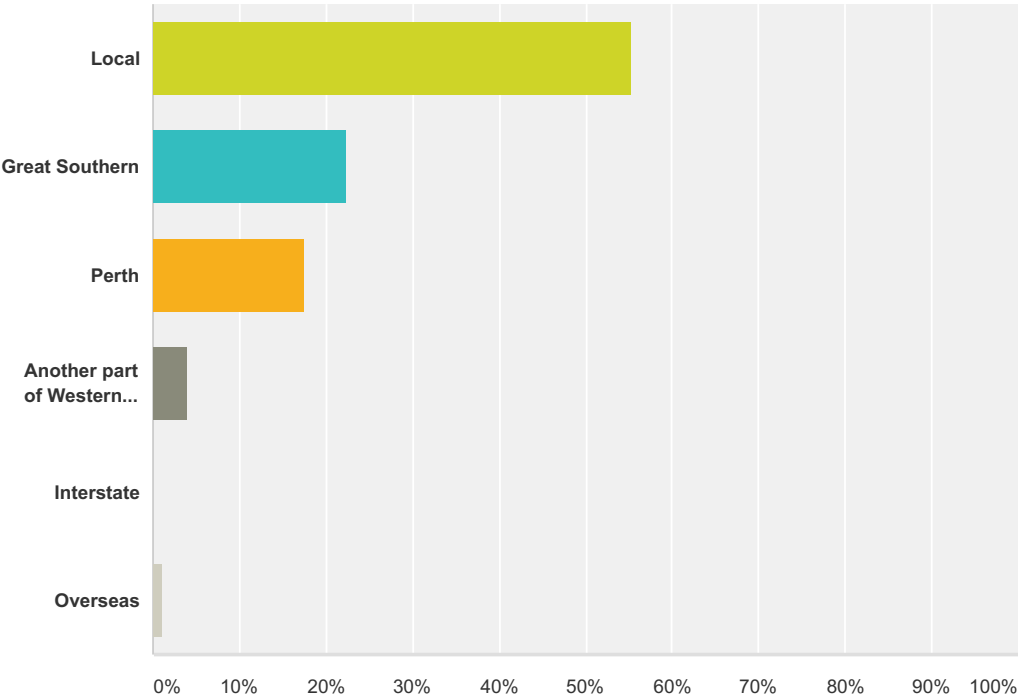
- ☐ Sandy beaches
 - ☐ Facilities
 - ☐ Undeveloped / low key nature
 - ☐ Wave conditions
 - ☐ Environment
 - ☐ Wilderness experience
 - ☐ Adventure
 - ☐ Other (please specify)
-

APPENDIX J

Survey Outcomes

Q1 Where are you from?

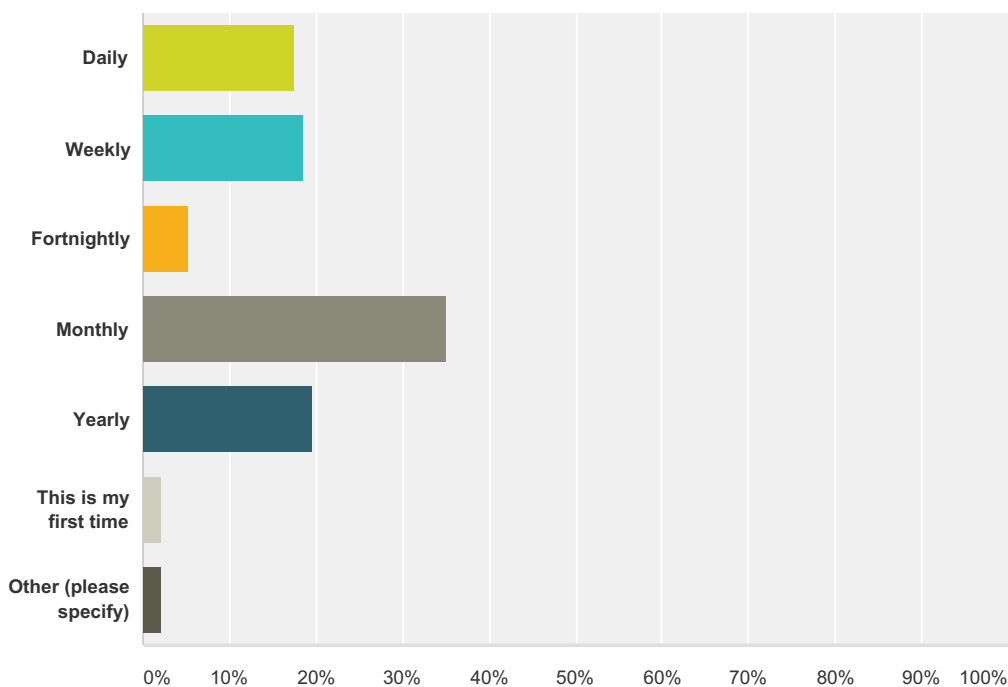
Answered: 103 Skipped: 0



Answer Choices	Responses	
Local	55.34%	57
Great Southern	22.33%	23
Perth	17.48%	18
Another part of Western Australia	3.88%	4
Interstate	0.00%	0
Overseas	0.97%	1
Total		103

Q2 How often do you visit the coastline within the Shire of Jerramungup?

Answered: 97 Skipped: 6



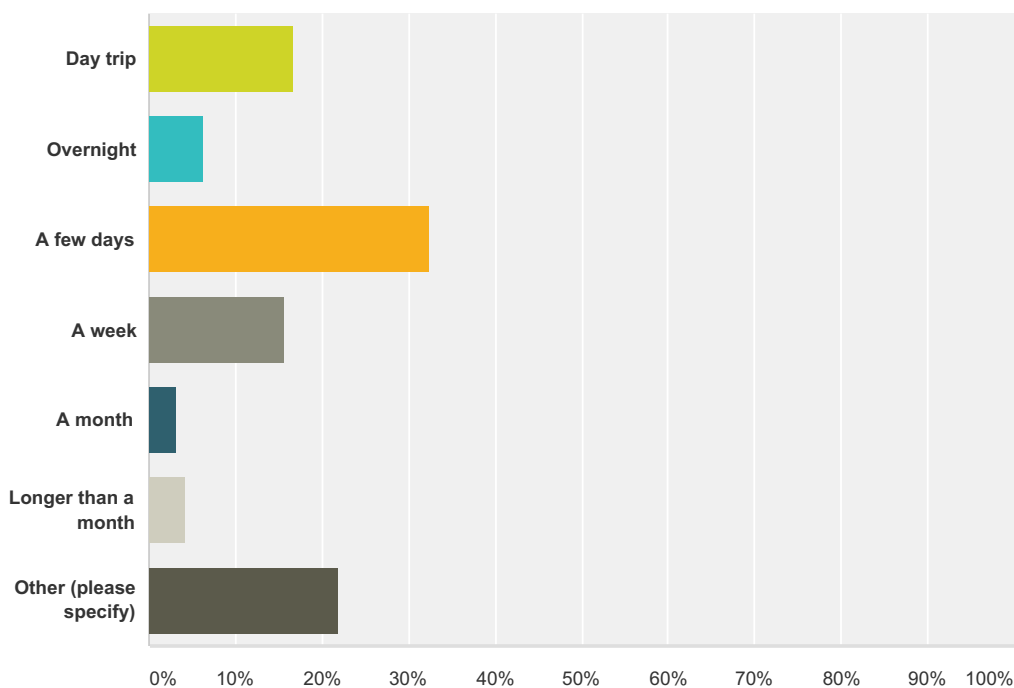
Answer Choices	Responses
Daily	17.53% 17
Weekly	18.56% 18
Fortnightly	5.15% 5
Monthly	35.05% 34
Yearly	19.59% 19
This is my first time	2.06% 2
Other (please specify)	2.06% 2
Total	97

#	Other (please specify)	Date
1	two - three times a year	5/1/2017 1:33 AM
2	While I indicate above that I am from Perth, I grew up on a farm on Bremer Bay Road. My brother is still living on Warramurup Road. So while I now only visit twice a year, I did spend considerable time along the Shire's coast, particularly during my primary school, high school and university days. I generally get back there now around twice a year for a week or two each visit, and most of this time is spent on the coast.	4/25/2017 12:16 PM
3	four times a year	4/25/2017 3:07 AM
4	Christmas holidays, Easter, June Long Weekend & October School Holidays. 3 days to three week but depends on time of the year.	4/14/2017 3:58 PM
5	often say 6 time a year	4/12/2017 4:40 AM
6	Every day on my trips to Bremer which are around every 3 months for a week or so at a time.	4/11/2017 7:17 AM
7	3 times per year - landholder in Bremer Bay	4/6/2017 3:49 PM
8	Several times a year, usually to Bremer and surrounds for holidays	4/6/2017 3:02 PM

9	2/3 times a year	4/6/2017 12:39 PM
10	.	4/6/2017 10:42 AM
11	Was born and grew up here,family still there,visit whenever I get a chance	4/6/2017 10:34 AM

Q3 How long do you generally stay (or how long do you plan on staying if this is your first time)?

Answered: 96 Skipped: 7



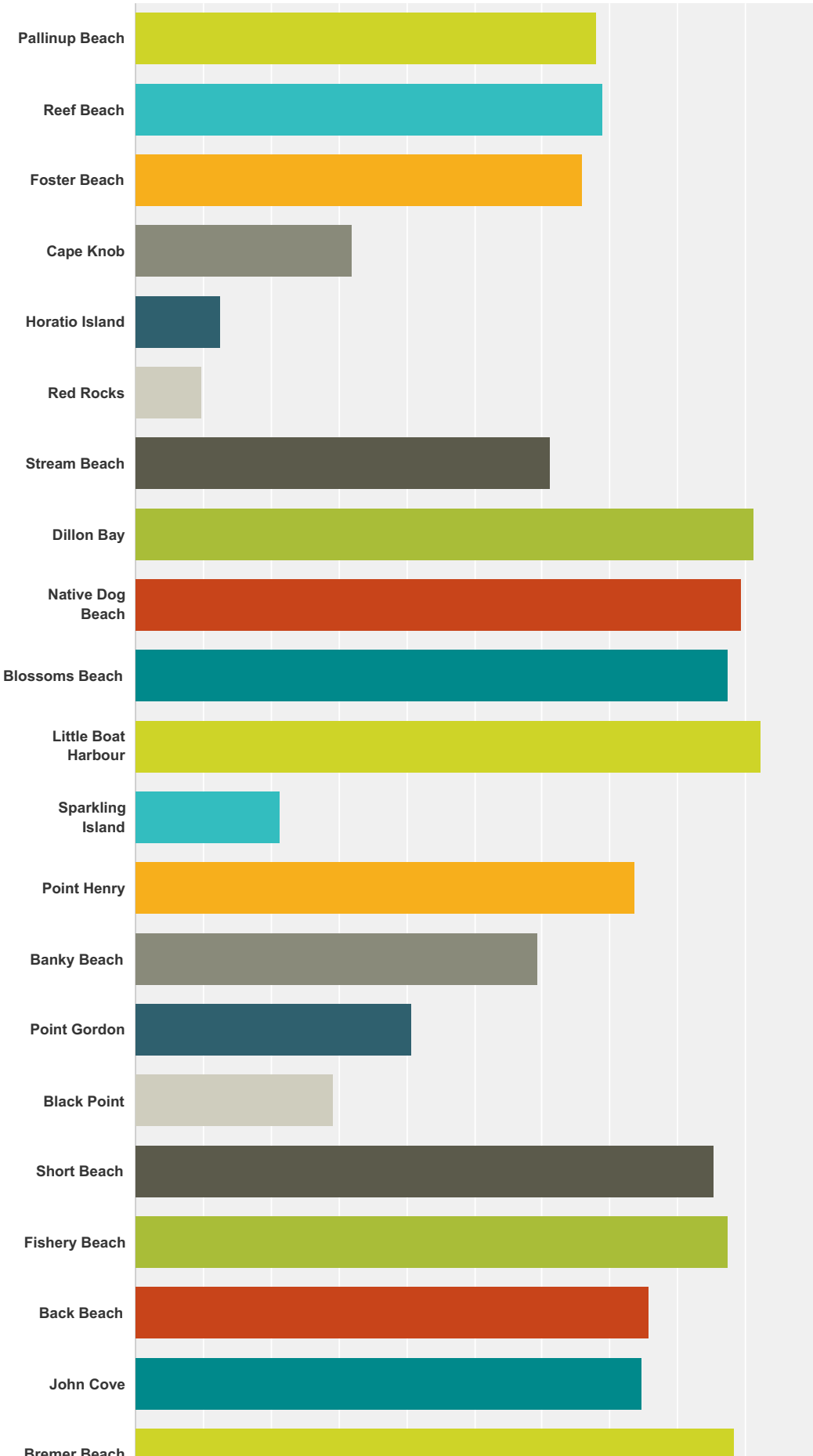
Answer Choices	Responses
Day trip	16.67% 16
Overnight	6.25% 6
A few days	32.29% 31
A week	15.63% 15
A month	3.13% 3
Longer than a month	4.17% 4
Other (please specify)	21.88% 21
Total	96

