ROTTONEST IS
the simple pleasures in life

ROTTONEST ISLAND AUTHORITY
Boating Management Strategy 2014
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## Appendices

### Appendix 1
Overview of Rottnest Island showing: reserve boundaries; boating activity density; mooring areas and infrastructure facilities.

### Appendix 2
Key legislation and policies impacting on the management of Rottnest Island listed in the Rottnest Island Management Plan (RIMP).

### Appendix 3
Rottnest Island Authority (RIA) mooring standards.
Approximately 500,000 visits to the Island each year include around 185,000 by private boat.
Foreword

Rottnest Island provides a unique environment providing a range of activities that make it a world-class destination for the boating public.

The Rottnest Island Authority which is charged with care and management of the Island on behalf of the people of Western Australia and other visitors is committed to forward planning in order to best meet the needs and expectations of Island visitors and the wider community, whilst protecting and preserving the values and attributes of the Island.

Currently around 185,000 visits to the Island annually are by private or charter boats. A recent survey of the Island’s boating visitors indicated that over half of respondents had been visiting Rottnest Island for 10 years or more.

The Authority values those visitors who use our facilities regularly, but to ensure that the Island meets its maximum potential as a boating destination, we want to attract new visitors, as well as encourage those who for some reason have stopped coming to renew their enjoyment of the Island and all it has to offer.

The current trend towards increased boat ownership, and towards larger vessels in the Perth metropolitan region will impact on the demands of the Island’s Marine Reserve.

It is important that the Authority determines the appropriate response with regards to the provision of infrastructure and facilities and the way access to these facilities is managed.

A publicly-endorsed boating management strategy makes an important contribution to the Authority’s forward planning framework, and provide direction for issues relevant to the management of boating activity in and around the Island.

I thank you for your feedback and views on future management of boating within the Rottnest Island Reserve.

Your feedback and views have been considered within this document.

John Driscoll
Chairman
Rottnest Island Authority
Executive Summary

Rottnest Island is the leading tourism destination in Western Australia, much-loved by Western Australians who make up over three-quarters of regular visitors, and equally popular with interstate and international visitors. Approximately 500,000 visits to the Island each year include around 185,000 by private boat.

The Island is located on the southwest coast of Western Australia at latitude 32 degrees S and longitude 115 degrees E, 18 kilometres west of Fremantle. It lies in an approximately east-west orientation, is 11 kilometres long and less than 5 kilometres wide at its widest point. The Island enjoys outstanding beauty, its convoluted rocky coast providing sheltered bays and beaches, set in stunning waters which are home to a greater range of habitats, marine plants and animals than the Perth coastline.

Rottnest Island has a tropical influence with the warm Leeuwin Current creating an ideal habitat for approximately 400 species of fish and 20 species of coral occur. The Western rock lobster makes its home in the many reefs around the Island; while Humpback whales pass by on their annual migration towards tropical calving grounds and turtles regularly skim the shallow reefs. Colonies of the rare Australian sea-lion inhabit the offshore islands surrounding Rottnest and the Island is also home to New Zealand Fur Seals.

An assortment of businesses in long-established Settlement areas provide visitors a choice of food and beverage outlets; and over 2,500 beds in a variety of accommodation. Rottnest Island’s long history has left a legacy of fascinating heritage buildings and interesting cultural fabric, which together, make it a favourite destination for boat owners in Western Australia – which has the highest number of boat owners per capita in Australia.

Boat ownership in the Perth metropolitan region is growing at a rate faster than the expected rate of population growth, from 34% to 43.4% boats per 1000 people over the next thirteen years with a trend towards ownership of larger vessels.

This growth will impact on visitation to Rottnest Island and the nature and demand for facilities including rental moorings; beach anchoring; jetties and jetty pens; size of boats and limitations on access; sullage disposal; fuel and water supplies and other services for the boating community.

As such, the Rottnest Island Authority has prepared this Boating Management Strategy under the Rottnest Island Management Plan (2009 – 2014) to provide the boating community with optimal, equitable usage of safe, well-managed marine facilities to an extent compatible with the boating capacity of the Island.

Importantly, its intent is to ensure the Rottnest Island visitor experience of WA’s boating community is enhanced through better infrastructure; reduced rules through education-based management and self regulation ensuring fairness and equality, within a well-managed, pristine environment.

The strategy considers the marine environment and its identified values, has sought to document boating activity through visitor and boating community surveys, identifies the impact of future trends on the demands on Rottnest, considers the adequacy of current facilities and systems of management, and makes a wide range of actions to be implemented in coming years. The actions identify management approaches that will result in infrastructure and facility upgrades and additions; legislative changes; behavioural changes, education and enforcement; research and monitoring; and adjustments to the current systems of management. The full list of actions is set out in Section 5.4 on page 49.

The Boating Management Strategy will be implemented as a sub-strategy of the Rottnest Island Management Plan, and operate alongside other strategies that address tourism and recreation, terrestrial, and cultural heritage management within the Rottnest Island Reserve.

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1 Rottnest Island again excelled in the annual WA Tourism Awards in 2012 with gold medals as WA’s major tourism destination; for tourism marketing; sustainable tourism; transport operations; and was the bronze medal winner in the heritage tourism and major tours and transport operator categories.

2 Latest customer satisfaction ratings with Rottnest Island exceed targets set at 97%.

3 Perth Recreation Boating Facilities Study 2008, Western Australian Department of Transport.
1. Introduction

1.1 Background

Rottnest is a highly desirable holiday destination, based around the Mediterranean climate, scenic natural environment, biodiversity and turquoise waters, with 63 sheltered beaches and 20 bays. It has unique and highly diverse terrestrial, lake and marine ecosystems, with the marine environment supporting a range of temperate and tropical species. The Island’s cultural and social heritage is equally diverse with a rich history of Aboriginal, maritime, colonial, European, military and recreational use.

Rottnest Island is an A class reserve (Reserve 16713) 20 kilometres west of Fremantle, Western Australia’s major port, with Perth a further 17 kilometres inland on the Swan River. The Island is approximately 11 kilometres long and 4.5 kilometres wide at its maximum. Reserve 16713 covers a land area of 1859 hectares, and includes Swan Location 10976 and Swan Location 11022, being the Island and designated marine area.

The Island is managed by the Rottnest Island Authority (the Authority) in accordance with the Rottnest Island Authority Act 1987 (the Act). Under Section 11 of the Act, control and management of Rottnest Island is vested in the Authority for the purposes of enabling it to:

a) Provide and operate recreational and holiday facilities on the Island;

b) Protect the flora and fauna of the Island; and

c) Maintain and protect the natural environmental and the man-made resources of the Island and, to the extent of the Authority’s resources, allow, repair its natural environment.

All jetties on the Island are licenced to the Authority from the Department of Transport. The Authority operates primarily from revenue received from visitors in the form of admission fees and charges for holiday accommodation and recreational services, including moorings and admission fees. Other funding sources include business leases, a State Government annual contribution, grants and sponsorship.

Rottnest is accessible to visitors by regular ferry services from Fremantle, Perth and Hillarys, by private boat and by small aircraft. Each year an estimated 185,000 people arrive by private boat to Rottnest Island.

Visitor access is centred on the Settlement Area in the north-eastern corner. This is the main visitor arrival area with services and facilities including shops, food and beverage and accommodation. Day-use facilities including toilet blocks, rubbish bins, bike racks and boardwalks are provided at other sites around the Island.

