Proposed **Walpole and Nornalup Inlets Marine Park**

Indicative Management Plan 2006 – 2016

Department of Environment and Conservation

MPRA
MARINE PARKS & RESERVES AUTHORITY

PUBLIC SUBMISSIONS ON THE INDICATIVE MANAGEMENT PLAN

Prior to gazettal of a marine conservation reserve, the *Conservation and Land Management Act 1984* requires the release of an indicative management plan to allow an opportunity for the community to provide feedback. It is an opportunity to say whether you support the creation of the marine conservation reserve, provide information, suggest alternatives and generally have a say on how the proposed Walpole and Nornalup Inlets Marine Park should be managed over the next ten years.

You are invited to make a public submission by completing the submission form in the 'Have Your Say' brochure. Alternatively you may prefer to write your own submission, or make a joint submission with others. The Department of Environment and Conservation welcomes submissions on all aspects of the indicative management plan, including the vision, boundary and reserve type, generic management strategies, the ecological and social values and targets as well as the zoning. If you wish to write your own submission, the following list provides some guidance to ensure it is effective as possible:

- make it clear and concise;
- list your points according to the subject sections (and page numbers) in the plan;
- describe briefly each subject or issue you wish to discuss;
- say whether you agree or disagree with any or all of the objectives or strategies within each subject or just those of specific interest to you - clearly state your reasons (particularly if you disagree) and give sources of information where possible; and
- suggest alternatives to deal with any issues with which you disagree.

It is important to indicate those strategies and recommendations you agree with as well as those with which you disagree. Each submission is important, but those that give reasons for concerns, provide supporting evidence where appropriate and offer information and constructive suggestions are most useful.

All submissions will be summarised according to topics discussed. The indicative management plan will then be reviewed, in the light of submissions, according to established criteria (see below). A summary of the submissions will be published along with the final management plan, including an indication of how the plan was amended or not in response to the submissions.

Criteria for amending the indicative management plan are that:

1. The indicative management plan *may* be amended if a submission:
   a) provides additional resource information of direct relevance to management;
   b) provides additional information on affected user groups of direct relevance to management;
   c) indicates a change in (or clarifies) Government legislation, management commitment or management policy;
   d) proposes strategies that would better achieve management goals and objectives; or
   e) indicates omissions, inaccuracies or a lack of clarity.

2. The indicative management plan *may not* be amended if a submission:
   a) clearly supports the draft proposals;
   b) offers a neutral statement or no change is sought;
   c) addresses issues beyond the scope of the plan;
   d) makes points that are already in the plan;
   e) is one amongst several widely divergent viewpoints received on the topic and the recommendation of the indicative plan is still considered the best option;
   f) contributes options which are not possible (generally due to some aspect of existing legislation, or Government or departmental policy).

Submissions are welcome for three months after the date of release of the indicative management plan. Written submissions should be sent to:

Plan Coordinator
Indicative Management Plan for the proposed Walpole and Nornalup Inlets Marine Park
Marine Policy and Planning Branch
Department of Environment and Conservation
47 Henry St
Fremantle Western Australia 6160

Submissions can also be forwarded by e-mail to walpole_nornalup.marine@dec.wa.gov.au.

Alternatively, refer to the Department of Environment and Conservation's NatureBase web site (www.naturebase.net), which has an electronic copy of the plan and allows you to lodge your submission electronically.

The closing date for submissions on the plan is Friday 1 December 2006.

PROPOSED WALPOLE AND NORNALUP INLETS MARINE PARK

INDICATIVE MANAGEMENT PLAN

2006 - 2016

Draft Vision

To protect and improve the unique natural biodiversity, aesthetic qualities and cultural values of the inlets. The area will support sustainable human use for present and future generations, such that:

- *the inlets and their shores are sustainably managed in a condition that is the same or better than today;*
- *the aesthetic values and ambience of the inlets are maintained;*
- *people can still experience a range of activities, such as fishing, tours and holidays on and around the inlets;*
- *the biodiversity of the inlets is monitored and protected;*
- *economic benefits of sustainable management of the inlets will flow to the Walpole community;*
- *there is a substantially raised awareness of the value of the inlets; and*
- *the local community feels ownership of the inlets, participates in managing the area, and feels confident in their long-term protection.*

Prepared by the Department of Environment and Conservation

AUGUST 2006

ACKNOWLEDGMENTS

The focus group for the proposed Walpole and Nornalup inlets marine conservation reserve have devoted considerable time and effort into discussions and meetings that provided the basis of this indicative management plan. Their efforts in assisting the Department of Environment and Conservation in developing the proposal are gratefully acknowledged. The focus group comprised community members from Walpole, Manjimup and Nornalup, community groups, Government departments and peak bodies. The membership of the focus group is detailed in Appendix III.

The following people provided important information and advice, and their assistance is also acknowledged:
Dr Bob Black (Department of Zoology, University of Western Australia)
Dr Anne Brearley (Department of Botany, University of Western Australia)
Ms Eve Bunbury (Department of Fisheries)
Dr Barry Hutchins (Western Australian Museum)
Dr Glenn Hyndes (Centre for Ecosystem Management, Edith Cowan University)
Dr Paul Lavery (Centre for Ecosystem Management, Edith Cowan University)
Mr Malcolm Robb (Department of Environment and Conservation)
Ms Shirley Slack-Smith (Western Australian Museum)

The Department of Environment and Conservation planning team comprised Alan Kendrick, Andrew Hill and Leanne Thompson. Tammie Reid facilitated the focus group meetings and Stephen Widjaja, Sonya Stewart, Melissa Mazzella & Christine Shervington, also provided assistance. The advice and support provided by Peter Keppel, Peter Bidwell, Mark Virgo, Chris Goodsell, Erica Shedley and Roslyn Burnside from the Department of Environment and Conservation's Warren Region and Frankland District is gratefully acknowledged. Thanks also to Angus Horwood of the Marine Parks and Reserves Authority for his attendance and contributions.

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AH Act	*Aboriginal Heritage Act 1972*
ANZECC	Australia and New Zealand Environment and Conservation Council
CALM Act	*Conservation and Land Management Act 1984*
CALM	Department of Conservation and Land Management
DEC	Department of Environment and Conservation
DIA	Department of Indigenous Affairs
DoE	Department of Environment
DoF	Department of Fisheries
DoIR	Department of Industry and Resources
DPI	Department of Planning and Infrastructure
EOI	Expression of Interest
EP Act	*Environment Protection Act 1986*
EPA	Environmental Protection Authority
FESA	Fire and Emergency Services
FRM Act	*Fish Resources Management Act 1994*
H	High priority management strategy
H-KMS	Key management strategy
IUCN	International Union for the Conservation of Nature
KPI	Key performance indicator
L	Low priority management strategy
M	Medium priority management strategy
MAC	Management Advisory Committee
MOU	Memorandum of Understanding
MPRA	Marine Parks and Reserves Authority
MPRSWG	Marine Parks and Reserves Selection Working Group
NRSMPA	National Representative System of Marine Protected Areas
SCRIPT	South Coast Regional Initiative Planning Team
WANISAC	Walpole and Nornalup Inlet Systems Advisory Committee
WATC	West Australian Tourism Commission
WC Act	*Wildlife Conservation Act 1950*
WRC	Water and Rivers Commission

EXECUTIVE SUMMARY

The magnificent Walpole and Nornalup inlets; between the forest and the Southern Ocean

Of the many inlets along the south coast of Western Australia, none are more beautiful than the magnificent Walpole and Nornalup inlets. Surrounded by undulating hills and eucalypt forests, the tranquil waters of the Walpole and Nornalup inlets support seagrasses, algae, a diverse benthic fauna, at least 40 marine and estuarine fish species and a variety of waterbirds, seabirds and shorebirds. The Walpole and Nornalup inlets are geologically complex, forming an estuary consisting of two connected inlets that are permanently open to the ocean. The inlet system, which is adjacent to the towns of Walpole and Nornalup on the south coast of Western Australia and fed by the Frankland, Deep and Walpole rivers, is in relatively good condition compared to most other easily accessible estuaries in the region. Because the Walpole and Nornalup inlets are permanently open to the ocean and therefore have marine-like conditions for most of the year, they are biologically diverse compared to most estuarine systems in southwest Western Australia.

The inlets are also of high social significance. In addition to a rich indigenous cultural heritage in sites and stories, the inlets are an accessible and low-risk destination for increasing numbers of tourists and visitors. The untouched nature, wildlife and scenic quality of the inlets provide a wealth of opportunities for commercial tourism, canoeing, water sports, nature appreciation and recreational fishing. A major attraction of the inlet system to visitors is the perception of 'naturalness' and 'remoteness' that can be experienced, particularly in parts of the Nornalup Inlet and the Frankland and Deep rivers.

These ecological attributes and social values make the Walpole and Nornalup inlet system a potentially significant component of the State-wide network of marine conservation reserves in Western Australia. Whilst there have been minor impacts to the system caused by land use practices and the development of towns, recreation and tourist infrastructure, the condition of the ecological and social values of the proposed Walpole and Nornalup Inlets Marine Park (the proposed marine park) are extremely high and are, in general, not significantly threatened by existing human activities. Management of the proposed marine park will focus on establishing an appropriate management and administrative framework including the gazettal of the reserve and the implementation of the management plan. Research, monitoring, education and interpretation, surveillance, enforcement and public participation programs will be implemented to gain a better understanding of the estuarine ecosystem, and to assess and manage the impacts of human activities in the area.

The *Indicative Management Plan for the proposed Walpole and Nornalup Inlets Marine Park* (the indicative management plan), when implemented, will conserve the Walpole and Nornalup inlet system to the approximate limits of tidal influence in the Frankland, Deep and Walpole rivers. The environmental condition of estuaries is closely linked to the condition of surrounding catchments and tributary waterways. As such, the capacity to sustainably manage the inlet system as a marine park will be greatly enhanced by the fact that its proposed boundary is largely contiguous with that of the existing Walpole-Nornalup National Park. The proximity of this terrestrial national park provides an exceptional opportunity to ensure the integrated management of these interconnected terrestrial and aquatic ecosystems. The indicative management plan is integrated with the management plan for the Walpole Wilderness Area and Adjacent Parks and Reserves. In addition, the proposal to establish the Walpole and Nornalup Inlets Marine Park is consistent with the direction taken on marine resource management in the South Coast Regional Strategy for Natural Resource Management (SCRIPT, 2004).

The indicative management plan proposes management strategies to protect the plants and animals and the remote and natural character of the area, while maintaining the opportunity for uses such as recreation, nature appreciation, tourism, fishing, scientific research and education to continue in a sustainable manner.

What are the major outcomes proposed in the indicative management plan and the type of approach taken?

The indicative management plan has been prepared in the context of an over-riding community vision that reflects the aspirations of the community of Western Australia for conservation of the natural environment and sustainable management of human activities in the area, both now and in the future. The proposed major outcomes of the indicative management plan include:

- that the 'marine park' reserve category is the most appropriate category for the proposed Walpole and Nornalup inlets marine conservation reserve;
- that the proposed marine park be classified as 'Class A';
- that the entire proposed marine park should be zoned as a 'recreation zone';
- an expanded program of research, monitoring, education and public involvement; and

- the integration of marine park management with management of the adjacent terrestrial Walpole-Nornalup National Park and the Walpole Wilderness Area.

What is the indicative management plan and why has it been produced?
Section 14 of the *Conservation and Land Management Act 1984* (CALM Act) requires the Minister for the Environment to provide clear public notification of any proposal to create a marine conservation reserve. This is known as the notice of intent and must include the following:

- proposed boundaries;
- reserve purpose;
- whether the reserve is to be classified as an A class reserve;
- an indicative management plan;
- any proposed zoning;
- where interested persons can obtain the above information; and
- how the public can make a submission.

At the time the Notice of Intent is published, an indicative management plan must also be released.

The indicative management plan for the proposed marine park has been prepared in accordance with the Minister's requirements under the CALM Act and has been produced to provide the public with a guide as to how the area will be managed. It will also provide the community with an opportunity to provide feedback on the most appropriate category of marine conservation reserve for the area, and to suggest ways in which the indicative management plan could be improved.

How has the indicative management plan been developed?
The Department of Environment and Conservation[1] (DEC) undertook an assessment of the existing biological and social information relevant to the area before commencing the planning and consultation process. The assessment process involved gathering information from government agencies, universities and community groups, as well as reports produced by DEC's Marine Policy and Planning Branch. Additional habitat surveys of the inlets were carried out in 2003 and 2004 by academic staff and students from Edith Cowan University's Centre for Ecosystem Management. The assessment process also involved consultation with stakeholders to gain an understanding of community views.

Following the information gathering process a community consultation program was initiated in 2003 with the formation of a community-based focus group to consider the proposed Walpole and Nornalup inlets marine conservation reserve. The Marine Parks and Reserves Authority (MPRA) provided guidance to the focus group at the commencement of the process and had an observer at meetings to provide advice during its consideration of the proposal where required. The focus group met five times in developing a position in respect to the type, category, boundary, zoning and management of the proposed marine conservation reserve. During this period, DEC undertook a broader community consultation program, which included distribution of information (e.g. brochures and newspaper advertisements) and presentations to government committees, community groups, media articles, meetings and presentations to key interest groups. This program was aimed at raising community awareness through education, to encourage community discussion of the proposal and to facilitate input into the focus group deliberations. The group provided its advice to the Minister for the Environment in September 2004.

During their meetings, the focus group established a vision for the proposed reserve and the overall strategic objectives and identified the ecological and social values. The also determined the objectives, strategies and targets for each value. In doing so, the focus group developed the content and direction of the indicative management plan, in conjunction with feedback from the community. The outcomes of the focus group formed the basis of this indicative management plan, which was prepared by DEC and presented to the MPRA for consideration.

The MPRA, after fully considering the feedback received, provided advice to the Minister for the Environment recommending that the Minister seek concurrence from the Minister for Fisheries and the Minister for Resources to publish the Notice of Intent to create a marine park and to release the indicative management plan for the statutory three month public submission period.

What are the options for marine conservation reserve categories?
The CALM Act provides for classification of a marine conservation reserve as a marine nature reserve, a marine

[1] The Department of Environment and Conservation was formed on 1 July 2006 through the amalgamation of the Department of Environment and the Department of Conservation and Land Management.

park or a marine management area. To determine the appropriate category for a proposed marine conservation reserve, it is necessary to assess the conservation significance and current and future uses of the area. The decision is guided by the purpose of the various reserve types as set out in the CALM Act. More specific guidance is outlined in the MPRA's *Policy Statement: The Application of the Marine Management Area Category in a Marine Conservation Reserve Planning Process*. The marine conservation reserve categories and the situations in which they apply are described below.

Marine nature reserves are created for conservation and scientific research. Although low impact tourism may be permitted, no recreational or commercial fishing, aquaculture, pearling, petroleum drilling or production is allowed in these areas.

Marine parks are created to protect natural features and aesthetic values and promote science and education while at the same time enabling recreational and commercial uses where these activities do not compromise conservation values. In marine parks, four statutory management zones can be created, these being:

- Sanctuary zones – 'look but don't take' areas managed solely for nature conservation and low-impact recreation and tourism.
- Recreation zones – provide for conservation and recreation including recreational fishing (subject to bag limits and other conservation measures).
- Special purpose zones – managed for a particular priority use or issue. This could be protection of a habitat or species, a seasonal event such as whale watching or a particular type of commercial fishing. Uses compatible with priority use or seasonal event are allowed in these zones.
- General use zones – areas of the marine park not included in sanctuary, recreation or special purpose zones. Conservation of natural resources in general use zones is a priority but activities such as sustainable commercial fishing, aquaculture, pearling and petroleum exploration and production are permissible provided they do not compromise the conservation values.

Marine management areas provide a formal integrated management framework over areas that have high conservation value and intensive multiple use. These areas are selected primarily on the basis of their biological and recreational values and their existing or future commercial activities such as petroleum production and commercial fishing. As with other marine conservation reserves, marine management areas are subject to environmental impact assessments for activities in accordance with the *Environmental Protection Act 1986*. In a marine management area, conservation is but one of the "uses" managed under the broader purpose of managing and protecting the marine environment. In accordance with the CALM Act, marine management areas can be zoned to meet management objectives of the reserve.

What happens next?

The public submissions to the indicative management plan will be reviewed and summarised for consideration by the MPRA. The indicative management plan may be revised by the MPRA as a result of public submissions received and they will provide formal advice to the Minister for the Environment. The Minister for the Environment will consider MPRA advice and then forward the final management plan to the Minister for Fisheries and the Minister for Resources seeking concurrence to create the proposed reserve.

1 INTRODUCTION

The Walpole and Nornalup inlets are located 450 km south of Perth on the south coast of Western Australia. The system comprises two connected basin inlets and the tidal reaches of three rivers that discharge into these inlets. Marine waters adjacent to the inlets lie in the Western Australian South Coast bioregion (ANZECC, 1998). The coastline of this region typically comprises prominent granite headlands with deposits of Pleistocene aeolian limestone (between 1.65 million to 10,000 years old), and is exposed to heavy swell with few well-protected embayments. The Walpole and Nornalup inlets comprise around 100 and 1300 hectares, respectively (Pen, 1997). The Frankland/Gordon river system, which flows into the Nornalup Inlet, extends for 400 km to the northeast of the inlets and has a catchment of approximately 5000 sq/km and has been extensively cleared for agriculture. The Deep River, which also flows into the Nornalup Inlet, is close to 120 km long and flows through a predominantly forested catchment of about 1600 sq/km. The Walpole River, which discharges into the Walpole Inlet, is around 15 km long and has a catchment of approximately 60 sq/km. Together the rivers bring to the estuary an estimated mean annual flow of 390,000 megalitres – ten times volume of the estuaries (Brearley, 2005). In most years 40 per cent of the flow comes from the Deep River and 45 per cent from the Frankland (Brearley, 2005). Around 80 per cent of river flow comes from the high rainfall forested area south of the Muir Highway (Brearley, 2005). The Frankland and Deep rivers are under tidal influence for 12 and six km, respectively. The inlet system attained its present form only during the 10,000 years as a result of changes in sea level. Although the river valleys of the system are geologically old, the inlet basins were formed only 6,000 – 8,000 years ago (Hodgkin & Clark, 1999). Like most other estuarine systems, the inlets are environmentally dynamic and are markedly influenced by adjacent terrestrial and marine processes. The Walpole and Nornalup inlets region receives around 1300 mm of rainfall annually, making it one of the highest rainfall zones of Western Australia (Hodgkin & Hesp, 1998). As this rainfall is strongly seasonal, the inlets undergo strong seasonal variations in water salinity, temperature and turbidity, and may also be subject to pronounced episodes of erosion and deposition. Unlike most estuaries in this region, the inlets are permanently open to the ocean. The high rate of water discharge from the system and the protection from prevailing wind and swell offered by the adjacent rocky headland ensure the entrance to the inlet remains permanently open (Hodgkin & Hesp, 1998).

The Walpole and Nornalup inlets are biologically diverse compared to most estuarine systems in southwest Western Australia because they are permanently connected to the ocean and have marine-like conditions for most of the year. The relatively deep waters of the Nornalup Inlet provide further habitat for a variety of marine species, including larger fish such as sharks that are uncommon in other estuaries. The inlets and surrounding lands have a long history as a tourist destination due to their outstanding scenic qualities, and forests adjacent to the Frankland River were made a conservation reserve as early as 1910 (Fernie & Fernie 1989). With only brief exceptions, the inlet system has been closed to commercial fishing since 1911. Currently the inlet system is a very popular, easily accessible and low-risk destination for locals, tourists and visitors seeking family holidays, commercial tourism activities, water sports and recreational fishing. The Walpole and Nornalup inlet system is both relatively undisturbed and undeveloped compared to most easily accessible estuaries that are adjacent to towns in the southwest of Western Australia. As the environmental condition of estuaries is closely linked to the 'health' of surrounding catchments and tributary waterways, the capacity to sustainably manage the inlet system as a marine conservation reserve will be greatly enhanced by the presence of the adjacent Walpole-Nornalup National Park. The presence of this terrestrial conservation reserve provides a remarkable opportunity to manage these terrestrial and aquatic ecosystems in an integrated manner. Creation of the proposed Walpole and Nornalup Inlets Marine Park (the proposed marine park) represents the best opportunity to sustainably manage this ecologically and socially important estuarine system and so minimise any significant human-induced environmental impacts.

In recognition of the importance of conserving the State's estuarine and marine biodiversity, the Minister for the Environment established the Marine Parks and Reserves Selection Working Group (MPRSWG) in 1986 to identify representative and unique areas of Western Australia's estuarine and marine waters for consideration as part of a State-wide system of marine conservation reserves under the *Conservation and Land Management Act 1984* (CALM Act). The MPRSWG's report was released in June 1994 and identified over 70 candidate areas throughout the coastal waters of Western Australia. The Walpole and Nornalup inlet system was identified by the MPRSWG as a distinct coastal type with high conservation values (CALM, 1994). Specifically, the MPRSWG recommended that the Walpole and Nornalup inlets and the tidal parts of the Frankland, Deep and Walpole rivers be made a marine conservation reserve '*as a matter of high priority*' in recognition of the high ecological and social values of the system. In September 2003, a community-based focus group was formed to assist in developing the *Indicative Management Plan for the proposed Walpole and Nornalup Inlets Marine Park*

(the indicative management plan) to guide the conservation and management of the proposed marine park. The focus group met five times before finalising its advice to the Minister for the Environment in September 2004.

The indicative management plan provides a detailed description of the ecological and social values of the area, management objectives, strategies and targets. The goal of the indicative management plan is to protect the estuarine environment, while maintaining the opportunity for uses such as recreation, nature appreciation, tourism, fishing, scientific research and education to continue in a sustainable manner. The indicative management plan also provides mechanisms for the community and visitors to actively participate in day-to-day management of the proposed marine park.

The indicative management plan for the proposed marine park should not be viewed in isolation, but as an integral part of a suite of complementary management practices that occur within and adjacent to the proposed marine park. These include fisheries regulations, wildlife protection, pollution control and environmental impact assessment, as well as maritime transport and safety measures. It should be noted that many species are not permanent residents in the proposed marine park, but move in and out of the area depending on environmental conditions and/or the stage in their lifecycles. Additionally, water and sediment quality within the proposed marine park are particularly susceptible to land-based activities outside of the marine park boundary. It is therefore critical that the management objectives of the environment within and adjacent to the proposed marine park are as compatible as possible. The plan discusses the framework to achieve the necessary integration and the close co-operation that is needed between estuarine and terrestrial management and regulatory agencies to achieve the conservation and sustainable management objectives outlined in this plan.

This plan is closely integrated with the draft management plan for the Walpole Wilderness Area and Adjacent Parks and Reserves which provides direction for management of access to the inlets and recreational use of the adjacent terrestrial reserves.

2 MANAGEMENT CONTEXT

2.1 State Policy Context

The CALM Act provides the legislative mechanism to create and manage marine conservation reserves in Western Australia. Marine conservation reserves are vested in the Marine Parks and Reserves Authority (MPRA) and managed by the Department of Environment and Conservation (DEC) in accordance with the Act and the approved management plan. The Department of Environment and Conservation was formed on 1 July 2006 by amalgamating the Department of Conservation and Land Management and the Department of Environment.

The CALM Act provides the State legislation to create marine conservation reserves, and seven marine conservation reserves were created between 1987 and 1990. In 1994, the Minister for the Environment released a report entitled *A Representative Marine Reserve System for Western Australia* (CALM, 1994) that identified about 70 areas in the coastal waters of Western Australia that were worthy of consideration for marine reservation under the CALM Act. In 1997, legislative changes were made to the CALM Act to change the mechanisms by which marine conservation reserves were established, vested and managed. These changes revised statutory consultative protocols for the establishment of marine reserves, provided clear guidance for commercial activities in marine reserves, and established the MPRA. The New Horizons policy released in June 1998 (Government of Western Australia, 1998a) provided policy guidance in respect to the establishment and management of marine conservation reserves.

2.2 Legislative Framework

Under the CALM Act, marine conservation reserves are vested (i.e. legally entrusted) in the MPRA and DEC is responsible for their management. The *Wildlife Conservation Act 1950* (WC Act), which is also administered by DEC, provides legislative protection for flora and fauna across the State's lands and waters. The Department of Fisheries (DoF) is responsible for the management and regulation of recreational and commercial fishing, aquaculture and pearling in marine conservation reserves in accordance with the *Fish Resources Management Act 1994* (FRM Act). The *Fishing and Related Industries Compensation (Marine Reserves) Act 1997* provides the mechanism by which the holder of an existing DoF authorisation for commercial fishing, aquaculture, pearling or fish processing may seek compensation if the market value of the authorisation is apparently diminished by the establishment of a marine nature reserve, or an management zone in a marine park.

The *Western Australian Marine Act 1982* and *Navigable Waters Regulations 1983* regulate boating in State waters and apply within marine conservation reserves. The Department of Planning and Infrastructure (DPI) administers these Acts. In addition, any development that may have a significant impact on the environment in or adjacent to a marine conservation reserve is assessed in accordance with the *Environmental Protection Act 1986* (EP Act) by the Environmental Protection Authority (EPA). DEC is responsible for controlling pollution in marine waters.

The proposed Walpole and Nornalup Inlets Marine Park lies within State territorial waters and comprises a discrete estuarine system. Most adjacent lands, including Newdegate (Snake) Island in the Nornalup Inlet, are reserves that are vested in the Conservation Commission of Western Australia and managed by DEC. Although these terrestrial reserves do not form part of the proposed marine park and are not covered by this management plan, management strategies for the proposed marine park have been developed to ensure, where appropriate, management of the estuarine and adjacent terrestrial environments are integrated. In addition, the proposal to establish a Walpole and Nornalup Inlets Marine Park is consistent with the direction taken on marine resource management in the South Coast Regional Strategy for Natural Resource Management. Specifically, Management Action Target (MAT) C9 in this strategy states 'Marine reserve areas identified using CAR analysis by 2006 and marine conservation reserve system establishment commenced by 2010'. The underlying management actions in this strategy to achieve MAT C9 are to: 1) support marine reserve planning and implementation, and 2) work with the broader community to facilitate creation of appropriate marine conservation reserve system.

2.3 National and International Context

At a national level, the conservation of marine biodiversity, maintenance of ecological integrity and the sustainable use of marine resources are addressed by the Intergovernmental Agreement on the Environment. This is implemented through actions developed under national strategies such as the *National Strategy for Ecologically Sustainable Development* (Commonwealth of Australia, 1992), the *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia, 1996a), *Australia's Oceans Policy* (Commonwealth of Australia, 1998) and the *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A Guide for Action by Australian Governments* (ANZECC TFMPA, 1999).

The proposed marine park will also form part of the National Representative System of Marine Protected Areas (NRSMPA). The NRSMPA is being developed cooperatively by the Commonwealth, State and Territory governments for the conservation, protection and management of the marine environment (ANZECC TFPMA, 1998a). The primary goal of the NRSMPA is to establish and manage a comprehensive, adequate and representative system of marine protected areas to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems and to protect Australia's biological diversity at all levels. The development of an NRSMPA helps to fulfil Australia's international responsibilities and obligations as a signatory to the Convention on Biological Diversity, to provide a means of meeting obligations under the Convention on Migratory Species (Bonn Convention) and to satisfy responsibilities under the Japan-Australia Migratory Bird Agreement and the China-Australia Migratory Bird Agreement. In addition, it supports the World Conservation Union (IUCN) World Commission on Protected Areas Program of promoting the establishment and management of a global representative system of marine protected areas (ANZECC TFPMA, 1998b).