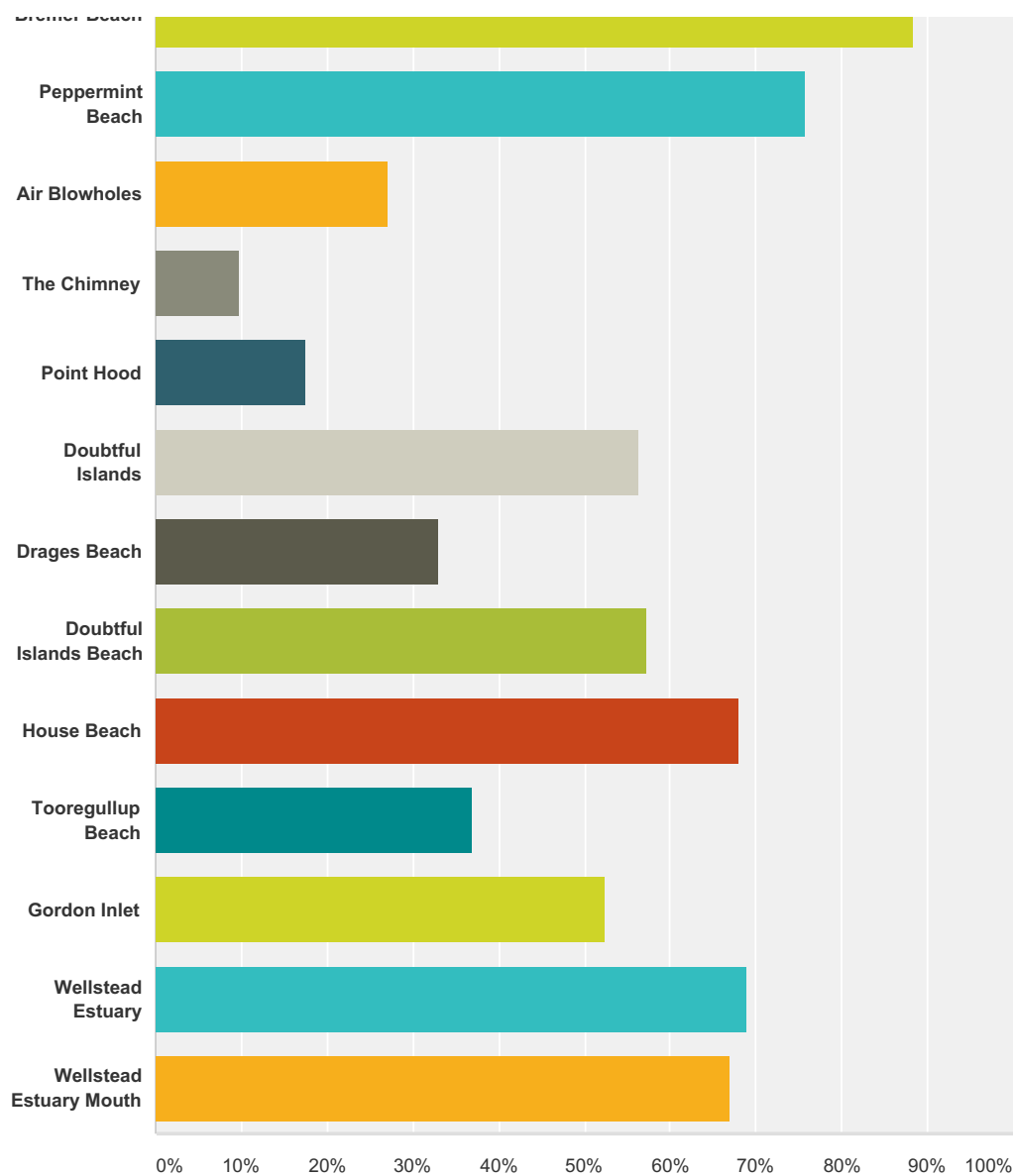
#	Other (please specify)	Date
1	Local	5/1/2017 12:53 AM
2	I'm a permanent resident; I welcome visitors who behave in a civilized manner and resent the annual invasion of feral Wheat-belt F***wits.	4/26/2017 6:53 AM
3	From a few hours to days at a time	4/19/2017 9:16 AM
4	Sometimes 3 days through to 3 weeks.	4/14/2017 3:58 PM
5	sometimes the day, sometimes 3 days	4/12/2017 4:40 AM
6	living locally	4/11/2017 1:20 AM
7	For ever	4/7/2017 12:39 AM
8	N	4/6/2017 4:33 PM
9	Live here	4/6/2017 2:40 PM

10	A few days	4/6/2017 2:05 PM
11	Live locally	4/6/2017 12:07 PM
12	We visit the various beaches most days if not a few times a day.	4/6/2017 11:57 AM
13	A week or two	4/6/2017 10:34 AM
14	Planning on retiring to Bremer Bay	4/6/2017 7:58 AM
15	We live here	4/6/2017 5:37 AM
16	I live here	4/6/2017 4:56 AM
17	Life	4/6/2017 4:55 AM
18	Live here so all the time	4/6/2017 4:29 AM
19	Both day trips and camping for 3-5 days	4/6/2017 4:14 AM
20	Local	4/6/2017 4:12 AM
21	local resident	4/6/2017 1:47 AM

Q4 Which coastal areas have you visited?

Answered: 103 Skipped: 0





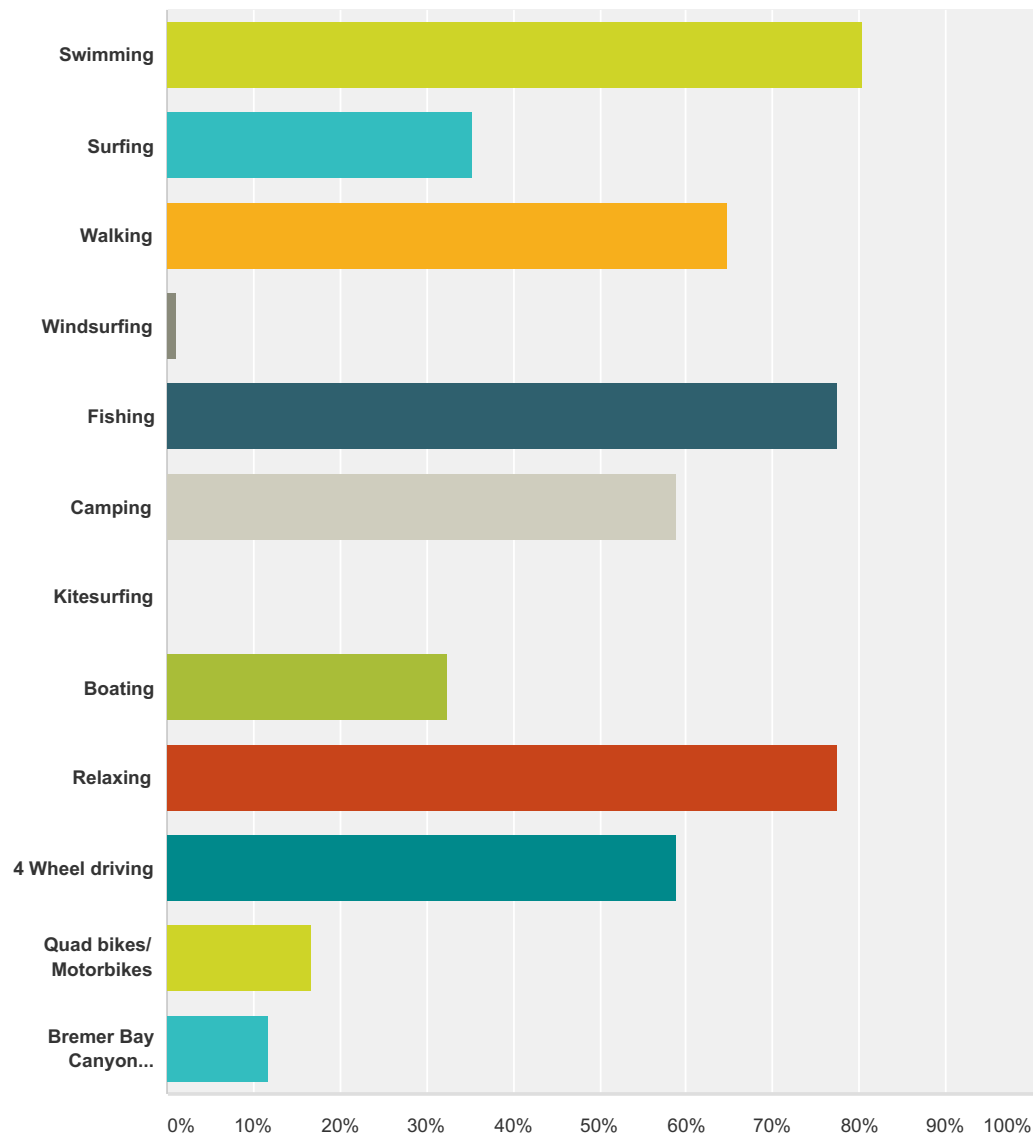
Answer Choices	Responses
Pallinup Beach	67.96% 70
Reef Beach	68.93% 71
Foster Beach	66.02% 68
Cape Knob	32.04% 33
Horatio Island	12.62% 13
Red Rocks	9.71% 10
Stream Beach	61.17% 63
Dillon Bay	91.26% 94
Native Dog Beach	89.32% 92
Blossoms Beach	87.38% 90
Little Boat Harbour	92.23% 95
Sparkling Island	21.36% 22
Point Henry	73.79% 76

Banky Beach	59.22%	61
Point Gordon	40.78%	42
Black Point	29.13%	30
Short Beach	85.44%	88
Fishery Beach	87.38%	90
Back Beach	75.73%	78
John Cove	74.76%	77
Bremer Beach	88.35%	91
Peppermint Beach	75.73%	78
Air Blowholes	27.18%	28
The Chimney	9.71%	10
Point Hood	17.48%	18
Doubtful Islands	56.31%	58
Drages Beach	33.01%	34
Doubtful Islands Beach	57.28%	59
House Beach	67.96%	70
Tooregullup Beach	36.89%	38
Gordon Inlet	52.43%	54
Wellstead Estuary	68.93%	71
Wellstead Estuary Mouth	66.99%	69
Total Respondents: 103		

#	Other (please specify)	Date
1	Trigolow	5/10/2017 4:29 AM
2	I particularly spend quite a bit of time at Pallinup, Reef and Fosters beaches, but also closer to Bremer Bay townsite at Bremer Beach, Back Beach, Short Beach, Native Dog and Blossoms.	4/25/2017 12:16 PM
3	How do you get to visit Horatio Island?	4/19/2017 9:16 AM
4	Point anne	4/6/2017 3:39 PM

Q5 What are your main activities when you visit the coast?