In early 2012, The Authority in cooperation with the Rottnest Conservation Foundation and volunteer groups, replaced the West End Boardwalk to provide disabled access from the carpark to a new viewing platform and enhance the overall visitor experience at this popular site, whilst providing additional habitat for nesting shearwaters. The design utilises the latest sustainable products to see it last for many decades in the harsh coastal environment. In addition, other upgrades to the Reserve have been made at Little Parakeet Bay, Henrietta Rocks and Porpoise Bay.

Facilities for boat users include beach deep water moorings and jetties in Thomson and Geordie Bays. There are 849 permanent licenced moorings, 41 rental moorings, and secure anchoring areas spread across bays on the north, east and west sides of the Island. Thomson Bay is the main mooring area (280 moorings), providing convenient access to facilities and services in the Settlement Area. Moorings at Geordie and Longreach Bays (157 moorings) provide convenient access to shops and accommodation in these locations. Another major mooring area is Narrow Neck (188 moorings) located on the north-west side, offering a more remote boating experience. The number of permanent licenced mooring sites has remained relatively stable and close to realistic capacity since 1997.

Appendix 1 provides an overview the Rottnest Island, showing Reserve boundaries, boating activity density, mooring areas and infrastructure facilities.
Private moorings at Geordie and Longreach Bays (157 moorings) provide convenient access to shops and accommodation in these locations.
1.2 The need for a boating management strategy

The Rottnest Island Management Plan (2009 – 2014) (RIMP) sets out the policies, major initiatives and operations for management of Rottnest Island for the period of its operation.

The RIMP identified the need for four issue based strategies to be prepared: a Tourism and Recreation Strategy (Initiative 2); a Boating Management Strategy (Initiative 15); a Terrestrial Management Strategy (Initiative 17); and a Cultural Heritage Management Strategy (Initiative 21).

With regards to boating management, the RIMP required preparation of a strategy to provide the basis for planning and developing new marine facilities, and to give consideration to the consistent increase in boating demand through provision of:

- Additional mooring sites suitable for the trend toward larger vessels;
- Installation of moorings for key dive and recreation sites;
- Feasibility of the development of a marina for commercial and charter vessels in the vicinity of the Army Jetty;
- The need to identify new experiences;
- Response to the demand for a safe recreational boat marina; and
- Recognition of the contingent emergency response capacity of the Island.

During the life of the RIMP (2009-2014) a commitment is given to the completion of a boating strategy before any significant new facilities or policies are developed. Any proposed facilities are to be based on a feasibility study of financial, social and environmental sustainability and fit within the Authority’s development approval process.

Furthermore, a boating visitor survey undertaken during 2010 allocated the following additional task to a boating management strategy:

- To provide a review of demands, impacts and management of marine facilities including: rental moorings; beach anchoring; jetties and jetty pens; size of boats and limitations on access; sullage disposal; fuel and water supplies; and other services for the boating community.

This strategy responds to RIMP Initiative 15, will need to work within the framework of the RIMP and other strategies still to be developed as well as respond to the tasks set by the boating visitor survey of 2010. It recognises the Authority’s duty of care to carry out maintenance and repairs to ensure safety of its own existing marine facilities, and to plan to meet increasing demands for moorings and marine facilities while protecting the marine environment, visitor safety and amenities.
1.3 Objective of the strategy

In accordance with the RIMP (2009 – 2014) the objective of the Boating Management Strategy (BMS) is to:

Provide the boating community with optimal, equitable usage of safe, well-managed marine facilities to an extent compatible with the boating capacity of the Island.

1.4 Scope of the strategy

The BMS will provide a framework for boating management within the Rottnest Island Reserve over the next five years to ten years, or until further direction on marine facilities is provided through a review and update of the Rottnest Island Management Plan (RIMP).

It is important that we encourage all of the WA boating community to come to Rottnest Island & therefore attempt to address all boating matters.

The process of preparing the boating strategy recognises that separate strategies will be developed to more directly consider tourism, recreation, the terrestrial environment, and cultural heritage management. The BMS has therefore focused on matters directly associated with boating management.

1.5 The process

Preparation of the BMS has been guided by the Boating Management Advisory Committee, the Rottnest Island Authority Executive and Board, with the following tasks undertaken:

1. Staff and stakeholder workshops to identify Island values, concerns, and appropriate responses. This input will be applied across all four issue based strategies under the RIMP.
2. Consideration of existing studies and material relevant to boating in the Reserve, including a Boating User Activity Survey (2010), Boating User Attitudinal Survey (2012), boating facility studies and regular and ongoing feedback from the boating community.
3. An assessment of existing knowledge and issues of boating activities by Authority staff, and the identification of knowledge gaps, future trends and threats.
4. Presentation of the draft BMS to the Boating Management Advisory Committee to set priorities and establish direction.
5. Acceptance of the report as a draft for public comment by the Rottnest Island Authority.
6. Distribution of the draft BMS for a period of public comment.
7. Feedback received from the draft BMS to be considered for the final Boating Management Strategy document.
1. INTRODUCTION CONTINUED

1.6 Rottnest Island planning and management framework

Legislation, policy and strategy, which comprise the planning framework for Rottnest Island, is set out in the RIMP (2009 – 2014) and summarised in Figure 1. This demonstrates the relationship between the Rottnest Island Authority Act 1987, the RIMP and the many other plans and strategies and their relationship with the BMS. Key legislation and policies affecting the management of Rottnest Island are listed in the RIMP, summarised in Appendix 2.

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**Figure 1: Rottnest Island Planning Framework**

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**Plans and Strategies**

The following plans are referred to in the RIMP:
- Disability Access and Inclusion Plan 2007 – 2012
- Rottnest Island Marine Management Strategy 2007
- Rottnest Island Research Strategy 2009
- Strategic Waste and Research Management Plan 2006
- Utilities Master Plan 2007
- Additional plans guide RIA operations.

Proposed in RIMP 2009 – 2014:
- Boating Management Strategy
- Cultural Heritage Management Plan (includes Aboriginal Cultural Heritage Management Plan)
- Sustainability Action Plan
- Terrestrial Management Strategy
- Tourism and Recreation Strategy (includes Cultural Heritage Tourism Strategy).

**Implementation**

- Rottnest Island Authority Strategic Development Plan (5 year internal plan including funding and corporate management)
- Agency Policy and Guidelines
- Operational Plans
- Memoranda of Understanding
- Contracts and Agreements
- Asset Management Plans
1.7 Boating regulation and policy

With regards to boating activities, facilities and management in the Rottnest Island Reserve, the following legislative, policy and management matters are of particular relevance:

- **The Rottnest Island Authority Act 1987** (the Act) and the Rottnest Island Regulations 1988 (the Regulations) provide the legislative mechanisms for Island management, and govern the activities of the Rottnest Island Authority.

- The Authority is responsible for management of recreational and holiday facilities, the protection of flora and fauna and the preservation of the natural environment and man-made resources. Where possible, the Authority is also responsible for restoration of these values.

- A five year management plan must be in place for the Island to direct Island development and management. This is currently the Rottnest Island Management Plan (2009-2014).

- When providing and operating recreational and holiday facilities, the Authority is to have particular regard to the needs of people who wish to visit or stay on the Island as a family group. Where demand for use of facilities exceeds supply, the Act stipulates that no preference or advantage shall be given to any particular person or group.