2.4 Responsibilities of Authorities and Government Agencies

DEC is responsible for the overall management of marine conservation reserves under the marine conservation reserve provisions of the CALM Act. DEC also collaborates with other agencies and authorities (e.g. MPRA, DoF, EPA, and local government authorities) that have responsibilities within marine conservation reserves and in the surrounding waters and coastal areas, to ensure the various regulatory and management practices are complementary. In some cases Memoranda of Understanding are developed to facilitate co-operation and promote operational efficiency.

The MPRA plays an important role in the development of marine policy, management plans and in auditing the management of marine conservation reserves that are vested in it. The audit function is aimed at ensuring that DEC's management of these reserves is meeting stated objectives and targets. The management plan provides the principal framework by which the MPRA will carry out this function.

The State agencies with statutory responsibilities in Western Australian marine conservation reserves are listed in Table 1.

Table 1: State authorities and agencies with responsibilities in the proposed Walpole and Nornalup Inlets Marine Park

Marine Parks and Reserves Authority	• vesting body for the marine conservation reserves; • provides policy advice to the Minister for the Environment; and • audits management plan implementation by DEC.
Department of Environment and Conservation	• manages marine conservation reserves vested in the MPRA. This includes the: a) preparation of management plans; b) implementation of management plans; c) co-ordination with other agencies and stakeholders; d) implementation of education and public participation programs; e) implementation of research and monitoring programs; f) coordination of management intervention programs; g) management of recreation (non-fisheries) and commercial tourism; h) lead role in enforcement (non-fisheries issues); and i) ensures the integrated management of marine conservation reserves and adjoining terrestrial conservation reserves. • assists the Environmental Protection Authority in the process of assessing proposals that may significantly affect the marine environment, including marine conservation reserves; • lead agency for water resources management (including waterways); • administers vegetation protection legislation; and • administers pollution control legislation.
Department of Fisheries	• manages and regulates commercial and recreational fishing, aquaculture and pearling in all State waters, including marine conservation reserves. This includes the application of restricted seasons, bag and size limits; and • lead role in enforcement of fisheries legislation within marine conservation reserves.
Department for Planning and Infrastructure	• responsible for all boating regulations including licensing, safety standards, vessel navigation, marker buoys, moorings, jetties and support facilities such as navigation marks, navigation charts and harbour facilities (N.B. mooring controls can be delegated to other agencies); • chairs and supports the State Co-ordinating Committee which provides the mechanism to coordinate the management of marine pollution incidents; and • responsible for management of vessel navigation and the development and management of support facilities.
Environmental Protection Authority	• assesses, reports and makes recommendations on proposals that may significantly affect the marine environment, including marine conservation reserves.
Western Australian Maritime Museum	• protects pre-1900 shipwrecks and artefacts under the *Marine Archaeology Act 1973*. Shipwrecks over 75 years old are protected under the Commonwealth *Historic Shipwrecks Act 1976*.
Department of Industry and Resources	• administers Acts that control mineral and petroleum exploration and development; and • regulates petroleum industry operations.
Department of Indigenous Affairs	• protects indigenous heritage and culture under the *Aboriginal Heritage Act 1972*.

3 MANAGEMENT FRAMEWORK

3.1 'Best Practice' Management Model

The conservation of estuarine and marine biodiversity and the sustainable management of human activities in these environments in Western Australia are achieved through a number of complementary mechanisms that include marine conservation reserves, fisheries regulations, pollution control, environmental impact assessments of development proposals and maritime safety regulations. The management of the park employs both generic (Section 7) and specific (Section 9) management strategies to ensure that human usage of the marine environment is sustainably managed.

The content of this section is based on the best practice principles outlined in the report *Best Practice in Performance Reporting in Natural Resource Management* (ANZECC, 1997). The model is also broadly consistent with the performance assessment framework being developed in the *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A guide for action by Australian Governments* (ANZECC TFMPA, 1999). The objectives, strategies, performance measures and management targets outlined in Section 9 reflect an outcome-based 'best practice' approach from which the effectiveness of management can be better assessed. This model has been adopted by the MPRA to facilitate better conservation and management outcomes and a more objective and effective approach to auditing DEC's management.

Ecological and Social Values

The conservation of marine biodiversity and the management of human uses are the major objectives of the proposed marine park. These generic terms need to be defined operationally to be useful in a management context. This is achieved by first identifying the key ecological and social values of the proposed marine park, and then setting management objectives, strategies and targets in relation to these values.

Ecological values are the intrinsic physical, chemical, geological and biological characteristics of an area. For convenience, the major ecological values are listed individually in this plan. However, in reality, the estuarine environment of the proposed marine park is a structurally and functionally complex array of relationships between plants, animals and the physical environment.

The ecological values should (where appropriate) include:

- species and communities that have special conservation status (e.g. endangered or rare species);
- key species endemic to the proposed reserve (if known);
- key structural components of the ecosystem (e.g. macro-algae, fish and bird communities);
- exploited species and communities (e.g. targeted fish populations); and
- key physical-chemical components of the ecosystem (e.g. water and sediment quality and geomorphology).

Social values are the major cultural, aesthetic, recreational and economic uses of the area.

Management Objectives

Management objectives identify **what** the primary aims of management are, and reflect the statutory responsibilities of the CALM Act. Objectives have been developed for all of the ecological and social values of the proposed marine park. Where significant pressure/s on an ecological value has been identified, the management objective addresses the specific pressure/s. When there is not an obvious existing pressure or threat, the management objective provides broader direction to management in relation to protecting the value from the most likely future pressures. Management objectives for social values address, where appropriate, the effect of the activity on other values of the proposed marine park and the complementary interests of other statutory management arrangements or activities that exist in the proposed marine park.

Management Strategies

Management strategies provide specific direction on **how** the management objective/s for each value might be achieved. All strategies outlined in this plan have been defined as high (**H**), medium (**M**) or low (**L**) priority to provide an indication of their relative importance. The (**H**) strategies considered to be critical to achieving the long-term objectives of the proposed marine park are also designated as *key management strategies* (**H–KMS**). These strategies will form part of the performance assessment of reserve management by the MPRA, particularly during the initial years of establishing the proposed marine park (see Section 10 – Performance Assessment). A proposed timeline for implementing the management strategies is outlined in Appendix II. It should be noted that management priorities are likely to alter in response to changes in usage patterns or to new knowledge acquired during the life of the management plan.

Performance Measures
Performance measures are **indicators of management effectiveness** for achieving the management objectives and targets. They are developed for all of the ecological values and those social values that are non-activity based and have intrinsic value (e.g. remoteness and naturalness). Performance measures should be quantitative, representative and, where possible, simple and cost-effective. Performance measures for indirect (e.g. nutrient enrichment impacts on seagrass) and direct (e.g. anchoring impacts on seagrass) impacts should focus on surrogate (e.g. changes in phytoplankton biomass and species composition) and direct (e.g. changes in seagrass biomass) measures of the value, respectively. Performance measures for most social values have not been developed due to inadequate existing information. These will be developed during the early phase of the implementation of the this plan.

It should be noted that all performance measures will be reviewed and refined if necessary during the development of monitoring programs for the proposed marine park.

Management Targets
Management targets represent the **end points of management**. Targets should be measurable, time bound and expressed spatially. Ecological targets will be set as either the 'natural state' or some acceptable departure from the 'natural state'. The long-term target provides a specific benchmark to assess the success or otherwise of management actions within the life of the management plan. The short-term target provides a benchmark for management to achieve within a specified time period and, in most cases, is a step to achieving the long-term target. Targets have been developed for all ecological and social values. The targets for recreational fishing, boating, commercial tourism, education and scientific research are process-based and are generally stated as 'Implementation of management strategies within agreed timeframes'. This ensures that strategies for the social values are implemented in accordance with the management objectives.

Key Performance Indicators
Key performance indicators (KPIs) are a **measure of the overall effectiveness** of management in relation to the strategic objectives of the proposed marine park. KPIs relate specifically to the management targets for key ecological and social values and reflect the highest conservation (from biodiversity and ecosystem integrity perspectives) and management (social) priorities of the MPRA, DEC and the community. KPIs are a key element of the MPRA audit process (Section 10).

The values of the proposed marine park were prioritised and a risk assessment of the pressures on these values was completed. The KPIs for the proposed marine park will be the management targets for the following ecological and social values: *sediment quality, water quality, benthic invertebrates, finfish* and *aesthetic values (scenery, peace and quiet)*.

3.2 Determining Management Priorities
Management of the proposed marine park aims to maintain the ecological and social values in the long-term and to promote science and education. Recreational and commercial activities will be provided for where these activities are compatible with maintaining the proposed marine park's values. To assess the compatibility of uses it is important to undertake a risk assessment, which considers the range of existing and potential pressures on the proposed marine park's key values and their associated ecological and social implications.

The level of risk posed by existing and/or potential pressures on the values of the proposed marine park can be assessed by considering the following factors:

- the *biological intensity* of the pressure – pressures that impact lower tropic levels (ie. primary producers such as coral and mangrove communities) are often of greatest concern. Pressures on higher trophic levels may cascade into impacts on lower trophic levels and would thus also be of great concern;
- the *temporal* scale of the pressure – ongoing pressures that continue are generally of greater management concern than pressures that are short-lived;
- the *spatial* scale of the pressure – pressures that occur over a greater spatial extend are often of greater management concern than localised pressures;
- the *social consequence* – acknowledges that different pressures have different social and political consequences. A high socio-economic/political consequence is often of greater management concern; and
- the *probability* of a pressure occurring within the timeframe of the management plan.

It is therefore necessary to determine how each value is, or is likely to be, affected by existing or future pressures. While the natural attributes and the major uses of the Walpole and Nornalup inlet system are

reasonably well known, the short-term and long-term cumulative effects of pressures on the ecological values of the system are not well understood. For the purposes of the management plan, pressures on the values are confined to current pressures and pressures likely to occur during the life of the management plan and considered to be manageable within a marine conservation reserve context. By definition this excludes such threats as worldwide global warming. The vision and strategic objectives of the plan (Section 6) provide the longer term (>10 years) direction for management of the proposed marine park.

4 REGIONAL PERSPECTIVE

4.1 Bioregional Setting

Marine waters adjacent to the proposed marine park are in the Western Australian South Coast bioregion, which extends from Black Point to Israelite Bay (ANZECC, 1998). The coastline of this bioregion typically comprises prominent granite headlands with deposits of Pleistocene aeolian limestone and Holocene dunes, and is exposed to heavy swell with few well-protected embayments. The coastal marine and estuarine biota has strong southern Australian affinities, with a significant local endemic component. Sheltered bays typically support seagrasses while sublittoral rocky shores are dominated by kelp. Strongly seasonal rainfall, which is moderate to high in the west of this bioregion, decreases to semi-arid in the east. The numerous estuaries of the bioregion vary widely in size, geomorphology and flow characteristics, with many being closed to the ocean seasonally or for extended periods. For these reasons, estuarine biotas of this bioregion are typically less diverse than the biotas of adjacent marine waters. However, the Walpole and Nornalup inlets is one of the most diverse estuary systems on the south coast as the system remains open to the ocean.

4.2 Geology and Geomorphology

The Walpole and Nornalup inlet system is geologically recent, having attained its present form only during the Holocene sea level changes of approximately 7000 years before present (Hodgkin & Hesp, 1998). Like other estuaries in the region, the inlet system was created by the isolation of flooded embayments or relatively old river valleys by the formation of dunes. Subsequent and highly dynamic processes, such as a fall in sea level, longshore drift of coastal sand, the infilling of estuaries with catchment sediments and highly seasonal water flow, have increasingly isolated these estuaries from the ocean. On the basis of these varying influences, estuaries of south-western Australia may be further classified as being permanently open, seasonally open, normally closed or permanently closed (Hodgkin & Hesp, 1998). The opening and closing regimes of estuaries depend on the degree of exposure of the inlet mouth to onshore sediment transport by swell and the flow characteristics of waterways that enter the system (Ranasinghe & Pattiaratchi, 1999; Ranasinghe *et al.*, 1999).

The Walpole and Nornalup inlet system is a basin estuary that formed in association with geologically ancient river channels (Hodgkin & Clark, 1999). Poor quality coal outcrops of Tertiary age occur at sea level along Coalmine Beach, and several shallow shafts have been sunk to test these deposits (Wilde & Walker, 1984). Although having undergone considerable sedimentation since its formation, this system remains one of only three permanently open estuarine systems on the south coast of Western Australia. The inlet entrance remains permanently open due to the high rate of water discharge from the system in winter open and the protection from the prevailing wind and swell provided by the adjacent Rocky Head (Hodgkin & Hesp, 1998). The channel takes different routes through the mobile sands and may be several metres deep in some places, but shallows to less than a metre deep where it crosses the beach to the sea (Brearley, 2005). Along the south-eastern shore of the Nornalup Inlet the dunes are truncated, and sands eroded from the shore have formed wide marginal shoals that slope steeply to the 3-5m deep central basin (Brearley, 2005). The coastal strip adjacent to the estuary comprises granite headlands, Pleistocene limestone and unconsolidated Holocene dunes that are generally stabilised by vegetation cover. An undulating landscape of forested laterite hills and low-lying peat swamp surrounds the inlet basins and the catchments of the Deep, Walpole and lower Frankland rivers. The Nornalup and Walpole inlets comprise approximately 1300 and 100 ha, respectively (Pen, 1997). The Walpole Inlet, about 2km from west to east and 1km from north to south, is generally less than 1 m deep except for the dredged boat channels (Brearley, 2005). The southern and north-eastern shores are higher and rocky, while the western and eastern shores where the Walpole and Collier Rivers enter are low-lying with sand or swampy land (Brearley, 2005). The Nornalup Inlet is approximately 5km in length from east to west, 3km from north to south and about 5m deep in the central basin (Brearley, 2005). The inlets are connected by a narrow channel around 200m wide, 1km long and approximately 2m deep (Brearley, 2005). The channel is bordered by steep granite hills with rocky shores (Brearley, 2005).

The Frankland/Gordon river system extends for around 400 km to the northeast of the inlet system onto the low relief plains and salt lakes of the Precambrian Western Shield Plateau. This catchment comprises approximately 6000 sq/km and much of the land in the north has been extensively cleared for cereal cropping, sheep farming and cultivation of vegetables (Brearley, 2005; DoE, 2004). The Deep River, which also flows into the Nornalup Inlet, is around 120 km in length and has a predominantly forested catchment of roughly 100 sq/km (Pen, 1997). The Walpole River, which discharges into the Walpole Inlet, has a much smaller catchment of approximately 60 sq/km. Although generally shallow, both the Frankland and Deep rivers are up to 5 m deep in places (Hodgkin & Clark, 1999)

4.3 Climate

The lower southwest of Western Australia has a Mediterranean climate with mild to moderately hot dry summers with cool evenings. Winters are typically cool and wet and are punctuated by periodic winter fronts bearing strong winds and rainfall. Mean minimum and maximum temperatures vary between 12-24° C in summer and 6-15° C in winter (DoE, 2004). Annual rainfall in Walpole is approximately 1300 mm, and is strongly seasonal with highest falls occurring between May and August (Hodgkin & Clark, 1999). Annual rainfall decreases rapidly to the north of the inlet system, with the northeastern extremity of the catchment receiving less than 500 mm. Annual rainfall can vary greatly from year to year and within a year (Brearley, 2005). For example, in 1996 rainfall was 1478 mm but in 2001 only 1081mm (Brearley, 2005). In recent decades, a slight but consistently decreasing trend in annual rainfall has been apparent in the region around the inlet system, which has amounted to a reduction of around 200 mm since the 1950s (Brearley, 2005; Hodgkin & Clark, 1999).

4.4 Hydrology

During summer months the inlet system is essentially marine (i.e. salinity close to 36 ppt) and tidal, although tidal amplitudes are dampened by 40 per cent due to limited exchange through the narrow inlet mouth. At these times the Frankland, Deep and Walpole rivers are tidal for around 12, six and one km, respectively. Although both the Frankland and Deep rivers flow all year, about 80 per cent of this discharge occurs during the winter and spring (i.e. from June to October) with negligible flow during summer, except for infrequent floods in the upper Frankland River (Brearley, 2005). Hence, the inlets undergo pronounced seasonal variations in water turbidity, salinity and temperature, and may be subject to distinct episodes of erosion and deposition during periods of peak flow (Hodgkin & Clark, 1999).

During the winter months a halocline (i.e. where water separates into distinct layers due to different salinities) typically forms throughout the estuary system. In the Nornalup Inlet, freshwater of generally 10ppt or less flows over salty water, which usually remains more than 30ppt in deeper parts of the inlet. Winter salinities in Walpole Inlet are usually lower than Nornalup Inlet (Brearley, 2005). This stratification breaks down in early summer due to wind driven mixing. During the summer months, saline water gradually extends up the rivers with deeper parts of the Frankland River to the head of the estuary (approximately 12km) reaching salinities of 30ppt with a layer of lower salinity water flowing over the surface (Brearley, 2005). During winter, if the river is not completely flushed, the layer of salt water in the deeper parts may persist (Brearley, 2005). The marine waters also penetrate the Deep River for a distance of 6km in summer although there may be an abrupt halocline between the bottom saltier water and the surface layer of fresh water (Brearley, 2005). This stratification typically results in low oxygen concentrations near the bottom of the water column as opposed to the well oxygenated conditions generated by waves stirring the open inlet (Brearley, 2005).

The water temperature of the Nornalup Inlet is approximately 20-22 °C during summer, while the surface temperature in winter (around 12-17 °C) is several degrees colder than deeper waters. River water temperatures exhibit greater variation and may reach 28°C by the end of summer (Hodgkin & Clark, 1999).

The inlet system is relatively well flushed as it has a high net inflow of water relative to the basin volume. The system is also subject to irregular and occasionally large flood events, the last major instance of which was in January 1982 (DoE, 2004). During these periods of high river discharge, visibility in the inlet system diminishes due to the presence of tannin-stained water, the dark colour of which may be an important factor in reducing algal growth (Brearley, 2005). In contrast, water clarity gradually increases during the summer months with the influx of clear sea water (Brearley, 2005). The change in colour may, however, not only be due to dilution with sea water but due to the light mediated breakdown of the organic compounds (Brearley, 2005).

4.5 Ecology

Because estuaries are subject to wide, often seasonal changes in physical conditions such as salinity, temperature, currents and turbidity, they typically support a relatively low diversity of organisms compared to most marine ecosystems (Edgar, 2001). However, as estuaries can provide a rich source of nutrients derived from surrounding catchments, tolerant species can occur in very high densities. Additionally, estuarine biota is strongly influenced by the frequency and duration of exchange with the ocean (Hodgkin, 1978; Young & Potter, 2002). The diversity of organisms may diminish markedly if the estuary mouth closes for an extended period (Hodgkin & Clark, 1990a)

Shorelines of the Walpole and Nornalup inlet system comprise rocky shores, sandy beaches and a variety of vegetation assemblages. Karri (*Eucalyptus diversicolor*) and low eucalypt forest commonly grow to the shoreline on hillsides, while assemblages dominated by peppermint (*Agonis flexuosa*) or *Oxylobium heterophyllum* occur

in low-lying areas. *Juncus* and *Melaleuca* dominate shorelines of the Walpole Inlet and at the mouths of the Frankland and Deep rivers (WANISAC, 1996; Figure 3). Riparian vegetation includes eucalypt forest and dense tea-tree thickets dominated by *Agonis parviceps* or *Homalospermum firmum* (WANISAC, 1996). While several shallow backwaters occur along the lower Frankland River, the ecological significance of these areas is poorly understood. Unlike many other estuaries in the region, the inlets do not have significant areas of intertidal swamp or mudflat. Low-lying areas adjacent to the river mouths do, however, become seasonally inundated during periods of high freshwater discharge.

The inlet system is biologically diverse compared to most estuaries in the southwest of Western Australia because it is permanently open to the ocean and maintains marine-like conditions for most of the year (Hodgkin & Clark, 1999). The inlet basins, which are dominated by mud and sand flats with some rocky shallows (Figure 4), support ephemeral seagrasses, such as *Heterozostera, Halophila* and *Ruppia,* and numerous species of algae. Polychaetes, crustaceans and molluscs dominate the relatively rich benthic invertebrate fauna, while approximately 40 mostly marine fish species commonly occur in the inlets, (Potter & Hyndes, 1994; Hodgkin & Clark, 1999). Larger fishes that breed in the inlets and/or lower rivers include black bream (*Acanthopagrus butcheri*) and cobbler (*Cnidoglanis macrocephalus*) (Neira & Potter, 1994). The relatively deep waters of the Nornalup Inlet provide further habitat for a variety of marine species, such as sharks, that are not common in other estuaries of the region. A diverse assemblage of waterbirds, shorebirds and seabirds, including ospreys (*Pandion haliaetus*) and white-bellied sea eagles (*Haliaeetus leucogaster*), inhabit the wide range of marine, estuarine and terrestrial habitats in and adjacent to the inlet system (Birds Australia, 2001b).

4.6 Social Context

Estuaries were highly significant hunting and gathering areas for indigenous communities of south-western Australia (Dortch, 1999). The presence of middens (places where shells, other food debris and other associated tools have accumulated over time), artefact scatters and fish traps on the shores of the inlet system and in the surrounding region provides evidence that Aboriginal groups have used the area extensively for camping and fishing (Dortch *et al.*, 1984; Dortch, 1992).

The first substantial European use of the inlets occurred following the settlement of Albany in 1826, when Nornalup Inlet was used as a base for sealers hunting the New Zealand fur seal (Fernie & Fernie, 1989). However, the outstanding scenic beauty of the inlets was quickly recognised. The diary of William Nairne Clark records his passage through the entrance one evening in February 1841:

> *'The swell of the ocean was heavy outside, but we easily swept over the bar, got into deep water as smooth as a millpond, and moored the boat to a tree by the river bank. I cannot describe my sensations on entering this beautiful river during the gloom of night. A sense of awe mingled with pleasure was chiefly predominant'.*

Although coastal areas of the region were used to graze cattle from about 1870 to 1900, the first permanent settlers close to the inlet system were the Bellanger brothers, who arrived in 1909. Despite intense pressure to develop the area for timber production and agriculture, 920 acres of land adjacent to the Frankland River were reserved for conservation in 1910. Remarkably, this reservation was initiated following a visit to the inlets region by a Ministerial party headed by James Mitchell, the Minister for Lands and Agriculture, who were to assess prospects for timber production and farming.

The present Walpole town site was first settled under the Land Settlement Scheme in 1930, and was gazetted in 1933. Tourism developed in and around the inlets during the 1920s, although access remained difficult until the Denmark to Nornalup railway opened in 1929 (Fernie & Fernie, 1989). Since the development of road access, the inlets have remained an accessible and low-risk destination for increasing numbers of tourists and visitors seeking family holidays, commercial tourism activities, water sports and recreational fishing. During World War II, United States servicemen flew flying boats to the inlets during periods of rest and recreation leave.

Tourism and recreation largely support the present day Walpole economy. Tourist facilities exist in Walpole, Nornalup and other locations, such as Rest Point and Coalmine Beach, adjacent to the inlets and rivers. A major attraction for commercial tourism in the inlet system is the lack of development and sense of isolation and remoteness that can be found, particularly in the Nornalup Inlet and substantial sections of the Frankland and Deep rivers. The value of the proposed marine park as a commercial tourism destination is further enhanced by its close proximity to other high profile nature-orientated tourist attractions, such as the Bibbulmun Track, the Tree-Top Walk and the Walpole Wilderness Area. Current commercial tourism in the inlet system includes boat tours and houseboat hire, as well as kayak tours, dinghy hire and guided fishing. Many boat users utilise the inlet

entrance to access adjacent marine waters. The inlet system is an important recreational fishing destination, where popular target species include black bream, King George whiting (*Sillaginodes punctata*) and blue-spot flathead (*Platycephalus speculator*). Catch and release black bream fishing competitions have been held in the inlet system in recent years. With two brief exceptions, from 1919-21 and 1944-46, the inlet waters have been closed to commercial fishing since 1911 (Fernie & Fernie, 1989). Shore-based commercial fishing for Australian salmon (*Arripis truttaceus*) occurs between February and April in ocean waters adjacent to the Nornalup Inlet, and a camp for this purpose is established on the shore of the inlet entrance. Catches are transported across the Nornalup Inlet by barge and are loaded onto road transport at a landing on the Deep River.

4.7 Ecological and Social Values

The Walpole and Nornalup inlet system was identified for consideration as a marine conservation reserve by the MPRSWG (CALM, 1994) because of the high ecological and social values of the area. The specific ecological and social values of the proposed marine park are listed below.

Summary of Ecological Values

- ***Geomorphology:*** *A geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the sea.*
- ***Sediment quality:*** *The sediments of the inlets are largely undisturbed and are essential to the maintenance of a healthy estuarine ecosystem.*
- ***Water quality:*** *Waters of the inlet system are generally in good condition and are essential to the maintenance of a healthy ecosystem.*
- ***Macroalgae and seagrass:*** *A variety of macroalgae and seagrass species, which are important primary producers and refuge areas for invertebrates and fishes, occur in the inlets.*
- ***Benthic invertebrates:*** *A diverse benthic invertebrate fauna, dominated by polychaetes, crustaceans and molluscs.*
- ***Finfishes:*** *Approximately 40 marine and estuarine fish species commonly inhabit the inlet system.*
- ***Sharks and rays:*** *The inlet system supports a variety of shark and ray species.*
- ***Waterbirds:*** *The varied habitats of the inlets, rivers and adjacent forest and coastal areas support numerous waterbirds, shorebirds and seabirds.*
- ***Sandy beaches and shoreline vegetation:*** *The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to the proposed marine park.*

Summary of Social Values

- ***Recreational fishing:*** *The inlets are a very popular destination for shore and boat-based recreational fishing for species such as black bream, King George whiting and blue-spot flathead.*
- ***Water sports:*** *The inlets are a popular destination for a diverse range of water sport activities.*
- ***Commercial tourism:*** *The inlets are an important commercial tourism destination for activities such as tours, houseboats, wildlife viewing, canoeing and exploring.*
- ***Aesthetic values (scenery, peace and quiet):*** *The scenery of the inlet system is distinctive in Western Australia, and the lack of development, particularly in the Nornalup Inlet and lower rivers, provides a strong sense of remoteness.*
- ***Indigenous cultural significance:*** *The inlet system and surrounding lands have a rich indigenous cultural heritage that exists as sites and stories.*
- ***European historical significance:*** *The inlet system and surrounding lands have a rich European heritage that exists as sites and stories.*
- ***Education:*** *The inlet system and surrounds comprise a variety of largely undisturbed landscapes and biota, as well as a rich Indigenous and European history, which represents a diverse and accessible educational resource.*
- ***Scientific research:*** *The diverse habitats and communities and largely undisturbed nature of the inlet system provide excellent opportunities for scientific research.*

5 DEFINITION OF THE AREA AND RESERVE TENURE

The proposed Walpole and Nornalup Inlets Marine Park is located approximately 450 km south of Perth, on the south coast of Western Australia (Figure 1). The proposed marine park represents a discrete estuarine system, comprising both the Walpole and Nornalup inlets and the tidal reaches of the Frankland, Deep and Walpole rivers, and covers and area of approximately 1442 ha.