Answered: 102 Skipped: 1



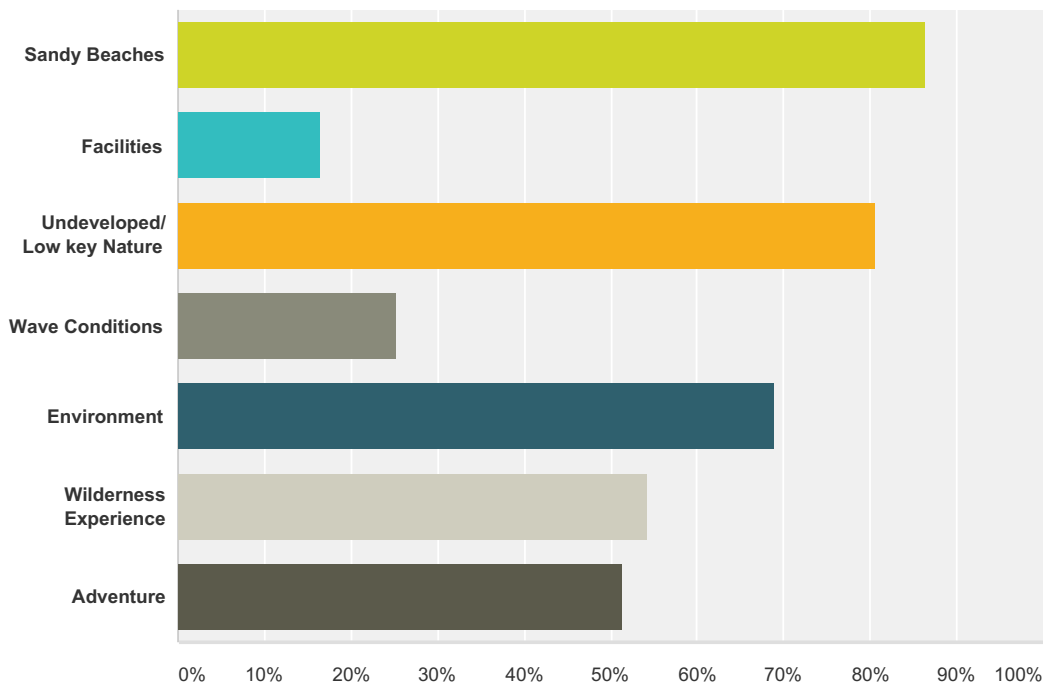
Answer Choices	Responses
Swimming	80.39% 82
Surfing	35.29% 36
Walking	64.71% 66
Windsurfing	0.98% 1
Fishing	77.45% 79
Camping	58.82% 60
Kitesurfing	0.00% 0
Boating	32.35% 33
Relaxing	77.45% 79
4 Wheel driving	58.82% 60

Quad bikes/ Motorbikes	16.67%	17
Bremer Bay Canyon experience	11.76%	12
Total Respondents: 102		

#	Other (please specify)	Date
1	Bird surveys/observation. Dodging vehicles.	4/26/2017 6:53 AM
2	Diving/snorkeling	4/25/2017 12:16 PM
3	Enjoying the nature, wildflowers, whales, sea life, land and seascapes, taking visitors to enjoy these too	4/19/2017 9:16 AM
4	Cultural-we are traditional owners and visit for cultural	4/13/2017 11:50 AM
5	We use the area for relation, we are all responsible licence insured people with family's from Albany. We have always removed more rubbish than taken, we normal half fill one tray ute up on leaving	4/12/2017 5:24 AM
6	NOTE: motorcycles are correctly licenced.	4/12/2017 4:40 AM

Q6 What do you value most about the coast?

Answered: 103 Skipped: 0

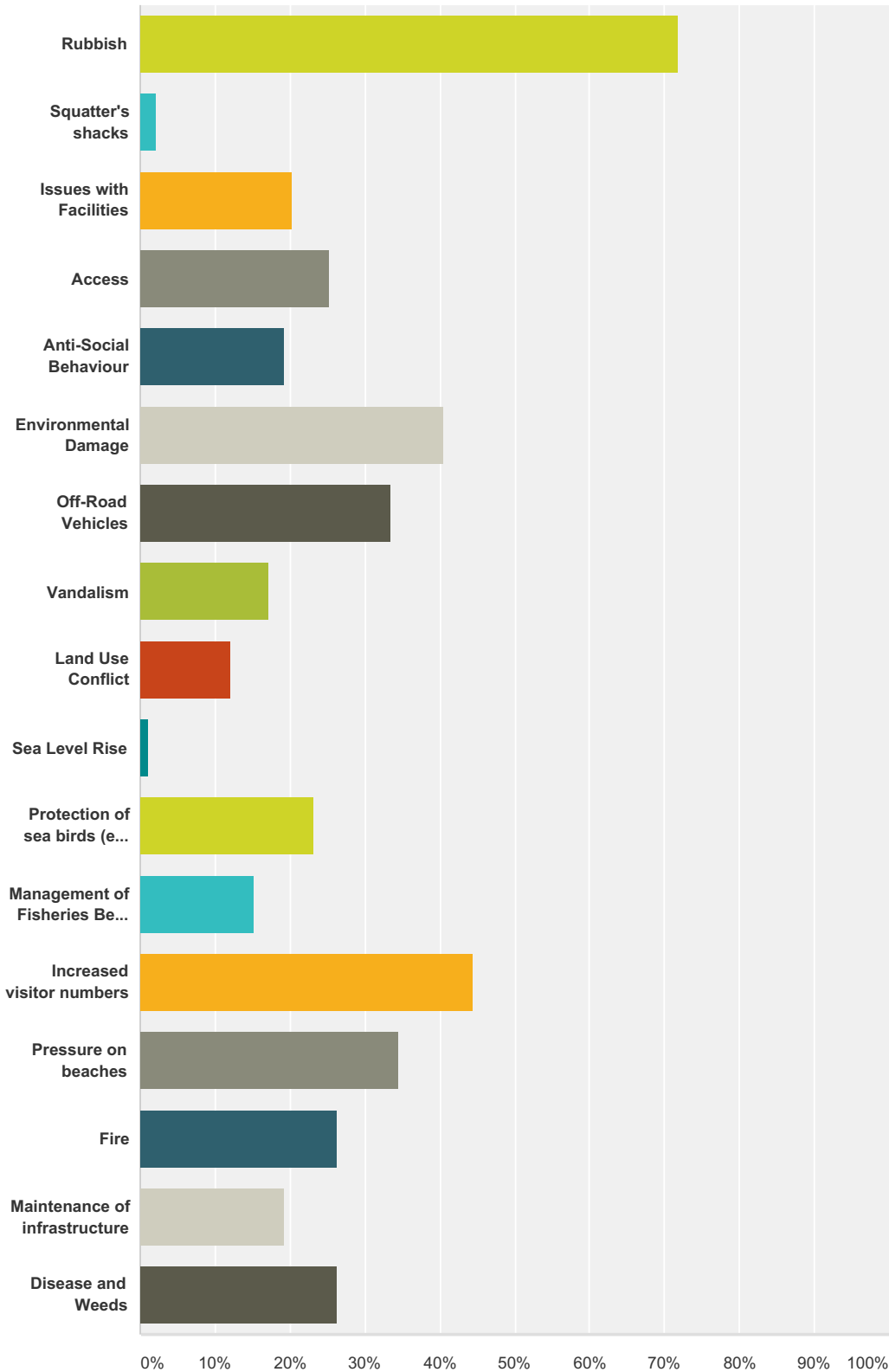


Answer Choices	Responses
Sandy Beaches	86.41% 89
Facilities	16.50% 17
Undeveloped/ Low key Nature	80.58% 83
Wave Conditions	25.24% 26
Environment	68.93% 71
Wilderness Experience	54.37% 56
Adventure	51.46% 53
Total Respondents: 103	

#	Other (please specify)	Date
1	It should provide a safe habitat for Migrant Shorebirds, and at present it fails.	4/26/2017 6:53 AM
2	I enjoy being able to access and drive along the beach at the more remote locations.	4/25/2017 12:16 PM
3	Largely unspoilt natural land and seascapes	4/19/2017 9:16 AM
4	We dont need facilities, thats what camping and being in the bush is about. maybe just a skip bin at the end of the track like at boat houber to dump off once you leave	4/12/2017 5:24 AM
5	Combination of healthy vegetation, low levels of development.	4/11/2017 7:17 AM
6	its my home where I grew up	4/6/2017 12:39 PM
7	Access	4/6/2017 4:55 AM
8	Peace	4/6/2017 4:08 AM
9	That you can do any think what you into i.e. Bike horse 4wd fish and once you start policing it you lost a magic place	4/6/2017 3:58 AM

Q7 What are the biggest issues along the coast?

Answered: 99 Skipped: 4



Answer Choices	Responses
Rubbish	71.72%71

Squatter's shacks	2.02%	2
Issues with Facilities	20.20%	20
Access	25.25%	25
Anti-Social Behaviour	19.19%	19
Environmental Damage	40.40%	40
Off-Road Vehicles	33.33%	33
Vandalism	17.17%	17
Land Use Conflict	12.12%	12
Sea Level Rise	1.01%	1
Protection of sea birds (e.g. Hooded Plover)	23.23%	23
Management of Fisheries Beach Marina	15.15%	15
Increased visitor numbers	44.44%	44
Pressure on beaches	34.34%	34
Fire	26.26%	26
Maintenance of infrastructure	19.19%	19
Disease and Weeds	26.26%	26
Total Respondents: 99		

#	Other (please specify)	Date
1	Unrestrained and uncontrolled dogs. While it is important to protect sea birds, providing a safe environment for beach-nesting birds is more relevant to coastal management. Please see comments.	4/26/2017 6:53 AM
2	I think the biggest issues are related to people thinking the area is remote and underutilised and that their use is a small/minor scale impact in the scheme of things that will not be noticed. This results in the beaches and adjacent areas being left in a state (organic rubbish such as orange peel, apple cores, fish cleaning/offal, general litter, fishing line etc.) and abluting in fore dune areas etc., which means that the coast then loses its pristine and natural feel. I think this is generally an awareness/education issue. Anti-social behaviour, while not a widespread issue, is definitely an issue at Bremer Beach over key festive/holiday periods (i.e. new year and Easter).	4/25/2017 12:16 PM
3	Considerate management of the whole and the issues above, to maintain natural values and sustainable access and good low-key infrastructure	4/19/2017 9:16 AM
4	Increasing visitor numbers and inappropriate access are causing erosion, rubbish and damage. Sea level rise is a relatively minor concern with low amounts of hard infrastructure in the 100m risk zone. Most infrastructure will be able to be adapted or managed retreat can occur. A lack of formalised tracks and parking in some areas is causing problems with 4wd vehicle causing track duplication, braiding and carpark expansion. this results in areas being vulnerable to erosion and weed invasion.	4/11/2017 7:17 AM
5	Lots of 4 wheel drives; conflicting uses and environmental damage	4/7/2017 2:06 PM
6	In most of the areas all seems to be quite good!	4/6/2017 4:33 PM
7	Really all of the above but Upgrade Toilet and rubbish facilities	4/6/2017 7:58 AM
8	Some creepy dude always taking pictures of my kids. Come here to get away and this dude has followed us to Little Boat Harbour and Short Beach!	4/6/2017 7:53 AM
9	tracks closed to a lot of beaches (FRNP mainly) :(4/6/2017 7:29 AM
10	Boat ramp is often full of sand and not deep enough	4/6/2017 5:49 AM
11	You need more big bins so campers can put rubbish in or so all the 4wd tracks are getting very tight over growing vegetation would be nice to see it slashed back a bit	4/6/2017 3:58 AM

Q8 Do you have any suggestions or ideas for improving coastal management within the Shire?