- The Authority has wide ranging powers to undertake tasks necessary or convenient to manage the Reserve including carrying out developments and business operations, and the issuing of licences and leases to establish commercial operations. The Authority is also empowered to grant leases and licences for vessel facilities, with the concurrence of the Minister for Transport under the Marine and Harbours Act 1981.

Other legislation with a direct effect on boat users within the Reserve is:

- Western Australia Marine Act 1982 – management and control of vessels
- Transport Co-ordination Act 1966 – coordination of ferry services
- Jetties Act 1926 – control and ownership of jetties
- Navigable Waters Regulations 1958 – management and control of vessels
- Fish Resources Management Act 1994 – management and control of fishing activity.

The Department of Transport and Department of Fisheries are the government departments vested with the administration and enforcement of these acts and regulations.
1.8 The marine environment

The ecological values of the Marine Reserve are described in detail in the RIMP. Rottnest’s geographic isolation from the mainland and location near the Leeuwin Current have resulted in its waters being characterised by a unique blend of tropical and temperate species, with a prominent component of Western Australian marine endemic species. The Island waters have the southern-most occurring assemblages of tropical corals in the State and possibly in Australia, and a diverse mix of habitats and communities, ranging from coral reef to seagrass habitats. Boating activity and management occurs within this unique marine environment and is a significant draw card for boating and non-boating visitors. Continual enjoyment of water activities such as fishing, swimming, surfing and diving are dependent on the maintenance of the ecological integrity of the Reserve.

Human activities such as inappropriate boating and diving practices appear to have caused localised habitat damage in some areas.

As part of the RIA Marine Management Strategy, sanctuary zones that exclude extractive activities are one management tool used to limit the impact of human activities on the marine environment. Research conducted at Rottnest suggests fauna abundance and distribution in addition to the population structure of some species is higher in sanctuary zones than in similar habitats where extractive activity is permitted.

For example, the density of Western Rock Lobster, Panulirus cygnus, is approximately 34 times higher in the Kingston Reef sanctuary zone than in other areas around the Island (Babcock, et al. 2007).

The Authority is supportive of ongoing research into the effects of human activity on the marine environment. This will enable the continual refinement of management practices in accordance with a growing understanding of the environmental response.

1.8.1 Marine landscape values

A workshop conducted in 2010 with Authority staff and stakeholders identified the following values of the marine landscape:

- Contrast of colours, turquoise waters, sand, dark green, rocky outcrops.
- Bays free of moorings, infrastructure, bays with moorings, boats.
- View scape from vessels, spectacular snorkelling, scuba diving, safe swimming.

Management that sustains or improves the viability of each of these targets will contribute to visitor experiences.

Mooring free bays have been identified as a marine landscape value. Inappropriate moorings, high-visibility buoys and infrastructure can detract from the aesthetics of the Island, which could be considered negative for terrestrial based visitors and some boating users. There are a number of bays that are free of moorings, but do support vessel anchoring without impact on the seabed vegetation.
1.8.2 Climate and weather

Rottnest has a Mediterranean climate, with mild winters and hot dry summers. Perth is the sunniest capital in Australia with an average of eight hours of sunshine a day but also the windiest. Perth’s weather, coastal and river environment is often ideal for water activities, with a relatively high level of boat ownership.

Summer months are hot, with an average temperature of 29 degrees Celsius during the day and 17 degrees Celsius at night. A moderate easterly breeze is common in the morning. During the day the direction swings around, with strong afternoon sea breezes in excess of 25 knots from the southwest and an increase in wave and swell height. The onset of this strong breeze can make boating offshore uncomfortable.

In summer the southern bays of Rottnest Island are often subject to southerly winds and swell exposure, which is undesirable for anchorage. The northern side bays are heavily populated at these times. Thomson Bay is relatively protected from the south westerly but offer little to no protection and is very exposed to morning easterly breeze. Vessel owners find this easterly breeze uncomfortable, particularly in jetty pens facing north-south. When the weather pattern shifts from the north, Parker Point anchorage is extremely popular.

Winter months (June to August) are mild, with an average temperature of 18 degrees Celsius during the day, and 9 degrees Celsius at night. Average yearly rainfall is 880 millimetres, with July the wettest month. Winds come from the north and are precursors to winter storms. The predominant swell is from the southwest, but refracts around the Island. It is not uncommon to experience extended periods of five metre swell on northern bays, making access to bays impossible or extremely dangerous through narrow and hazardous navigation channels. It is common to see occasional swells wash over the Geordie Bay Jetty. Recreational boating activity at Rottnest Island is at its lowest during these winter months.

The winter weather pattern can also create difficulties for berthing passenger ferries at the Main Jetty.

Management considerations:

- The recommendations and initiatives arising from the BMS will need to be compatible with the Authority’s other plans, policies and strategies, in particular the RIMP, environmental policy and risk register.
- Boating management should consider the identification and development of new visitor experiences.
- Boating management should uphold the identified values of the marine environment, including the retention of bays free of moorings and other infrastructure.
- Climate and weather patterns have a significant effect on seasonal boating activity and user requirements.
2. Understanding Boating Visitors

2.1 Overview of boating activity

The Rottnest Island Boating Visitor Survey Report 2010 provides an insight into boating activity within the Reserve, as summarised by figures 2 to 6.

From this survey, the characteristics of the mean average user of the Rotnest Reserve are:

- vessel of 10.8 metres;
- 3.8 persons on board;
- 12.8 trips per year;
- most popular day to visit is Saturday followed by Sunday and Friday;
- the majority of users secure their vessel using a swing mooring;
- the most common length of stay is a day trip;
- the most popular place visited is Thomson Bay; and
- the most preferred activity is relaxing, followed by swimming.

![Method to secure vessels (%)](image1)

**Figure 2: Method for mooring a vessel at Rottnest Island**

![Distribution of days people visited Rottnest Island by boat](image2)

**Figure 3: Distribution of days people visited Rottnest Island by boat**
2. UNDERSTANDING BOATING VISITORS

Figure 4: The length of time in nights spent at Rottnest Island on a boat

Figure 5: Bays visited by boat

Figure 6: Common activities undertaken by people visiting by boat
2.1.1 Boat registrations

Rottnest Island registered boat users fall into six categories:

1. Licensee – A vessel owner with a mooring site licence.
2. Authorised User – A vessel owner authorised to use a licensed mooring.
3. Annual admission – An annual admission pass entitling a vessel to enter the Reserve but no use of a mooring.
4. Casual admission – A “pay as you go” admission for a vessel into the Reserve.
5. Charter operator – A commercial vessel licenced to engage in a commercial charter operation within the Reserve.
6. Ferry operator – A commercial vessel issued with a ferry licence.

The minimum size of a vessel that can be the nominated vessel to a mooring licence is 6.4 metres in length; is a sailing vessel or has its own form of self-propulsion capable of achieving a speed of 5 knots. Vessels between 3.75 metres and 6.75 metres in length are referred to as Additional Vessel when nominated to a mooring licence, and can be approved to be rafted alongside. Vessels less than 3.75 metres in length are not required to be registered with the Authority and are referred to as Tenders.

Figure 7 categorises the number of vessels registered with the Authority seeking access to moorings, by length and type.