The boundary of the proposed marine park follows the shoreline of both inlets and the shorelines of the Frankland River to Monastery Landing, the Deep River to the Bibbulmun Track swing-bridge and the Walpole River to the South Coast highway bridge. The boundary extends to low water mark where it is adjacent to the boundary of the Walpole Nornalup National Park, and elsewhere to high water mark. The ocean boundary is delineated by a line of longitude at 116° 44' 15" East.

The community-based Focus Group which considered the Walpole and Nornalup Inlets Marine Park proposal did not reach consensus on the inclusion of the Boronia Ave jetty or 'town jetty' and surrounding area within the proposed marine park. This area is in the Walpole Inlet and includes the work areas of the commercial tourism businesses that work on the inlet system. Exclusion or inclusion of this area would have advantages and disadvantages for management. The MPRA considered the issue and recommended that both boundary options (i.e., with the 'town jetty' included in the proposed marine park and the 'town jetty' excluded from the proposed marine park), be included in the indicative management plan and public comment sought on the issue.

The boundary of the proposed marine park, with the two boundary options for the 'town jetty' and surrounding area, is shown on Figure 1.

All of the Nornalup Inlet and part of the Walpole Inlet are surrounded by the Walpole-Nornalup National Park, which is vested in the Conservation Commission of Western Australia for conservation purposes and managed by DEC. This includes Newdegate (Snake) Island in the Nornalup Inlet. The northern shore of the Walpole Inlet comprises Unallocated Crown Land and Crown Reserve vested in Local Government. The tenure of lands adjacent to the proposed marine park is shown in Figure 2.

The CALM Act (Section 6 (6)) also states that a *marine park, marine nature reserve* or *marine management area* *'... includes:*

a) the airspace above such waters or land;
b) in the case of waters, the sea-bed or other land beneath such waters and the subsoil below the sea-bed or other land to a depth of 200 m; and
c) *in the case of land other than waters, the subsoil below such land to a depth of 200 m.'*

The CALM Act provides for the classification of marine conservation reserves as *marine park, marine nature reserve* or *marine management area*. To determine the appropriate category for a proposed reserve, it is necessary to assess the conservation significance and current and future uses of the area and the decision is guided by the purpose of the various reserve types as set out in the CALM Act (outlined below). More specific guidance is outlined in the MPRA's Policy Statement *The Application of the Marine Management Area Reserve Category in a Marine Conservation Reserve Planning Process* (MPRA, 2001).

The CALM Act (Section 13B (1)) states that a *marine park* is established *'... for the purpose of allowing only that level of recreational and commercial activity which is consistent with the proper conservation and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of any feature of archaeological, historic or scientific interest.'*

The CALM Act (Section 13A (1)) states that a *marine nature reserve* is established *'...for:*

a) the conservation and restoration of the natural environment;
b) the protection, care and study of indigenous flora and fauna; and
c) the preservation of any feature of archaeological, historic or scientific interest.'

The CALM Act (Section 13C (1)(2)) states that a *marine management area* is established *'... for the purpose of managing and protecting the marine environment so that it may be used for conservation, recreational, scientific and commercial purposes. Commercial purposes include:*

a) aquaculture, commercial fishing and pearling activity;
b) mining, within the meaning of the Mining Act 1978*;*

c) seismic surveys and exploratory drilling for petroleum; and
d) production of petroleum, and associated activities.'

It is recommended that the Walpole and Nornalup inlets area be vested as a *marine park* because of its high ecological and social values, and because the primary social values of the area (i.e. recreation and tourism) rely on the maintenance of those ecological values.

As the reserve is proposed to be gazetted as a Class A reserve, any amendment of the purpose and boundaries of the reserve, once gazetted, requires the tabling of an order in both Houses of Parliament. Either House can resolve to disallow a reservation order and as such Class A vesting provides high security of tenure. By contrast, the zoning scheme and the management plan can be amended through a formal public consultation process and do not require Parliamentary consideration. This provides the flexibility to respond to changing management priorities and community aspirations, and new information on the values and uses of the area. Any substantial change to the management plan requires a statutory three-month public submission period and subsequent Ministerial approvals.

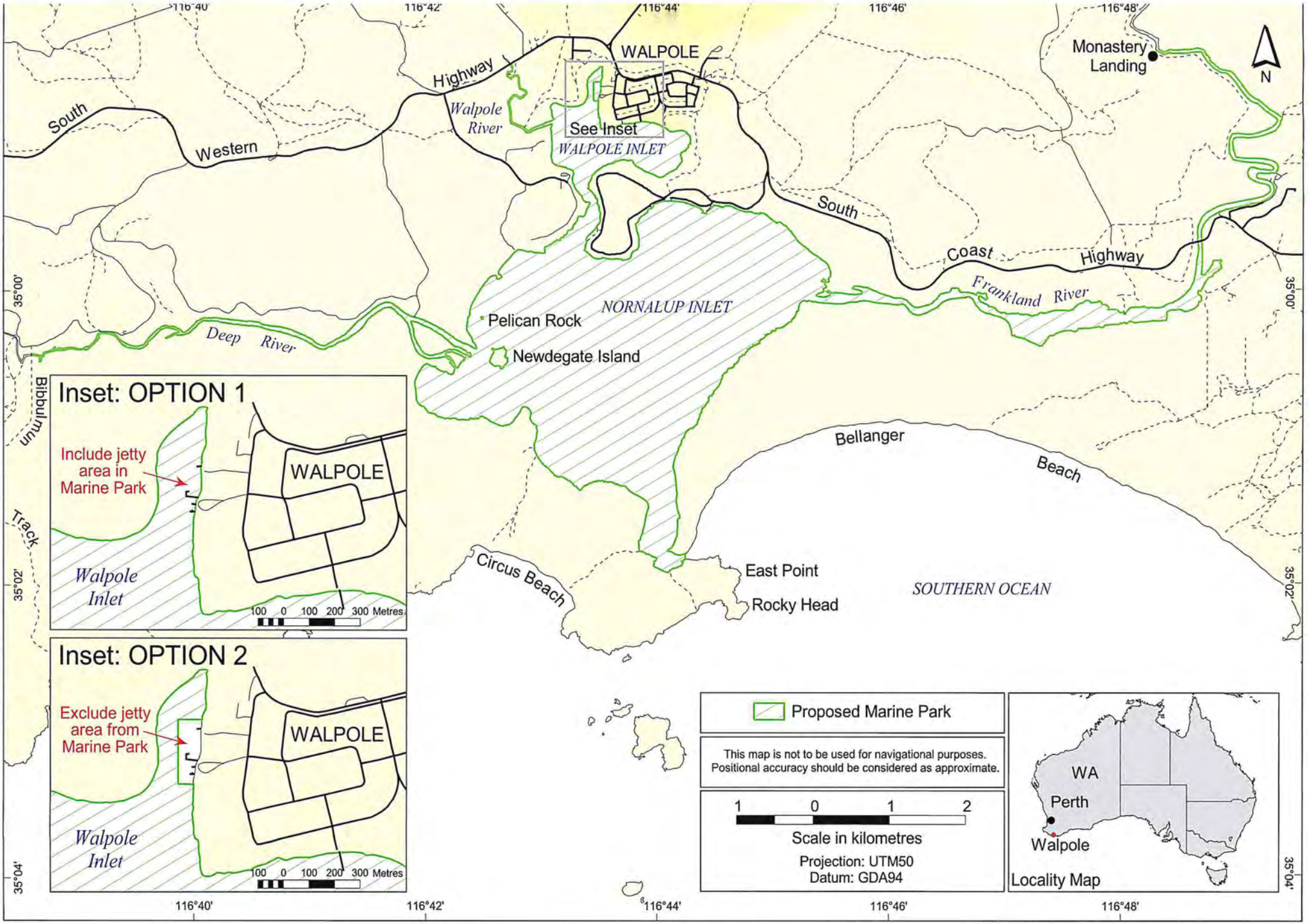

Figure 1: The locality and draft boundary of the proposed Walpole and Nornalup Inlets Marine Park.

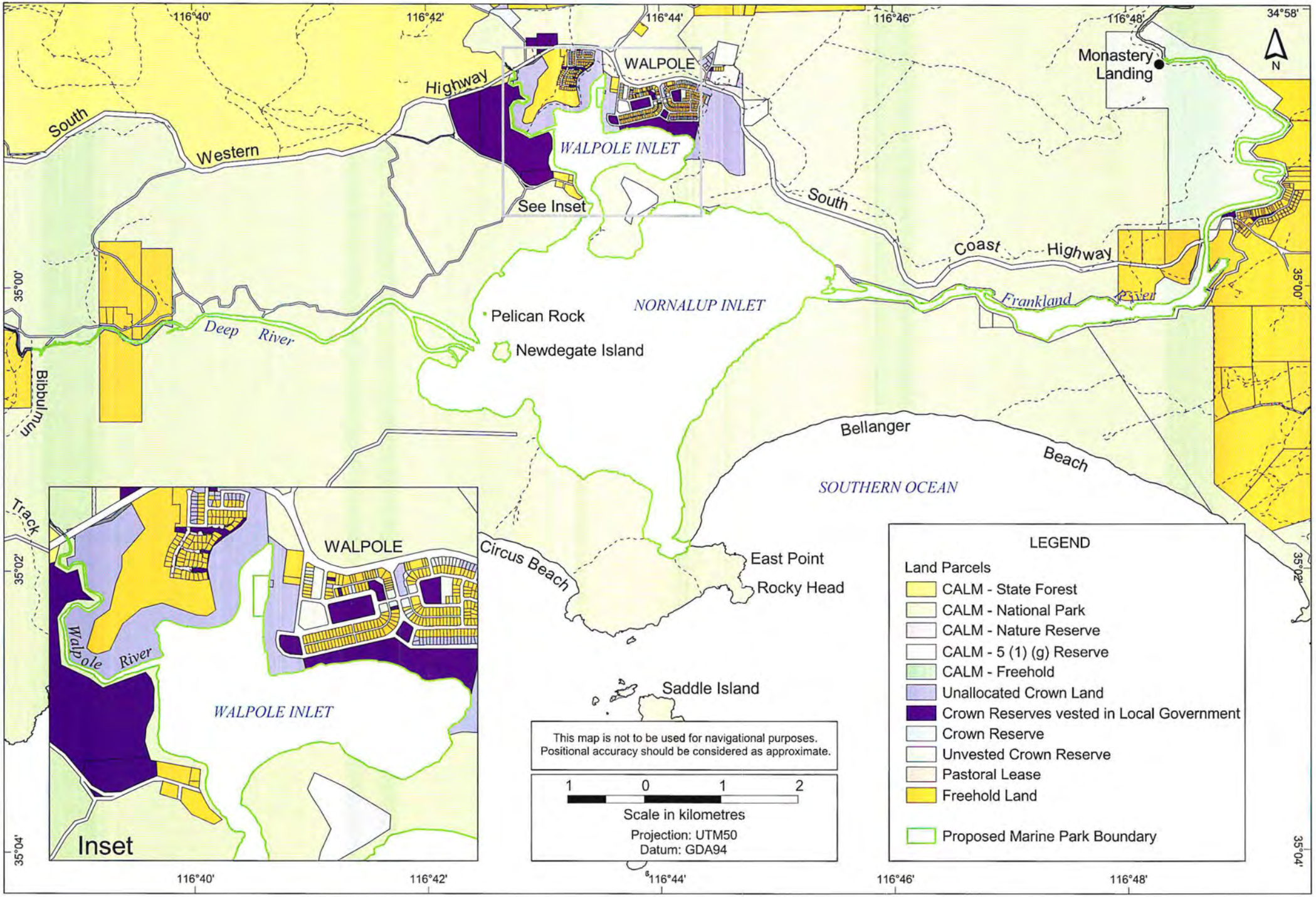

Figure 2: Tenure adjacent to the proposed Walpole and Nornalup Inlets Marine Park.

6 VISION AND STRATEGIC OBJECTIVES

6.1 Vision

The vision statement for the proposed marine park has been developed to represent the local and broader community's future aspirations for the conservation, use and management of the proposed marine park, and will provide a broad direction for future management.

Draft vision for the proposed Walpole and Nornalup Inlets Marine Park

To protect and improve the unique natural biodiversity, aesthetic qualities and cultural values of the inlets. The area will support sustainable human use for present and future generations, such that:

- *the inlets and their shores are sustainably managed in a condition that is the same or better than today;*
- *the aesthetic values and ambience of the inlets are maintained;*
- *people can still experience a range of activities, such as fishing, tours and holidays on and around the inlets;*
- *the biodiversity of the inlets is monitored and protected;*
- *economic benefits of sustainable management of the inlets will flow to the Walpole community;*
- *there is a substantially raised awareness of the value of the inlets; and*
- *the local community feels ownership of the inlets, participates in managing the area, and feels confident in their long-term protection.*

6.2 Strategic Objectives

The government has a policy of establishing a comprehensive, adequate and representative system of marine conservation reserves in Western Australia, based on the principle of multiple-use. The objectives of the marine conservation reserve system are:

- to preserve representative as well as special ecosystems in the marine environment; and
- to put a formal management framework in place to ensure the various uses of marine conservation reserves are managed in an equitable, integrated and sustainable manner.

Within the context of government policy and the CALM Act, the strategic objectives for the proposed marine park are:

Conservation

- to maintain and enhance the biodiversity and ecological values of the proposed marine park;
- to maintain key ecological processes and ecosystem structure and function;
- to work in partnership with managers of catchment areas that flow into the proposed marine park; and
- to maintain the aesthetic values and ambience of the proposed marine park.

Recreational uses

- to facilitate and, where appropriate, assist in the management of compatible recreational activities in the proposed marine park within a socially equitable and ecologically sustainable framework.

Commercial uses

- to ensure that commercial activities are managed in a manner that is compatible with the maintenance of the ecological and social values.

Cultural heritage

- to maintain Indigenous and European cultural and historical heritage.

Science and education

- to promote education and nature appreciation; and
- to promote ongoing scientific research to improve knowledge and support the management of the proposed marine park.

The strategic objectives of the proposed marine park cannot be achieved in isolation from other statutory and non-statutory management measures both within and external to the reserve. Thus the management of the proposed marine park must be seen as part of a complementary suite of management practices including management of adjacent terrestrial areas, fisheries management, wildlife management, pollution control, environmental impact assessment and maritime transport and safety measures that all contribute in varying degrees to achieving the above strategic objectives.

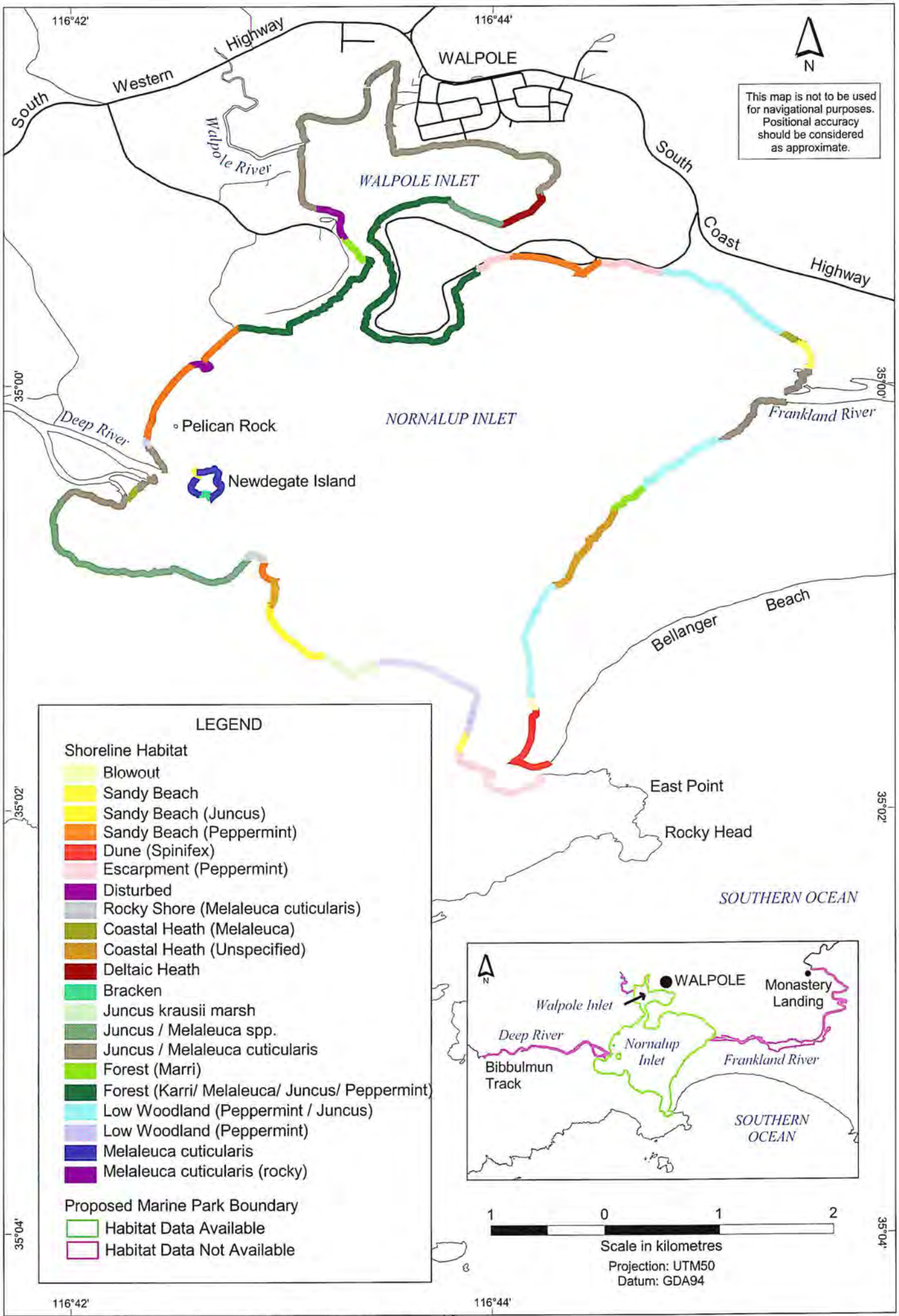

Figure 3: Shoreline habitats adjacent to the Walpole and Nornalup inlets.

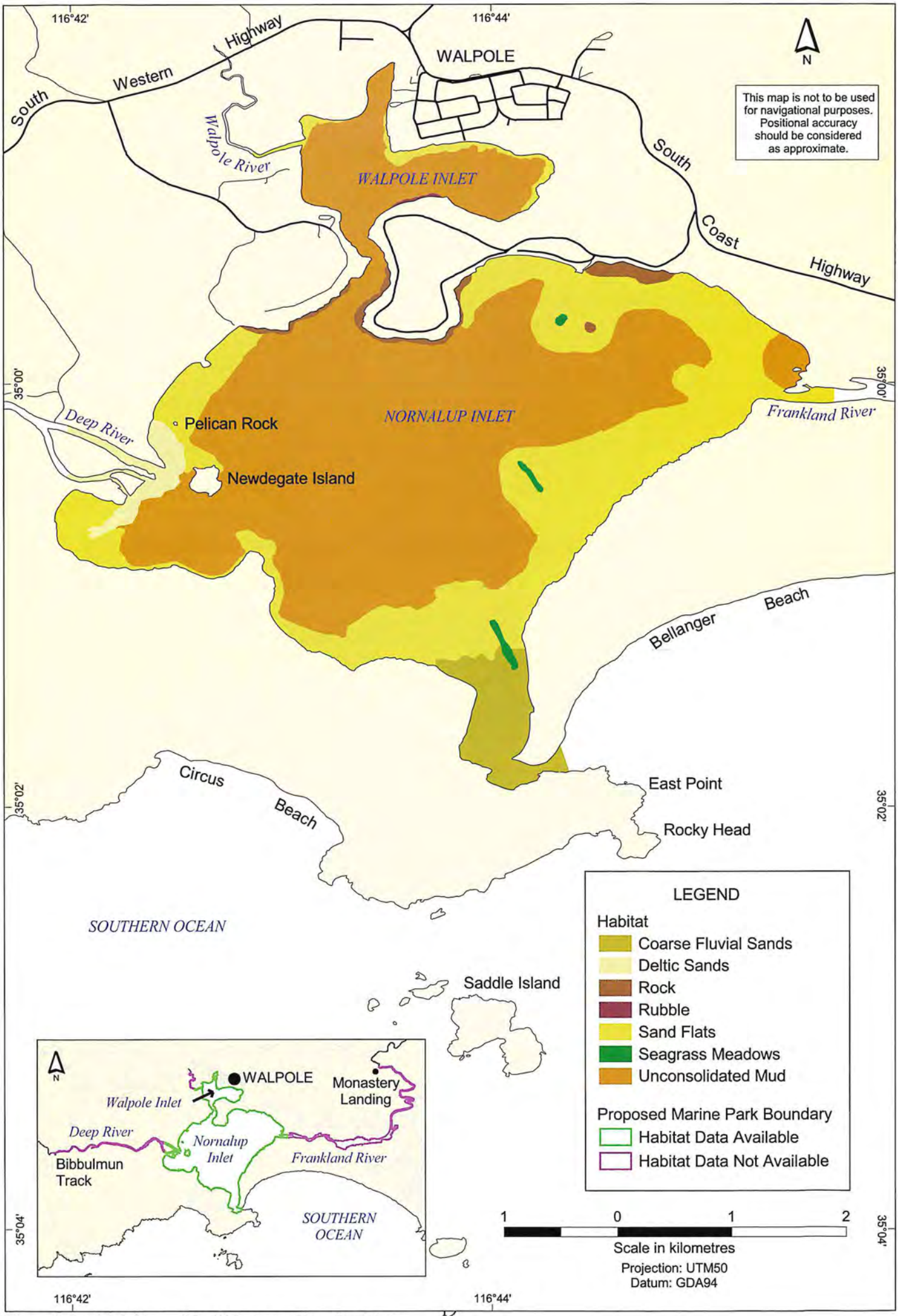

Figure 4: Benthic habitats of the Walpole and Nornalup inlets.

7 GENERIC MANAGEMENT STRATEGIES

The vision, strategic objectives, management targets and management objectives outlined in Sections 6-9 provide the framework for the development of specific management actions designed to conserve the ecological and social values of the proposed marine park. These actions are achieved by applying one or more of the following seven generic management strategies:

- the development of an appropriate management and administrative framework;
- education and interpretation;
- public participation;
- patrol and enforcement;
- management intervention and visitor infrastructure;
- research; and
- monitoring.

7.1 Development of a Management and Administrative Framework

A management and administrative framework is the set of legal, financial, human and administrative activities required to establish and maintain an appropriate framework for marine management. It includes administrative/financial/data management; office and infrastructure costs; human resource management; provision of internal and external advice and licensing and reporting. It also includes the establishment of zoning and mooring schemes, preparation of planning schemes and other activities not covered by other generic management strategies.

The development of an appropriate management and administrative framework is essential to ensure effective long-term management of the proposed marine park. This framework should include statutory considerations such as management purpose, the zoning scheme, appropriate regulations and considerations of human, financial and infrastructure resources.

For administrative purposes, DEC is divided into regions which in turn are made up of districts. The proposed marine park is within the Warren Region and the day-to-day operational management of the proposed marine park is the responsibility of the Frankland District. The District office is based in Walpole and is supported by the Marine Policy and Planning Branch, which has a central role in assisting Regional and District offices in the establishment and management of marine conservation reserves throughout the State. A number of other specialist DEC branches provide support, direction and assistance in relation to such areas as research and monitoring, wildlife management and licensing of tourism operations.

The proposed marine park will become part of the NRSMPA. The objective of the NRSMPA is to build a system of marine protected areas that will be:

- *Comprehensive* – include marine protected areas in all the major bioregions of Australia;
- *Adequate* – include marine protected areas that are of appropriate size and configuration to ensure the conservation of biodiversity and the integrity of ecological processes; and
- *Representative* – include the flora, fauna and habitats that are representative of the bioregion.

The implementation of an appropriate zoning scheme is an important strategy for both biodiversity conservation and the management of human use in the proposed marine park. A zoning scheme can separate conflicting uses and provide for specific activities such as recreation, scientific study and nature appreciation. Zoning is a flexible management tool that can accommodate evolving use of the proposed marine park for the duration of the management plan. The nature and extent of zoning should be considered within the context of the other generic management strategies of education and interpretation; public participation, patrol and enforcement; management intervention and visitor infrastructure; research and monitoring (Sections 7.2 – 7.7). Section 62 of the CALM Act provides for classification of zones in any category of marine conservation reserve necessary to give effect to the objects of the CALM Act. Section 13b of the CALM Act requires that marine parks be zoned as one or a combination of specific management zones. These are sanctuary, recreation, general use and special purpose zones.

Sanctuary zones provide for the maintenance of environmental values and are managed principally for nature conservation by excluding human activities that are likely to adversely affect the environment. They are used to provide the highest level of protection for vulnerable or specially protected species and to protect representative habitats from human disturbance so that marine life can be seen and studied in an undisturbed state. Specified

passive recreational activities, scientific study, appreciation and education that are consistent with maintaining environmental values may be permitted, but extractive activities, including fishing and traditional fishing and hunting are not. Commercial nature based tourism operations will be considered where they do not conflict with other uses, and will be regulated under the CALM Act.

Recreation zones provide for conservation and recreation, including recreational fishing where this is compatible with conservation values. Commercial fishing, pearling and aquaculture are not permitted in these zones.

Special purpose zones are managed for a particular priority purpose or use, such as a seasonal event (e.g. wildlife protection or whale watching) or a particular type of commercial activity (e.g. pearling). Uses that are incompatible with the specified priority purpose are not allowed in these zones.

General use zones comprise those areas not included in sanctuary, special purpose or recreation zones. Conservation of natural values is still the priority of general use zones, but activities such as sustainable commercial and recreational fishing, aquaculture, pearling and petroleum exploration and production are permitted provided they do not compromise the ecological values of the reserve.

Changes to the zoning of the marine park during the life of the management plan can only occur after meeting the statutory public consultation requirements and acquiring the approval of the Minister for the Environment, the Minister for Fisheries and the Minister for Resources.

7.1.1 Zoning for the proposed Walpole and Nornalup Inlets Marine Park

A zoning scheme for the proposed marine park was derived through a consultative process with a focus group that comprised community members and representatives of community stakeholder groups, peak bodies and government agencies. During a series of workshops, the focus group developed a vision for the future of the inlet system, and a set of ecological and social values that should represent priorities for management. Based on the vision and values, the focus group then concluded that the reserve category of marine park represented the most relevant type of reserve for future management of the inlet system. As marine parks must be zoned with any one or combination of the zone types described above, the focus group considered a zoning scheme in relation to their vision for the future management of the inlet system, and key ecological and social values identified for the area. They also received advice from scientists with expertise in estuarine ecology and management, and with particular knowledge of the Walpole and Nornalup inlet system.

Initial considerations of zoning by the focus group recognised the high ecological values of the proposed marine park, and the importance of the area as a recreation and tourism destination for the local and broader communities. As a major local tourism asset, the inlet system contributes significantly to the local economy and for this reason the focus group considered that recreational fishing should be allowed to continue in the proposed marine park. Following these initial discussions, the focus group recommended that, in general, zoning for the proposed marine park should reflect the major uses of the area for recreation and tourism while recognising the underlying requirement for the conservation of the ecological values and processes of the estuary system.