Answered: 45 Skipped: 58

#	Responses	Date
1	Control access to beaches via 4x4 vehicles Limit free camping access Control behaviour on the beach during peak holiday season Restricted access area's	5/8/2017 11:36 PM
2	Signs to let visitors know about the History of the area in witch they are and asking to look after the area and to take care of this area and remove all rubbish and to take care when driving on tracks and beaches	5/4/2017 1:19 PM
3	Increasing dedicated parking areas that aren't too far from the beaches may encourage users to use these instead of driving across dunes and fragile areas. The camp host idea works well and could be expanded to take the pressure off of the rangers. These could be extended to non camping areas where we know people free camp.	5/3/2017 12:35 AM
4	limit access to beaches by 4wd vehicles. It would do people good to walk to the beach for fishing rather than driving on the beach. Some beaches look like car parks on busy weekends. It totally unnecessary. We have a 4wd but we NEVER drive it on a beach because it is simply unnecessary. also no more subdivision on point henry! It has clearly reached saturation.	5/1/2017 2:41 AM
5	More tidy towns	5/1/2017 1:07 AM
6	increase the information for visitors to access some of the more natural areas of bremmer such as walk trails.	4/26/2017 8:19 AM
7	Start to value the vegetated dunes as part of the environment and useful habitat. At present they are treated as expendable and allowed to be trashed and vandalised by vehicles.	4/26/2017 6:53 AM
8	- Maintaining/allowing the continuation of beach access for 4WD vehicles on the more remote beaches. - Rubbish collection/removal at more beaches even if it is infrequent or just for non putrescible/organic (i.e. inert) wastes. This could be with large bins/collection areas at the points where the access tracks met back onto the main road (i.e. for Reef Beach and Pallinup) so that while users need to take their rubbish out, they will know that they only need to lug it to the main road. - Achieving the right balance of providing amenities/facilities and more managed experiences versus the rough and ready remote and under-serviced beach experiences. In particular Bremer Beach (i.e. the Paperbarks area and John Cove) should have a very high level of access, amenities and formalities - Maximising opportunities for education and awareness in a way that encourages users to be aware of their usage and what impacts this can have for the enjoyment by others - Restricting the use of unlicensed offroad vehicles on the Wellstead Estuary bar area - the Shire should partner/engage with key local individuals and local organisations and encourage them to be custodians of relevant areas. This would involve actively identifying and going to them (rather than waiting for them to provide input through surveys like this) and equipping them to be active in coastal management and also being role models for others in terms of how the coast is used. My experience is that the locals are very proud of their coast and protective of the use of it. If engaged properly they can be key agents to get out the right message and also identify and discourage inappropriate or anti-social behaviors/activities	4/25/2017 12:16 PM
9	Quality trails to natural features Rationalised sustainable access Quality low-key infrastructure such as whale watching platforms Serious recognition by the Council of the outstanding and fragile nature that the coastal reserves protect and can share, its broad community value and the need to sustain its future. Dieback disease a particular threat that requires commitment to contain. A genuine discussion with the community about revenue raising for coastal reserve management, including bed taxes etc.	4/19/2017 9:16 AM
10	A phone tower for a better recp need some communication for safety	4/19/2017 4:16 AM
11	Better radio and phone communication	4/19/2017 2:54 AM
12	Use local indigenous knowledge to implement care offenvironment and history.	4/18/2017 2:16 PM
13	Make more skip bins available at areas where they can be accessed	4/18/2017 4:24 AM
14	If you stop blocking access people will stop making new tracks and damaging environment	4/17/2017 4:17 AM
15	Get rid of off road vehicles(motor bikes) from sandbar at Bremer Beach. With lots of families around, not a good mix.	4/14/2017 3:58 PM
16	Joint management with aboriginal people	4/13/2017 11:50 AM
17	other than a skip bin at the start of the tracks to keep the rubbish down, we love it that is why i live and work in this area born here traveled Australia and back no better place to raise my family	4/12/2017 5:24 AM
18	Maintain limited 4wd access to some areas. try to encourage codes of conduct and stewardship as just blocking access won't work with many users anti-red tape or green tape. Use of track stabilisation measures like the rubber belting at fosters could be expanded.	4/11/2017 7:17 AM

19	Difficult, but close or limit beach access to 4WD....	4/7/2017 2:06 PM
20	rubbish bins at more beaches	4/7/2017 12:39 AM
21	Fixing up current infurstructure eg toilets roads and signs and public bins and parking areas for visitors at beaches upgraded to reduce impact on environment. Possibly blocking off dunes with basic fencing to stop motorbikes disrupting vegetation and or having designated tracks or areas signed correctly.	4/6/2017 4:33 PM
22	Remove 4x4 access/patking on little boat harbour beach - it is not necessary except for boat launching.	4/6/2017 3:49 PM
23	Regular road maintenance please	4/6/2017 3:39 PM
24	Please don't over manage or allow too much development on the coast	4/6/2017 3:02 PM
25	Close Gardner south road to reduce potential dieback. Protect shore nesting bird areas. Walk trails around point Henry Walk trail to point Ann.	4/6/2017 2:22 PM
26	listen to Aboriginal families and involve us in the process of management	4/6/2017 12:39 PM
27	Do more beach cleanups but basically people are good and should be left to enjoy this untouched area.	4/6/2017 11:57 AM
28	The beaches close to town/easy access need more or better facilities-rubbis bins-toilets-more or better parking & fence off fragile bush areas. Signage that is easily visible warning about rips and dangerous surf/sea conditions (eg Native dog beach) More Walkways and paths. Plaques that tell the stories about the beaches names/history	4/6/2017 10:34 AM
29	Quite like the fact that access to many beaches is difficult/hard to find as it keeps visitor numbers down and adds to the experience.	4/6/2017 10:17 AM
30	More local beach clean up days More bin facilities or dumping points on the way home if people collect rubbish on their own Clear signage regarding 4wd conditions (backbeach particularly)	4/6/2017 9:18 AM
31	Designated free camping bays, managed by caretaker with eco friendly toilets	4/6/2017 7:58 AM
32	Bigger bins at the Fishery Beach, if possible close to where people launch their boats. Better bins at Short Beach and Little Boat Harbour.	4/6/2017 7:53 AM
33	open up areas on fit river nat park	4/6/2017 7:29 AM
34	More signage for beach access. Grading gravel roads more often.	4/6/2017 6:36 AM
35	There should be signage on all beach entrances advising motorists to reduce tyre pressure, maintain a low speed and be aware of beachgoers. Also advising of emergency two way channels and phone numbers.	4/6/2017 5:51 AM
36	Extend rock wall on marina to reduce swell coming in and eroding Bach/ filling up boat ramp with sand making is too shallow for safe launching.	4/6/2017 5:49 AM
37	None	4/6/2017 5:38 AM
38	Identification of a couple of key areas in terms of usage, where facilities could be improved. John cove, little boat harbour and the Marina need better facilities for sitting and shelter. These are an example of areas regularly used by locals, visitors which are easily accessible by cars. Dog conflict is s big problem during peak times at main beach, the marina and blossoms. 4wd use on little boat harbour should be banned unless launching a boat. The beach is too small at times for everyone to enjoy.	4/6/2017 5:37 AM
39	Reduce 4wd access to dunes, off road areas	4/6/2017 4:56 AM
40	Offer skip bin rubbish point on the main tracks out of the off road beach areas	4/6/2017 4:29 AM
41	I would love to have better access to some of the beaches that are 4wd access only.	4/6/2017 4:14 AM
42	Point Henry fire egress	4/6/2017 4:11 AM
43	More rubbish bins / beach cleaners	4/6/2017 4:08 AM
44	Keep it simple keep it open to 4wd bike riders fishing man do not bring the pine log crew in stoping people this is why we love bremer and love to do anything to help	4/6/2017 3:58 AM
45	Revision of boating facilities at Bremer Bay marine (sand build up), small craft moorings at doubtful bay	4/6/2017 3:38 AM

Q9 Any other comments?

Answered: 27 Skipped: 76

#	Responses	Date
1	Make people aware of the risk of using motorbikes at places like reef beach. It is very hard for Ambulance to get to isolated beaches.	5/10/2017 4:29 AM
2	Further comments at the committee meeting in Bremer Bay	5/8/2017 11:36 PM
3	Education of beach users is the key. Increase interactive workshops during peak periods that are fun to increase the public's knowledge of the area. There are opportunities to work with existing groups such as South Coast Management Groups, South Coast NRM, FBG, Friends of the Wellstead Estuary. These groups are keen to be involved in education programs and if you genuinely work together, it could be a win-win. There are already programs running but they need to be ramped up and better resources to make a difference. Shire could utilise uni students to run education programs as work experience. Consider attracting more funding to increase the ranger presence during peak periods as well to reduce vandalism.	5/3/2017 12:35 AM
4	Beautiful place.	5/1/2017 2:41 AM
5	No	5/1/2017 1:07 AM
6	4WDs, quad bikes and motor bikes damage fragile dune systems and help spread dieback and weeds. Quad and motor bikes in particular destroy the atmosphere on beaches and disturb feeding and breeding shorebirds. Since the closure of beaches to 4WDs in Albany, more bike riders seem to be coming to Bremer but there are not enough resources to regulate them. Also a problem for emergency services who are called out to assist when accidents occur. Dieback is a major concern as tourism increases and people travel from highly infested areas such as the Stirling Ranges to the Shire of Jerramungup. Ideally we should have a wash-down station and more education about the implications of dieback.	4/27/2017 5:01 AM
7	Bremmer is a beautiful natural place to visit and we need to be aware that any "progress" in the area does not detract from the beauty of Bremmer	4/26/2017 8:19 AM
8	Many visitors from Victoria remark on our lack of care for dunes and beaches. Protection of Beach-nesting birds needs to be listed. Pied and Sooty Oyster-catchers, Hooded and Red-capped Plovers and Fairy Terns all attempt to nest on our beaches.	4/26/2017 6:53 AM
9	The coast is an absolute key asset for the area. It needs to be appropriately managed, but not by getting key users offside or by being overly restrictive. Education and awareness is a key factor. This was non-existent in the past, but I think generally now a higher proportion of people want to do the right thing, they just need to be made aware of the key considerations to keep this at the front of mind.	4/25/2017 12:16 PM
10	It's great to see the coastal reserve plan being reviewed, well done. Make sure it aligns with other plans and strategies of the Shire and State Govt.	4/19/2017 9:16 AM
11	Love the area + will continue to come for ever	4/19/2017 4:16 AM
12	Fabulous place to visit and stay	4/19/2017 2:54 AM
13	Please keep the coast open for the next generation, all for help and support but once it's given away to other group we lose all rights. I right this as my experience over on the east coast, they closed the bush off, bang fires no access as tracks closed off due to reveg, now they ask motor cycle groups to do rides thru areas with a GPS to log the area and then ask them to do a track report and the end of the ride. and I must say what a good idea the right people using the right groups in the right way. I'm the 1st to yell at a unlicensed rider yarr hooing in front of family group. done it a few times. We aren't all bad people work live play-pay work dues and taxes enjoy live	4/12/2017 5:24 AM
14	Would love to see better management of developed areas eg roads footpaths and fencing and lawn mowing in public spaces seems to get cleared but left over grow again specially in New estate along the road to Bremer beach.	4/6/2017 4:33 PM
15	While I think it's totally fine to launch boats at little boat, I find parking on it or driving on it a bit excessive. If there was a bigger car park that would be great, as long as people can still launch dinghies there and park in the car park	4/6/2017 8:10 AM
16	Signage and information provided by way of 4wd tracks, walking trails, free camping The Parking Bay with 1 rubbish bin that is on the way back to the highway along the Bremer Rd is always overflowing after an influx of visitors. Great that rubbish is being bought out but travellers want to get rid of it somewhere	4/6/2017 7:58 AM
17	Put a sign up, saying creepy pedo's not welcome?! Or the unsolicited photography of public especially, children under the age of 18 is a punishable offence?	4/6/2017 7:53 AM
18	Please stop people from parking vehicles on Little Boat Harbour Beach.	4/6/2017 7:09 AM
19	More holiday accommodation	4/6/2017 5:44 AM

20	The big appeal of Bremer to the wider community is that it still offers a sense of adventure, people can go 4wd, camp on the beach and ride motorbikes with a sense of freedom that can't be matched across the rest of the south west. This I think is Bremer's biggest selling point and whilst we should still work to ensure good environmental and social outcomes we mustn't lose the "sense of adventure" that Bremer and surrounds offers.	4/6/2017 5:38 AM
21	the fisheries boat ramp is ordinary	4/6/2017 5:23 AM
22	Protect the bush and beaches	4/6/2017 4:56 AM
23	We love Bremer because we can go onto the beach to fish or swim or just relax but the visitors with 4x4 in the sand dunes does become dangerous along the tracks because they rip around not thinking that there could be another car coming, and in the short time they are here can do some damage.	4/6/2017 4:26 AM
24	Great shire and great town	4/6/2017 4:11 AM
25	We have been coming to BB for over 40yrs and have a Semi Perm Site @ BBCVP. Other than a Road Closed Sign on the Bremer Bay Road to keep the masses out (lol) I'd like to see better Public Toilets at Little Boat Harbor, Speed Humps back on the road along side the Caravan Park and better upkeep of the gravel roads out to the East of Bremer. The road condition (corrugations) are inexcusable.	4/6/2017 4:07 AM
26	Slash the 4wd tracks	4/6/2017 3:58 AM
27	We love Bremer Bay the way it is. It is part of the living here experience to 4 wheel drive on the beaches, or ride the motorbikes on the bush tracks between catching some waves- in a responsible way of course. We would not want to see that aspect gone. However, we do recognise, that there will always be the type of people not doing the right thing. It would be a shame if we let these people ruin our lifestyle.	4/6/2017 1:47 AM