A small but increasing number of recreational vessels fall into the ‘super yacht’ category of over 24 metres. There are 22 vessels in this category. Of those, 18 are registered in the Perth metropolitan region and are registered for mooring use with the Authority. In general there has been a trend towards ownership of larger boats in Western Australia. This has been attributed to the global financial collapse in 2007 when Western Australian’s buoyant economy relative to other parts of the world, increased the affordability of boats locally and resulted in a flood of vessels from overseas, particular the United States of America.

Since July 2011 the Authority has been able to monitor use of hire mooring facilities though an electronic online booking system. Current data indicates the average stay is 2.2 nights with an overall occupancy rate ranging from 1% in July to 61.3% in January. Swing moorings are the most popular type with rental facility, with many individual days during December and January reaching 97% (representing a ‘fully booked’ state). Beach pens are the least popular due to the smaller size vessels they can accommodate (<7.5m).
Swing moorings are the most popular, with many individual days during December and January reaching 97% fully booked.
2. UNDERSTANDING BOATING VISITORS

Continued

Management considerations:

- Rottnest boating activity and the corresponding demand for facilities varies substantially across the week, with a marked rise in activity between Friday and Sunday.
- Rottnest boating activity is highly seasonal with peak periods correlating with summer months, and at its maximum in the first few week of the calendar year.
- Boat ownership in the Perth metropolitan region is growing at a rate faster than the expected rate of population growth, with a trend towards ownership of larger vessels. This growth will impact on visitation to Rottnest Island and the nature of future demand for facilities.

The Perth Recreational Boating Facilities Study 2008 (Department of Transport) compiled data on projected recreational vessel registrations in line with Western Australian population growth for Perth from Two Rocks to Singleton.

Vessels were categorised based on length, and assumed that vessels over 7.5 metres in length were too large to transport by trailer, and therefore would require a pen or mooring.

In brief, by the year 2025 the projection indicates an increase of 28% for vessels over 7.5 metres as opposed to 21% for vessels under 7.5 metres in the Perth region.

To accurately plan and meet future demands of boat users, the Authority needs to monitor boat numbers access the Reserve. There are a number of ways this could be achieved through the use of technology; however it would not be able to identify the unlawful entrant.

Table 1: Western Australian boat ownership and predicted growth
Source: Perth Recreational Boating Facilities Study 2008, Department of Transport.

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<thead>
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<th>Year</th>
<th>No of Boats</th>
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<td></td>
<td>&lt; 7.5</td>
<td>&gt; 7.5</td>
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<tr>
<td>2008</td>
<td>44,099</td>
<td>5,162</td>
<td>49,261</td>
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<td>2012</td>
<td>49,921</td>
<td>6,035</td>
<td>55,956</td>
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<tr>
<td>2018</td>
<td>60,266</td>
<td>7,493</td>
<td>67,759</td>
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<tr>
<td>2025</td>
<td>75,435</td>
<td>9,422</td>
<td>84,857</td>
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Figure 8: Occupancy rates of Authority marine hire facilities (July 2011 - March 2012)

All Moorings
Swing Moorings
2. UNDERSTANDING BOATING VISITORS

2.2 Views of the boating community

The Authority commissioned the Rottnest Island Tourism and Recreation Strategy Research Boating Survey (TNS, 2012). It captures the views of the boating community about aspects of Rottnest Island relative to other local boating destinations. Respondents included both visitors and non-visitors to the Island.

2.2.1 Popular boating destinations

Of those surveyed, Rottnest Island, the Swan/Canning River and Cockburn Sound were the most popular local boating destinations. These locations together with Hillarys/Mindarie/Yanchep are boating destinations that tend to be visited all year round, and possibly as a result of this tend to be visited a greater number of times across the course of a year. These destinations are potential fishing destinations and are closer to Perth so can be visited for shorter trips.

Seal/Penguin Island, further north/south, Mandurah and Busselton are more likely to be visited only in summer and are visited fewer times in a year. Those that visited Busselton did so because of facilities, ease of access, marina, value for money and because they have a mooring there or live there. Visits to Mandurah are based on access to town, facilities, and ease of access, fishing and crabbing.

2.2.2 Reasons for NOT visiting Rottnest

Survey respondents that had not visited Rottnest by boat in the last year were asked to provide reasons for not visiting. Boating reasons included the costs of mooring; access to moorings; weather conditions; facilities (relative to other destinations); ease of access to the shore; and the poor condition of moorings (both hire and private). Other general (non-boating) reasons included the adequacy of restaurants and cafes; facility conditions; and reviews by the media and word of mouth.

Almost two in five boating visitors who have been going to Rottnest for two or more years say they are visiting less often than they were in the past, while 1 in 5 are now going more often.

Reasons for not visiting as frequently include personal reasons for not holidaying as much, in addition to issues associated with mooring access; costs; rules and regulations and crowding.

We need to address the reasons for the lack of visitation to Rottnest Island and welcome lapse visitors back.

2.2.3 Reasons for visiting Rottnest

Over half of survey respondents that visit Rottnest have been visiting for over 10 years. Thirty per cent visit on their boat with a group of four or more people. Seventy four per cent go for an overnight stay, sleep on their boat and go ashore.

Views on the cost of moorings were divided, with a similar proportion of boating visitors saying it is good or reasonable value for money (36%) as say it is poor value for money (38%).

Reasons for visiting Rottnest include as a good place to relax and to go with friends and visitors to Perth, fishing/catching lobster; diving/snorkelling; and sightseeing.

2.2.4 Views on the future

Most survey respondents were open to changes on Rottnest, although 24% said they would like Rottnest to remain unchanged. Respondents were asked about the level of importance, and their level of satisfaction with the following elements:

- Ease of getting to shore
- Availability of short stop landing
- Choice of eating options
- Upkeep of private moorings
- Upkeep of hire moorings
- Access to a hire mooring
- Availability of fuel
- Toilet and shower facilities
- Availability of potable water
- Sullage pump out facilities
2. UNDERSTANDING BOATING VISITORS

Figure 9 reflects the views on suggested new services.

Management considerations:

- Boating users visit Rottnest as a good place to relax and to go with friends and visitors.
- Reasons the boating community may not visit Rottnest include mooring costs, access and upkeep; the condition of shared facilities; and non-boating developments relative to other destinations.
- The boating community are divided in their views on the cost of moorings, with a similar proportion of boating visitors saying it is good or reasonable value for money (36%) as say it is poor value for money (38%).
- A high proportion of recent boating survey respondents are open to changes on Rottnest, while a quarter of respondents would like Rottnest to remain unchanged. The Rottnest Island Authority needs to find the right balance to keep the existing boating community happy but also to welcome new and lapse visitors to the Island.
- Opinions about the idea of the Authority assuming ownership of all moorings were divided (43% for, 44% against). Similar mixed views were apparent about a comprehensive marina style development (53% for, 38% against).
Reasons for visiting Rottnest include as a good place to relax and to go with friends and visitors to Perth, fishing/catching lobster; diving/snorkelling; and sightseeing.
3. Marine Facilities and Operations

3.1 Jetties and Pens

3.1.1 Main Jetty

The Main (Ferry) Jetty is the largest maritime service structure on the Island and the main arterial point of entry for Island visitors. The wharf is a limestone breakwater structure with a steel and concrete extended end point. The Authority is responsible for the operational management of the Main Jetty, including the collection of berthing revenue.