The focus group then considered whether zoning could facilitate management of specific physical or biological components of the proposed marine park or be used as a tool to monitor human impacts on the area. The focus group identified the physical and biological aspects of the Walpole and Nornalup inlet system that influenced their recommendations for zoning in the proposed marine park. For example, this estuarine system is relatively small compared to most existing marine conservation reserves in Western Australia, and the typically variable hydrological conditions that occur in the system means that numerous marine species opportunistically colonise the proposed marine park only when conditions are appropriate. Even mobile estuarine species, such as black bream, may move between the rivers, inlets and even the ocean depending on environmental conditions. In addition to these factors, the simple basin structure of the inlets contributes to the fact that particular parts of the inlet system cannot yet be distinguished as being, for example, highly productive or consistently supporting particular concentrations of flora and/or fauna. For these reasons, the focus group considered that creating zones in the proposed marine park for the management of specific components of the biota (e.g. special purpose or sanctuary zones) would not significantly contribute to achieving the management objectives of the proposed marine park during the ten-year life of this management plan. The group, however, did recognise that knowledge of the inlet system was incomplete, and that some important areas, such as fish spawning habitat or backwater areas of the lower Frankland River, may be identified as requiring spatial protection in the future.

These same physical and biological characteristics of the inlet system were considered by the focus group as

influencing the capacity to use sanctuary zones as a tool by which to assess the impact of human activities in this proposed marine park. In most cases, the formation of sanctuary zones can enable the comparison of areas subject to human impacts with areas that are maintained in an undisturbed or largely undisturbed state, and most marine conservation reserves in Western Australia contain sanctuary zones. To perform this function, sanctuary zones should contain 'ecological units', such as a complete reef system, or be sufficiently large to ensure that a substantial component of the biota are isolated from human activities. The relatively small size of the inlet system and the seasonal or longer-term changes in the distribution and abundance of the biota in response to variations in the estuarine hydrological cycle diminishes the capacity to use sanctuary zones to assess human impacts on the ecosystem of the proposed marine park. Furthermore, the focus group recognised that, as a significant proportion of existing and potential threats to the proposed marine park derive from human activities in lands and catchments that surround the inlet system, zones created in the inlet basins could not be isolated from these impacts. After considering the above, the focus group recommended that human impacts would most effectively be assessed by regularly monitoring water and sediment quality and biological communities throughout the entire proposed marine park rather than forming sanctuary zones for this purpose.

After considering all of the above factors, the focus group recommended that the proposed marine park be zoned as a recreation zone in its entirety. This zoning scheme recognises the significance of tourism and recreation as major activities in the area, as well as the physical and biological characteristics of the inlet system. The activities permitted in the proposed marine park are outlined in Table 2

Table 2: Uses permitted in the proposed Walpole and Nornalup Inlets Marine Park.

ACTIVITY		ACTIVITY	
RECREATIONAL		**COMMERCIAL**	
Water sports (motor & non-motorised)	Yes [a, b]	Aquaculture	No
Access by foot	Yes	Commercial fishing	No
Recreational line fishing	Yes [c]	Commercial specimen collecting (shell)	No
Recreational netting	No [c, d]	Petroleum drilling and mineral development	No
Spearfishing	No [c]	Charter fishing activities	Yes [c, d]
Recreational aquarium/specimen collecting	Yes [c]	Charter activities (e.g. houseboats, tours, hire activities etc.)	Yes [d, e]
Recreational crabbing	Yes [c]	Commercial vessels in transit (e.g. fishing vessels, barges etc)	Yes [a]
Wildlife interaction	Yes [c]		
OTHER ACTIVITIES			
Proposals for marine infrastructure (e.g. moorings)	Assess [a, d]		
Research	Yes [d]		
Anchoring	Yes [a, b]		
Discharge of boat sewage	No		
Dredging	Assess		

a Subject to the *Western Australian Marine Act 1982*
b Restrictions on vessel type, speed etc. and anchoring may be introduced in consultation with the community and major users where boating and/or surface water sports are impacting on the ecological and/or social values of an area
c Subject to the FRM Act
d Licence required from DEC and/or DoF
e Subject to the CALM Act and WC Act

The generic management and administration objectives, strategies and targets are summarised below.

Summary of Generic Management and Administration Objectives, Strategies and Targets

Management objective/s	To implement the statutory management and administrative framework for the proposed marine park.
Strategies	1. Gazette appropriate notices under the CALM Act and FRM Act to implement the zoning scheme for the proposed marine park within one year of gazettal (DEC, DoF). (**H-KMS**) 2. Gazette the proposed marine park as a mooring control area or similar legislative mechanism within one year of gazettal (DEC, DPI). (**H-KMS**) 3. In liaison with the community and where necessary, gazette appropriate restrictions for boating and/or surface water sports where these detrimentally impact the values of the proposed marine park (DEC, DPI). (**H**) 4. Educate and inform visitors to the proposed marine park of the zoning scheme and regulations (DEC). (**H**) 5. Undertake annual inspections and maintenance of the infrastructure of the proposed marine park (DEC). (**H**)
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

7.2 Education and Interpretation

Developing community support for the proposed marine park is critical to the effective implementation of this management plan. The level of public compliance with management controls in the proposed marine park directly relates to the level of understanding of the values and the reasons for regulation of activities in the proposed marine park. Public education will increase public awareness and understanding of conservation and management issues in the proposed marine park and of the marine environment in general. In a local sense, this increased understanding will help to develop a real sense of community ownership, which will subsequently lead to better protection of the ecological and social values of the proposed marine park.

Upon release of the plan, education programs will need to initially raise awareness of the new restrictions on activities as a result of the management strategies. Ongoing education programs will be required to minimise human impacts on the ecological values and a range of education and interpretation infrastructure (e.g. walk trails, interpretative signs) will be considered where appropriate. Specific education strategies are detailed for each ecological and social value in section 9 and education as a value of the park is outlined in section 9.2.11.

The generic education and interpretation objectives, strategies and targets are summarised below.

Summary of Generic Education and Interpretation Objectives, Strategies and Targets

Management objective/s	To enhance community understanding of, and support for, the proposed marine park through education and interpretation programs.
Strategies	1. Develop and progressively implement an integrated education and interpretation program (using a variety of media both on and off site) to ensure visitors are aware of, and understand the values of the proposed marine park, the purpose of management zoning and regulations, and the reasons for these controls (DEC, DoF). (**H-KMS**) 2. Assist commercial tour operators to access and deliver information about the proposed marine park to their staff and/or patrons (DEC). (**H**) 3. Provide public talks and briefings about the values, uses and management of the proposed marine park to user/community groups (DEC). (**H**) 4. Install and maintain appropriate educational signage and other relevant information (DEC). (**H**)
Target	1. Implementation of management strategies within agreed timeframes. 2. 50 per cent of visitors aware of the existence of the proposed marine park, its values and management within three years of gazettal. 3. 90 per cent of visitors aware of the existence of the proposed marine park, its values and management within ten years of gazettal.

7.3 Public Participation

The communities of Walpole and Nornalup have expressed a strong commitment to preserving the ecological and social values of the inlet system that are presented in this indicative management plan. Such community 'ownership' of the area would facilitate participation in management of the proposed marine park through a community-based Management Advisory Committee (MAC). Comprising appropriate community representation, a MAC would facilitate community input into management of the proposed marine park by providing advice and assistance to DEC and the MPRA. Through the MAC, local stakeholders would be able to discuss, for example, reserve management, administration, zoning, conflicts of use and other management-related issues with DEC and the MPRA, and this group could further act as a forum to disseminate the results of research and monitoring into the local community. It is important that catchment groups be represented on a MAC for the proposed marine park.

The generic public participation objectives, strategies and targets are summarised below.

Summary of Generic Public Participation Objectives, Strategies and Targets

Management objective/s	To facilitate on-going community participation in the management of the proposed marine park.
Strategies	1. Ensure that an appropriate MAC is established to facilitate community input into the ongoing management of the proposed marine park (DEC). **(H-KMS)** 2. Develop a public participation strategy for the proposed marine park (DEC). **(H)** 3. Encourage community and local industry involvement in education, interpretation and monitoring activities (DEC). **(M)** 4. Implement a schools program to foster involvement in reserve management (DEC). **(M)** 5. Investigate and implement, if appropriate, honorary marine conservation reserve officers (DEC). **(M)**
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

7.4 Patrol and Enforcement

This management plan details a range of strategies relating to the management of particular human activities within the proposed marine park, and the effectiveness of these strategies will be dependent on compliance by visitors. While visitors typically comply with management regulations when they understand why such controls have been implemented, there will, however, always be a need to monitor the level of compliance and take action to stop inappropriate or illegal behaviour. To achieve this, an appropriate level of 'on water' presence by DEC and DoF staff will be necessary in the proposed marine park.

The generic patrol and enforcement objectives, strategies and targets are summarised below.

Summary of Generic Patrol and Enforcement Objectives, Strategies and Targets

Management objective/s	Maximise public compliance of regulations related to the ongoing management of the proposed marine park.
Strategies	1. Develop and implement a patrol and enforcement program in collaboration with DoF to ensure an adequate level of compliance with regulations (DEC, DoF, DPI). **(H-KMS)** 2. Develop and implement procedures to ensure coordination between government agencies to maximise efficiency and effectiveness of patrol and enforcement activities (DEC, DoF, DPI). **(H - KMS)** 3. Facilitate cross authorisation of government enforcement officers as appropriate (DEC, DoF, DPI). **(H - KMS)** 4. Develop and implement a program that promotes voluntary compliance and peer enforcement of regulations (DEC, DoF). **(H-KMS)** 5. Encourage and facilitate an active role for commercial operators and visitors to the proposed marine park in a voluntary surveillance program (DEC). **(H)**
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

7.5 Management Intervention and Visitor Infrastructure

Intervention is direct management actions needed to achieve conservation outcomes. These can be either proactive (i.e. preventative) or reactive (i.e. restorative) management actions. It includes provision of visitor facilities required to reduce site disturbance and environmental impacts, such as moorings, designation of dive trails and vegetation rehabilitation works.

Although the majority of the proposed marine park is in a relatively good condition, there are areas that have suffered localised disturbance from human use. Anecdotal evidence from current visitors to the inlet system suggests that there are areas of shoreline degradation and possible depletion of some bivalve species. Other impacts may include for example, sediment contamination or accumulations of litter, which, although localised, may negatively affect the ecological and social values of the area. Management response in this case would be to identify areas that have been disturbed prior to gazettal of the proposed marine park and evaluate what, if any, rehabilitation measures should be undertaken. Decisions as to whether it would be appropriate to rehabilitate an area would be based on the ability of an area to recover naturally (i.e. if no further pressure is applied and with no management intervention), the current level of disturbance of the area, ecosystem effects of not carrying out rehabilitation, aesthetic impacts of the disturbance and the cost of rehabilitation.

It is envisaged that the human usage of the Walpole and Nornalup inlet system will increase in the future. Increasing visitor numbers may require additional facilities to protect ecological values from human disturbance and to enhance the visitor experience. The level of usage of the proposed marine park and the areas which come under the highest visitor pressure should be monitored and consideration given to provision of visitor facilities where appropriate. Policy Statement No. 18, Recreation, Tourism and Visitor Services provides the basis for planning and management for recreation, tourism and associated visitor activities on lands and waters managed by DEC. This policy statement will guide the management of visitors, provision of infrastructure and associated activities such as nature appreciation and education through the life of the management plan. Ongoing visitor risk assessment will be undertaken to identify potential hazards and implement mitigation strategies as visitation increases.

The generic intervention objectives, strategies and targets are summarised below.

Summary of Generic Intervention Objectives, Strategies and Targets

Management objective/s	1. To identify and, where appropriate, mitigate existing environmental impacts within the proposed marine park. 2. To provide visitor facilities, where appropriate, that minimise environmental impact to, and enhance visitor enjoyment of, the proposed marine park. 3. To take reasonable steps to minimise visitor risk where possible in the proposed marine park.
Strategies	1. Identify areas of existing human impact in the proposed marine park (DEC). (**M**) 2. Assess rehabilitation options and implement, where appropriate (DEC). (**M**) 3. Monitor visitor numbers and distribution in the proposed marine park and, consistent with available resources, provide visitor facilities where appropriate (DEC). (**M**) 4. Assess visitor risk in the proposed marine park and, where necessary, implement appropriate measures to minimise (DEC). (**M**)
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

7.6 Research

An increased understanding of the natural and social environment is critical for effective management, and a comprehensive research program will provide background information on the environment of the proposed marine park, as well as provide an understanding of what is 'natural' as a benchmark for future monitoring. Considerable scope exists in the proposed marine park for research that will establish the natural state of key ecological values and processes. Research programs should, ideally, be designed to fill key gaps in current knowledge. Specific research strategies are detailed for each ecological and social value in Section 9 and scientific research as a value of the proposed marine park is outlined in Section 9.2.8.

The generic research objectives, strategies and targets are summarised below.

Summary of Generic Research Objectives, Strategies and Targets

Management objective/s	1. To obtain an appropriate understanding of the biodiversity and key ecological and social processes within the proposed marine park. 2. To promote ecological and social research in the proposed marine park that will improve knowledge and the technical basis for management decisions.
Strategies	1. Develop and progressively implement a coordinated and prioritised research program focussed on key values and processes of the proposed marine park (DEC, DoF). **(H - KMS)** 2. Develop detailed habitat and wildlife distribution maps for the proposed marine park (DEC). **(H-KMS)** 3. Develop and maintain a database of human usage and impacts in the proposed marine park (DEC, DoF). **(H - KMS)** 4. Develop base line data for values that are data-deficient so that any changes in values over time can be assessed (DEC, DoF). **(H - KMS)** 5. Identify, prioritise and communicate high priority ecological and social research projects relevant to the management of the proposed marine park to appropriate research institutions via a strategic research plan with the aim of maximising priority research outcomes for the proposed marine park (DEC). **(H - KMS)** 6. Develop and maintain a database of historical and current research in the proposed marine park (DEC). **(H)** 7. Facilitate scientific and social research in the proposed marine park, conducted by research, academic and educational institutions, by providing financial and logistical assistance where possible (DEC, DoF). **(H)** 8. Develop partnerships with stakeholders and the community to implement research programs (DEC). **(H)** 9. Evaluate the sustainability of marine based activities in the region (DEC). **(M)**
Target	1. Implementation of management strategies within agreed timeframes (see Appendix II). 2. Provision of comprehensive, up-to-date scientific knowledge relevant to the management of the proposed marine park.

7.7 Monitoring

Regular and rigorous monitoring is essential to measure the effectiveness of marine conservation reserve management. Monitoring enables the early detection of detrimental impacts, and provides the trigger for corrective management actions before the important ecological and social values of the reserve become significantly degraded. Where changes have occurred and remediation measures have been implemented, a monitoring program should determine the rate of recovery of an affected area. Specific monitoring strategies are detailed for each ecological and social value of the proposed marine park in Section 9, and scientific research as a value is outlined in Section 9.2.7.

The generic monitoring objectives, strategies and targets are summarised below.

Summary of Generic Monitoring Objectives, Strategies and Targets

Management objective/s	1. To monitor ecological values and human usage in the proposed marine park. 2. To provide information that supports management decisions.
Strategies	1. Develop and progressively implement a coordinated and prioritised monitoring program for key values and processes of the proposed marine park (DEC, DoF). **(H - KMS)** 2. Encourage and facilitate community-based monitoring (DEC, DoF). **(H)** 3. Ensure that proponents of development proposals or activities with the potential to impact on the values of the proposed marine park conduct appropriate compliance monitoring programs (DEC). **(H)**
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

8 DEVELOPMENT PROPOSALS WITHIN THE PROPOSED MARINE PARK

All development proposals within the proposed marine park are subject to the environmental impact assessment requirements of the EP Act and consideration by the MPRA in the context of the management plan under the CALM Act. During the life of this management plan there may be proposals for the installation and construction of infrastructure associated with tourism operations and public recreation. This infrastructure may include major developments such as marinas, or minor works such as the installation of moorings or navigation markers. The nature of the development will determine the appropriate level of assessment. All assessments will review the proposal in terms of its potential impacts on the proposed marine park's ecological and social values and whether it is consistent with the ecological targets of the proposed marine park.

There are currently approximately 35 private jetties in the proposed marine park, all of which are licensed with DPI. The three public jetties in the proposed marine park are currently managed and maintained by the Shires of Manjimup and Denmark. Construction of private jetties may lead to the degradation of shoreline vegetation and may limit public access to the shoreline. In addition, the Walpole Wilderness Area Management Plan will not allow public access to the majority of foreshore areas so jetties will not be required in these instances as landward access will be restricted. It is therefore proposed that no additional private jetties be permitted in the proposed marine park.

The Mooring Policy (Policy Statement No. 59) for marine conservation reserves (CALM & MPRA, 2002) aims to (i) minimise the detrimental impacts of uncontrolled mooring and anchoring; (ii) enhance user safety, access and equity in relation to moorings; and (iii) provide a framework to accommodate present and future mooring usage patterns. Under the Mooring Policy, DEC will seek to designate all marine conservation reserves as 'Mooring Control Areas' under the *Shipping and Pilotage Act 1967* or other legislative mechanism. DEC will further seek appointment as the 'controlling authority', in accordance with the *Shipping and Pilotage (Mooring Control Areas) Regulations 1983,* to facilitate the management and control of mooring control areas in marine conservation reserves or pursue alternative options to achieve similar management. DEC will develop a mooring plan in conjunction with the DPI and with appropriate consultation. This plan will identify areas where moorings are acceptable from an ecological and social perspective and to establish capacities for these areas.

Applications for new moorings should be assessed on a case-by-case basis and in relation to criteria established in the DEC/MPRA Mooring Policy. At this stage, with the exception of boating channels, there are no areas in the proposed marine park that have been identified where moorings would not be permitted. However, given the limited number of sheltered areas in the inlets, the number of moorings in the proposed marine park may be capped if pressure for new moorings persists. Of the eleven DPI-registered moorings that currently exist in the inlet system, a commercial tour company (Houseboat Holidays) owns ten and one is registered to an individual.

Given increasing visitation to the area and the need to maintain the opportunity for sustainable recreational opportunities, there may be the need to further develop recreation sites adjacent to the proposed marine park. The Walpole Wilderness Area and Adjacent Parks and Reserves management plan has identified a spectrum of visitor management settings for the adjacent lands. These settings guide the DEC in determining what sort of recreational development may be appropriate in various natural settings and ensures that settings are not subject to incremental development. Visitor management settings adjacent to the proposed marine park are in Appendix 4.

A summary of the objectives, strategies and targets for development proposals is outline below.

Summary of Development Proposals Objectives, Strategies and Targets

Management objective/s	To ensure that the ecological and social impacts of infrastructure development proposals on the ecological and social values of the proposed marine park are evaluated through an appropriate level of environmental assessment.
Strategies	1. Gazette the proposed marine park as mooring control area (DEC, DPI). **(H-KMS)** 2. Ensure appropriate advice is provided to relevant authorities with regard to proposed infrastructure and the relevant ecological targets for the reserve (DEC). **(H)** 3. Develop a mooring plan for the proposed marine park which identifies areas in which moorings are acceptable and/or necessary from environmental, safety and equity perspectives (DEC, DPI). **(M)** 4. Assess applications for new moorings on a case-by-case basis and in relation to criteria established in the DEC/MPRA Mooring Policy (DEC, MPRA). **(M)** 5. Prohibit the construction of new jetties where it assessed that there is an unacceptable risk or impact to shoreline vegetation and/or constrain access to public shoreline (DEC, DPI). **(M)**
Target	Implementation of management strategies within agreed timeframes (see Appendix II).

9 MANAGEMENT OF ECOLOGICAL AND SOCIAL VALUES

9.1 Ecological Values

Ecological values are the physical, geological, chemical and biological characteristics of an area. Ecological values are significant in terms of their biodiversity (i.e. representative, rare or unique) and ecosystem integrity role. Ecological values also have a social significance because many social values are functionally dependent on the maintenance of ecological values.

9.1.1 Geomorphology

Ecological value	***Geomorphology:*** *A geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the sea.*

Background	The Walpole and Nornalup inlet system has a complex geomorphology, having attained its present form only during the Holocene period (i.e. 6000-8000 years ago) when rising sea levels flooded the geologically ancient valleys of the Deep and Frankland rivers (Hodgkin & Hesp, 1998; Hodgkin & Clark, 1999). Coastal dune formation then increasingly isolated the estuary system from the ocean, such that exchange with the sea is now restricted to a narrow and shallow, though permanently open, entrance to the Southern Ocean. This permanently open channel is maintained by its orientation, which provides protection from prevailing south-west winds and swells, and a relatively high volume of freshwater discharge (Hodgkin & Hesp, 1998). Landforms adjacent to the inlet system comprise Precambrian granites, Pleistocene limestones and unconsolidated Holocene dunes close to the coast with undulating laterite hills and low-lying peaty swamps further inland. The accumulation of river sediments over time has resulted in the Walpole Inlet being now only approximately 1 m deep, while the Nornalup Inlet has a deeper central basin of 4-5 m in depth. The rate of this deposition is sufficiently slow that depths appear not to have changed significantly between 1912 and 1985 (Hodgkin & Clark, 1999). Wave-driven erosion and deposition has formed wide sandy shallows in the Nornalup Inlet, where deltaic sands have also accumulated to form shoals at the mouths of the Deep and Frankland rivers. Active areas of erosion and deposition, such as the constantly changing ocean channel and eroding shoreline cliffs on the northeast side of the Nornalup Inlet, highlight the dynamic nature of this estuarine system. Similarly, it is notable that the entrance channel, which is currently about 1 m deep, is now much shallower than the 10-12 feet (approximately 3-4 m) recorded by William Nairne Clark in 1841. Development proposals in the proposed marine park which may impact on geomorphology are subject to assessment in accordance with the EP Act. In contrast to numerous other estuaries in south-western Western Australia, the Walpole and Nornalup inlet system is largely unmodified. Given the nature of current activities in the proposed marine park, there are currently no major pressures on the geomorphology of the system. Proposed improvements to the Knolls picnic site aim to prevent and rehabilitate shoreline erosion caused by unmanaged visitor access (CALM, 2003). While concerns have been raised about shoreline erosion caused by wake from powerboats, especially in the lower Frankland River, quantifying this impact in relation to natural processes, such as flood events, can be difficult. Boating channels have been dredged in the Walpole Inlet and through the shallow deltas of the Frankland and Deep rivers in the Nornalup Inlet, and must be occasionally deepened to maintain boat access (Hodgkin & Clark, 1999). Concerns have been expressed that exotic marrum grass, which has been planted to stabilise dunes near the inlet entrance, may act to disrupt natural processes of sand movement and, hence, may be contributing to sedimentation of the channel. Management with regard to geomorphology in the proposed marine park will comprise educating visitors about the geological history and naturally dynamic processes of erosion and deposition that occur in the inlet system, as well as seeking to rehabilitate areas of localised shoreline erosion. The significance of geomorphology should be emphasised in liaison with relevant agencies when development proposals in the area are assessed. Research on geological processes will be undertaken as required.
Current status	While the geomorphology of the proposed marine park is naturally dynamic, it is generally undisturbed by human contact apart from minor and localised disturbance created by boat

	channels, shoreline infrastructure and erosion.
Existing and potential uses and/or pressures	• Physical disturbance from the installation of jetties and boat ramps, dredging of boat channels, anchoring/mooring and the installation of navigational markers. • Shoreline erosion, including that caused by boat wake. • Possible disturbance of natural erosion and deposition processes caused by exotic marrum grass adjacent to the inlet mouth.
Current major pressure/s	None currently identified.
Management objective/s	1. To ensure that the structural complexity of the geomorphology of the proposed marine park is not significantly altered by user activities or infrastructure development. 2. To increase knowledge of geomorphology processes in the proposed marine park to facilitate long-term management.
Strategies	1. Educate visitors about the geomorphology of the proposed marine park and natural processes of erosion and deposition, particularly with regard to fragile shorelines (DEC). **(H-KMS)** 2. Ensure that development activities do not have a significant impact on the geomorphology of the proposed marine park through the provision of advice to the EPA regarding environmental assessment of proposals (DEC). **(M)** 3. Collaborate with relevant agencies or landholders to prevent and/or appropriately rehabilitate areas of localised shoreline erosion in and adjacent to the proposed marine park (DEC, Local Government). **(M)** 4. Monitor the effects of boat wake on the shoreline of the inlets and where necessary, take appropriate action to alleviate impacts from boat wake where these are occurring (DEC, DPI). **(M)** 5. Initiate research to increase knowledge of sedimentation processes associated with the entrance channel (DEC, research institutions). **(M)** 6. Initiate research on other geological processes, as required, to facilitate long-term management (DEC). **(L)**

Performance measure/s	Area of inlet or riverbed disturbance (ha).	**Desired trend/s**	Constant or negative.
Short-term target/s	To be developed as required.		
Long-term target/s	No significant change to the geomorphology of the proposed marine park as a result of human activity.		

9.1.2 Sediment quality (KPI)

Ecological value	**Sediment quality:** *The sediments of the inlets are largely undisturbed and are essential to the maintenance of a healthy estuarine ecosystem.*

Background	Sediments of the Walpole and Nornalup inlets are diverse and reflect the recent geological history of the system (see Section 7.1.1). The inlet basins and lower rivers largely comprise deep deposits of organically enriched mud that has been carried downstream from surrounding catchments (Hodgkin & Clark, 1999). In contrast, the extensive marginal shoals of the Nornalup Inlet are composed of firm sand and the entrance channel sediments comprise unconsolidated carbonate-rich sands of low organic content. In the deepest parts of the Nornalup Inlet the sediment consists of sand and clay silts, and the bottom of the Walpole Inlet is covered with fine organic material (Brearley, 2005). There are fine sediments with high concentrations of organic material and nutrients near Newdegate Island, the channel between the inlets and in Walpole Inlet (Brearley, 2005). Sediments near the channel to the ocean and near the Frankland River inflow are coarser with low concentrations of organic matter and nutrients, indicating that they may be reworked by the stronger water movements in these areas (Brearley, 2005). Sediment processes in the inlet system are very dynamic. Flood events may cause major deposition and/or erosion of, for example, riverbanks, while the northern shore of the Nornalup Inlet comprises a cliff-face shoreline that is actively eroding from wind-generated wave action. Uncontaminated sediments are important for the maintenance of healthy ecosystems as they support invertebrate communities that are an important trophic resource for numerous animals, such as fishes and birds. Development and infrastructure proposals that have the potential to impact on sediment quality are subject to assessment under the EP Act. The EPA can set conditions for sediment quality, which are subsequently regulated by the DEC and the Department of Industry and Resources (DoIR). Given the present low level of urban and industrial development adjacent to the inlet system, it is unlikely that this value is currently subject to major pressure. There are some indications of pollutants above background concentrations in the Walpole Inlet and channel near the Newdegate Island, however the source of these is unknown (Brearley, 2005). Sediment contamination may derive from town-sites or tourist facilities (e.g. storm-water runoff or nutrient leaching), work areas (e.g. jetties etc), boat ramps (e.g. concentration of pollutants from boats) or agricultural sources (e.g. chemicals). Current impacts of this kind are most likely to be low-level and/or localised in occurrence. The catchment of the Walpole River, for example, contains a closed landfill site that has caused groundwater contamination. In addition, accidental chemical spills from land-based facilities or road transport must be recognised as a significant potential threat to sediment quality in the proposed marine park. Management to maintain the sediment quality of the proposed marine park will focus on developing knowledge through monitoring and research. Guidelines and capacity will be developed to prevent and/or contain possible chemical spills that could enter the inlet system. A pollutant inputs database will also be developed and maintained for the proposed marine park.
Current status	While detailed knowledge of sediment quality is lacking, it is likely to be in a satisfactory condition with some minor and/or localised disturbance.
Existing and potential uses and/or pressures	• Accumulative contamination from townsites, recreation and/or tourist facilities (e.g. wastewater treatment plant, leach drains, refuse disposal sites, fertilisers, light industry etc). • Contamination from boat engines, especially adjacent to launch and mooring facilities. • Accidental chemical spills. • Accumulative contamination from agricultural sources.
Current major pressure/s	None currently identified.
Management objective/s	To increase knowledge of sediment quality in the proposed marine park and monitor sediments for human induced impacts.
Strategies	1. Monitor sediment quality in the proposed marine park, utilising community-based initiatives where appropriate (DEC). (**H-KMS**) 2. Develop and maintain a pollutant inputs database for the proposed marine park (DEC). (**H**) 3. Educate visitors about the ecological significance of sediment quality in the inlet system

	(DEC). (**M**) 4. Initiate research on sediment contamination, as required, to facilitate long-term management (DEC, Water Corporation). (**M**) 5. Liaise with relevant agencies to identify possible contaminant ingress points into the inlet system and develop a strategy and capacity to mitigate the impacts of accidental spills (DEC, FESA, Water Corporation). (**M**)

Performance measure/s	1. Metals and metalloids. 2. Organic compounds. 3. Nutrients.	**Desired trend/s**	1. Constant or negative. 2. Constant or negative. 3. Constant or negative.
Short-term target/s (KPI)	To be developed as required.		
Long-term target/s (KPI)	No significant change in sediment quality from 2006 as a result of human activity.		