**Q10 If you would like to find out more about the Shire of Jerramungup Coastal Management Plan, please provide your name, phone number and email address and we will add you to the mailing list...If you would like to talk with us directly, you can contact Melanie Price on 0447 446 343 or
melanie.price@auroraenvironmental.com.au**

Answered: 12 Skipped: 91

#	Responses	Date
1	Harry Casey 1800 3473 000 Info@1800fire000.com.au	5/4/2017 1:19 PM
2	geoff.barr001@gmail.com	4/26/2017 8:19 AM
3	Yes please I would be very interested, and expect that my time on the coast within the Shire will continue and most likely increase. I am also happy to provide informal input or provide local contacts that can provide key inputs. Jason Hick jason.hick@emergeassociates.com.au	4/25/2017 12:16 PM
4	Stephen Booth booth.sp@gmail.com	4/18/2017 4:24 AM
5	Yarramoupp@gmail.com	4/13/2017 11:50 AM
6	John McKinney john@agonis.com.au 0438 913 213	4/11/2017 7:17 AM
7	James.bee@elders.com.au James Bee 0419719213	4/6/2017 3:39 PM
8	Matt Cloughton 0417992892 matt@southcoastenv.com.au	4/6/2017 3:02 PM
9	Martin Heller 0430 196987 Martinkheller@gmail.com	4/6/2017 1:46 PM
10	Roni Gray Forrest rforrest@ais.wa.edu.au representing Yarramoupp Aboriginal Corporation Jerramungup	4/6/2017 12:39 PM
11	Nathan Lissiman 0459 437 744 nathanlissiman@gmail.com	4/6/2017 11:06 AM
12	Gemma Bawden 0429723310 gemma.bawden@aycc.org.au	4/6/2017 9:18 AM

APPENDIX K

Colouring Competition Winners

**SHIRE OF JERRAMUNGUP
COASTAL MANAGEMENT PLAN 2017**



<http://www.barbgreenart.com.au>

NAME: Tatum

AGE: 2

**SHIRE OF JERRAMUNGUP
COASTAL MANAGEMENT PLAN 2017**



<http://www.barbgreenart.com.au>

NAME: Isis 0400 493 470 AGE: 7

**SHIRE OF JERRAMUNGUP
COASTAL MANAGEMENT PLAN 2017**



<http://www.barbgreenart.com.au>

NAME: Bella

AGE: 14

APPENDIX L

Submissions for Draft Management Plan

SUMMARY OF PUBLIC SUBMISSION

SHIRE OF JERRAMUNGUP - DRAFT COASTAL MANAGEMENT PLAN

Table 1: Submission Summary

Submissions received from:

1. Department of Transport – Erosion Hotspots
2. Department of Transport – on Draft Coastal Management Plan
3. G. and T. Webster
4. Greg Heberle
5. Ian Weir
6. Nathan McQuoid
7. Department of Biodiversity Conservation and Attractions
8. Tourism WA

Submitter	Submission Summary	Response	Change to Coastal Management Plan
Department of Transport	Fishery Beach has been identified as a coastal erosion hotspot with management and adaptation options outlined in DoT's Coastal Hotspots (Seashore, 2017).	Note management options, including that fencing of western dune face be maintained to prevent access.	Add information to Fishery Beach section and Appendix.
Department of Transport	Modify wording: Department of Transport (DoT) – Boating facilities and coastal infrastructure planning, construction, and management. DoT also provides advice and grants to support coastal management in general.	Noted.	Add modified wording.
G. and T. Webster	A visit to the Jerramungup coastline was marred by destructive behaviour and noise from quad bike users on the beach. 'No dogs' signs ignored. Concerned about impacts on wildlife, especially when visitor population swells during peak periods.	Effective management of coastal users is challenging and relies on number of approaches, including providing information (e.g. signage), education and policing. These aspects have been included in the management plan, with recognition of resource limitations.	No change to document required.
Greg Heberle	Long term and historic involvement with coastline, particularly Doubtful Island Bay (including as a commercial fisherman). Mr Heberle has written two books about the area: <ul style="list-style-type: none"> • Heberle fishing Western Australia 1929-2004 • Doubtful Island Bay Western Australia 	Noted, and appreciate historic perspective.	
	Climate: Page 14: Jacup is not the nearest weather station to the Jerramungup coast. BOMs weather stations 009594 Peppermint Grove and 009654 Bremer Bay, are closer to the coast.	Bremer Bay and Peppermint Grove do not have overall climate summary. Note that rainfall could be quite different at Jacup.	Add annual rainfall data for Bremer Bay weather stations.

	<p>Access: In the 1960s-1990s, the approximately 3.5km of clay road in to Doubtful Island road was typically impassable for most of the 4 wettest months of the year, May, June, July, August. In more recent years the clay road is typically impassable for much of November, December and January, as well. (rainfall spreadsheets provided)</p>	Noted.	Add note to section about access to Doubtful Islands area.
	<p>Section 7.3 House Beach - Corner Cove Page 68: There are more than 15 camping sites at House Beach. At times such as Easter and New Year, more than 40 camps can be occupied. Probably 90%+ of the camping is on location 1307 private property. Page 71: The fishing lease at House Beach probably never existed. It was a fishermen's camp. The shack is still present but fishing ceased in about 2000. Page 72: Why decommission the old pit toilet. Maintain it. If there is no public toilet within easy walking distance, most people will make their own arrangements, e.g. take toilet paper in to nearby bush.</p> <p>Page 73: I question the need for a camp host. Probably 90%+ of the camping is on location 1307 private property. Would the camp host have any authority on private property? If funds are available for a camp host, spend it instead on dumping gravel or even sand on the 3.5km of clay road. Page 73: If good tracks are not available, new tracks will be made. If there is a good track, almost everyone will use it.</p>	<p>Noted. 15 camp sites was an approximation based on a site inspection. It is likely that more groups fit in at peak times. The plan notes that camping is occurring on freehold land.</p> <p>The pit toilet is in poor condition and would be best if replaced with a composting toilet, due to its proximity to the beach. However, action may be delayed while tenure of the area is being resolved.</p> <p>A trial using camp hosts could assist in improving behaviour and use of the House Beach area during peak times and remains a valid management option.</p>	<p>Reword section to clarify House Beach status.</p> <p>Add wording to clarify.</p> <p>No change to management plan.</p>
	<p>Section 7.4 Doubtful Island Peninsular Page 81 Vehicle access. Doubtful Island (House Beach) was the earliest shore based whaling station in west Australia, in 1836. Thus, Doubtful Island Bay was one of the first places settled by Europeans and yet, there still is not a good road in to the place, 180 years after first settlement. Hassell's had leases in the area, probably from about 1860 and presumably paid rates. Location 1306 near Peppermint Dam was surveyed 1895, initially owned by Hassells and presumably rates have been paid since then. Similarly for locations 1307 House Beach-Trigelow and location 1325 Peppermint, surveyed soon after</p>	While the desire to upgrade tracks is understandable and a worthy management aspiration, there are significant difficulties relating to land tenure and expense. Also, provision of upgraded access would allow more visitation to an area that does not have the facilities to accommodate current demand.	Clarify desire to improve road and associated constraints.

	<p>1306. Rates have been paid for Heberle's fishing lease since about 1972 and for Hassell's House Beach lease since about 1984.</p> <p>Surely the relevant rate payers are entitled to an all-weather road in to their properties at some stage. The 3.5km of clay road should have gravel or even sand dumped on it, then spread. Ideally, there should be an annual budget for this work, aiming to have it completed in say 5 or 10 years. The sand tracks are OK in all weathers, except for a total of about 150 metres in wet areas, in about 4 places.</p>	<p>Clay areas that exacerbate risk of dieback introduction and spread should form priority for any track improvement works.</p> <p>Need to determine dieback status of these areas.</p>	<p>Make note that improvement of clay areas should be priority for access improvement works.</p>
Dr Ian Weir	<p>Supports weed control and dieback management initiatives. Engage visitors to help.</p> <p>Supports concept of 'neighbourhood safe places' during fire emergencies on Point Henry.</p> <p>Supports development of a bushfire refuge and memorial to those who have drowned along the coast (proposed to be located at Blossom's Beach). See full submission below.</p>	<p>Noted</p> <p>Noted</p> <p>Noted. Shire's position is that refuges would be beneficial at Blossom's Beach and Short Beach. Not Little Boat Harbour.</p>	<p>Add wording in plan to reflect these aspirations.</p>
	<p>Little Boat Harbour – See concept Master Plan (full submission below).</p>	<p>Local Law may assist in controlling vehicle access to Little Boat Harbour Beach during peak times.</p>	<p>Wording in report: Council to consider developing more detailed design based on adopted concept but needs to keep in mind: technical requirements for trailers, tenure (UCL), erosion risk hazard and environmental impacts (e.g. stream and vegetation).</p> <p>As an interim measure, the following options have been considered and presented to the community and stakeholders:</p> <ol style="list-style-type: none"> 1. Maintain current access: does not address current congestion and visitor risk. 2. Prohibit non-boat related vehicle access to the beach at all times (vehicles to park in car parks provided). 3. Prohibit non-emergency trailer parking on beach at all times (vehicles to park in upper car park). 4. Prohibit all vehicles, including non-emergency trailer launching and parking during peak times (school holidays). That is, no

			<p>vehicles on beach during peak times.</p> <p>5. Launching of boats for emergencies would be permitted.</p> <p>Feedback from the community regarding preferences was mixed. In light of input received, the following was recommended:</p> <ul style="list-style-type: none"> • Trial access control for three years and then re-engage with community. • Prohibit all vehicles on the beach during Summer and Easter school holidays except boat launching by commercial operators through a permit system. • Allowed at any time: Emergency access for boat launching. <p>Council needs to consider the implications for this action, in terms of enforcement, as a gate, signage and ranger patrol are likely to be required.</p> <p>At its Council Meeting on 21 March 2018, Council determined:</p> <p><i>Specifically in regard to Little Boat Harbour Council consider installing Australian Standard signage at the entry points to the beach to raise awareness regarding safety concerns and vehicle maneuverability.</i></p>
Nathan McQuoid	Cape Knob, Doubtful Island and Point Henry Peninsulas have outstanding biodiversity and recreation values. There are opportunities for joint management via Native Title Settlement process.	Noted.	Clarify in plan.
	Better management of recreation, dieback, access and weeds is necessary, particularly at Point Henry and Point Gordon.	Noted.	Clarify in plan.
	Most immediate priority is repair of Gordon Inlet and Doubtful Island Roads/ tracks to prevent the spread of Dieback.	Noted. While the desire to upgrade tracks is understandable and a worthy management aspiration, there are significant difficulties relating to land tenure	Clarify desire to improve road and associated constraints.

		and expense. Also, provision of upgraded access would allow more visitation to an area that does not have the facilities to accommodate current demand.	
Tourism WA	Tourism WA is supportive of this initiative as we are well aware that tourism access to this area is important to the travelling public. However we are also aware of some possible negative impacts this may bring to the natural environment. Tourism WA therefore supports the management initiatives outlined and wishes to emphasise the importance of managed access to this sensitive area.	Noted	No change to plan
Department of Biodiversity Conservation and Attractions	Were DBCA on the Steering Committee?	Two officers represented DBCA on Steering Committee as described in Section 5.1 of the plan	No change to plan
	The list of international initiatives relevant to the Shire of Jerramungup coastal reserves should include the UNESCO Man and the Biosphere Program for the recently re-listed Fitzgerald Biosphere.	Agreed	Add text about UNESCO Man and the Biosphere Program
	Add to "Strategic document which relate to coastal management..." list of documents.	Noted	Add list of documents/ initiatives.
	Add wetlands as a 'coastal value'	Noted	Add wetlands to section 3.
	Under tenure management it should be recognised that Crown reserves around the mouth of the Pallinup River have been identified in DBCA South Coast Regional Management Plan 1992 – 2002 to become conservation reserves. These reserves are 14988, 21647, 22353, 27102 and 33257.	Noted	Make changes as suggested.
	Change second sentence to "In 2003, the DBCA became responsible for the management of fire prevention, weeds and pest animals on UCL and UMR outside gazette townsites under a Memorandum of Understanding with the then Department of Planning and Infrastructure"	Noted	Make changes as suggested.
	<i>Dasyurus geoffroii</i> (Chuditch) and <i>Calyptorhynchus latirostris</i> (Carnaby's Black Cockatoo) are known to occur within the Jerramungup coastal reserve and are not listed within Table 7.	Noted	Make changes as suggested.
	<i>Eucalyptus microschema</i> does not occur in the Shire of Jerramungup, this	Noted	Make changes as suggested.