The jetty has four ferry berths; one inner wooden berth (Berth 0) on the south side; a rarely used berth on the northern side (Berth 5); and one T-jetty structure suitable for medium sized vessels midway along the northern side. Five vessels across two commercial ferry companies use Berths 1 - 4 in accordance with approved schedules. Government and emergency services vessels use the wooden inner jetty Berth 0.

Of the four ferry berths, Berth 4 is the least desirable as it is exposed to swell and wind from the north. Berth 4 is also subject to cargo congestion, with passengers required to cross the vehicle access lane to embark and disembark. The Authority is working with ferry operators to identify options to make Berth 4 more user-friendly. This would involve structural changes, for example relocating the gangway cut-out towards the Island to lessen the ferry’s exposure from prevailing wind and swell action and installing a wave suppression system along Berth 5.

During peak times such as the Christmas school holidays, ferry companies operate at maximum capacity, and the Authority works with operators to maximise access to available berths through scheduling. The Authority approves ferry schedules in consultation with the Department of Transport approval process for a ferry operator’s licence under the provision of the Transport Coordination Act 1966.

The jetty is nearing 50 years old and is compliant. In 2002 following an upgrade by the owner, the Department of Transport it was handed over to the Authority to manage. Its structural integrity has begun to deteriorate with sinkholes along the length and the development of concrete cancer, which is becoming more apparent over recent years.
In 2010 Berth 0 was closed due to the structural integrity. Minor repairs were performed to allow the berth to reopen. However, the long term remedy has yet to be addressed.

The ongoing structural integrity of the Main Jetty requires significant ongoing capital commitment.

The jetty is divided lengthwise by a low level four stand fence to separate passengers from cargo movement. Internal Authority assessment suggests the four stand fence does not offer a proper safe guard to prevent passengers crossing into the cargo movement area.

As the main entry point to the Island for many visitors, aesthetic and functional improvements to the Main Jetty such as the provision of shade and seating have been completed.

Berth 5 on the northern side is not used by ferry operators and only used by the occasional 20 metre plus charter operator. Berth 5 is only usable in calm conditions due to the prevailing surge wave direction. There maybe greater benefits to fill in this berth by extending the rock groin to offer greater protection to Berth 4, and enable Berth 4 to be used in less than ideal conditions.

The “T” Jetty attached to the northern side of the Main Jetty offers a loading point for charter and recreational vessels up to 25 metres. This jetty was only recently overhauled, but it is subject to surge wave action while offering a deepwater point for vessels to berth for short term transfers with some risk.

In 2012 in the interest of public safety the area between the northern side of the Fuel Jetty and the southern side of Main Jetty was gazetted a “No Swimming” zone because of the high traffic volume and the restricted capacity of large vessels in this area to manoeuvre. The Authority and ferry operators are currently undertaking studies to further develop safe working practices.

3.1.2 Army Jetty

As the name implies the Army Jetty was originally constructed in 1907 and used by the Australian Army during occupation of the Island in World War II. Following this time, it was used for ferry berthing prior to construction of the Main Jetty in the 1960s. The Army Jetty located south of Thomson Bay, is well serviced by road and has toilets and a recreational barbeque area.

The concrete hard stand of the jetty has deteriorated over recent years and the assessment of an engineer has recommended that it is closed to vehicle and boating traffic due to structural integrity. The wooden berthing face has also deteriorated where it is no longer safe for vessels to come along side. A relatively degraded ramp exists on the north side and the south side has some old spit posts in place. This ramp has been used as an alternative for a barge landing position although the concrete ramp has slipped slightly into the water and the exposure to swell action in its current configuration makes it less than desirable for barge operations.

The ramp also acts as a boat ramp as it is the only hard surface area suitable.

It has been estimated that it would cost approximately $3 million to replace this facility.
3. MARINE FACILITIES AND OPERATIONS CONTINUED

3.1.3 Fuel Jetty

The Fuel Jetty is the prime recreational jetty facility at Rottnest Island with 20 minute loading zones and pens catering for vessels up to 16 metres long. Water is available at two points, delivered at low pressure and volume with self-closing taps. Self-service fuel dispensers operate 24 hours a day, 7 days a week offering diesel, unleaded and premium unleaded.

The jetty provides close access to the Settlement Area and is close to all support utilities.

The Fuel Jetty is a relatively new structure but requires ongoing maintenance. There is little scope for additional facilities to be located on this jetty without causing congestion. The entire structure is exposed to waves and surge especially during easterly wind patterns.

3.1.4 Hotel Jetty

The Hotel Jetty is located directly in front of the Hotel Rottnest in Thomson Bay and is in a ‘T’ configuration. In 2010 a new Hotel Jetty was installed over the old jetty footprint. The jetty was designed and constructed to provide easy access to Hotel Rottnest and other shore based facilities. In addition six rental boat pens were installed to cater for vessels less than 8 metres. A number of free mooring points for tenders/ additional vessel are provided on the southern side from 6am to 12 midnight.

The Hotel Jetty is extremely popular as it grants access directly to the hotel and to the Authority’s bike hire building, which offers scuba tank refills and aquatic equipment hire. It is also exposed to easterly breezes.

3.1.5 Stark Jetty

Stark Jetty is the only shore jetty located in north Thomson Bay where small vessels can unload passengers. It also provides five small shallow-draft vessel hire pens. Stark Jetty is a minor, but useful structure. Inspection reports have identified that significant repair to the pylons will be required in the very near future.

3.1.6 Geordie Bay Jetty

The Geordie Bay Jetty is the only jetty on the north side of the Island situated within a mooring bay, and is the closest access point to onshore facilities for over 400 mooring sites.

Moorings in Geordie Bay are highly sought after (see figure 11).

The Geordie Bay Jetty is the only other location apart from the Fuel Jetty, where water is directly available. Use of the jetty is largely uncontrolled with vessels of all sizes competing for access. Access is limited to a maximum of 20 minutes.

An informal system of use has evolved where small vessels and tenders locate on the northeast side, while larger vessels use the southwest and outer northwest section. Recently the Authority refurbished the jetty replacing the decking and support bearers, and installed a lower landing on the eastern side to cater for tenders and vessel under 6.75 meters long. The land side of the jetty has been restored to connect directly to a set of steps leading to a barbeque area and shops. Additional ladders have been added and mooring points added to both sides.
3.1.7 Jetty maintenance and management

All jetties within the Rottnest Reserve operate under the Jetties Act 1926. Jetty maintenance is expensive, and a specialist field. Jetty management is contracted to a private company as a component of the Facilities, Operations and Utilities Management Agreement between the Authority and that contractor.

The current legislation provides limited scope for the Authority to manage and control the activity of jetty users beyond occupational health and safety. Amendments to enable greater control over access to, and movement along the jetties would improve efficiencies, and ensure uses are appropriate to jetty design capacity.

A safe working code of practice is being developed in accordance with occupational health and safety standards and is currently in draft format.