9.1.3 Water quality (KPI)

Ecological value	**Water quality:** *Waters of the inlet system are generally in good condition and are essential to the maintenance of a healthy ecosystem.*

Background	Waters of the inlet system are essentially marine during summer months. The waters of the Deep and Walpole rivers are fresh and the Frankland River is saline (Brearley, 2005). The Frankland and Deep rivers are tidal for approximately 12 and six kilometres, respectively, while the smaller Walpole River is tidal over only a short distance. Freshwater discharge from these rivers is strongly seasonal, with about 80 per cent occurring between June and October (Hodgkin & Clark, 1999). This hydrological regime creates pronounced changes in the salinity, temperature and turbidity of water in the inlet system throughout the year (see Section 4.4). Early records of the nutrients collected during the 1970s Fisheries Department surveys indicate that nutrients were low in river and estuary waters (Brearley, 2005). Samples of river water collected in 1995-1996 showed similar low nutrient concentrations, although the amount of nitrate was higher in the Frankland River than the Deep River (Brearley, 2005). Since 1999, the Department of Water funded by the Natural Heritage Trust have carried out routine water quality monitoring every three months at eight monitoring sites in the inlets (Brearley, 2005). Temperature, salinity, dissolved oxygen, turbidity, phytoplankton and nutrients are sampled in the Walpole Inlet (2 sites), the channel between the inlets (1 site) and in the Nornalup Inlet (5 sites) (DoE, 2004). DEC and the Walpole and Nornalup Inlet Systems Advisory Committee (WANISAC) also monitor water quality in the Walpole River. The upper Frankland/Gordon catchment is extensively cleared and degraded. As a result, salinity is increasing in the Frankland River and brackish water enters the Nornalup Inlet. Sampling has revealed that most of the nutrients show marked seasonal changes, and vary from year to year depending on flows (Brearley, 2005). Although nutrient levels are also elevated in the upper Frankland/Gordon rivers, these are diminished in the lower river and nutrient discharge into the Nornalup Inlet is currently low. This is probably due to dilution caused by freshwater input as the river enters the coastal high-rainfall zone and nutrient processing by healthy riparian vegetation along the lower river. The presence of relatively higher nutrient levels in waters of the Walpole Inlet compared to the Nornalup Inlet may be a consequence of less flushing in this part of the inlet system, the re-suspension of nutrients held in shallow sediments and nearby unsewered residential properties (Brearley, 2005; DoE, 2004). In contrast, very little of the Deep River catchment, which extends north of the inlet system to the vicinity of Lake Muir, is cleared and the water derived from this system is fresh and low in nutrients. The catchment of the Walpole River, which provides drinking water to the town of Walpole, is partially used for grazing and dairy production, and also contains a closed landfill site (WRC, 2000). The National Water Quality Management Strategy provides a framework for water quality management that is based on policies and principles that apply nation-wide. It is implemented in Western Australia through the State Water Quality Management Strategy and the State implementation framework (EPA, 2002). Development and infrastructure proposals, which have the potential to impact on water quality in the state, are subjected to assessment under the EP Act. The EPA also sets conditions for water quality, which are regulated by the DEC and the DoIR. Since 1999, the Water Corporation has operated a wastewater treatment plant on the north side of the South Coast Highway near Walpole, which replaced septic systems in the town. While treated effluent is currently disposed of in infiltration trenches, this system is being upgraded such that in future all treated effluent will be used to irrigate a tree-lot at a site on Allen Rd, Walpole. This system aims to ensure zero nutrient discharge from the woodlot site (Water Corporation, 2002). The town of Nornalup uses septic tanks to dispose of sewage. Sewage discharge from vessels also has the potential to increase nutrient levels and to cause health problems for direct contact recreational activities due to elevated bacterial levels. While the impact of sewage discharge from vessels will vary considerably from place to place and seasonally as a consequence of environmental parameters (e.g. water circulation) and human usage patterns (e.g. number of vessels), the DPI's *Strategy for Management of Sewage Discharge from Vessels into the Marine Environment* details implementation of controls on sewage discharge. Under this strategy, three sewage discharge zones have been created based on the degree of risk to public health and/or the environment. These zones cover areas of water

	where sewage discharge must be prohibited for health and/or environmental grounds (Zone 1); areas where treated sewage discharge would be acceptable (Zone 2); and areas, mostly well offshore, where untreated sewage can safely be discharged from vessels (Zone 3). Due to the probable limited dilution and dissipation of sewage in the inlets, the entire proposed marine park will be designated as a 'No Discharge Zone' (Zone 1). Ecologically sustainable houseboat management is addressed by Department of Water's State-wide Policy 7 (WRC, 2001). The greatest pressure on water quality in the proposed marine park is contamination caused by nutrients and/or chemicals from proximate sources, such as townships, tourist facilities, light industrial areas, waste disposal sites and wastewater treatment plants. As most vessels that operate in the area are relatively small trailer boats, sewage discharge in the inlet system is not currently a significant management issue. Reduced water quality in the catchments that feed the inlet system represents a significant pressure on water quality in the proposed marine park. A closed landfill site in the Walpole River catchment, for example, has caused groundwater contamination. The significance of agricultural chemical contamination in the rivers is not well understood. Accidental chemical spills must also be recognised as a significant potential threat to water quality in the proposed marine park. Management to maintain the water quality of the proposed marine park will focus on continued monitoring and developing knowledge through research. Visitors to the proposed marine park will be offered educational material about the importance of water quality. In addition, guidelines and capacity will be developed to prevent and/or contain possible chemical spills that could enter the inlet system.
Current status	Water quality in the proposed marine park is generally in a satisfactory condition, with minor elevated nutrient levels in the lower Frankland River. The impact of chemical contaminants is currently poorly understood.
Existing and potential uses and/or pressures	• Accumulative contamination from townsites, recreation and/or tourist facilities (e.g. wastewater treatment plant, leach drains, refuse disposal and landfill sites, fertilisers, light industry etc). • Contamination from boat engines, especially adjacent to launch and mooring facilities. • Accidental chemical or sewage spills. • Water diversion (e.g. for irrigation and/or human consumption). • Diversion of saline drainage channels into waterways. • Accumulative contamination from agricultural sources. • Litter. • Sewage discharge from vessels.
Current major pressure/s	None currently identified.
Management objective/s	To increase knowledge of the impacts of human use on water quality in the proposed marine park and in associated catchments and waterways.
Strategies	1. Maintain water quality monitoring in the proposed marine park, and in surrounding waterways and catchments (DEC, WANISAC, Water Corporation). (**H-KMS**) 2. Designate the proposed marine park as a 'No discharge Zone' (Zone 1) to prohibit the discharge of sewage from vessels (DEC). (**H**) 3. Develop and maintain a pollutant inputs database for the proposed marine park (DEC). (**H**) 4. Educate visitors about government policy and regulations on boat sewage disposal and the ecological significance of water quality in the inlet system (DEC, DPI). (**M**) 5. Initiate research on water quality, as required, to facilitate long-term management (DEC, Water Corporation). (**M**) 6. Liaise with relevant agencies to identify possible contaminant ingress points into the inlet system and develop a strategy and capacity to mitigate the impacts of accidental spills (DEC, FESA, Water Corporation). (**M**)

Performance measure/s	1. Nutrients: *Chlorophyll a* and inorganic Nitrogen concentration in water. 2. Toxicants: Concentration in water. 3. Pathogens: Faecal coliform concentration in water. 4. Litter: Mass (kg) of litter at selected monitoring sites.	**Desired trend/s**	1. Constant or negative. 2. Negative. 3. Negative. 4. Negative.
Short-term target/s (KPI)	To be developed as required.		
Long-term target/s (KPI)	No significant change in water quality from 2006 as a result of human activity.		

9.1.4 Macroalgae and seagrass

Ecological value	**Macroalgae and seagrass:** *A variety of macroalgae and seagrass species, which are important primary producers and refuge areas for invertebrates and fishes, occur in the inlets.*

Background	Although a variety of aquatic plant species occur in the Walpole and Nornalup inlets, they are naturally sparse and their abundance and distribution varies depending on prevailing environmental conditions (Hodgkin & Clark, 1999). Many are marine species that have a low tolerance of seasonal freshwater discharge. A survey in 2003 identified 15 species of algae in the inlets, including *Polyphysa, Cystoseira, Cladomorpha, Cladophora, Gracilaria, Enteromorpha, Zosterocarpus* and *Chaetomorpha*, however, none of these were abundant (Brearley, 2005; Hyndes & Lavery, ECU, unpublished data). The green alga *Polyphysa* (also known as *Acetabularia calyculus*) grows attached to dead shells and rocks (Brearley, 2005). The brown alga *Cystoseira trinodis* also grows attached to rocks in the channel between the inlets (Brearley, 2005). The seagrasses *Ruppia megacarpa, Heterozostera tasmanica, Halophila decipiens* and *H. ovalis* also occur in the inlets. These are short-stemmed ephemeral species that typically grow rapidly and commonly occur in estuaries. The seeds of *R. megacarpa*, for example, will only germinate in low salinity water (DoE, 2003). These seagrasses do not form the large, dense and stable meadows that are common to inshore marine waters in Western Australia. Several *H. tasmanica* meadows, the location or persistence of which may not be stable over time, were identified on shallow sand flats along the eastern shore of the Nornalup Inlet during 2003 (Figure 4), while low densities of *R. megacarpa, H. ovalis* and *H. decipiens* were also widely distributed on eastern sand-flats, rubble and rocky substrates. *R. megacarpa* also grows on the shallow sandbanks near the Deep River and is often covered with algal epiphytes such as *Polysiphonia* (Brearley, 2005). The deeper part of the central basin contains black, organic mud and the dark tannin stained waters are too dark for plant growth (Brearley, 2005). The distribution and abundance of aquatic plants in the lower Frankland, Deep and Walpole rivers is not well understood. Aquatic plants play an important ecological role in the inlet system by processing nutrients and providing food and shelter for other organisms. There are no significant pressures on aquatic vegetation currently recognised in the inlet system, although a range of green algae species typically occur in the shallower, higher nutrient waters of the Walpole Inlet. Previously high densities of *R. megacarpa* that have occurred in the Walpole Inlet, and were most likely caused by eutrophication from proximate agricultural sources which have now been removed. This seagrass species grows and dies off very rapidly in response to changes in nutrient levels and prolific growth is a good indicator of eutrophication (DoE, 2003). Algal blooms, probably caused by eutrophication, occurred in the inlets during the late 1950s. *Chaetomorpha linum* and *C. aurea* were abundant in 1973-1974 and *Cladophora* sp. were abundant on the muddy sands in 1976 (Brearley, 2005). In 1976 living algae covered a layer of dying and dead algae 10-20cm thick over black deoxygenated ooze in 1-2 metres of water (Brearley, 2005). Similar elevated nutrient impacts during the 1970s and 80s resulted in the presence of floating mats of *Enteromorpha intestinalis* and *Chaetomorpha billardieri* in the shallow areas of the Walpole Inlet (Hodgkin & Clark, 1999). Proposed management of aquatic plants will place emphasis on monitoring the diversity, abundance and distribution of species in the proposed marine park. Research should be initiated, as required, to facilitate specific management needs.
Current status	Macroalgae and seagrass communities are in a generally undisturbed state, although the state of communities in the lower rivers is poorly understood.
Existing and potential uses and/or pressures	• Eutrophication from proximate (e.g. townsite, recreation and/or tourist facilities) or catchment sources. • Introduced species.
Current major pressure/s	None currently identified.
Management objective/s	To gain an increased understanding of the natural dynamics of seagrass and macroalgal communities in the proposed marine park.
Strategies	1. Monitor the distribution and abundance of macroalgae and seagrass in the proposed marine park (DEC). (**H**) 2. Initiate research on macroalgae and seagrass, as required, to facilitate long-term management (DEC). (**M**)

	3. Educate visitors about the ecological significance of macroalgal and seagrass communities in the inlet system (DEC). **(L)**

Performance measure/s	1. Diversity. 2. Biomass.	**Desired trend/s**	1. Constant. 2. Constant.
Short-term target/s	To be developed as required.		
Long-term target/s	No significant change to macroalgal and seagrass abundance[Ø] and diversity as a result of human activity in the proposed marine park.		

[Ø] In this context a loss or change in 'abundance' or 'biomass' excludes losses of a minor, transient or accidental nature.

9.1.5 Benthic invertebrates (KPI)

Ecological value	**Benthic invertebrates:** *A diverse benthic invertebrate fauna, dominated by polychaetes, crustaceans and molluscs.*

Background	The diversity of benthic invertebrates in estuaries is typically low as few organisms can tolerate the typically wide seasonal variation in environmental conditions, such as temperature, salinity and turbidity (Edgar, 2001). Species that are adapted to such environments however, can occur in very high densities. More benthic invertebrate species inhabit the Walpole and Nornalup inlets compared to most other estuaries of south-west Western Australia because the entrance is permanently open, and marine-like conditions prevail for much of the year (Hodgkin & Clark, 1999). Polychaetes, crustaceans and molluscs dominate this fauna. The polychaete *Capitella capitata* is abundant throughout the estuary and a number of small gastropod snail species such as *Taeta preissii, Assiminea* and *Hydrococcus brazieri* can be found in the fringing rushes (Brearley, 2005). Typical estuarine bivalves such as the mussel (*Xenostrobus pulex*), the trough shell (*Spisula trigonella*) and *Arthritica semen* occur near the Frankland River entrance and *Soletellina donacioides* are also notably abundant within the inlets (Brearley, 2005). Larger prawns *Metapenaeus dalli, Palaemonetes serenus,* and *Leander* sp., the blue swimmer crab *Portunus pelagicus* and mud burrowing crab *Cyclograpsus audouinii* are also found in the inlets (Brearley, 2005). Within the system, a greater diversity of benthic invertebrates occurs in the Nornalup Inlet compared to the Walpole Inlet, with a greater diversity on sand-flats compared to deeper muddy basin habitats (Hodgkin & Clark, 1999; Hyndes & Lavery, ECU, pers. comm.). Both the diversity and abundance of benthic invertebrates in the inlets are likely to diminish during winter months (Hodgkin & Clark, 1999). The fauna of the tidal rivers is less well understood. Benthic invertebrates may be filter feeders, grazers or active predators, and are important consumers of organic material that grows in or is transported into the inlets. Similarly, they form the diets of numerous larger species, such as fishes and birds. Under the FRM Act, the DoF is responsible for the management of the recreational take of invertebrate species. No significant pressures on benthic invertebrates are currently recognised in the proposed marine park, although some species, such as the blue swimmer crab (*Portunus pelagicus*) and cockles, are collected for food or bait in the inlets. Concerns exist about the current rarity of some previously abundant bivalve species, such as the cockle (*Katelysia scalarina)* and oyster (possibly *Ostrea angasi*) (S. Slack-Smith, Western Australia Museum, pers. comm.), although it is currently unknown if this is primarily the result of natural or human-induced processes or both. While this cockle species is collected for bait in the inlets, populations at Albany in Western Australia have, for example, exhibited large changes in abundance between 1978 and 1999 that may have resulted from variations in the recruitment of pelagic early life stages (Peterson *et al.*, 1994; W.R. Black, University of Western Australia, pers. comm.). This example highlights the need for greater knowledge of the ecology and biology of invertebrate species in the proposed marine park. Monitoring and developing a greater understanding of the diversity, distribution, ecology and biology of species will form the basis of managing benthic invertebrates in the proposed marine park. Species subject to fishing pressure will be managed on a sustainable basis by the DoF as detailed in Section 7.2.1.
Current status	The available data for most species indicates that populations are generally stable, however populations of targeted species have been reduced.
Existing and potential uses and/or pressures	• Collection for food and/or bait. • Disturbance by infrastructure development. • Introduced species. • Aquaculture developments.
Current major pressure/s	None currently identified.
Management objective/s	To increase knowledge of the diversity, distribution, ecology and biology of invertebrates in the proposed marine park to facilitate long-term management.

Strategies	1. Monitor benthic invertebrate communities in the proposed marine park (DEC). **(H-KMS)** 2. Identify invertebrate species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). **(H)** 3. Review the need for special conditions (e.g. bag limits and/or possession limits) for targeted invertebrate species in the proposed marine park (DoF). **(H)** 4. Conduct research to increase knowledge of the diversity, distribution, ecology and biology of invertebrates, including, but not limited to, cockles and oysters, to facilitate long-term management (DEC). **(M)** 5. Educate visitors about the ecological significance of benthic invertebrates in the inlet system and provide information regarding species which may be extracted from the proposed marine park to users (DEC, DoF). **(M)**

Performance measure/s	1. Diversity. 2. Abundance of indicator species.	**Desired trend/s**	1. Constant. 2. Constant.
Short-term target/s (KPI)	To be developed as required.		
Long-term target/s (KPI)	1. No loss of invertebrate diversity as a result of human activity in the proposed marine park. 2. No loss of protected invertebrate species abundance[Ø] as a result of human activity in the proposed marine park. 3. Management targets for the abundance of targeted invertebrate species are to be determined in consultation with the DoF and peak bodies.		

[Ø] In this context a loss or change in 'abundance' or 'biomass' excludes losses of a minor, transient or accidental nature.

9.1.6 Finfishes (KPI)

Ecological value	**Finfishes:** *Approximately 40 marine and estuarine fish species commonly inhabit the inlet system.*

Background	The abundance and distribution of fishes in estuaries of south-western Western Australia varies between species and is closely linked to seasonal freshwater discharge patterns and opening and closing regimes (Potter & Hyndes, 1999). About 70 per cent of fishes that regularly enter estuarine waters are marine species whose presence is irregular and usually confined to marine waters close to the estuary mouth (Potter *et al.*, 1990). Penetration of these species into the estuary will depend on the prevalence and duration of marine-like conditions. A smaller proportion (around 15 per cent) of species, typically mullets, gerreids, terapontids and whitings, opportunistically enter estuaries as juveniles when seasonal openings permit, where they exploit opportunities to forage and evade predators. These species do not usually breed in estuarine waters and commonly leave the system during periods of high freshwater discharge. Less than 10 per cent of the fish species found in estuaries in the south-west of Western Australia breed and complete their life cycles in these habitats, although these typically small species, such as gobids, atherinids (or hardyheads) and syngnathids, often occur in very high densities (Potter *et al.*, 1990; Potter & Hyndes, 1999). Hardyheads (*Leptatherina wallaceii, Atherinosoma elongata* and *L. presbyteroides*) together with the goby *Gavonigobius lateralis* are of notable abundance, accounting for over 90 per cent of the individuals found in shallow water communities (Brearley, 2005). Approximately 40 fish species commonly occur in the Walpole and Nornalup inlet system however the fish fauna in the Walpole and Nornalup inlet system is less diverse than comparable estuaries such as the Peel-Harvey or Swan on the lower west coast (Brearley, 2005; Potter & Hyndes, 1994). Unlike some other southwest estuaries, the Walpole and Nornalup inlets (and the nearby Wilson Inlet) are not as important as juvenile habitats for marine fishes as estuaries on the lower west coast (Potter & Hyndes, 1994; Ayvazian & Hyndes, 1995). Thirty six species of larval fish have been recorded throughout the estuary, with estuarine species accounting for 99 per cent of the total abundance (Brearley, 2005). The larval assemblage in the two basins of the inlets is dominated by the southern anchovy (*Engraulus australis*), the blue spotted goby (*Pseudogobius olorum*) and the long finned goby (*Favonigobius lateralis*) collectively account for more than 95 percent of the total in the two inlets (Brearley, 2005). Larvae of the hairy pipefish (*Urocampus carinirostris)* and the blenny *Parablennis tasmanianus* are also abundant in the estuary system (Brearley, 2005). Black bream, cobbler and blue-spot flathead are among the few relatively large species that breed in the inlet system (Neira & Potter, 1994). The striped trumpeter (*Pelates sexlineatus*), classed as a marine opportunist, is one species that may actually spawn within the inlet (Brearley, 2005). The larger sizes of King George whiting, mullet, striped trumpeter and herring found within the inlets, when compared to fish recruited to the lower west coast, indicates that spawning areas are a greater distance from south coast estuaries and that spawning may occur in the large marine embayments and fringing limestone reefs of the lower west coast (Brearley, 2005). Only one truly anadromous fish (i.e. which moves from the sea to spawn in freshwater), the pouched lamprey (*Geotria australis*), occurs in the southwest and is most abundant in waterways between the Margaret and Denmark Rivers (Morgan *et al.*, 1996). Among the most primitive of living fishes, lampreys have a jawless mouth that is modified to form a circular suction disc and a cartilaginous skeleton (Gomon *et al.*, 1994). Ammocoetes (larval lampreys) are known to occur in the Deep and Walpole rivers where they burrow into shaded organically enriched substrates for over four years before migrating to the ocean (Morgan & Beatty, 2003). Fishes of the Walpole and Nornalup inlet system are of high significance for recreational fishing, which is important among the local and broader communities, and is a significant drawcard for the local tourism industry. Fishing occurs throughout the inlet system and popular target species include black bream, King George whiting, blue spot flathead and herring

	(*Arripis georgianus*). Pink snapper (*Pagrus auratus*) has also been recorded in Nornalup Inlet (Brearley, 2005). While current knowledge of fish in the inlet system is greatest for commonly exploited species (Sarre & Potter, 1999; 2000; Sarre *et al.*, 2000; Norriss *et al.*, 2002), research has also been carried out on broader fish communities (Neira & Potter, 1994; Potter & Hyndes, 1994). Fishes are ecologically significant as consumers of plants, invertebrates and other fish, and as prey for larger fish species and numerous waterbirds, including cormorants (*Phalacrocorax* spp.), ospreys (*Pandion haliaetus*) and white-bellied sea eagles (*Haliaeetus leucogaster*). Under the FRM Act, the DoF is responsible for managing the recreational take of fish species. WANISAC surveys movement of pouched lampreys at the water supply weir on the Walpole River. The current major pressure on fishes in the proposed marine park is recreational fishing. While the inlet system is closed to commercial fishing, recreational fishing pressure in Walpole-Nornalup has increased substantially in recent years and current information on fish communities has not been documented (Brearley, 2005). Anecdotal evidence suggests that illegal fishing, such as the taking of undersize fish and use of nets, does occur. The introduction of exotic fishes could exert pressure on native species by acting as predators, competing for spatial and/or trophic resources or introducing disease (Helfman *et al.*, 1997). A probable sighting of carp was made in the Walpole River in early 2004. Species subject to fishing pressure will be managed on a sustainable basis by the DoF as detailed in Section 9.2.1. Long-term management of the fish community in the inlet system will require regular monitoring, ecological and biological research, and educating visitors about the ecological significance of fishes in the inlet system.
Current status	Fish populations are believed to be stable, however populations are not currently monitored.
Existing and potential uses and/or pressures	• Recreational fishing. • Illegal fishing. • Introduced species. • Disease. • Habitat degradation. • Pollution.
Current major pressure/s	Recreational fishing.
Management objective/s	To ensure that recreational fishing does not significantly impact fish populations in the proposed marine park.
Strategies	1. Monitor fish populations in the proposed marine park (DEC, DoF). **(H-KMS)** 2. Identify fish species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). **(H)** 3. Review the need for special conditions (e.g. bag limits and possession limits) for targeted fish species in the proposed marine park (DoF). **(H)** 4. Initiate ecological and biological research of fishes, as required, to facilitate long-term management (DEC, DoF). **(H)** 5. Educate visitors about the ecological significance of fishes in the inlet system and provide information regarding species which may be extracted from the proposed marine park to users (DEC, DoF). **(M)**

Performance measure/s	1. Diversity. 2. Abundance of indicator species.	**Desired trend/s**	1. Constant. 2. Constant.
Short-term target/s (KPI)	To be developed as required.		
Long-term target/s (KPI)	1. No loss of finfish diversity as a result of human activity in the proposed marine park. 2. No loss of protected finfish species abundance[Ø] as a result of human activity in the proposed marine park. 3. Management targets for the abundance of targeted finfish species to be determined in consultation with the DoF and peak bodies.		

[Ø] In this context a loss or change in 'abundance' or 'biomass' excludes losses of a minor, transient or accidental nature.

9.1.7 Sharks and rays

Ecological value	**Sharks and rays:** *The inlet system supports a variety of shark and ray species.*

Background	Elasmobranches are cartilaginous, usually live-bearing, fishes that typically produce relatively small numbers of young (Last & Stevens, 1994). For this reason, and others such as typically slow growth, elasmobranches are particularly susceptible to human-induced pressures (Pogonoski *et al.*, 2002). Potter & Hyndes (1994) recorded the smooth hammerhead shark (*Sphyrna zygaena*), southern shovelnose ray (*Aptychotrema vincentiana*), black stingray (*Dasyatis thetidis*), eagle ray (*Myliobatis australis*) and gummy shark (*Mustelus antarcticus*) from the Walpole and Nornalup inlets, among which the latter two species were particularly abundant. Gummy sharks are confined to the outer basin of the Nornalup Inlet where salinity is the highest (Brearley, 2005). The eagle ray is more widely distributed within the Nornalup Inlet than in the Walpole Inlet or the Frankland River, where it has only been recorded during summer when salinity is greater than 23ppt (Brearley, 2005). It is likely that these shark and ray species commonly inhabit this estuarine system because of the permanently open entrance, which creates marine-like conditions in the inlets for much of the year, and because the Nornalup Inlet is relatively deep compared to other estuaries. These abundant species are not strictly estuarine, but opportunistically or randomly inhabit estuarine waters. Notably, the inlets appear to act as a habitat for immature gummy sharks (Lenanton *et al.*, 1990; Potter & Hyndes, 1994). While these elasmobranch species are widely distributed, most are poorly understood (Cavanagh *et al.*, 2003). Gummy sharks are fished commercially in oceanic waters, while other species, including southern shovelnose rays, are caught as by-catch. Rays are benthic feeders, which are commonly seen foraging for crustaceans and molluscs on shallow flats, while gummy sharks and smooth hammerhead sharks feed mainly on molluscs and fish and cephalopods, respectively (Gomon *et al.*, 1994; Edgar, 2000). These species are unlikely to have natural predators in the inlet system. Recreational fishing is managed by the DoF under the FRM Act, while commercial fishing is not permitted in the inlet system. The smooth hammerhead shark is listed as low risk/near threatened by the IUCN (IUCN, 2003). The major current pressure on elasmobranches in the inlet system is recreational fishing. Tourism interactions, which are based on habituated feeding, represent a potential pressure on stingrays at Rest Point. Species subject to fishing pressure will be managed on a sustainable basis by the DoF as detailed in Section 9.2.1. Regular monitoring, ecological and biological research, and educating visitors about the ecological significance of elasmobranches in the proposed marine park will be important aspects of long-term management.
Current status	The ecology and biology of most elasmobranches in the proposed marine park are poorly understood. While anecdotal evidence suggests that some populations are stable, none are regularly monitored.
Existing and potential uses and/or pressures	• Fishing. • Illegal fishing. • Disease. • Habitat degradation. • Pollution. • Stingray tourism contact (including habituated feeding).
Current major pressure/s	None currently identified.
Management objective/s	To increase knowledge of the ecology and biology of elasmobranches in the proposed marine park to facilitate long-term management.