	<p>is an incorrect record. Likely Bremer Bay was given as closest town. Specimen was collected from Old Ravensthorpe Road. Other records from Naturemap may also be incorrect and should be verified.</p> <p><i>Caretta caretta</i> (Loggerhead Turtle) and <i>Dermochelys coriacea</i> (Leather back Turtle) are listed as threatened plants in Table 7.</p>		
	Weeds are not usually eradicated by fire. On the contrary they are usually exacerbated due to the diminished competition from native species on fast establishing exotic weeds species.	Noted	Make changes as suggested.
	Once yearly Eradicat baiting is now integrated into the DBCA Aerial Bait program for fauna conservation areas such as the Fitzgerald River National Park.	Noted	Make changes as suggested.
	Change the sentence as per the underline "A survey by the <u>then Department of Conservation and Land Management...</u> "	Noted	Make changes as suggested.

APPENDIX M

Survey – Draft Management Plan

6. Little Boat Harbour is a popular location for families, scuba diving, fishing and boat launching. Vehicles on the beach, especially during busy times can cause risk for users, particularly children. Which (if any) of the following would you support at Little Boat Harbour?

- ☐ Maintain current unlimited access. This action does not address current congestion and visitor risk.
- ☐ Only allow vehicles on the beach that are launching boats (all other vehicles to park in car parks provided).
- ☐ Allow only emergency vehicles to park on the beach (all seasons).
- ☐ No vehicles allowed on the beach at peak times (school holidays).
- ☐ Permit launching of boats for emergencies only.
- ☐ Boat launching related vehicles only, and vehicles to be removed from beach to car parks after launching.
- ☐ Other suggestions:

7. Any other comments regarding priorities for coastal management?

Please return this survey by 25 January 2018 to:

Email: development@jerramungup.wa.gov.au

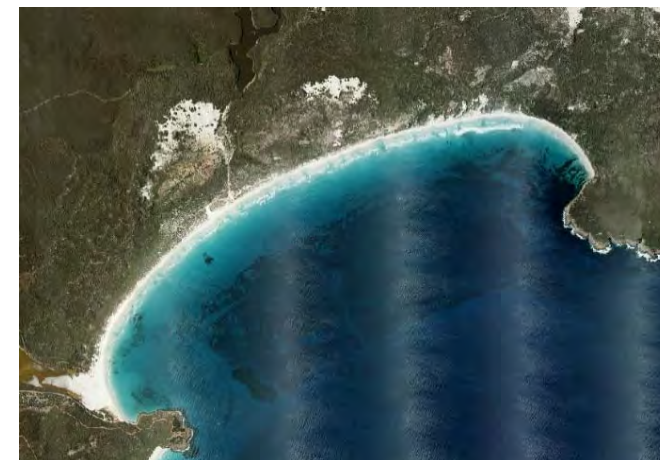
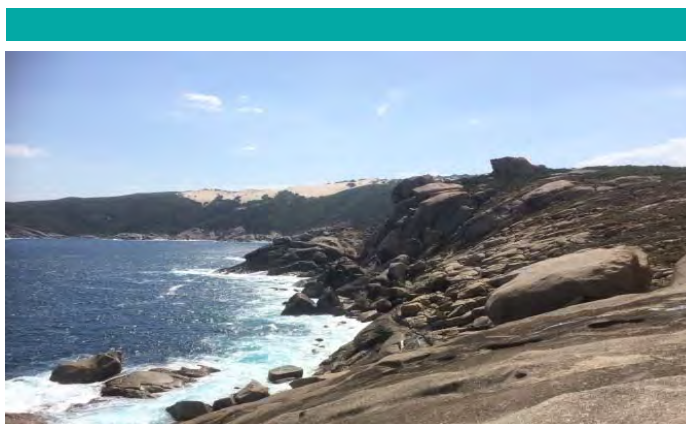
Or post:

Postage Paid

Shire of Jerramungup

8 Vasey Street, JERRAMUNGUP WA 6337

You can call to discuss the Draft Coastal Management Plan with Melanie Price of Aurora Environmental on 0447 446 343



Shire of Jerramungup

DRAFT Coastal Management Plan Feedback

The Shire of Jerramungup is seeking comments about its Draft Coastal Management Plan which is available for public review between 4 December 2017 and 25 January 2018.

You can provide your views about priorities for recommended actions in the plan. The plan is available at:

<http://www.jerramungup.wa.gov.au/development/coastal-management-plan-review-2017/>

You can provide a full submission via this webpage. Another way to provide your views is to complete this survey, which is also available online at:

<https://www.surveymonkey.com/r/C5YLZLS>

1. In terms of coastal management, what do you think are the top **three** priorities?

- ☐ Leadership and action (e.g. Coastal Action Group)
- ☐ Education and awareness
- ☐ Management of safety issues
- ☐ Resolution of reserve ‘ownership’
- ☐ Removal of squatter shacks
- ☐ Access (e.g. walk trails, four wheel drives and off road vehicles)
- ☐ Rubbish collection
- ☐ Better camping facilities (e.g. House Beach)
- ☐ Planning for sea level rise and coastal erosion risks
- ☐ Improvement of facilities (car parks, trails, signage and toilets)
- ☐ Better planning controls for coastal and marine tourism
- ☐ Protection of shore bird nesting and foraging areas
- ☐ Weed management
- ☐ Dieback risk management
- ☐ Fire risk management
- ☐ Other

2. Which coastal areas do you think are most in need of management? Name your top **three** locations.

- ☐ Pallinup Beach
- ☐ Reef Beach
- ☐ Foster Beach
- ☐ Cape Knob
- ☐ Horatio Island
- ☐ Red Rocks
- ☐ Stream Beach
- ☐ Dillon Bay
- ☐ Native Dog Beach
- ☐ Blossoms Beach
- ☐ Little Boat Harbour
- ☐ Sparkling Island
- ☐ Point Henry
- ☐ Banky Beach
- ☐ Point Gordon
- ☐ Black Point
- ☐ Short Beach
- ☐ Fishery Beach (Marina)
- ☐ Back Beach
- ☐ John Cove
- ☐ Bremer Beach
- ☐ Peppermint Beach
- ☐ Air Blowholes
- ☐ The Chimney
- ☐ Point Hood
- ☐ Doubtful Islands
- ☐ Drages Beach
- ☐ Doubtful Islands Beach
- ☐ House Beach
- ☐ Tooregullup Beach
- ☐ Gordon Inlet
- ☐ Wellstead Estuary Mouth
- ☐ Other (please specify)

3. In relation to question 2, why are these areas your top priority?

4. In relation to Question 2, what most needs attention in this area?

5. Previous consultation has highlighted the following actions as high priorities. How would you rank the following projects (from 1 to 7)?

- ☐ Main Beach and Bremer Beach: Monitoring for four wheel drive use and protection of shore birds.
- ☐ Fishery Beach Marina: Planning for expansion of facilities and monitoring of sand drift.
- ☐ House Beach: Resolve tenure, design of camping area, use of camp hosts, access and weed management.
- ☐ Gordon Inlet: Road access and dieback risk reduction.
- ☐ Rock Cairn Lookout: Development of iconic visitor location.
- ☐ Banky Beach, Dillon Beach, Doubtful Island Peninsula: Visitor risk management.
- ☐ Fitzgerald River National Park interface: Upgrade access to Point Ann (Pabelup Road; DBCA) and via Gordon Inlet Road (Shire of Jerramungup).

Other (please specify)

Summary of Survey Responses

Q1 In terms of coastal management, which do you think are the top 3 priority actions?		
1. Rubbish collection (44%)	2. Improvement of facilities (35%)	3. Access (32%)
Comment: In terms of long term sustainability of the coast, the practical management of access is most likely the most important issue (as can also address dieback risk, erosion and safety). Site assessments did not indicate a significant issue with rubbish management. Improvement of facilities in some places (e.g. House Beach) are valid, but will require tenure resolution and funding.		
Q2 Choose your top 3 coastal areas that are most in need of management.		
1. Little Boat Harbour (67%)	2. Blossom's Beach (39%)	3. Fishery Beach (24%)
Q3 In relation to question 2, why are these areas your top priority.		
Little Boat Harbour	Blossom's Beach	Fishery Beach
<ul style="list-style-type: none"> • Use of the area needs guidelines • Little Boat Harbour: vehicles on beach are a danger to pedestrians • Access to LBH is terrible and cars should not be allowed on the beach • Beach too congested • poor parking and access • Little Boat Harbour is becoming increasingly popular and the car park / turn around area is tiny. I think access to the beach is important as it allows easy access for physically impaired people and it's a great swimming beach. • Not enough car park room down the bottom even to turn around when people are parked in the Limited car park. • Interaction of tourists with boat launching. Hard to get boats off the beach when tourists and kids are all over it. • Cars Should not be on beach except if launching boats • An accident waiting to happen in particular on school holidays and long weekends - there is no need to drive on this beach except for boat launching. No vehicles should be left on the beach once boats launched. 	<ul style="list-style-type: none"> • The amount of usage and the resultant pressures • high level of traffic over peak period accessing this beach, track into blossoms is overgrown and narrow in parts, it is only one car wide to access the beach which is dangerous during peak periods as head-ons may occurs • Beach access limited • It's got too much pollution • Interaction of so many people. People fishing, swimming, surfing, boat launching, jet skiing all in same area. • restrict motorbikes • Conflict between users, in particular dogs not on leashes and inappropriate jet ski use close to other beach users. 	<ul style="list-style-type: none"> • Need to ensure facilities are up to standard to tour operators / users of the marina • Erosion • They are making More and more changes which causes high risk of danger • Fishery beach area is good, but I think it could be improved on with better facilities such as cold showers, shaded areas on or near to the beach. • Not enough parking in the boat trailer area on good weekends.
Q4 In relation to Question 2, what needs attention in the area?		
<ul style="list-style-type: none"> • Cars on the beach • Keep vehicles off beach during peak times (weekends and school holidays) • Vehicles on beach during prime times • Don't allow cars on the beach • Parking and toilets • Carpark / turnaround area at beach level • Mine some of the rock or remove some of the small trees • A redesign of the whole area to improve parking and walking access to the beach, keep cars off the beach and boat trailer parking up away from the area as this just reducing the available space on the beach. Education and no boating areas to keep jet skiing launching in a defined area. Dogs to be kept off the beach or better policing of dogs needing to be on leads. • Boat launching vehicles only on the beach and then parked in engineered permeable surface constructed in the swale behind primary dune. Other overflow cars parked in intermediate carpark above beach and have an 	<ul style="list-style-type: none"> • Access control, signage, rubbish collection/removal, restricting the use of unlicensed off-road vehicles • Tracks • A redesign of the whole area to improve parking and walking access to the beach, keep cars off the beach and boat trailer parking up away from the area as this just reducing the available space on the beach. Education and no boating areas to keep jet skiing launching in a defined area. Dogs to be kept off the beach or better policing of dogs needing to be on leads. 	<ul style="list-style-type: none"> • Jetty's / facilities • Control of erosion • Less changes, less injuries • Shaded areas, showers, BBQ's, tables etc. • Remove the bloody sand for starters