Management considerations:

- The Main, Army and Stark jetties have current outstanding and ongoing maintenance issues, which need to be addressed to ensure their ongoing structural integrity, requiring substantial investment.
- There are a number of structural improvements to the Main jetty which would improve efficiency, and assist in meeting peak demand and passenger safety. This includes amendments to Berth four and barriers to separate passengers and cargo traffic or resiting these facilities elsewhere.
- Ensure appropriate instruments are in place to enable the Authority to better manage jetty activity.
3.2 Moorings

Private moorings were first installed in the bays around Rottnest Island before World War II, enabling people to camp at the Island for extended periods of time. Moorings provide greater security for vessels than anchoring. Until the mid-1980s, moorings were effectively self-regulated with owners often holding more than one mooring to ensure protection from prevailing elements. In the 1980’s, regulations and a single mooring licensing system were introduced.

There are currently 893 moorings in Rottnest Bays. Forty four are controlled by the Authority for hire, courtesy and Ranger use and the other 849 licenced to private users (Licensees).

Permanent moorings are located in eight bays: Catherine, Geordie, Longreach, Marjorie, Narrow Neck, Porpoise, Stark and Thomson Bays. The largest private mooring is for a 35 metre vessel in Narrow Neck and the smallest is 7 metre vessel also in Narrow Neck. The largest mooring in the Reserve is an Authority hire mooring in Thomson Bay at 40 metres (250 tonnes). Moorings were removed from Little Armstrong and Eagle Bay in 1997 enabling these locations to be as natural as possible.

Licensees share access to private moorings with Authorised Users. A Licensee may appoint as many suitable sized Authorised Users as they wish. There are currently 2,085 Authorised Users registered with the Authority. Persons who do not know a suitable Licensee are able to make application to the Authority to be appointed as an Authorised User to a mooring site. It has been suggested a discounted rate should apply to Licensee’s where this has occurred. The Licensee has ultimate control over use of their mooring. To avoid conflict over mooring access, Authorised Users must seek the approval of the Licensee to use the mooring. In reality this practice is not adhered to, with a ‘first come first served’ scenario, which can result in the need for intervention by Rangers to resolve conflicts.

The proliferation of vessel ownership and the ongoing popularity of Rottnest as a boating destination mean that for some time, there has been a greater demand for moorings than can be met with complaints from Authorised Users that they are unable to gain access to a mooring. A major increase in swing moorings is not suitable or capable of meeting current and predicted future demands or the auxiliary requirements of boat owners.

The Authority has pursued a number of reviews and adjustments to the mooring system over time, in order to maximise access to moorings for the general community and address and respond to weather patterns.

This includes introduction of the Shared Mooring System (SMS) with subsequent enhancements enabling any Licensee or Authorised User to access any vacant private mooring within the Reserve that is of a compatible vessel length (colour coded). This has improved access opportunities generally; with previous marine user surveys identifying overwhelming support for the SMS. However, some Licensees are not in favour of the system due to the additional non-beneficial use of their mooring for which they bear all costs and liabilities. The SMS has been extended to include all hire moorings.

The Authority has utilised a Differential Global Positioning System (DGPS) to survey all mooring locations, plot the centre point and set the Maximum Swing Room (MSR) for each mooring to avoid obstruction. This offers a greater efficiency for the Authority in the management and resolution of mooring conflicts without the need to attend on site, and an ability to address allegations that moorings had been moved (intentionally or unintentionally). It has also enabled the Authority to review the location of mooring positions to maximise capacity of mooring bays.

The Authority has adopted a formula to determine a safe maximum vessel length for each mooring site to minimise conflict and ensure safe passage by passing vessels. This formula is included in Appendix 3: Adopted outcomes of Authority mooring standards.
Moorings are colour coded according to their maximum vessel length, and displayed by a 200mm coloured disk attached to the pickup rope.

- **RED** - Do not use or vessel under 8m
- **GREEN** - Vessel up to and including 10m
- **GREY** - Vessel up to and including 12m
- **PURPLE** - Vessel up to and including 14m
- **BLUE** - Vessel up to and including 16m
- **WHITE** - Vessel over 16m
  (vessel size indicated in centre)

### 3.2.1 Mooring construction

Due to limited space and the high density of moorings in some bays, vertical moorings are preferred. A vertical mooring is a chain, rope, or wire between the seabed and the surface buoy. The length of chain, rope, or wire is arranged such that the buoy is vertically above the mooring centre point at high tide. From the centre point, the ground chain is set out usually in a three finger star pattern to anchor points, to ensure that any load is spread between a minimum of two of the fingers.

Some moorings only have two fingers and others have four. This is dependant on the size of vessel to be moored. This multi-finger approach provides a degree of safety should one of the fingers fail.

Older moorings use clump weights (engine blocks or railway wheels) to secure the ground chain to the seabed. Clump weights rely on mass and chain, and work best in mud or sand. Clump weight moorings have proven unreliable for larger vessels as they can pull the clump weights in. Over the past ten years, the preferred method is ‘pin’ style mooring points, drilled into the seabed. The pins are usually high tensile 100 pound railway iron 2.5 metres in length. Pin style moorings have less detrimental effect on the benthic environment.

Following discussion with the Swan River Trust and Department of Transport mooring buoy colours within the Reserve are now consistent with Perth metro waters eg. red – courtesy mooring and white – commercial mooring.
3.2.2 Mooring inspection and condition

The importance of the upkeep of swing moorings was highlighted by 83% of respondents in the recent boating user survey (TNS, 2012).

The Authority requires Licensees to submit a mooring inspection report every 12 months, and must determine the adequacy of the report. It is the responsibility of the Licensee to ensure a current mooring inspection report, conducted by their mooring contractor.

A recognised mooring contractor can only submit mooring inspection reports, however at present, the Authority does not hold a list of contractors. Amendments to the Regulations would allow the Authority to set down minimum working standards and insurances for contractors.

While there is no Australian or New Zealand mooring standard or code, the Department of Transport maintains a list of recognised mooring contractors based on suitable insurances, an approved vessel and adherence to commercial dive code AS/NZS2299.1. These requirements could be modelled by the Authority in amending the Regulation.

The Regulations prohibit the installation of a mooring without permission or to secure to a mooring without permission.

3.2.3 Environmental effect of moorings

Since 2000 the Authority has required moorings to have an environmental design that will minimise adverse effects on the seabed to protect the assemblies of seagrass species. The effect of moorings on the sea-grass and seabed is referred to as ‘mooring scar’.

Curtin University in October 2007 released a study titled “The impact of boat moorings on seagrass beds in Thomson Bay, Rottnest Island, Western Australia, 2004 to 2006”. In 2012 the outcome of the study was reassessed by the Authority, which indicated that there had been a 62% decrease in the observed mooring scars. This can be directly linked to requirement to have environmentally sensitive mooring systems.

3.2.4 Private moorings

The granting of Private or Licensee moorings is governed by the Regulations. Licensees are responsible for the management and upkeep of their mooring and a licensee’s vessel has priority use over all other vessels.

There are currently 849 Licensees allocated a mooring based on nominated vessel length. Each year the Licensee is invited to renew their mooring site licence, the fee for which is calculated on the length of vessel plus annual admission fees. A Licensee may have a minimum of 25% interest in more than one vessel for which they only need to pay admission fees (providing that vessel is suitable for the nominated mooring).
A mooring site licence is issued to one individual and is not transferable or able to be bequeathed. The Authority has had issues with commercial operators using private moorings. This is contrary to clause 6 of the Rottnest Island Terms and Conditions in that “the licence cannot be sub-licence, mortgaged, charged, financial gain from or give away the benefit of the licence by will or gift”. However, the lack of definition of financial gain creates compliance issues for the Authority.