Strategies	1. Monitor elasmobranch populations in the proposed marine park, especially in relation to tourist contact (DEC, DoF). (**H**) 2. Identify elasmobranch species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). **(H)** 3. Review the need for special conditions (e.g. bag limits and possession limits) for targeted elasmobranch species in the proposed marine park (DoF). **(H)** 4. Initiate ecological and biological research on elasmobranches, as required, to facilitate long-term management (DEC, DoF). (**M**). 5. Educate visitors about the ecological significance of elasmobranches in the inlet system (DEC, DoF). (**M**)

Performance measure/s	1. Diversity. 2. Abundance of indicator species.	**Desired trend/s**	1. Constant. 2. Constant.
Short-term target/s	To be developed as required.		
Long-term target/s	1. No loss of elasmobranch diversity as a result of human activity in the proposed marine park. 2. No loss of protected elasmobranch species abundance[Ø] as a result of human activity in the proposed marine park. 3. Management targets for the abundance of targeted elasmobranch species to be determined in consultation with the DoF and peak bodies.		

[Ø]In this context a loss or change in 'abundance' or 'biomass' excludes losses of a minor, transient or accidental nature.

9.1.8 Waterbirds, shorebirds and seabirds

Ecological value	**Waterbirds, shorebirds and seabirds:** *The varied habitats of the inlets, rivers and adjacent forest and coastal areas support numerous waterbirds, shorebirds and seabirds.*

Background	The inlet system and surrounding district provide a diverse mosaic of aquatic and terrestrial habitats that include forests, heathland, swamps and coastal areas. Approximately 150 bird species are known to inhabit this diverse landscape (Birds Australia, 2001a; b), including numerous waterbirds, shorebirds and seabirds. These include swans, ducks, grebes, swamphens, moorhens, coots, cormorants, herons, egrets, ibis, pelicans, whimbrels, sandpipers, stints, oystercatchers and plovers. Gulls and terns are abundant in the area, and shearwaters, gannets and albatross may also be observed. The main raptors associated with inlet waters are ospreys and white-bellied sea eagles. The presence of these large predatory birds, which mainly feed on fish, is a major attraction for commercial tourism in the inlet system. Like many other estuaries, the permanent waters of the inlet system provide important habitat for bird species that migrate seasonally from drying ephemeral inland wetlands (Raines *et al.*, 2000; Kingsford & Norman, 2002). Birds are likely to be significant predators of invertebrates and fishes in the inlet system. All bird species are protected under the WC Act. The hooded plover (*Thinornis rubricollis*), which nests on beaches of south-western Australia, which is particularly susceptible to disturbance as human use of coastal regions continues to increase (Raines, 2002), is listed as low risk/near threatened by the IUCN (IUCN, 2003). Although only transient visitors to the area of the proposed marine park (Birds Australia, 2001b), the Indian yellow-nosed albatross (*Thalassarche carteri*) and Hutton's shearwater (*Puffinus huttoni*) are listed as endangered (IUCN, 2003). The major pressure on birds in the proposed marine park and on the adjacent shores is disturbance by people, dogs, boats and vehicles. Areas where such disturbance may occur include shallow banks on the western side of Nornalup Inlet near 'the peppermints', which is a feeding area for black swans, tidal flats along the eastern channel leading to the inlet entrance and Pelican Rock, which is a nesting and roosting site for some bird species. Shorebirds that nest and/or roost in easily accessible and/or high use areas, such as beaches, are particularly vulnerable to disturbance. It is proposed to prohibit dogs on the inlets to prevent disturbance to waterbirds. This will be consistent with regulations in the surrounding national park. The management of waterbirds, shorebirds and seabirds will primarily seek to increase visitor awareness of the ecological significance of birds in the proposed marine park, and to minimise or prevent disturbance, especially in the proximity of nesting and roosting areas. Populations of waterbirds, shorebirds and seabirds in these areas will be monitored.
Current status	Populations of waterbirds, shorebirds and seabirds and considered generally stable.
Existing and potential uses and/or pressures	• Incidental disturbance by people, dogs, boats and vehicles, especially in accessible and/or high use areas in and adjacent to the proposed marine park. • Predation by feral animals, especially of nests. • Habitat degradation or modification. • Entanglement in litter. • Habituated feeding.
Current major pressure/s	Disturbance.
Management objective/s	To prevent or minimise waterbird, shorebird and seabird disturbance by people, dogs, boats and vehicles.

Strategies	1. Educate visitors about the ecological significance of waterbirds, shorebirds and seabirds in the inlet system and the potentially detrimental impacts of human disturbance (DEC). (**H-KMS**) 2. Ensure the implementation of existing management plans (such as the *Hooded Plover Management Plan (2002-2012)*) for and relevant to waterbird, shorebird and seabird species that utilise the inlet system and/or adjacent lands (DEC). (**H-KMS**) 3. Ensure that important waterbird, shorebird and seabird nesting, foraging and roosting areas in and adjacent to the proposed marine park are not significantly affected by human activities (DEC). (**H**) 4. Prohibit dogs from the proposed marine park (DEC). (**H**) 5. Monitor waterbird, shorebird and seabird populations in the proposed marine park (DEC). (**H**) 6. Initiate ecological and biological research of waterbirds, shorebird and seabird as required, to facilitate long-term management (DEC). (**M**)

Performance measure/s	1. Diversity. 2. Abundance of indicator species.	**Desired trend/s**	1. Constant. 2. Constant.
Short-term target/s	To be developed as required.		
Long-term target/s	No loss of waterbird, shorebird or seabird diversity and abundance[Ø] as a result of human activity in the proposed marine park.		

[Ø] In this context, a loss or change in abundance excludes losses due to accidents. Minor or transient losses are unacceptable.

9.1.9 Sandy beaches and shoreline vegetation

Ecological value	**Sandy beaches and shoreline vegetation:** *The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to the proposed marine park.*

Background	The inlet system has a complex and diverse shoreline of beaches, rocky shores and fringing vegetation comprising a variety of plant communities (Figure 3) that are integral components of the ecological and scenic values of the proposed marine park. Only two sandy beaches, both of which are located in the Nornalup Inlet, are accessible by vehicle. Coalmine Beach is adjacent to developed tourist and recreation infrastructure, including the Coalmine Beach Caravan Park and Walpole Yacht Club, while Sandy Beach has only low-key access and visitor facilities. These beaches are popular recreation areas. Along the hillsides fringing the Walpole-Nornalup channel, the south-western shore of the Nornalup Inlet, and along the Deep and Frankland rivers, stands of karri (*Eucalyptus diversicolor*), red tingle (*E. jacksonii*) and yellow tingle (*E. guilfoylei*) dominate the tree line (Brearley, 2005). The lower sandy ridges are covered with *Banksia* woodland, while the low ground consists of paperbark (*Melaleuca*) woodlands and swamps with sedges and rushes (Brearley, 2005). A low shrub community occupies the areas near the mouths of the rivers and near Walpole (Brearley, 2005). It is dominated by the yellow-flowered pea shrubs (*Oxylobium heterophyllum* and *Jacksonia horrida)*, bottlebrush (*Beufortia* sp.), wattle (*Acacia pulchella* and *Astartea fascularis*), kangaroo paw (*Anigozanthus* sp.), zamia palm (*Macrozamia riedlei*), grass trees (*Xanthorrhea preissii*) and sword sedge (*Lepidosperma gladiatum, Euphorbia* sp.) (Brearley, 2005). Swamp cedars (*Agonis juniperina*) occur near the boat ramp (Brearley, 2005). A rush plant community dominated by sea rush (*Juncus krausii*) occurs around the estuary (Brearley, 2005). This is often narrow due to the steep slopes around the inlets (Brearley, 2005). Where the ground is flatter, species of sedge and grass such as bare twig rush (*Baumea juncea*), Mediterranean marram grass (*Ammophila arenaria*) and *L. gladiatum* grow behind the *Juncus* community (Brearley, 2005). The introduced salt water couch or seashore paspalum (*Paspalum vaginatum*) also occurs in these areas (Brearley, 2005). The sand spit at the bar is colonised by *A. arenaria*, dune cabbage (*Arctotheca populifolia*) and the native club rush (*Isolepis nodosa*) (Brearley, 2005). Shrubs, including *Leucopogon parviflorus, O. axillarus, Acacia littorea* and the sedge *L. gladiatum* dominate the more stable dune vegetation (Brearley, 2005). Unlike other estuaries in the region, the Walpole and Nornalup inlets do not have significant areas of inter-tidal habitat, such as samphire marshes or mudflat (Hodgkin, 1978; Hodgkin & Clark, 1990a, b). Low-lying areas, and particularly those adjacent to the river mouths, however, do become seasonally inundated during periods of freshwater discharge. While the shoreline vegetation of the Nornalup Inlet is largely undisturbed except in the vicinity of Coalmine Beach, significant disturbance has occurred around the Walpole Inlet, in particular adjacent to Walpole townsite and Rest Point (DoE, 2004). Significant weed infestation has occurred in riparian vegetation of the Walpole foreshore (WTC, 1996). Weed species include grasses such as *A.. arenaria, A. populifolia*, bracken and dodder (*Cassytha* sp.) (Brearley, 2005). Riparian vegetation of the lower Frankland, Deep and Walpole rivers is generally intact, although degradation has occurred on the Nornalup foreshore of the Frankland River. The diverse riparian vegetation of the lower Walpole River reflects a range of different landforms, such as silted channels, levees and floodplain (WANISAC, 1996). Inlet beaches are a discrete habitat type that is utilised by fauna such as shorebirds. Riparian vegetation has an important ecological function in maintaining the environmental health of waterways and estuaries by, for example, processing nutrients, stabilising shorelines and providing habitat for wildlife (Pen, 1997). The beaches and shoreline vegetation of the inlet system fall outside the boundary of the proposed marine park. However, most of the beaches and shoreline vegetation of the inlets and lower rivers is within the Walpole-Nornalup National Park. The shoreline of the northern half of the Walpole Inlet is either Unallocated Crown Land or Crown Reserve vested in Local Government (Figure 2), which is currently managed by the Shire of Manjimup.

	The most significant management issues with regard to sandy beaches and shoreline vegetation are clearing for development, degradation by inappropriate or unmanaged use such as trampling or 4WD access and invasion by pest species. These values, which lie adjacent to the boundary of the proposed marine park, will be managed by ensuring integrated management of adjacent lands, such as the terrestrial Walpole-Nornalup National Park. Educating visitors and collaborating with relevant agencies, such as the Shires of Manjimup and Denmark, will be important to successfully manage these areas.
Current status	Sandy beaches and shoreline vegetation habitats are generally undisturbed except in particular areas such as around towns and other tourist infrastructure such as at Coalmine Beach and Sandy Beach, where there are varying levels of disturbance.
Existing and potential uses and/or pressures	• Erosion and degradation caused by unmanaged shore access by vehicles and people and boat wake. • Clearing. • Weeds. • Litter.
Current major pressure/s	• Erosion and degradation caused by, for example unmanaged access by vehicles and people and boat wake. • Weeds.
Management objective/s	Prevent or minimise degradation or disturbance to flora and fauna associated with beaches and shoreline vegetation.
Strategies	1. Ensure an integrated approach to management of the interface between the Walpole-Nornalup National Park and the proposed marine park (DEC). (**H**) 2. Undertake an education program to raise awareness of the ecological and social significance of shoreline habitats and promote environmentally sensitive use of shoreline areas adjacent to the proposed marine park (DEC). (**H**) 3. Collaborate with appropriate management agencies to understand and minimise environmental impacts caused by, for example, exotic species such as marrum grass and erosion caused by boat wake, and implement rehabilitation programs as required (DEC, Local Government). (**H**) 4. Monitor the condition of shoreline habitats to facilitate long-term management (DEC). (**H**)

Performance measure/s	Shoreline disturbance (length).	**Desired trend/s**	Constant or negative.
Short-term target/s	To be developed as required.		
Long-term target/s	1. No further significant degradation of sandy beaches or shoreline vegetation caused by human impacts. 2. Rehabilitation of degraded areas.		

9.2 Social Values

Social values are those cultural, aesthetic, recreational and economic characteristics for which an area is significant or well known. These can include Indigenous and European heritage, commercial and recreational usage, science and education. Striking a balance between protecting the environment for current and future generations and facilitating ongoing recreational and commercial opportunities is the primary purpose of the draft management plan.

9.2.1 Recreational fishing

Social value	**Recreational fishing:** *The inlets are a very popular destination for shore and boat-based recreational fishing for species such as black bream, King George whiting and blue-spot flathead.*

Background	The popularity of recreational fishing has increased in Western Australia during the last decade, and this trend is expected to continue in line with population growth (DoF, 2000). Major estuaries, including the Walpole and Nornalup inlet system, Wilson Inlet and the Albany Harbours, are key south coast recreational fishing locations (DoF, 2004a). Surveys of 296 recreational fishing groups conducted by the DoF from December 2002 to November 2003 revealed that when compared with other south coast estuaries, the Walpole and Nornalup inlets experienced the highest recreational fishing effort (39,740 fisher days) (DoF, unpublished data). The combination of accessibility and sheltered waters make the inlet system a very popular destination for shore and small boat-based anglers, as well as anglers from houseboats. During its recreational fishing survey, the DoF recorded that recreational anglers caught 25 different species, with black bream being the most common species targeted by shore and boat-based anglers, as well as anglers from houseboats (DoF, unpublished data). Over 36,700 black bream were kept by boat-based anglers, approximately 1,300 by shore-based anglers and over 300 by anglers on houseboats from December 2002 to November 2003 (DoF, unpublished data). King George whiting, Australian herring and blue spot flathead are among the major species targeted, although a range of other inshore marine fishes are also caught. In recent years, catch and release bream fishing competitions have also taken place in the inlet system. Fishing activity occurs throughout the system and DoF studies indicate that peak activity occurs during summer with the highest levels of fishing effort for both boat and shore-based angling being recorded (DoF, unpublished data). The annual effort for shore-based and boat-based fishers was estimated at 5,125 fisher days and 33,595 fisher days, respectively (DoF, unpubl. data). Recreational fishing in the inlet system is of high social significance to the local and broader communities, and is of local economic importance as a major attraction for tourists visiting the district. During the 2002-2003 DoF recreational fishing census, approximately 28 per cent of shore-based anglers were visitors from interstate or overseas, 26 per cent from regional Western Australia, 18 per cent from the Perth Metropolitan Area, and 27 per cent of shore-based anglers were local (DoF, unpublished data). In contrast, only 2 per cent of boat-based anglers were visitors from interstate or overseas (DoF, unpublished data). The highest proportion of this user group, making up approximately 37 per cent, were visitors from regional Western Australia (DoF, unpublished data). Local anglers and anglers from the Perth Metropolitan Area comprised approximately 30 per cent each of the total proportion of boat-based anglers (DoF, unpublished data). Recreational fishing is managed under the FRM Act by the DoF using a variety of management strategies, such as daily bag limits, possession and trip limits, legal sizes, gear restrictions and spatial and/or temporal closures (DoF, 2000). New recreational fishing bag and size limits for the south coast of Western Australia (between Black Point east of Augusta and the Western Australia/South Australia border) were implemented by DoF on 1 January 2006 (DoF, 2005) and these limits apply in the proposed marine park. Potential management issues with regard to recreational fishing in the proposed marine park are the depletion of target species and/or the ecological impacts of depleting particular species (e.g. 'trophic cascades') (Shurin *et al.*, 2002). In particular, black bream which is the most popular targeted species in the inlets, are resident estuarine species and may be susceptible to over-

	exploitation in particular systems (DoF, 2001). As recreational fishing in the area is likely to increase, habitat degradation from, for example, trampling sensitive vegetation to gain shoreline fishing access and pollution from outboard engine oils, may become important management issues. Management of recreational fishing in the proposed marine park will entail collaboration with DoF to ensure that fishing for target species is ecologically sustainable. Emphasis will be placed on education, surveillance and enforcement to ensure compliance with fishing regulations and research.
Requirements	• Healthy fish stocks. • Maintenance of habitat for target species. • Equitable access to fishing areas.
Management objective/s	1. To ensure that, in collaboration with the DoF, recreational fishing in the proposed marine park is managed in a manner that is consistent with maintaining the proposed marine park's values. 2. To maintain the ecological values of the proposed marine park that are important to recreational fishing. 3. Collaborate with the DoF in maintaining quality recreational fishing opportunities in the proposed marine park.
Strategies	1. Educate recreational fishers about regulations that apply to their activities (DEC, DoF). (**H-KMS**) 2. Undertake joint surveillance and enforcement with the DoF to ensure compliance with fishing regulations (DEC, DoF). (**H-KMS**) 3. Monitor and undertake research on the ecological effects of recreational fishing in the proposed marine park, and review management controls as appropriate (DEC, DoF). (**H-KMS**) 4. Formulate performance measures and targets for key recreational species that will ensure sustainable recreational fishing (DoF, DEC). (**H**) 5. Monitor the abundance of selected targeted finfish species to assess the effectiveness of management strategies (DoF, DEC). (**H**) 6. Monitor recreational fishing catch/effort in the proposed marine park (DoF). (**M**)

Reporting	To be developed as required.
Target/s	Implementation of management strategies within agreed timeframes (see Appendix II).

9.2.2 Water sports

Social value	**Water sports:** *The inlets are a popular destination for a diverse range of water sports.*

Background	The Walpole and Nornalup inlets are a popular destination for boating and other water sports, due to their easy access by major roads, sheltered waters and high scenic values. The inlets also provide users with access to the adjacent ocean through the permanently open entrance. While trailer powerboats are the most prevalent craft, the inlets are also used for canoeing, sailing, jet skiing and water skiing. Anecdotal evidence indicates that water sport activity is highest during summer holiday periods. High use areas include the channel between the inlets, the lower Frankland River and the inlet mouth. The Frankland and Deep rivers are popular for canoeing, and Canoeing Western Australia are working with DEC to develop canoeing opportunities on the inlets. The Warren Region Draft Paddling Management Strategy will guide the development of canoeing opportunities. The Walpole Yacht Club is located at Coalmine Beach on the Nornalup Inlet. Vessel channels have been dredged in the Walpole Inlet and the deltas of the Frankland and Deep rivers (Hodgkin & Clark, 1999). Vessel launching facilities of varying quality are located at Walpole, Rest Point, Coalmine Beach and Nornalup, while small dinghies and canoes can be launched at other shoreline access points (e.g. Isle Road). Two public jetties are located at Walpole (Boronia Ave and Swarbrick Jetty) and one at the Nornalup boat ramp. Approximately 35 private jetties are located in the Walpole and Nornalup inlets and on the Deep and Frankland rivers, particularly adjacent to Nornalup. The Walpole Yacht Club jetty at the eastern end of Coalmine Beach was demolished for safety reasons during 2004. Water sport activities are a highly valued recreational activity among locals and visitors to the inlet system. Commercial water sport operations on the inlets are associated with commercial tourism (see Section 9.2.3) and the transport of commercial fishing catches from Bellanger Beach adjacent to the inlet mouth to a road access point on the Deep River. The DPI is responsible for commercial and recreational vessel regulations including boat licensing, safety standards, navigation markers and the licensing of moorings and jetties. Mooring controls can be delegated to other management agencies. The Shires of Manjimup and Denmark currently manage public boat launching facilities and public jetties in the proposed marine park. Proposed improvements to water sport facilities adjacent to the Walpole Yacht Club include upgrading the jetty and boat ramp, relocating trailer parking away from the shoreline, and improving the general appearance (CALM, 2003). During 2004, the proprietors of Rest Point Holiday Village proposed a foreshore redevelopment that includes new jetties and improvements to the existing boat ramp. Boating is prohibited adjacent to the Coalmine Beach swimming area, and vessels are limited to eight knots in the Walpole Inlet, the channel between the inlets, the rivers (Frankland, Deep and Walpole) and adjacent to the Knolls and the Coalmine Beach boating exclusion zone. There is currently no gazetted water ski area in the inlets. While it is currently recommended that water-skiing continue to be permitted, the impact of this activity on the ecological and social values of the proposed marine park should be closely monitored, and restrictions applied if necessary. Sustainable houseboat management is addressed by the Department of Water's State-wide Policy 7 (WRC, 2001). The most significant current management issues with regard to water sports in the proposed marine park are the enforcement of existing regulations and the separation of incompatible activities in a waterway that is of limited size. Speeding in particular is perceived to be a management issue, while water skiing and the use of personal water craft can disturb wildlife and disrupt the peace and quiet that is highly valued by canoeists and houseboat users. Within the life of this management plan, increasing numbers of vessels have the potential to negatively impact on the ecological and social values of the proposed marine park. Overcrowding for example may diminish the perceptions of 'peace and quiet', 'naturalness' and 'remoteness' that are integral aspects of the aesthetic value of the inlet system (see Section 9.2.4). In this context, while few private non-commercial live-aboard vessels currently use the inlet system, their presence is anticipated to increase. Vessel channels dredged in the Walpole Inlet appear to accumulate algae that rot, releasing stored nutrients which promote further algal growth leading to problems of eutrophication (Brearley, 2005). Areas once isolated are now visited more frequently by adventurers in canoes, who make overnight camps in, and may impact on, the riparian vegetation, increasing the risk of fire outbreaks (Brearley, 2005).

	Management of water sports in the proposed marine park will primarily involve ensuring compliance with vessel regulations through education and enforcement. Speed and area restrictions may be necessary where particular types of water sports are shown to be incompatible with roosting or nesting waterbirds or other types of user activities. If required to maintain the ecological and social values of the proposed marine park in the future, sustainable limits may need to be determined. To provide management direction prior to the development of long-term strategies, it is proposed that, to protect aesthetic and natural values and prevent overcrowding, should visitation to the proposed marine park markedly increase, visitors with non-commercial live-aboard vessels that intend to stay more than two nights in the proposed marine park must apply to DEC to do so. The number of non-commercial live-aboard vessels of any kind spending more than two nights in the proposed marine park will not exceed seven vessels at any time, however this may be reviewed in consultation with the community during the life of the management plan if these restrictions are not appropriate. The discharge of sewage from any vessels would not be permitted in the proposed marine park (see Section 9.1.3). Vessel channels may require additional dredging to maintain access during the life of this management plan.
Requirements	• Adequate regulation and enforcement of vessel regulations. • Adequate vessel-related infrastructure and facilities.
Management objective/s	1. To ensure that water sports is managed in a manner consistent with maintaining the values of the proposed marine park. 2. To maintain the values of the proposed marine park that are important to water sports. 3. To ensure that any infrastructure developments are consistent with the values of the proposed marine park.
Strategies	1. Educate visitors about water sport regulations and restrictions (DEC, DPI). (**H-KMS**) 2. Develop and implement appropriate patrol and enforcement as required (DEC, DPI). (**H-KMS**) 3. Develop and maintain a database of water sport use in the proposed marine park (DEC, DPI). (**H-KMS**) 4. Investigate strategies to separate incompatible water sport activities as required (DEC, DPI). (**H**) 5. Liaise with commercial tourism operators and the MAC and survey visitors to evaluate the sustainability of water sports in the proposed marine park (DEC). (**M**) 6. Prior to the development of a long-term sustainable water sport strategy, ensure that no more than seven non-commercial live-aboard vessels, which are staying for more than two nights, are present in the proposed marine park at any time (DEC). (**M**)

Reporting	To be developed as required.
Target/s	Implementation of management strategies within agreed timeframes (see Appendix II).

9.2.3 Commercial tourism

Social value	**Commercial tourism**: *The inlets are an important commercial tourism destination for activities such as tours, houseboats, wildlife viewing, canoeing and exploring.*

Background	The diversity of wildlife and undeveloped and easily accessible terrestrial, estuarine and coastal scenery associated with the inlet system makes the proposed marine park a very popular commercial tourism destination. The value of the proposed reserve in this regard is further enhanced by the proximity of other popular nature-orientated attractions, such as the Bibbulmun Track, the Tree-Top Walk and the Walpole Wilderness Area. Major attractions for commercial tourism are the lack of development and sense of isolation and remoteness that can be found, especially in the Nornalup Inlet and the Frankland and Deep rivers, as well as the ability to see iconic fauna, such as ospreys and white-bellied sea eagles, in an undisturbed and natural setting. Visitor numbers to the Walpole Tourist Bureau has grown from approximately 17,000 to 84,000 during the decade up to 2001. This was probably largely in response to opening of the high-profile Tree-Top Walk in the nearby 'Valley of the Giants'. While this rate of increase has subsequently slowed, international tourism to Western Australia is expected to double over the next decade (WATC, 2003). Tourist visitation to Walpole is strongly seasonal, with most occurring between September and April. Commercial tourism associated with the inlet system is a major component of the local economy. The major commercial tourism businesses that currently operate on the inlets offer boat tours and houseboat hire. The boat tours operate from jetties adjacent to the Boronia Ave boat ramp in Walpole and visit the inlet mouth or Frankland River over 2.5 to 4 hours. Houseboat Holidays currently offer three houseboats for hire, and have ten registered moorings located around the inlets and the lower Frankland River. Sea kayak tours also operate on the inlets during summer months, and dinghies may be hired from Rest Point during peak holiday season. In addition, canoe hire operates from Nornalup on the lower reaches of the Frankland River. Tourism Western Australian is responsible for promoting tourism infrastructure and product development (WATC, 2003). Vessels engaged in commercial tourist activity on the inlet system require a license from DPI, which is based on their size and the type of activity being undertaken. Holders of DoF licenses for aquatic ecotourism, fishing tour and restricted fishing tour activities in the South Coast Region are also permitted to operate in the inlets. Fishing tour licenses entitle holders to operate fishing charters in adherence to recreational fishing regulations. Information on DEC licensing for tourism businesses that operate in marine conservation reserves is presented in Appendix I. There are currently no significant management issues relating to commercial tourism in the proposed marine park, and the current commercial tourism operators contribute significantly to protecting the inlet system by fostering environmental awareness and understanding. However, the limited size of the inlet system may create management issues in the future should use of the area significantly increase. For example, strategies may be required to separate commercial tourism from other incompatible boating activities, such as water-skiing and the use of jet-skis. Similarly, should the number of commercial operators continue to increase, tourism activity itself could eventually have a negative impact on other values of the proposed marine park (see Section 9.2.4). If required in the future, sustainable limits on the number of commercial tourism operators may need to be determined. Proposals for new commercial tourism operations would be assessed with regard to their possible impact on the ecological and social values of the proposed marine park. Policy Statement No. 18, Recreation, Tourism and Visitor Services provides will help guide the management of visitors, provision of infrastructure and associated activities such as nature appreciation and education through the life of the management plan. Commercial tourism will be managed to be consistent with maintaining the ecological and social values of the proposed marine park. Management will also focus on maintaining the values that sustain commercial tourism, and providing assistance to maintain a viable commercial tourism industry in the proposed marine park.
Requirements	• Equitable access to the natural values of the proposed marine park. • An undegraded natural environment and the presence of iconic wildlife. • High aesthetic quality, including serenity and quiet, of the inlets environment.