'attraction' (e.g. coffee cart and/or nice shaded terrace) locate between the top carpark and the beach - at a spot that offers views both up to the carpark and down to the beach. All as identified and master planned by N McQuoid, C Lebens and I Weir for the SoJ.		
Q5 Previous consultation has highlighted the following actions as high priorities. How would you rank the following projects (from 1 to 7)?		
1.	Fishery Beach Marina: Planning for expansion of facilities and monitoring of sand drift.	
2.	Fitzgerald River National Park interface: Upgrade access to Point Ann (Pabelup Road; DBCA) and via Gordon Inlet Road (Shire of Jerramungup).	
3.	Main Beach and Bremer Beach: Monitoring for four-wheel drive use and protection of shore birds.	
4.	Gordon Inlet: Road access and dieback risk reduction.	
5.	House Beach: Resolve tenure, design of camping area, use of camp hosts, access and weed management.	
6.	Rock Cairn Lookout: Development of iconic visitor location.	
7.	Banky Beach, Dillon Beach, Doubtful Island Peninsula: Visitor risk management.	
Note: There was only a small margin between the prioritisation of actions, indicating that the respondents had different priorities.		
Q6 Little Boat Harbour is a popular location for families, scuba diving, fishing and boat launching. Vehicles on the beach, especially during busy times can cause risk for users, particularly children. Which (if any) of the following would you support at Little Boat Harbour?		
15% indicated that 'no change' was preferred.		
A range of 'other' responses, including:		
<ul style="list-style-type: none"> This has been an ongoing issue for years. Little boat harbour is the only safe place to launch a boat in the bay. If you restrict access people will launch at blossoms which is dangerous for the boats and other beach users. This beach has been a boat launching beach for 40 years. There are plenty of beaches to play and swim at. None they know the risks associated with being on the beach at those times and as for small kids they should be the adult's responsibility Maintain unlimited access and make the carpark / turnaround area bigger "only allow vehicles on the beach that are launching boats" and "no vehicles allowed on the beach at peak times" and "permit launching of boats for emergencies only" Maintain current unlimited access. People to be responsible and aware of other users Prohibit non-boat related vehicle access to the beach at all times (vehicles to park in car parks provided) Only allow vehicles on the beach that are launching boats (during peak season only) When little boat harbour is full people drive down turn around and go elsewhere seems to work fine beach is too small to make parking bay bigger Signage reminding people it is a busy spot and to drive slowly and for drivers to be aware of pedestrians and vice versa. On some evenings even in school holidays there may be only a couple of cars. I think people can respect one another during high congestion and peak period by taking it slowly and looking out for each other's so that all can enjoy the beach. During school holiday periods, boat launching related vehicles only, and vehicles to be removed from beach to car parks after launching. Vehicles should not be allowed on weekends or school holidays 		
Q7 Any other comments regarding priorities for coastal management?		
<ul style="list-style-type: none"> Regarding Little Boat Harbour: Maybe signage that explains that lower (car) park is for drop off and pick up only. Top park to be used after unloading. Top park would need to be made bigger- especially if boat trailers are forced to park there. In answering Q 5 1 is the most important and 7 least important. Quality relationships with JP Shire, DPaW, Planning Commission, Noongar people and other stakeholders are vital. Committed and active management as the implementation of plan priorities, with dieback the most important as it could/will cause irretrievable damage. Firm and committed policing and management of environmental damage and recreation sites. Committed working with DPaW, Noongars and other stakeholders to carefully manage Cape Knob and Doubtful Island Peninsulas for their outstanding conservation and recreation values, recommend their tenure upgrade to national parks. Quality coastal management is a key part of the profile of Bremer Bay being a premium natural experience for visitors, the coastal environment must be protected and carefully managed to maintain this profile. Use the international Biosphere Reserve Brand as support for the coastal management plan and its recommendations. It is an amazing list of natural assets when they are outlined like this - so I think we should bear in mind that this is all 'a good problem' to have. I think the SoJ needs to cast all this forward thinking in the context of the UNESCO Fitzgerald Biosphere Reserve/region - given that all these assets are within the recently adopted FBR Boundary. The FBR provides not just an international context but a global sustainability framework - and that is where we should be looking - world class/best practice. in so doing we should not underestimate the power of social media (e.g. Instagram + Esperance) to draw attention to this highly photogenic landscape. So we need to prepare for a new type of visitor and visitor experience rather than just think that current land use/tourism will proceed organically on its present trajectory. The questions we should be asking are: Is there an opportunity to use social media + tourism to eradicate tea tree in Bremer Bay by 2020? Is there a way to mobilize volunteer tourists/visitors to help construct walk trails and pavilions on Point Henry? (and so on). These types of actions/events create results while also being the result - that is Sustainability is a process not an end game and people will want to come here and be a part of that process (given these extraordinary assets). Restrict beach fishing from main swimming beaches in peak times. (Blossoms and Bremer) I saw a fisherman chumming up on blossoms when there were kids swimming not more than 50m away. A fight nearly started between the fisherman and the adults 		

- As locals we enjoy being able to access the beaches with our vehicles. Don't let peak tourist seasons idiots ruin it for those that live here. Perhaps the shire could employ an extra ranger at these peak times.
- Think you're doing a good job as it is a few more rubbish bins or skip bins during peak times to stop the need to put rubbish next to bins like you see at the Boxwood end of Borden to Bremer rd and in the parking Bay near Wishart's.
- Motorbikes and off-road vehicles driving in the Fitzgerald national park is becoming more prevalent, especially in the smaller bifurcated part of the Fitzgerald to the west. This needs to be managed.
- Information signs on remote tracks
- For Little Boat Harbour: "Only allow vehicles on the beach that are launching boats" and "Boat launching related vehicles only, and vehicles to be removed from beach to car parks after launching".
- Poor track conditions into house/doubtful inhibits vehicular access which helps reduce numbers of visitors particularly in peak periods. During peak periods vehicles driving at high speeds on beaches near kids is a concern.
- This really needs to get the engagement and inputs from the locals in each of those areas, and particularly those based in the Bremer Bay township
- More funding is needed to make the recommendations happen.
- Include Indigenous knowledge in land management

APPENDIX N

Fishery Beach Coastal Erosion Hotspot

Shire of Jerramungup

Table 3-1: Hotspot LGA / Coastal Manager

ID	LGA / Coastal Manager	Hotspot
53	Shire of Jerramungup	Bremer Bay Fishery Beach

Table 3-3: Erosion issue per hot spot

Relative importance shown by shading from most important (black) to least important (white). Note 1: some sites (12, 18 and 25) have four issues of equal importance (dark grey) with all included in the sub-totals.

	(a) Erosion due to influence of artificial structures	(d) Nearshore structures cannot withstand erosion	(b) Local instability due to geomorphology	(c) Instability due to external processes (variable sed. supply)	(e) Enhanced response due to projected change (mainly SLR)
53. Bremer Bay					

Table 3-6: Asset class susceptible to erosion hazard per hotspot

Shaded indicates assets susceptible to erosion hazard. Table sorted N to S.

	Private ¹			Leasehold			Road/rail			Services ²			Recreation ³			Boating ⁴			SLSC/rescue		
	0-5	5-25	25+	0-5	5-25	25+	0-5	5-25	25+	0-5	5-25	25+	0-5	5-25	25+	0-5	5-25	25+	0-5	5-25	25+
53. Bremer Bay																					

Note: 1) X = Freehold land without a road to seaward. 2) Services are drains, electricity, water, communications, gas, sewerage, oil from Dial before you Dig. 3) Recreation includes paths, beach access (only fixed by concrete/bitumen or staircases), playgrounds, parklands and car parks. 4) Boating excludes sand access ramps and beach launching with no associated stabilisation works. 5) South Thomson Bay has public-owned holiday cottages, separate to the asset classes in this table.

Table 3-8: Timeframe for Management Action - component rating (physical asset and recreation/stakeholder)

Hotspot	Physical Asset rating			Recreation/ Stakeholder rating			Level of Action		
	0-5 years	5-25 years	25+ years	0-5 years	5-25 years	25+ years	0-5 years	5-25 years	25+ years
53. Bremer Bay Fishery Beach	L	L	L	L	M	M	L	L	L

Table3-10: Overall prioritisation and group rank

Hotspot (Listed N to S within each Group Rank)	Group Rank	Prioritisation		
		Imminent (0-5)	Expected (5-25)	Projected (25+)
53. Bremer Bay Fishery Beach 16. Grey	8	L	L	L

Table 3-12: Management and adaptation options per hotspot

	Existing				Imminent (0-5 year)				Expected (5-25 year)				Projected (25+)			
	Avoid	Retreat	Accom.	Protect	Avoid	Retreat	Accom.	Protect	Avoid	Retreat	Accom.	Protect	Avoid	Retreat	Accom.	Protect
53. Bremer Bay			✓				✓				✓				✓	

Note: sand nourishment has been included under protect.

Table 3-16: Approximation of costs (50k/L/M/H) for works in the 0-5 and 5-25 year time frames

Hotspot	Approximation of cost for works in 2016 costs (50k/L/M/H)	
	Imminent (0-5 years) time frame	Expected (5-25 years) time frame
53. Bremer Bay	Accommodate - L	Accommodate - L