Under the Rottnest system, a Licensee owns mooring apparatus and leases an area of the sea floor from the Authority for mooring installation. Licences are renewed annually (from 1 September to 31 August), and are ongoing until cancelled or relinquished.

In previous years there have been suggestions that the Authority should assume ownership of all moorings to remove a perceived exclusivity of mooring ownership and access. However, a recent survey (TNS, 2012) indicated that support for this idea was divided.

A Licensee is responsible for all costs associated with their mooring. While the Authority strongly discourages a Licensee from demanding payment from Authorised Users to assist with financial upkeep, these users may in some instances, offer financial assistance.

Complaints from Licensees that they must bear the full costs of mooring upkeep and repair are common particularly in instances of damage. Licensees with moorings in highly desirable locations may feel their mooring receives excessive use under the Shared Mooring System or abuse by users not abiding by the colour coding system.

Licensees occasionally leave a registered additional small vessel (under 6.75 metres) on their mooring between 1 October and 30 April. This practice does generate complaints that it restricts access to the mooring under the Shared Mooring System, and increases the risk of damage to either vessel. Further, this practice is contrary to the current Regulations, which require a competent operator to remain within the boundaries of the Reserve.

Licensees are also able to swap mooring site locations with other Licensees in the same mooring location. Many Licensees feel there should be more flexibility to allow mooring swaps between bays as their needs and vessels change over the years.

The Authority receives a substantial number of complaints from Authorised Users that they are unable to access their designated mooring. After being advised the mooring is unavailable they find the mooring is not in use on that day.

Private moorings were first installed in the bays around Rottnest Island before World War Two, enabling people to camp at the Island for extended periods of time.
3. MARINE FACILITIES AND OPERATIONS CONTINUED

3.2.5 Hire Moorings

The Authority offers marine rental facilities to fulfil their obligations under Section 11 and 12 of The Act, and Regulation 15.

The following marine rental facilities are offered in Thomson, Geordie and Longreach Bays:

- 41 swing moorings capable of holding a vessel ranging from 7 metres to 40 metres at 250 tonnes
- 33 jetty pens capable of holding vessels from 7.5 metres to 16 metres; and
- 20 beach pens capable of holding a vessel up to 7.5 metres.

The Authority also provides 17 beach anchoring points and one courtesy mooring free of charge on a first-come basis.

Improvements to the booking system are ongoing to reflect the needs of the user. Current booking system issues identified for future development are:

- Minimum boat length for larger swing moorings;
- Mooring locations linked with the Geographical Information Systems map;
- Booking details linked to the mooring data base.
- Part day booking;
- A real-time phone application showing mooring availability.

3.2.6 Wait lists

The Authority maintains waiting lists of mooring applicants as per the Regulations. This list is sectioned into available mooring area and sequentially numbered. The list is available for public inspection during business hours and date of application, although does not disclose contact details. Once the initial application fee is paid no further payment is required to remain on the waiting list.

Each year the Authority writes to all waiting list applicants confirming contact details, their desire to remain on the list and that they own a suitable vessel.

As at 2012 there were 537 people who have paid a deposit and nominated a preferred bay on the waiting list for a mooring site. The longest wait is for Marjorie Bay (19 years) and the shortest Porpoise Bay (2 years). In 2011/12, 43 mooring site licences were relinquished and subsequently offered to wait list applicants, with 39 accepted. The remaining four are pending re-offer. There is no pattern as to which mooring area is the fastest moving although Porpoise Bay is the least popular due to exposure to the prevailing summer weather conditions.

Mooring relinquishment most commonly occurs as a result of the death of the Licensee. In a small number of instances moorings have been cancelled by the Authority due to fraud, mooring or vessel non-compliance.

![Figure 11: Mooring sites and wait list numbers by location (June 2012).](image)
3.2.7 Courtesy moorings

The Authority maintains one courtesy mooring for vessels up to 24 metres on Kingston Reef near a popular dive site wreck. Use is free for up to two hours. In response to a matter raised in the RIMP, the Authority completed an assessment to identify priority dive sites within the Reserve in 2010 where courtesy moorings would be of benefit. Crystal Palace and Roe Reef were identified as locations which would best contribute to the boating visitor experience and reduce the risk of reef damage.

There are opportunities to seek external funding from the Recreational Boating Facilities Scheme for the installation of additional courtesy moorings.

3.2.8 Commercial moorings

There are two commercial moorings within the Reserve allocated to ferry operators. These moorings assist in the managing of ferries access to the Main Jetty during lay over periods. Commercial moorings are identifiable by a white mooring buoy.

The Authority maintains one courtesy mooring for vessels up to 24 metres on Kingston Reef near a popular dive site wreck.

Management Considerations:

- Demand for mooring ownership exceeds current availability.
- Peak weekend, special events and prime holiday period demand exceeds availability under the current mooring management system.
- Under the current dispersed system of mooring ownership and management, it is not possible for the Authority to quantify the remaining capacity to accommodate additional users. There is therefore a strong reliance on the results of user surveys and feedback.
- Define the term “financial gain” as it applied to commercial vessels.
- Proposals to introduce additional moorings must be mindful of the need to retain the values of the marine environment and landscape.
- The current mooring ownership and management system present some equity issues: for authorised users gaining access; for Licensee to bear total costs whilst being required to share; and for the RIA in addressing compliance issues.
- The RIA must ensure that mooring contractors are operating to a minimum standard and “best-practice”.
- There are a number of issues that need to be addressed in the hire mooring booking system.
- The installation of additional courtesy moorings at popular locations within the Reserve such as Crystal Palace and Roe Reef dive sites, would offer environmental benefits and additional amenity for boating users.
3.3 Anchoring

Anchoring is permitted in certain areas free of charge. They are encouraged to drop anchor in sand patches and not in areas where seagrass or reef is present, and are not permitted to anchor within 50 metres of a mooring, interfere or restrict access to a mooring.

It is important for the Authority to ensure unauthorised movement of moorings does not compromise anchorage areas and that the needs of anchoring vessel-based visitors can be met.

During busy periods, competition for anchorage sites results in overloading. Under these circumstances anchors can end up located under other vessels, restricting ability to leave. Often vessels have differing lengths of chain deployed so even though all vessels may ride well under the existing or prevailing wind, tangles and collisions may occur with changes in wind direction. Where mooring areas adjoin an anchorage, vessels often encroach into the 50 metre exclusion zone, or obstruct access to moorings, which is contrary to regulations. Entanglement in ground chains is common in these circumstances.

There have been requests to regulate vessel access to anchorages, particularly at Longreach Bay where most complaints occur. The Authority has preferred to manage anchorage activity through education and awareness, rather than introducing new regulations and controls, and has enhanced Ranger patrol presence during busy periods.

In 2010 the Authority identified a number of popular dive sites within the Reserve that had been subject to anchor damage.

Beach anchoring is popular with vessels under 7.5 meters, but is prohibited in Thomson, Geordie and Longreach Bays where permitted anchor areas have been designated in accordance with Regulations.

Seventeen beach anchoring points were installed in 2010 in Thomson Bay between the Fuel and Hotel Jetties. This system has proven popular and reduced the risk of injury to pedestrians. The system also self regulates the area to avoid overcrowding and ensures safe anchoring practices. Further beach anchoring points are planned for Geordie and Longreach Bays.