	• Appropriate infrastructure and facilities.
Management objective/s	1. To ensure that commercial tourism activities are managed in a manner that is consistent with maintaining the ecological and social values of the proposed marine park. 2. To maintain the ecological and passive social values of the proposed marine park that are important to the tourism industry. 3. Cooperate with the industry to maintain a viable tourism industry in the proposed marine park.
Strategies	1. License all commercial tourism operators (or provide a lease where appropriate) within the proposed marine park with appropriate conditions (DEC). (**H**) 2. Develop codes of practice for commercial tourism in the proposed marine park, including performance measures, desired trends, short-term and long-term management targets and monitoring and reporting requirements, which will be included on licence conditions (DEC, Tourism Western Australia). (**H**) 3. Ensure equitable access for commercial tourism in the proposed marine park (DEC). (**M**)

Reporting	To be developed as required.
Target/s	Implementation of management strategies within agreed timeframes (see Appendix II).

9.2.4 Aesthetic values (scenery, peace and quiet, remoteness) (KPI)

Social value	**Aesthetic values (scenery, peace and quiet):** *The scenery of the inlet system is distinctive in Western Australia, and the lack of development, particularly in the Nornalup Inlet and lower rivers, provides a strong sense of remoteness.*

Background	Outstanding scenic qualities are created by the undulating landscape of the Walpole district and the fact that the inlets and lower rivers are largely surrounded by predominantly forested national park. The inlet system itself provides a diverse visual landscape of tranquil waters, meandering rivers, forested hillsides, heathland and wild coastal scenery. The recognition of these high aesthetic values led to the creation a conservation reserve on the Frankland River as early as 1910 (Fernie & Fernie, 1989). Pivotal to the high aesthetic value of the inlet system is the 'peace and quiet' and sense of 'remoteness' and 'naturalness' that can be experienced by visitors, particularly in the Nornalup Inlet and the lower reaches of the Frankland and Deep rivers. Such aesthetic values are enhanced by the lack of intrusive infrastructure development in these areas, and the presence of iconic wildlife in a totally natural setting. The aesthetic values of the inlet system are highly valued by locals and visitors to the area, and are an important asset for commercial tourism. DEC Policy No 34, Visual Resource Management of Lands and Waters Managed By DEC, aims to ensure that all uses of lands and waters managed by DEC are carried out in a way that sustains the beauty of the natural environment. Maintaining the visual quality of landscapes is a major management objective of the Walpole-Nornalup National Park, which comprises most shorelines of the proposed marine park and adjacent lands (CALM, 1992). The management plan for the Walpole Wilderness Area and Adjacent Parks and Reserves specifies visual landscape management zones for the region (see Appendix 4). In the proposed marine park, proposed improvements to visitor facilities at Coalmine Beach and the Knolls for example, aim to remove some visually intrusive infrastructure (CALM, 2003). Most visitors to the proposed marine park will appreciate aesthetic values as a combination of the natural setting, perceived isolation with relatively few people and the absence of infrastructure. While current levels of activity and development in the inlet system are not perceived to significantly compromise aesthetic values, overcrowding, excessive noise and inappropriate infrastructure development could .easily do so. However, as aesthetic perceptions are subjective, and may differ between different visitors and over time, the targets that set to maintain this value will require ongoing review and input from visitors. As visitation to the proposed marine park increases, there will always need to be a balance between maintaining aesthetic values whilst not unnecessarily restricting access. Regular visitor surveys are recommended to gauge perceptions of aesthetic quality. Management of aesthetic values in the proposed marine park will focus on educating visitors, monitoring visitation, and gauging user perceptions. As visitation increases, it may be necessary to liaise with stakeholders and the community to develop sustainable levels of visitation and use.
Requirements	• Maintain tranquillity and quiet. • Waters and shores free of structures and human influence (e.g. litter). • Minimal shoreline development and no intrusive infrastructure. • Fauna with visual appeal.
Management objective/s	To ensure that the aesthetic values of the proposed marine park are not degraded by human activities.
Strategies	1. Monitor levels of visitation to the proposed marine park (DEC). (**H- KMS**) 2. Educate visitors about maintaining the aesthetic values of the proposed marine park (DEC). (**H**) 3. Identify user perceptions on the importance of aesthetic values and sustainable levels of use to ensure that these values do not become significantly degraded (DEC). (**H**) 4. Liaise with tourism operators, the MAC (see Section 8.6) and other visitors to identify management targets for visitation and/or limits on visitation to particular areas of the proposed marine park (DEC). (**M**) 5. Collaborate with Local Government to ensure that aesthetic values are considered in planning approvals (DEC, Local Government). (**M**)

Performance measure/s	Visitation (e.g. vessels per day on inlets)	**Desired trend/s**	To be developed.
Short-term target/s (KPI)	Develop a community agreed position in respect to maximum visitation levels to maintain aesthetic values.		
Long-term target/s (KPI)	No significant loss of aesthetic values as a result of human activity in the proposed marine park.		

9.2.5 Indigenous cultural significance

Social value	**Indigenous cultural significance:** *The inlet system and surrounding lands have a rich Indigenous cultural heritage that exists as sites and stories.*

Background	Estuaries were likely to have been significant hunting and gathering areas for Indigenous communities in south-western Australia (Dortch *et al.*, 1984; Dortch, 1999). The Aboriginal people originally occupying the area, the Minang or literally 'Southeners' or South People, referred to the area as No-Nor-Nup, the place of the Norne (black snake) (Brearley, 2005). Archaeological evidence of indigenous occupation in this region, comprising artefact scatters and to a lesser extent burials, quarries, scarred trees, middens (places where shells, other food debris and other associated tools have accumulated over time), and stone arrangements, commonly occur adjacent to lakes, rivers and wetlands (WAWA, 1995). Aboriginal groups are likely to have camped in coastal areas for extended periods as part of seasonal movements in the region that were based on resource availability, and archaeological sites may represent occupations that a ranged from ephemeral to long-term. While Indigenous archaeological sites near the Walpole and Nornalup inlet system include middens, artefact scatters and fish traps on the inlet shore and in the surrounding region, this record has probably been obscured by geologically recent changes in sea level and landscapes (Dortch, 1992). Despite disruptions to traditional life, Aboriginal people seek to retain social, religious and personal bonds with their traditional lands. The inlets are important sites for Aboriginal people and they aspire to have access to the proposed marine park for the purposes of collecting flora and fauna and carrying out and maintaining cultural customs on their traditional lands. All Aboriginal sites registered or otherwise are protected under the *Aboriginal Heritage Act 1972* (AH Act) and the Department of Indigenous Affairs (DIA) has statutory responsibility for the management of these sites. The Depot, Newdegate (Snake) Island and Coalmine Beach are registered as being sites of Aboriginal significance under Section 38 of the AH Act. A native title claim, the Single Noongar Claim, which exists over the inlets region, is currently awaiting mediation in the Federal Court. Public awareness of Indigenous cultural heritage associated with the inlet system is generally low, although information is provided by tourism operators. In the absence of appropriate education and interpretation, the potential exists for incidental damage to occur to cultural sites. Management strategies include the involvement of Aboriginal people in the management of the proposed marine park. The establishment of a Park Council is one option that will be explored to facilitate joint management of adjacent terrestrial reserves (CALM, 2005). Ideally, joint management of the proposed marine park would be integrated into this arrangement. However if that is not possible, then strategies have been put in place to ensure there is appropriate Aboriginal representation on the MAC. The management of Indigenous heritage within the proposed marine park will aim to minimise or prevent human-induced degradation of cultural sites. Considerable potential exists for developing cultural heritage education and interpretation to raise visitor awareness of local Indigenous history and heritage.
Requirements	• Indigenous cultural sites are recognised and protected. • Provision of access to the inlets for cultural and hunting/collecting activities. • Raise public awareness of historical and cultural links to the inlets with sensitive and sustainable education and interpretation.
Management objective/s	1. To ensure that, in collaboration with local Aboriginal people and the relevant management authorities, human activities do not significantly impact on sites of significance to Aboriginal people in the proposed marine park. 2. To involve local Aboriginal people in the management of the proposed marine park.

Strategies	1. Ensure that there is appropriate Aboriginal representation on the MAC (DEC). **(H-KMS)** 2. Develop mechanisms, in collaboration with local Aboriginal groups and relevant authorities, which ensure Aboriginal people have meaningful involvement in the management of the proposed marine park (DEC, DIA, local Aboriginal groups). **(H)** 3. Develop, in collaboration with the local Aboriginal community, a greater understanding among visitors of the significance of the area to Aboriginal people through incorporating information on Aboriginal history in interpretive materials (DEC, local Aboriginal groups). **(M)** 4. Advise visitors of relevant regulations under the AH Act (DEC). **(M)** 5. Encourage and assist research on cultural heritage to facilitate long-term management (DEC). **(L)**

Performance measure/s	To be developed.	**Desired trend/s**	To be developed.
Short-term target/s	To be developed.		
Long-term target/s	No significant deterioration of Indigenous cultural sites as a result of human activity in the proposed marine park.		

9.2.6 European historical significance

Social value	**European historical significance:** *The inlet system and surrounding lands have a rich European heritage that exists as sites and stories.*

Background	The first regular European use of the inlets occurred following the settlement of Albany in 1826, when an area on the shore of the Nornalup Inlet was used as a base for sealers (Fernie & Fernie, 1989). The first permanent settlers close to the inlet system were the Bellanger brothers who arrived in 1909, although seasonal cattle grazing occurred in these coastal areas from about 1870 to 1900. During these early years of settlement, the inlets were typically accessed by sea. In October 1903, the 15 m wooden steamer *Escort* was wrecked close to the inlet entrance with a cargo of supplies (de L. Marshall, 1991). This exposed wreck now lies close to East Point (McCarthy *et al.*, 1992), which is outside the proposed marine park boundary. No significant European shipwrecks are currently known to exist within the inlet system. While the district surrounding the inlets was primarily developed for timber, dairy and beef production (Horwitz & Wardell-Johnson, 1996), an area adjacent to the Frankland River was reserved for conservation in 1910 (Fernie & Fernie, 1989). The present Walpole townsite was first settled under the Land Settlement Scheme in 1930, and was gazetted in 1933. Despite early difficulties of access, tourism developed in and around the inlets during the 1920s. Improvements in road access lead to an increasing significance of the inlets as an accessible and low-risk destination for tourists and visitors seeking family holidays, commercial tourism activities, boating and recreational fishing. During World War II, United States servicemen attached to Fleet Air Wing 10, which operated PBY Catalina flying boats from Crawley on the Swan River, used the inlets as a landing area during rest and recreation leave. The *Heritage of Western Australia Act 1990* provides for the protection of cultural heritage, including the State Register of Heritage Places. Public awareness of the rich cultural heritage associated with the inlet system is generally low, although information is provided by tourism operators. In the absence of appropriate education and interpretation, the potential exists for incidental damage to occur to historical sites. The management of European history and cultural heritage within the proposed marine park will aim to minimise or prevent human-induced degradation of heritage sites. Considerable potential exists for developing heritage education and interpretation to raise visitor awareness of local European history.
Requirements	• European historical sites recognised and protected. • Raise public awareness of historical links to the inlets with sensitive and sustainable education and interpretation.
Management objective/s	To ensure that European historic sites in the proposed marine park are not significantly degraded by human activities.
Strategies	1. Educate visitors about local European cultural heritage (DEC, heritage groups). (**M**) 2. Advise visitors of relevant regulations under the *Heritage of Western Australia Act 1990* (DEC). (**M**) 3. Encourage and assist research on history, including oral histories, and heritage to facilitate long-term management (DEC). (**M**)

Performance measure/s	To be developed.	**Desired trend/s**	To be developed.
Short-term target/s	To be developed.		
Long-term target/s	No significant deterioration of European heritage sites as a result of human activity in the proposed marine park.		

9.2.7 Education

Social value	**Education**: *The inlet system and surrounds comprise a variety of largely undisturbed landscapes and biota, as well as a rich Indigenous and European history, which represents a diverse and accessible educational resource.*

Background	The Walpole and Nornalup inlet system represents a valuable educational resource, as it is easily accessible by sealed roads, is in close proximity to accommodation and town facilities, and is largely undeveloped. The significance of the proposed marine park as an educational resource is highlighted by the fact that most other similar sized or larger estuaries in the southwest of Western Australia are substantially modified and/or degraded by catchment impacts or due to their location adjacent to significant urban centres. While schools, universities and commercial tourism operators currently use the inlet system as an educational resource, there is potential for this use to be increased. Public education about the inlet system through active participation would greatly assist management of the proposed marine park by enhancing awareness of conservation and management issues, and engendering affinity and respect for the estuarine environment. While most educational programs are benign, care must be taken to ensure that such activity is carried out in an ethical and sustainable manner. The potential for conflict between educational and other user groups must also be recognised. Management will seek to provide equitable access to ethical and sustainable educational opportunities that will enhance the understanding of the inlet system at all levels. Educational use will be permitted in all areas of the proposed marine park.
Requirements	• Educational and interpretative material to be made available to the local and broader communities. • Equitable access to the proposed marine park for educational opportunities.
Management objective/s	1. To promote and provide educational opportunities which are consistent with maintaining the values of the proposed marine park. 2. To ensure that educational activity is ethical and ecologically sustainable.
Strategies	1. Develop and distribute to the local community and visitors a range of education and interpretive materials (using a variety of media) about the management and values of the proposed marine park (DEC, DoF). (**H-KMS**) 2. Provide talks and briefings about management, values and activities associated with the proposed marine park (DEC). (**M**) 3. Support schools that wish to develop educational programs relating to the proposed marine park (DEC, schools). (**M**) 4. Provide support, where possible, to institutions using the proposed marine park for educational purposes (DEC). (**M**)

Reporting	To be developed.
Target/s	Implementation of management strategies within agreed timeframes (see Appendix II).

9.2.8 Scientific research

Social value	**Scientific research**: *The diverse habitats and communities and largely undisturbed nature of the inlet system provide excellent opportunities for scientific research.*

Background	As a largely unmodified and undegraded estuarine system, the proposed marine park represents an important current and potential resource for scientific research. While the flora and fauna of the inlet system has largely been documented (Potter & Hyndes, 1994; Hodgkin & Clark, 1999; Birds Australia 2001a, b), considerable knowledge gaps exist. For example, potential exists for research on the biology and ecology of many species, and on environmental processes such as nutrient dynamics across the terrestrial/aquatic interface. Importantly, numerous temporal patterns of biological variation in the system are not well understood. In addition, despite the long history of human use and occupation in the area, very little social research has been carried out in the proposed marine park. A good understanding of physical processes, the ecology and biology of organisms and patterns of human use are a fundamental requirement for effective management. In a broader context, such research would contribute to the management of other estuarine systems. All research within the proposed marine park requires the appropriate research permit issued under the CALM Act, WC Act or the FRM Act. While most scientific research programs are relatively benign, care must be taken to ensure that research is carried out in an ethical and sustainable manner. Potential also exists for conflict between researchers and other user groups. Management will seek to provide equitable access to ethical and sustainable research opportunities that will enhance the understanding of the inlet system at all levels. Research programs in the proposed marine park should preferentially fill key gaps in existing knowledge. Scientific research will be permitted in all areas of the proposed marine park subject to the granting of an appropriate permit.
Requirements	• Equitable access to the proposed marine park for ecological and social research opportunities. • Identify and communicate physical, biological and social research opportunities that are relevant to managing the proposed marine park to appropriate research organisations.
Management objective/s	To ensure the value of the proposed marine park for scientific research is not diminished as a result of human activity.
Strategies	1. Identify and communicate physical, biological and social research opportunities relevant to the management of the proposed marine park to appropriate research organisations (DEC). (**H**) 2. Facilitate physical, biological and social research in the proposed marine park by providing financial and logistical assistance where possible (DEC). (**M**) 3. Involve the local community in research relevant to management of the proposed marine park where possible, and keep the local community informed of research findings and management implications (DEC). (**M**)

Reporting	To be developed.
Target/s	Implementation of management strategies within agreed timeframes (see Appendix II).

10 PERFORMANCE ASSESSMENT

The effectiveness of the management plan for the proposed marine park will be periodically reviewed through a formal auditing and review process. This will be undertaken through an annual performance assessment carried out by DEC and a formal audit by the MPRA every three years. The audits will include reports on the status of key ecological and social values and an assessment of the effectiveness of current management strategies, which will provide feedback to reserve managers.

Overall management performance will be reviewed by the MPRA via a performance assessment report, which assesses compliance against the stated key ecological and social management targets (i.e. outcome-based approach) and against progress regarding implementation of the key management strategies (i.e. activity-based approach covering resource inputs and outputs) as outlined in Sections 7 - 9. Management targets of selected key ecological and social values of the proposed marine are used as *key performance indicators* of management effectiveness. These are identified in Section 9 by the symbol KPI. The KPIs reflect both the conservation priorities and the management imperatives of the MPRA, DEC and the community. *Key management strategies* are identified in Sections 7 - 9 by the symbol H-KMS.

10.1 Performance Assessment by the Department of Environment and Conservation

The prioritised strategies outlined in Sections 7 – 9 of the management plan will be built into the annual works program of DEC's Frankland District, which will be responsible for the day-to-day management of the proposed marine park. Progress against KPIs, H-KMSs and the remaining management targets and strategies will form the basis of an annual performance assessment report on the proposed marine park by DEC's Frankland District to the MPRA and DEC's Corporate Executive.

10.2 Audit by the Marine Parks and Reserves Authority

Progress against the KPIs and H-KMSs will form the basis of a formal MPRA audit of the park every three years. Following gazettal of the proposed marine park, DEC will provide annual performance assessment reports to the MPRA, which will enable monitoring of DEC's implementation of the management plan. The adequacy of the selected KPIs and H-KMSs will be reviewed following each MPRA audit and they will be amended if appropriate.

10.3 Review of the Management Plan

After its approval, the management plan will guide management of the proposed marine park for a period of 10 years, or until such time as the statutory review of the management plan is undertaken and a new management plan is prepared. The plan will be reviewed after 10 years with full public consultation, re-submitted to the MPRA and then submitted to the Minister for the Environment, the Minister for Fisheries and the Minister for Resources for approval. The CALM Act specifies that, in the event of such a revision not occurring by the end of the plan's specified life-span, the plan will remain in force in its original form, unless it is either revoked by the Minister or until a new plan is approved.

10.4 Links with State Environment Reporting

The first Western Australian State of the Environment Report was prepared in 1992 and a second report published in 1998 (Government of Western Australia, 1998b). These reports provided an overview of the key marine and terrestrial environmental issues in the state. The EPA will be responsible for ongoing State of the Environment reporting building on the framework contained within the 1998 report. Relevant marine issues covered by this framework are the implementation of a State-wide system of marine conservation reserves, biodiversity, degradation of marine habitats, environmental contamination, introduction of exotic species, tourism and fisheries. The performance assessment of the proposed marine park as described above is broadly consistent with the State of the Environment reporting framework.

10.5 Links with National Environment Reporting

At a national level, there are two major reporting mechanisms relevant to marine conservation reserves. These are the National State of the Environment Report and the performance assessment framework for the NRSMPA. A State of the Marine Environment Report was published in 1996 (Commonwealth of Australia, 1996b) and will form part of the National State of the Environment Report. A range of performance assessment criteria are being developed to assess whether the goals of the NRSMPA are being achieved. The performance assessment framework of this plan is broadly consistent with the performance assessment criteria being developed for the NRSMPA.

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13 APPENDICES

Appendix I:
Information on commercial operations licensing in relation to the proposed Walpole and Nornalup Inlets Marine Park.

The purpose of commercial operations licensing in marine conservation reserves is to ensure the conservation and cultural values of these areas are effectively managed and conserved. Under the CALM Act, a licence provides the legal authority to undertake commercial activity(s) on DEC managed lands and/or waters. Most licensed activities are related to tourism. A licence holder cannot have exclusive access or use of Crown Land. Licences are granted where the activity is of a transient nature or involves no permanent infrastructure within the reserve boundary, while leases are granted for the occupation of a specific area, such as a caravan park.

Close to 370 businesses are currently licensed to operate on DEC-managed estate, and two types of licence exist:

T Class or unrestricted licence

This is issued when there is no current restriction on the number of operators carrying out a particular type of activity in a given reserve. This licence costs $300 annually together with a $50 application fee, and management is set by general licence conditions. About 90 per cent of licensed businesses currently have T Class licences, which includes some of the State's largest and longest established tour operators.

E Class or restricted licence

This licence is used when the number of operators or the area or type of activity must be limited, usually because of environmental, management or risk constraints. The E Class licence fee is negotiated on a case-by-case basis, and may comprise a flat fee, a per head fee or a percentage of gross turnover. As there is often high demand for these licences, they are allocated via a publicly advertised competitive Expression of Interest (EOI) process, which is a process that is consistent with the State Supply Guidelines. Whale shark interaction tours in the Ningaloo Marine Park, for example, are managed under the E Class licence system. Only 15 licences are currently issued because of the limited knowledge of tourism impacts on the fish, as recommended by a Wildlife Management Program developed especially for this activity. As demand for the licences far exceeds their availability, the EOI process is the most equitable method of allocation.

Both T and E class licences can be issued for periods of up to five years (the licence period) and can be renewed for a further period of up to five years (the renewal period). T Class licences are normally granted for 12 months, but longer terms (three to five years) can be given subject to achieving particular levels of accreditation through recognised schemes (currently National Tourism Accreditation Program (NTAP), Eco Certification Program (ECP, formerly NEAP) or Green Globe International). In the case of one, three or five year T Class licences, renewal is a straightforward administrative process as long as the activity remains unrestricted and the operator has complied with licence conditions.

Most E Class licences are granted for five years and then renewed for another five years. After this, the licence is required to go through another EOI process. This is done because an E Class licence confers a competitive advantage to operate within a community-owned conservation reserve in what would otherwise often be a highly competitive environment. The allocation of competitive licences to operate on community-owned lands and waters must be fair, open and equitable. Similarly, when a business holds a Government contract for a certain period, that business has to re-tender in an open and competitive process for the same contract when it expires.

DEC licences are not transferable, and cannot be sold, rented, leased or hired to another person. If a licence holder wishes to sell a business that wholly or partially operates under a DEC licence, sale should be subject to the purchaser obtaining a licence. For a T Class licence, the purchaser simply applies for new licence in their name. In the case of an E Class licence, the purchaser will need to apply for a replacement licence. As part of the application, they will need to demonstrate suitable experience and qualifications to operate under the licence. Subject to a positive assessment and Ministerial approval, a new licence will be granted with the same terms and expiry date as the original.

Under the *Conservation and Land Management Regulations 2002*, DEC can only refuse to renew a licence if there has been a contravention of the licence conditions, a conviction under the CALM Act or the WC Act or associated regulations, the licence was obtained by fraud or misrepresentation, or it is in the interests of the protection, management or control of DEC land or assets on DEC land, the protection of people using DEC land or the conservation, protection or proper management of fauna or flora.

Particular concessions are made with respect to pre-existing tourism operations in proposed marine conservation reserves. Where a commercial operation has been established in an area that subsequently is declared a conservation reserve, the commercial operators will be required to be licensed in accordance with the CALM Act and Regulations. An assessment will be made as to whether the types of licences granted for the new reserve will be T Class (unrestricted) or E Class (restricted). This may be in accordance with the requirements of the management plan or an assessment by the DEC.

In the case of a T Class (unrestricted) licence being appropriate for a particular activity in the new reserve, all operators will be required to apply for and will be granted a T Class licence if it is determined that this is appropriate. Those who already hold a T Class licence for conducting commercial tourism on other DEC-managed land, such as an existing National Park, can simply add the new reserve to their existing licence at no additional cost. Where it has been determined that for environmental, management or for the protection of life, property or the environment, the number of licences should be restricted, E Class (restricted) licences will be allocated as follows:

- Where the restriction on the number of licences to be allocated is equal to or greater than the number of commercial operators who can demonstrate historical and sustained conduct of the activities prior to the declaration of the reserve, then the existing operators will be offered first refusal for the opportunity of an E class licence. Should the existing operators not take up all the available licences, any unused licensing capacity would be allocated through a publicly advertised EOI process.
- Where the restriction on the number of licences is exceeded by the number of existing operators who can demonstrate historical and sustained conduct of the activities prior to the declaration of the reserve, the licences would be allocated through a competitive process amongst those existing operators.
- Where, at a later date, it is determined that a T Class licence should become a restricted E Class licence, a licence holder who can demonstrate a history of operation prior to the declaration of the reserve would be allocated the opportunity for an E Class licence without the requirement to apply through a competitive process.

There are currently approximately six tourism businesses that operate with differing levels of involvement in the proposed marine park. Several of these businesses already hold T Class licences as they currently operate in existing DEC-managed conservation reserves, including the Walpole-Nornalup National Park. As there is currently no competition among businesses for similar types of tourism in the inlets, it is anticipated that T Class licences would be appropriate in the proposed marine park. For those operators that currently hold this type of licence for another reserve, the proposed marine park would be added to their existing licence, should it be gazetted. Operators who do not currently hold this licence would apply for it. This process mostly involves the applicant demonstrating that the equipment used to conduct the activity is legal (e.g. DPI survey for a vessel) and that the applicant holds adequate public liability insurance for the activity. If, in the future, the number of tourism operators wanting to establish in the proposed marine park exceeds a pre-determined 'sustainable limit' for that particular activity (i.e. boat tours or houseboats etc), then an E Class licence system would be introduced. Should this occur, the pre-existing operator's policy would then allow for the historic operators to apply for an E Class licence for five years with a five year renewal (i.e. 2 x five-year licences) without the need to be involved in the initial EOI process.

During planning for the proposed inlets marine park, community consultation has identified a range of important ecological and social values that are to be maintained should the proposed marine park be gazetted. While commercial tourism is one of these values, it was also recognised that too much tourism activity could potentially have an impact on other values. This is especially so given the limited size of the inlet system. For example, while aesthetic values such as 'peace and quiet' and perceptions of 'remoteness' and 'naturalness' are also highly valued by the community and the current tour operators and their clients, these values could be diminished by the presence of too many other vessels in the future.

Successful management of the proposed marine park will seek to find a balance that will preserve all of these values in perpetuity, and this could mean limiting the number of tour operators in the future. In this regard, policies that restrict business competition can only be applied where this is consistent with the principles of the National Competition Policy. In the case of this proposed marine park, this would most likely occur only to ensure ecological sustainability. This is presently the case, for example, for whale shark interaction tourism in the Ningaloo Marine Park. While community consultation during planning for the proposed marine park has provided broad direction on this issue, it is anticipated that any actual limits on the numbers of tour boats that can operate in the proposed marine park would be determined in discussions between existing operators, DEC and a community-based MAC that would be established to enable community participation in on-going management of the reserve.