Appendix D.53. Bremer Bay Fishery Beach

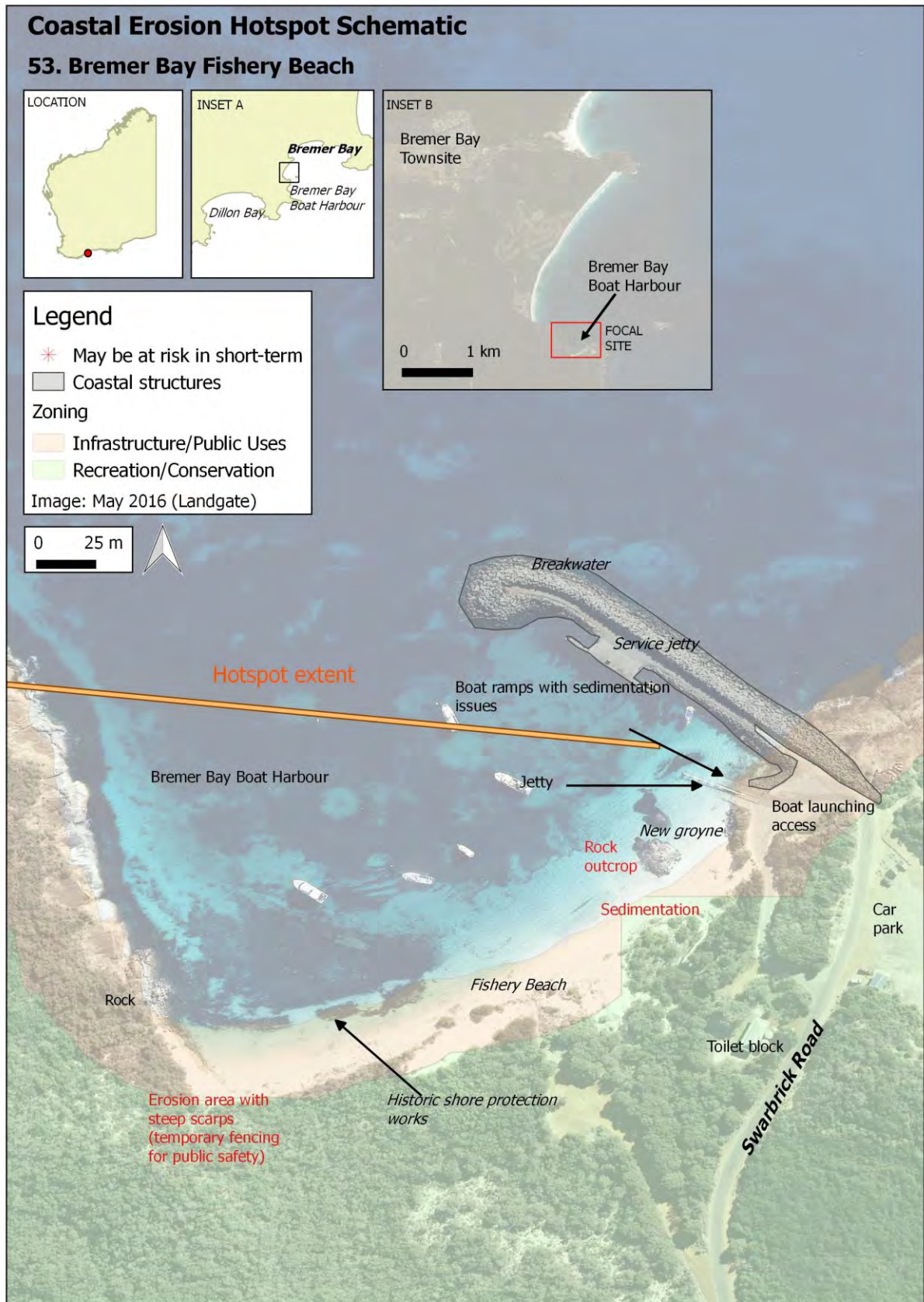


Figure D-53: Bremer Bay Fishery Beach figure

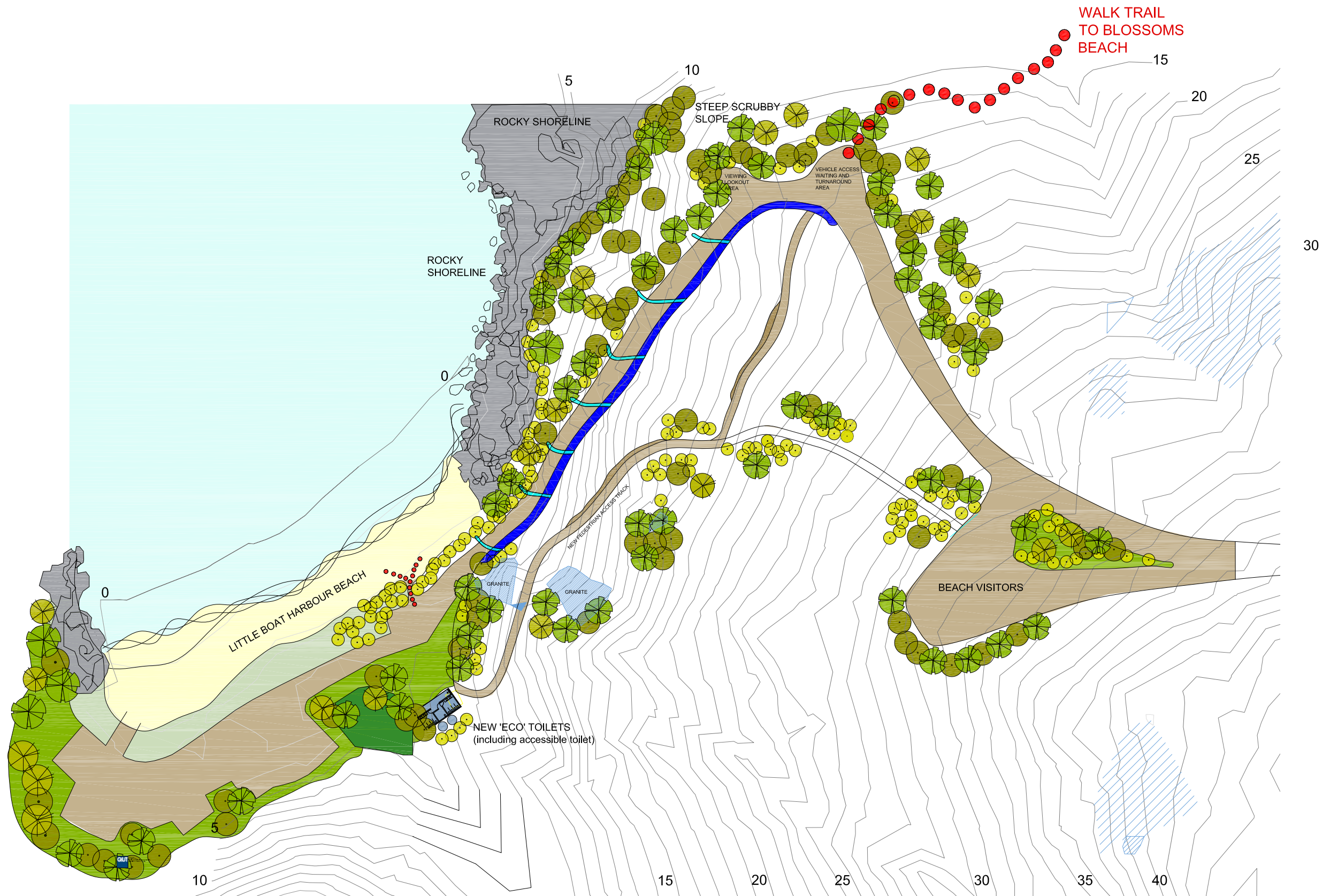
Table D-53: Bremer Bay Fishery Beach summary information

Hotspot No.	53
Hotspot Name	Bremer Bay Fishery Beach
Local Coastal Manager	Shire of Jerramungup
Summary of hotspot	<p>The western extent of Fishery Beach is eroding in response to the recent Bremer Bay Boat Harbour construction. The scarp erodes under extreme storms, with the harbour limiting the capacity for recovery. Historically the beach would lose all of its sand in a big easterly storm and regain it before the end of the year, superimposed with long-term cyclic behaviour. Increased compartmentalisation by the structures have limited exchange of sediment beyond the harbour. Historic efforts have been undertaken to stabilise the western foreshore, with the present approach of temporary fencing used to keep beach users away from the steeply scarped dunes.</p> <p>There are no public assets susceptible to erosion hazard of erosion damage within the hotspot area. Sedimentation of the boat ramp is an indirect impact from the erosion, which requires management (annual dredging), and DoT plan to build another groyne in response. Erosion will restrict the capacity for recreational use of the beach, and hampers boat launching due to increased sedimentation. Local tourist operators and boat users have an active interest in this foreshore.</p>
Extent of erosion problem and hotspot characteristics	<p>Western Fisheries Beach</p> <p>Hotspot characteristics:</p> <ul style="list-style-type: none"> • Sites typically subject to progressive or episodic erosion (instability). • Apparently limited capacity to manage future erosion using existing coastal protection measures where extension of works is likely to exacerbate erosion transfer (transfer). • Very highly valued by the community, as nominated by local government representative (community).
CHRMAP status and findings	<p>CHRMAP Status: Not Scheduled</p> <p>Hazard Assessment: Nil</p> <p>Management & Adaptation Options: DoT have prepared design for two groyne structures and associated sand nourishment.</p> <p>Additional Comments: Nil</p> <p>Reports: Nil</p>
Coastal dynamics studies for a level 3 assessment. Further detail in Table 4-2.	Ongoing coastal movement data collection
Assets susceptible to erosion hazard 0-5 years	None in this timeframe. However maximum value is a 2 to address sedimentation of the boat ramp
Assets susceptible to erosion hazard 5-25 years	None in this timeframe. However maximum value is a 2 to address sedimentation of the boat ramp
Assets susceptible to erosion hazard 25+ years	None in this timeframe. However maximum value is a 2 to address sedimentation of the boat ramp
Existing management	<p>Allow foreshore to retreat, excavate sediment from boat ramp.</p> <p>Avoid (N),</p> <p>Retreat (N),</p> <p>Accommodate (Y - Excavate sediment from boat ramp as required. DoT considering a subsequent groyne. Ensure sediment excavated from boat ramp is placed at toe of eroding dune),</p> <p>Protect (N)</p>
Management options (0-5 years)	<p>Anticipated behaviour: Continued erosion stress on western dune/scarp face.</p> <p>Avoid (N),</p> <p>Retreat (N),</p> <p>Accommodate (Y - Fence area to restrict access. Partial retreat, cut back dune/cliff to anticipated alignment to address community concern of appearance/safety. Regrade, matting and revegetation.),</p> <p>Protect (N)</p>

Approximation of cost for 0-5 years options (L/M/H)	Accommodate - L
Trigger for next level management, monitoring and alternate management option (0-5 years)	Trigger for next level management: Subsequent intolerable damage to the dune for >3 years. Monitoring: Photographic monitoring Alternate option: N/A
Management and adaptation options (5-25 years)	Anticipated behaviour: Continued erosion stress on western dune/scarp face. Avoid (N), Retreat (N), Accommodate (Y - Further retreat, cut back dune/cliff to subsequent anticipated alignment. Regrade, matting and revegetation), Protect (N)
Approximation of cost for 5-25 years options (L/M/H)	Accommodate - L
Trigger for next level management, monitoring and alternate management option (5-25 years)	Trigger for next level management: Subsequent intolerable damage to the dune for >5 years. Monitoring: Photographic monitoring Alternate option: N/A
Management and adaptation options (25+ years).	Anticipated behaviour: Additional response to sea level rise with further rotation. Avoid (N), Retreat (N), Accommodate (Y - Retreat of dunes across whole bay to allow for adjustment of the foreshore with projected sea level), Protect (N)
Works to avoid to achieve long-term plans	Holding the line and not allowing for response to the breakwater. Increased investment in fixed infrastructure in areas of projected retreat.

APPENDIX O

Little Boat Harbour Concept Plan



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NOT FOR CONSTRUCTION

Project
Little Boat Harbour Design Concept
by I Weir, C Lebens and N McQuoid

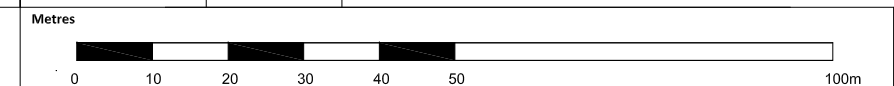
Location
Bremer Bay, Shire of Jerramungup

Scale @ A3
1:1000
Date
06/01/2014

Drawn by
KF
Checked
IW

Title

Concept Site Plan



APPENDIX P

Coastal Works Cost Estimates

ON GROUND ACTION	UNIT OF MEASURE	COST OF MATERIAL (GST EXCLUDED) PER UNIT	LABOUR COST / HOURS	COMMENTS/ ASSUMPTIONS
Weed control	Per hectare		\$500 to \$1000 Labour and chemicals	Depends on site and the type of spraying required. Can be as low as \$200/ha Blanket spray \$200/ha Hand spot spray \$980/ha
Brushing (installation of brushing)	Per cubic metre or by hectare	Around \$530/m ³ of material		Labour to cut brush \$140/cubic metre (based on costing from AMRS fire recovery project) Other cost: \$13 per m ²
Dune reformation (sand moving using machinery)	Per day	Around \$1,500 per day for the use of a Posi-track vehicle and operator	Includes machinery and operator	
Fencing – cable fencing	Per metre	\$20-\$40/m (including labour)		This varies depending on the thickness and number of cables used.
Wind fencing	Per metre	Sand trap fencing \$32.50 per linear metre		Chris Gibbs did a project recently for this
Board walk	Per metre	~\$1,000 per metre. This is based on costings from the AMRS fire project in 2012 for a composite recycled plastic and fibreglass/timber product.		
Purchase of seedlings (e.g. \$3000/ha)	Per seedling	\$1 to \$2 per seedlings	Cost of seedling depends on species and source. From 7 cents - \$1.75 and \$1.27 - \$1.75 per seedling	Density of planting depends on the site, the type of seedlings and what you are trying to achieve. Could go to one plant per square metre in some cases or more dense with rushes/ sedges (e.g. 6 plants per ha).
Tree guard purchase	Per tree guard	\$1.20	Installation of guard \$1-\$1.50/guard About 80 cents for installation of cardboard guards with bamboo.	Depends on the type of guard. Purchase from ~ 50 cents (cardboard with bamboo stakes) to ~\$1.30 (core flute with hardwood). Installation and supply \$2.50 per plant

Planting of seedlings			\$0.70 to \$1 per seedling	Agree on this average costing.
Signage (printing cost)	Per sign	Between \$600 (simple colour bod sign) to \$6000 for (custom designed sculptural signs)	450mm corflute \$80	This depends on complexity of information, design, material used etc.
Coir logs for erosion control	Each	\$50 material only	Unknown installation cost. Coir logs- 30cm x 3m \$85.75 each. Stakes 25x25x750 @ 82 cents each. Supply and installation of coir mesh \$7.95/m ² Auguring hole 50 cents per hole.	

Source: Aurora Environmental and South West Catchments Council, 2015.