Appendix II:
Timeline for implementation of management strategies for the proposed Walpole and Nornalup Inlets Marine Park.

VALUE	MANAGEMENT STRATEGY	YEAR									
Generic		1	2	3†	4	5	6†	7	8	9	10‡
Management and Administrative Framework GV 7.1	1. Gazette appropriate notices under the CALM Act and FRM Act to implement the zoning scheme for the proposed marine park within one year of gazettal (DEC, DoF). (**H-KMS**)										
	2. Gazette the proposed marine park as a mooring control area or similar legislative mechanism within one year of gazettal (DEC, DPI). (**H-KMS**)										
	3. In liaison with the community and where necessary, gazette appropriate restrictions for surface water sports where these detrimentally impact the values of the proposed marine park (DEC, DPI). (**H**)										
	4. Educate and inform visitors to the proposed marine park of the zoning scheme and regulations (DEC). (**H**)										
	5. Undertake annual inspections and maintenance of the infrastructure of the proposed marine park (DEC). (**H**)										
Education and interpretation GV 7.2	1. Develop and progressively implement an integrated education and interpretation program (using a variety of media both on and off site) to ensure visitors are aware of, and understand, the values of the proposed marine park, the purpose of management zoning and regulations, and the reasons for these controls (DEC, DoF). (**H-KMS**)										
	2. Assist commercial tour operators to access and deliver information about the proposed marine park to their staff and/or patrons (DEC). (**H**)										
	3. Provide public talks and briefings about the values, uses and management of the proposed marine park to user/community groups (DEC). (**H**)										
	4. Install and maintain appropriate educational signage and other relevant information (DEC). (**H**)										
Public participation GV 7.3	1. Ensure that an appropriate MAC is established to facilitate community input into the ongoing management of the proposed marine park (DEC). (**H-KMS**)										
	2. Develop a public participation strategy for the proposed marine park (DEC). (**H**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Generic		1	2	3†	4	5	6†	7	8	9	10‡
	3. Encourage community and local industry involvement in education, interpretation and monitoring activities (DEC). (**M**)										
	4. Implement a schools program to foster involvement in reserve management (DEC). (**M**)										
	5. Investigate and implement, if appropriate, honorary marine conservation reserve officers (DEC). (**M**)										
Patrol and enforcement GV 7.4	1. Develop and implement a patrol and enforcement program in collaboration with DoF to ensure an adequate level of compliance with regulations (DEC, DoF, DPI). (**H-KMS**)										
	2. Develop and implement procedures to ensure coordination between government agencies to maximise efficiency and effectiveness of patrol and enforcement activities (DEC, DoF, DPI). (**H - KMS**)										
	3. Facilitate cross authorisation of government enforcement officers as appropriate (DEC, DoF, DPI). (**H - KMS**)										
	4. Develop and implement a program that promotes voluntary compliance and peer enforcement of regulations (DEC, DoF). (**H-KMS**)										
	5. Encourage and facilitate an active role for commercial operators and visitors to the proposed marine park in a voluntary surveillance program (DEC). (**H**)										
Management intervention and Visitor Infrastructure GV 7.5	1. Identify areas of existing human impact in the proposed marine park (DEC). (**M**)										
	2. Assess rehabilitation options and implement, where appropriate (DEC). (**M**)										
	3. Monitor visitor numbers and distribution in the proposed marine park and, consistent with available resources, provide visitor facilities where appropriate (DEC). (**M**)										
	4. Assess visitor risk in the proposed marine park and, where necessary, implement appropriate measures to minimise (DEC). (**M**)										
Research GV 7.6	1. Develop and progressively implement a coordinated and prioritised research program focussed on key values and processes of the proposed marine park (DEC, DoF). (**H - KMS**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Generic		1	2	3†	4	5	6†	7	8	9	10‡
	2. Develop detailed habitat and wildlife distribution maps for the proposed marine park (DEC). **(H-KMS)**										
	3. Develop and maintain a database of human usage and impacts in the proposed marine park (DEC, DoF). **(H - KMS)**										
	4. Develop base line data for values that are data-deficient so that any changes in values over time can be assessed (DEC, DoF). **(H - KMS)**										
	5. Identify, prioritise and communicate high priority ecological and social research projects relevant to the management of the proposed marine park to appropriate research institutions via a strategic research plan with the aim of maximising priority research outcomes for the proposed marine park (DEC). **(H - KMS)**										
	6. Develop and maintain a database of historical and current research in the proposed marine park (DEC). **(H)**										
	7. Facilitate scientific and social research in the proposed marine park conducted by research, academic and educational institutions, by providing financial and logistical assistance where possible (DEC, DoF). **(H)**										
	8. Develop partnerships with stakeholders and the community to implement research programs (DEC). **(H)**										
	9. Evaluate the sustainability of marine based activities in the region (DEC). **(M)**										
Monitoring GV 7.7	1. Develop and progressively implement a coordinated and prioritised monitoring program for key values and processes of the proposed marine park (DEC, DoF). **(H - KMS)**										
	2. Encourage and facilitate community-based monitoring (DEC, DoF). **(H)**										
	3. Ensure that proponents of development proposals or activities with the potential to impact on the values of the proposed marine park conduct appropriate compliance monitoring programs (DEC). **(H)**										
Development proposals	1. Gazette the proposed marine park as mooring control area (DEC, DPI). **(H-KMS)**										

VALUE	MANAGEMENT STRATEGY	YEAR									
Generic		1	2	3†	4	5	6†	7	8	9	10‡
	2. Ensure appropriate advice is provided to relevant authorities with regard to proposed infrastructure and the relevant ecological targets for the reserve (DEC). **(H)**										
	3. Develop a mooring plan for the proposed marine park, which identifies areas in which moorings are acceptable and/or necessary from environmental, safety and equity perspectives (DEC, DPI). **(M)**										
	4. Assess applications for new moorings on a case-by-case basis and in relation to criteria established in the DEC/MPRA Mooring Policy (DEC, MPRA). **(M)**										
	5. Prohibit the construction of new jetties where it assessed that there is an unacceptable risk or impact to shoreline vegetation and/or constrain access to public shoreline (DEC, DPI). **(M)**										

VALUE	MANAGEMENT STRATEGY	YEAR									
Ecological		1	2	3†	4	5	6†	7	8	9	10‡
Geomorphology EV 7.1.1	1. Educate visitors about the geomorphology of the proposed marine park and natural processes of erosion and deposition, particularly with regard to fragile shorelines (DEC). (**H-KMS**)										
	2. Ensure that development activities do not have a significant impact on the geomorphology of the proposed marine park through the provision of advice to the EPA regarding environmental assessment of proposals (DEC). (**M**)										
	3. Collaborate with relevant agencies or landholders to prevent and/or appropriately rehabilitate areas of localised shoreline erosion in and adjacent to the proposed marine park (DEC, Local Government). (**M**)										
	4. Monitor the effects of boat wake on the shoreline of the inlets and where necessary, take appropriate action to alleviate impacts from boat wake where these are occurring (DEC, DPI). (**M**)										
	5. Initiate research to increase knowledge of sedimentation processes associated with the entrance channel (DEC, research institutions). (**M**)										
	6. Initiate research on other geological processes, as required, to facilitate long-term management (DEC). (**L**)										
Sediment quality (KPI) EV 7.1.2	1. Monitor sediment quality in the proposed marine park, utilising community-based initiatives where appropriate (DEC). (**H-KMS**)										
	2. Develop and maintain a pollutant inputs database for the proposed marine park (DEC). (**H**)										
	3. Educate visitors about the ecological significance of sediment quality in the inlet system (DEC). (**M**)										
	4. Initiate research on sediment contamination, as required, to facilitate long-term management (DEC, Water Corporation). (**M**)										
	5. Liaise with relevant agencies to identify possible contaminant ingress points into the inlet system and develop a strategy and capacity to mitigate the impacts of accidental spills (DEC, FESA, Water Corporation). (**M**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Ecological		1	2	3†	4	5	6†	7	8	9	10‡
Water quality (KPI) **EV 9.1.3**	1. Maintain water quality monitoring in the proposed marine park, and in surrounding waterways and catchments (DEC, WANISAC, Water Corporation). **(H-KMS)**										
	2. Designate the proposed marine park as a 'No discharge Zone' (Zone 1) to prohibit the discharge of sewage from vessels (DEC). **(H)**										
	3. Develop and maintain a pollutant inputs database for the proposed marine park (DEC). **(H)**										
	4. Educate visitors about government policy and regulations on boat sewage disposal and the ecological significance of water quality in the inlet system (DEC, DPI). **(M)**										
	5. Initiate research on water quality, as required, to facilitate long-term management (DEC, Water Corporation). **(M)**										
	6. Liaise with relevant agencies to identify possible contaminant ingress points into the inlet system and develop a strategy and capacity to mitigate the impacts of accidental spills (DEC, FESA, Water Corporation). **(M)**										
Macroalgae and seagrass **EV 9.1.4**	1. Monitor the distribution and abundance of macroalgae and seagrass in the proposed marine park (DEC). **(H)**										
	2. Initiate research on macroalgae and seagrass, as required, to facilitate long-term management (DEC). **(M)**										
	3. Educate visitors about the ecological significance of macroalgal and seagrass communities in the inlet system (DEC). **(L)**										
Benthic Invertebrates (KPI) **EV 9.1.5**	1. Monitor benthic invertebrate communities in the proposed marine park (DEC). **(H-KMS)**										
	2. Identify invertebrate species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). **(H)**										
	3. Review the need for special conditions (e.g. bag limits and/or possession limits) for targeted invertebrate species in the proposed marine park (DoF). **(H)**										

VALUE	MANAGEMENT STRATEGY	YEAR									
Ecological		1	2	3†	4	5	6†	7	8	9	10‡
	4. Conduct research to increase knowledge of the diversity, distribution, ecology and biology of invertebrates, including, but not limited to, cockles and oysters, to facilitate long-term management (DEC). (**M**)										
	5. Educate visitors about the ecological significance of benthic invertebrates in the inlet system and provide information regarding species which may be extracted from the proposed marine park to users (DEC, DoF). (**M**)										
Finfishes (KPI) **EV 9.1.6**	1. Monitor fish populations in the proposed marine park (DEC, DoF). (**H-KMS**)										
	2. Identify fish species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). (**H**)										
	3. Review the need for special conditions (e.g. bag limits and possession limits) for targeted fish species in the proposed marine park (DoF). (**H**)										
	4. Initiate ecological and biological research of fishes, as required, to facilitate long-term management (DEC, DoF). (**H**)										
	5. Educate visitors about the ecological significance of fishes in the inlet system and provide information regarding species which may be extracted from the proposed marine park to users (DEC, DoF). (**M**)										
Sharks and rays **EV 9.1.7**	1. Monitor elasmobranch populations in the proposed marine park, especially in relation to tourist contact (DEC, DoF). (**H**)										
	2. Identify elasmobranch species that can be taken by recreational fishers in the proposed marine park and, in liaison with DoF, provide the necessary legislation to provide protection for particular species by restricting take (DEC, DoF). (**H**)										
	3. Review the need for special conditions (e.g. bag limits and possession limits) for targeted elasmobranch species in the proposed marine park (DoF). (**H**)										
	4. Initiate ecological and biological research on elasmobranches, as required, to facilitate long-term management (DEC, DoF). (**M**).										
	5. Educate visitors about the ecological significance of elasmobranches in the inlet system (DEC, DoF). (**M**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Ecological		1	2	3†	4	5	6†	7	8	9	10‡
Waterbirds, shorebirds and seabirds EV 9.1.8	1. Educate visitors about the ecological significance of waterbirds, shorebirds and seabirds in the inlet system and the potentially detrimental impacts of human disturbance (DEC). (**H-KMS**)										
	2. Ensure the implementation of existing management plans (such as the *Hooded Plover Management Plan (2002-2012)*) for and relevant to waterbird, shorebird and seabird species that utilise the inlet system and/or adjacent lands (DEC). (**H-KMS**)										
	3. Ensure that important waterbird, shorebird and seabired nesting, foraging and roosting areas in and adjacent to the proposed marine park are not significantly affected by human activities (DEC). (**H**)										
	4. Prohibit dogs from the proposed marine park (DEC). (**H**)										
	5. Monitor waterbird, shorebird and seabird populations in the proposed marine park (DEC). (**H**)										
	6. Initiate ecological and biological research of waterbirds, shorebirds and seabirds, as required, to facilitate long-term management (DEC). (**M**)										
Sandy beaches and shoreline vegetation EV 9.1.9	1. Ensure an integrated approach to management of the interface between the Walpole Nornalup National Park and the proposed marine park (DEC). (**H**)										
	2. Undertake an education program to raise awareness of the ecological and social significance of shoreline habitats and promote environmentally sensitive use of shoreline areas adjacent to the proposed marine park (DEC). (**H**)										
	3. Collaborate with appropriate management agencies to understand and minimise environmental impacts caused by, for example, exotic species such as marrum grass and erosion caused by boat wake, and implement rehabilitation programs as required (DEC, Local Government). (**H**)										
	4. Monitor the condition of shoreline habitats to facilitate long-term management (DEC). (**H**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Social		1	2	3[†]	4	5	6[†]	7	8	9	10[‡]
Recreational fishing SV 9.2.1	1. Educate recreational fishers about regulations that apply to their activities (DEC, DoF). (**H-KMS**)										
	2. Undertake joint surveillance and enforcement with the DoF to ensure compliance with fishing regulations (DEC, DoF). (**H-KMS**)										
	3. Monitor and undertake research on the ecological effects of recreational fishing in the proposed marine park, and review management controls as appropriate (DEC, DoF). (**H-KMS**)										
	4. Formulate performance measures and targets for key recreational species that will ensure sustainable recreational fishing (DoF, DEC). (**H**)										
	5. Monitor the abundance of selected targeted finfish species to assess the effectiveness of management strategies (DoF, DEC). (**H**)										
	6. Monitor recreational fishing catch/effort in the proposed marine park (DoF). (**M**)										
Water sports SV 9.2.2	1. Educate visitors about water sport regulations and restrictions (DEC, DPI). (**H-KMS**)										
	2. Develop and implement appropriate patrol and enforcement as required (DEC, DPI). (**H-KMS**)										
	3. Develop and maintain a database of water sport use in the proposed marine park (DEC, DPI). (**H-KMS**)										
	4. Investigate strategies to separate incompatible water sport activities as required (DEC, DPI). (**H**)										
	5. Liaise with commercial tourism operators and the MAC and survey visitors to evaluate the sustainability of boating in the proposed marine park (DEC). (**M**)										
	6. Prior to the development of a long-term sustainable boating strategy, ensure that no more than seven non-commercial live-aboard vessels, which are staying for more than two nights, are present in the proposed marine park at any time (DEC). (**M**)										
Commercial tourism	1. License all commercial tourism operators (or provide a lease where appropriate) within the proposed marine park with appropriate conditions (DEC). (**H**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Social		1	2	3†	4	5	6†	7	8	9	10‡
SV 9.2.3	2. Develop codes of practice for commercial tourism in the proposed marine park, including performance measures, desired trends, short-term and long-term management targets and monitoring and reporting requirements, which will be included on licence conditions (DEC, Tourism Western Australia). (**H**)										
	3. Ensure equitable access for commercial tourism in the proposed marine park (DEC). (**M**)										
Aesthetic values (scenery, peace and quiet, remoteness) (KPI) SV 9.2.4	1. Monitor levels of visitation to the proposed marine park (DEC). (**H- KMS**)										
	2. Educate visitors about maintaining the aesthetic values of the proposed marine park (DEC). (**H**)										
	3. Identify user perceptions of the importance of aesthetic values and sustainable levels of use, to ensure that these values do not become significantly degraded (DEC). (**H**)										
	4. Liaise with tourism operators, the MAC (see Section 8.6) and other visitors to identify management targets for visitation and/or limits on visitation to particular areas of the proposed marine park (DEC). (**M**)										
	5. Collaborate with Local Government to ensure that aesthetic values are considered in planning approvals (DEC, Local Government). (**M**)										
Indigenous cultural significance SV 9.2.5	1. Ensure that there is appropriate Aboriginal representation on the MAC (DEC). (**H-KMS**)										
	2. Develop mechanisms, in collaboration with local Aboriginal groups and relevant authorities, which ensure Aboriginal people have meaningful involvement in the management of the proposed marine park (DEC, DIA, local Aboriginal groups). (**H**)										
	3. Develop, in collaboration with the local Aboriginal community, a greater understanding among visitors of the significance of the area to Aboriginal people through incorporating information on Aboriginal history in interpretive materials (DEC, local Aboriginal groups). (**M**)										
	4. Advise visitors of relevant regulations under the AH Act (DEC). (**M**)										

VALUE	MANAGEMENT STRATEGY	YEAR									
Social		1	2	3†	4	5	6†	7	8	9	10‡
	5. Encourage and assist research on cultural heritage to facilitate long-term management (DEC). (**L**)										
European historical significance SV 9.2.6	1. Educate visitors about local European cultural heritage (DEC, heritage groups). (**M**)										
	2. Advise visitors of relevant regulations under the *Heritage of Western Australia Act 1990* (DEC). (**M**)										
	3. Encourage and assist research on history, including oral histories, and heritage to facilitate long-term management (DEC). (**M**)										
Education SV 9.2.7	1. Develop and distribute to the local community and visitors a range of education and interpretive materials (using a variety of media) about the management and values of the proposed marine park (DEC, DoF). (**H-KMS**)										
	2. Provide talks and briefings about management, values and activities associated with the proposed marine park (DEC). (**M**)										
	3. Support schools that wish to develop educational programs relating to the proposed marine park (DEC, schools). (**M**)										
	4. Provide support, where possible, to institutions using the proposed marine park for educational purposes (DEC). (**M**)										
Scientific Research SV 9.2.8	1. Identify and communicate physical, biological and social research opportunities relevant to the management of the proposed marine park to appropriate research organisations (DEC). (**H**)										
	2. Facilitate physical, biological and social research in the proposed marine park by providing financial and logistical assistance where possible (DEC). (**M**)										
	3. Involve the local community in research relevant to management of the proposed marine park where possible, and keep the local community informed of research findings and management implications (DEC). (**M**)										

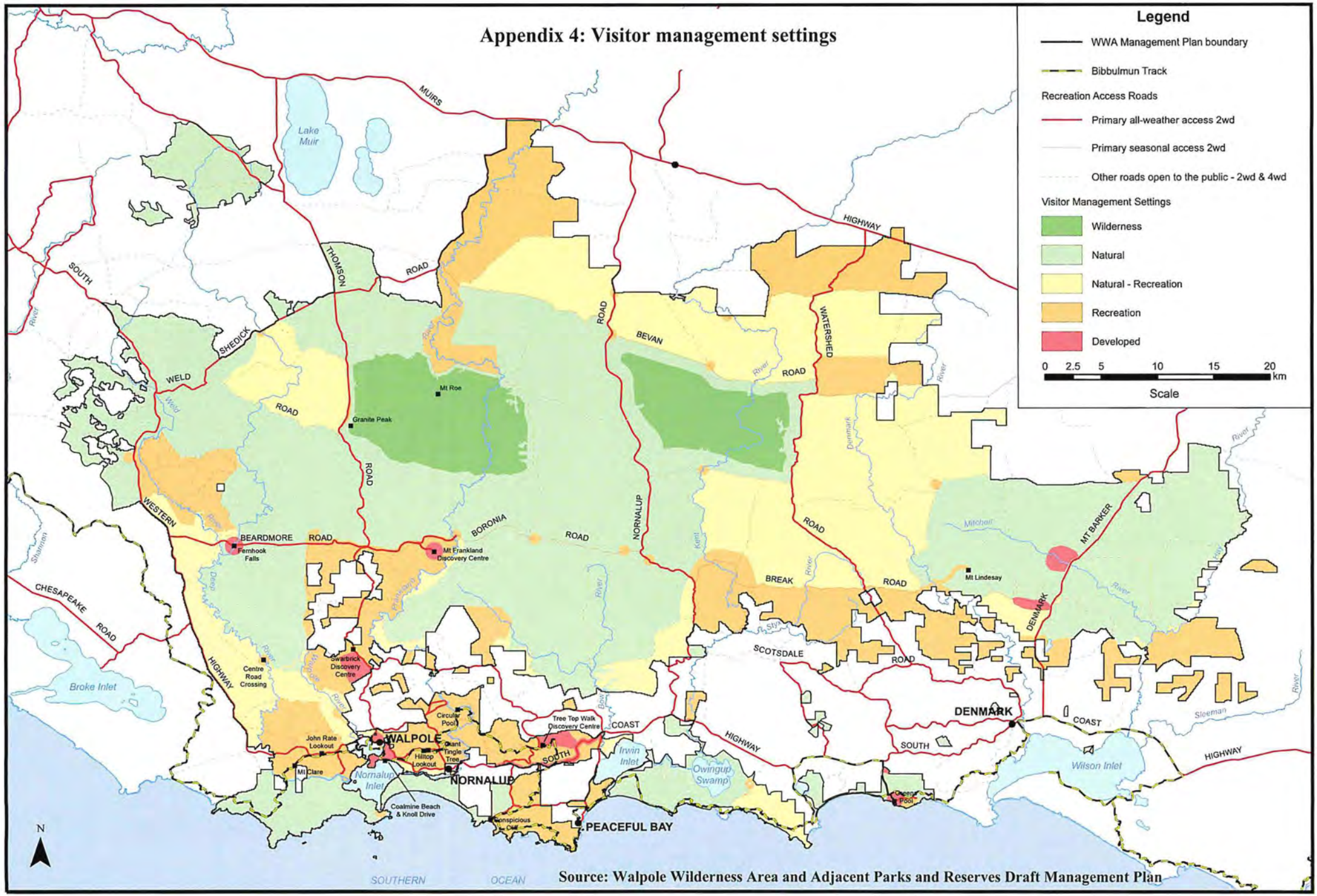
Key:
EV = Ecological value reference in indicative management plan
GV = Generic values reference in indicative management plan
SV = Social value reference in indicative management plan
† MPRA Audit
‡ MPRA Audit and Management Plan Review

Appendix III:
Focus Group Membership and Workshop Attendance

The focus group members are listed below, and the number of planning workshops that each member attended is indicated in parenthesis.

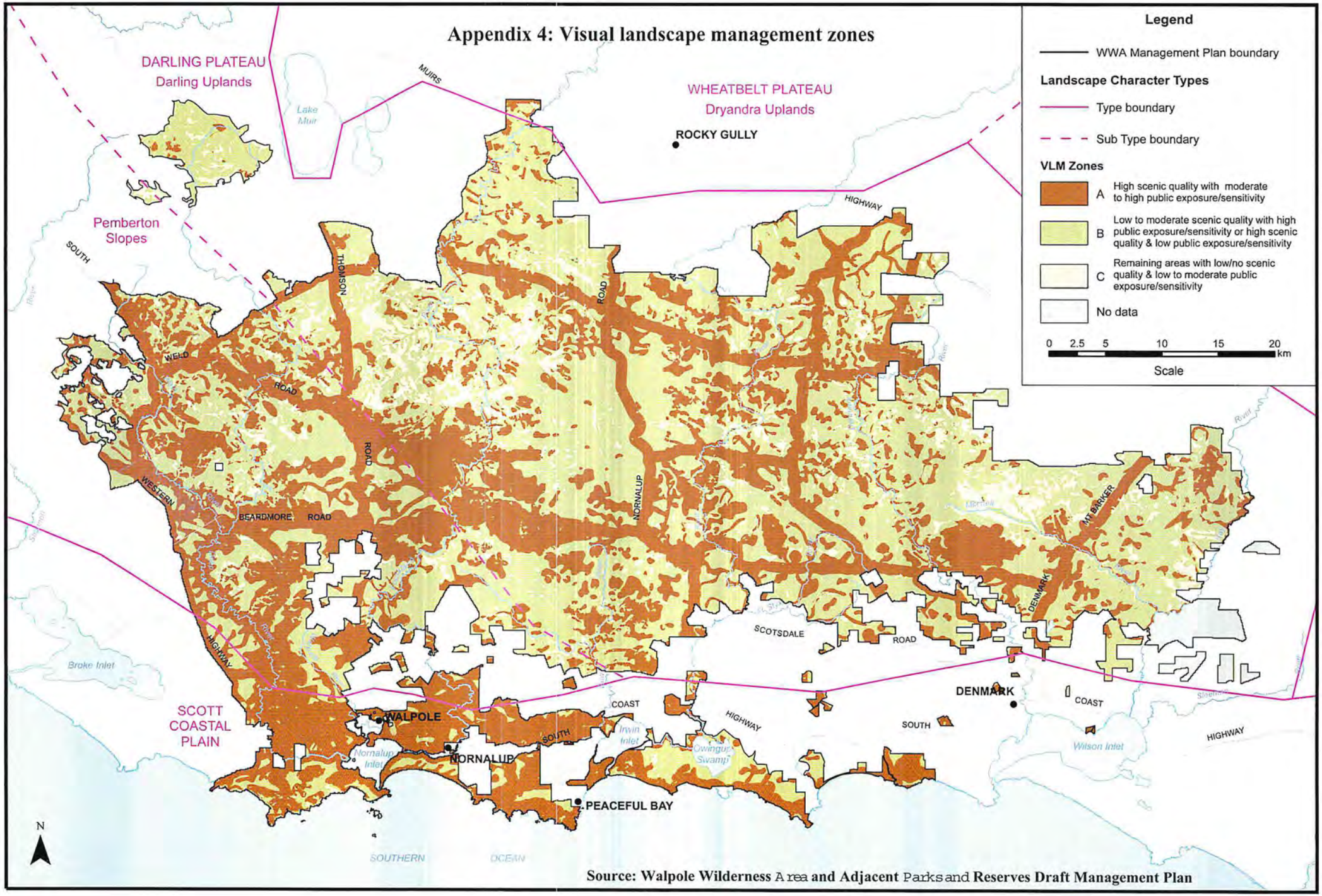
Robin Adair (4),
David Anning (Timber Communities Australia) (5),
Vaughan Bellanger (4),
Murray Brown (0),
Wayne Brown (0),
Rick Chaucer (2),
Frank Cooper (Walpole Yacht Club) (3),
Wayne Crombie-Wilson (2),
Wayne Dumbrell (2),
Tony Fitzpatrick (Department for Planning and Infrastructure) (3),
Derren Foster (Walpole Tourist Bureau) (2),
Nigel Fry (3),
Terry Fuller (Australian Anglers Association) (1),
Mark Halse (5),
Merv Hull (0),
Steve Hunter (1),
Eddie Liddelow (5),
Ernest Love (0),
Paul Minchin (4),
Ross Muir (5),
Barry Nockolds (0),
Kate O'Brien (5),
Ian Payton (5),
Louise Pickett (5),
Mark Pagano (Recfishwest) (5),
Mick Sawyer (0),
Phil Shaw (Department of Fisheries) (3),
John Stockley (0),
David Tapley (5),
Gary Tiszavolgyi (0),
Malcolm Vigus (0),
Mark Virgo (Frankland District Senior Ranger, DEC) (5),
Percy Vlietman (2),
Brett Ward (DEC) (5),
David Warnock (Walpole Nornalup and Districts Community Development Group) (5),
Wayne Webb (0).

Appendix 4: Visitor management settings



Source: Walpole Wilderness Area and Adjacent Parks and Reserves Draft Management Plan

Appendix 4: Visual landscape management zones



Source: Walpole Wilderness Area and Adjacent Parks and Reserves Draft Management Plan