Management consideration:

- Beach anchoring points have proven to provide a safe and secure means for securing vessel less than 7.5 metres on the beach without jeopardising pedestrian or vessel safety. There is potential to manage numbers by installing beach anchoring points in Geordie and Longreach Bays in an attempt to welcome more of the WA boating community to Rottnest Island.
Seventeen beach anchoring points were installed in 2010 in Thomson Bay between the Fuel and Hotel Jetties.
3.4 Shared facilities

3.4.1 Ablutions

In the 2012 Boating Survey, 84% of boating visitors rated the importance of toilets and shower facilities compared with other facilities and only 33% were dissatisfied with current facilities.

Public toilets and showers are easily accessible in Narrow Neck, Stark Bay, Geordie Bay, Longreach Bay, Thomson Bay, Parker Point and Green Island. These facilities operate independently of the Island’s scheme water and power supply.

In 2011 Parker Point Toilets were upgraded to an innovative new facility using a Microflush Hybrid System with closed-circuit flush water and nil ground discharge. This system was determined to be most suitable for use in a highly sensitive environment with high visitation levels and utilises a combination of wind turbine and solar power technologies. The hard wearing decking was made from low maintenance and highly durable 100% post-consumer recycled plastic planking.

There have been calls from the public to duplicate these facilities in all bays where moorings are installed. There are distinct environmental and some social benefits from these facilities. However, they represent a capital investment of over $500,000 per facility in addition to operating expenses.

3.4.2 Fuel Supplies

Unleaded, premium unleaded and diesel fuel is available from the Fuel Jetty via a self-dispensing credit card system. The fuel dispensing system has recently been upgraded enabling an extension to operating hours.

The central fuel depot has the capacity to hold 34,800 litres of unleaded and 5,200 litres of diesel. This is adequate to meet current demand, which is typically for top up or emergency supply, rather than total tank refills. Bulk fuel deliveries to the Island are made by tanker truck approximately once a week, depending on seasonal demand.

In the 2012 Boating Survey, 70% of boating visitors indicated the importance of available fuel only 26% of those visitors was dissatisfied with the current situation.

3.4.3 Potable Water

Potable water is available from Geordie Bay Jetty and the Fuel Jetty. Nearly all boats with a capacity for overnight stays have the ability to carry water, and vessel owners are encouraged to fill water tanks prior to departing the mainland to lessen the drain on the Island’s water supply.

Potable water is a limited resource on the Island and is purified to Health Department standards. Potable water on the Island costs approximately three times that of the mainland.
Seventy four percent of boating visitors in the most recent survey (TNS, 2012) rate the importance of potable water compared with other facilities. Forty percent of those visitors were dissatisfied with the current facilities.

Current demand for potable water exceeds supply. Increased visitation results in a corresponding increase in water demand. The Authority continues to investigate ways to recycle water and increase water production capacity via the desalination plant. However, these processes are expensive, with current production costs at five dollars per kilolitre.

Should the capacity increase the Authority can scope the cost of installing high volume water delivery systems in Geordie and Thomson Bays on a user pay basis.

### 3.4.4 Sullage Disposal

The Rottnest Island Regulations define the term sullage as liquid waste from bathrooms, laundries, galleys, floor waste, faecal matter, urine and any waste composed wholly or in part of liquid. The discharge of sullage within the Reserve is prohibited unless it has been treated by an approved treatment system.

The management of sewage discharge from vessels is an important precautionary measure to protect marine users and maintain the ecological values of the marine environment. The Authority is leading other agencies in regards to legislating sullage discharge. Under more relaxed sullage regulations in the past, there were occasions where water samples from the Reserve exceeded ANZECC guidelines for primary contact due to faecal bacterial contamination.

Some vessels have an on board toilet, and a holding tank for later disposal. On-board toilets that pump straight into the water (with or without treatment) are unacceptable, and there are no available treatment systems approved by the Department of Health.

The alternative is to use shore based ablution facilities described in the previous section, although there are practical limitations associated with accessing shore based ablutions at certain times.

The Island’s waste system caters for terrestrial activities and is not suitable for vessel disposal, which carries additional chemicals that are detrimental if untreated before being added.

Sullage holding tanks are the only way to be sure that effective toilet waste practices are being undertaken. Nearly all new manufactured vessels over nine metres (released in Australia or imported) have holding tanks installed. However, retrofitting holding tanks to older vessels is expensive and may be prohibitive by their design.

The Authority encourages vessel owners to use mainland pump out facilities where possible. Approaches to collect vessel waste from holding tanks, ranging from a mobile to a traditional pump out facility have been investigated by the Authority. A fixed pump out facility would be the most cost effective approach. However, this may need to be considered especially within the consideration of a marina facility and will incur a capital set up cost of approximately $500,000.

These high setup costs are based on a pre-treatment plant, as the Authority waste processing plant cannot process chemicals associated with on board toilets or saltwater.

Forty nine percent of boating visitors (TNS, 2012) indicated sullage was important compared with other facilities with 27% dissatisfied with current facilities.
3.4.5 Rubbish

The Department of the Environment & Heritage in 2003 identified debris as one of the key treating processes to marine habitats and organisms in Australia especially to threatened or endangered species. With visitation rates in excess of 500,000 people per year, the management of human-generated waste is an important issue for the Authority. While many strategies have already been implemented to deal with marine debris, rubbish remains an issue.

Boat owners are encouraged to take rubbish back to the mainland for disposal. In addition, the Authority provides shore based rubbish receptacles across the Island. Rubbish collected is compacted and returned to the mainland at considerable expense.

A survey undertaken by Southern Cross University and Earthwatch Institute Australia between 27 February and 3 March 2012 at sixteen sites around Rottnest Island predicted at the outset that the majority of debris would be found adjacent to areas of concentrated human populations.

However, this was not always the case. Bays that were adjacent to accommodation contained rubbish loads that were substantially lower than those found on the southern and northern-western beaches. These more remote beaches contained items that had been washed in, mostly fragments of larger items such as craypots, glass bottles and wooden pallets.

It is a concern to the Authority as rubbish is not only unsightly, but also poses a threat to the marine and terrestrial environment and it has resulted in a number of serious injuries to people. In particular there have been a number of cases where people have waded ashore and suffered severe lacerations to their feet from broken bottles.

The Authority is committed to the collection of rubbish and litter, and pursues community education and awareness programs on this matter.

Management Considerations:

- Illegal and inappropriate sullage disposal presents as significant threat to the marine environment of Rottnest Island.
- In the absence of pump out facilities on the Island, the installation of sullage holding tanks on vessels is the most effective management tool.
- Ensuring the supply of an adequate number of conveniently located shore based ablutions for boat users will assist to minimise illegal and inappropriate sullage disposal into the marine waters of Rottnest Island.
- There is an inconsistency in the management of sullage disposal among government entities such as the Department of Transport and Swan River Trust.
- The Authority is committed to the collection of rubbish and litter, and pursues community education and awareness programs on this matter.
- Marine Rangers need to assist in creating an enjoyable and safe experience for all visitors and also to protect the marine and terrestrial environment. Penalties and fines will be considered for inappropriate waste disposal, littering, pollution and unreasonable emissions.
The Authority is committed to the collection of rubbish and litter, and pursues community education and awareness programs on this matter.
3.5 Ferry Operations

There are currently three ferry operators carrying passengers to and from Rottnest Island. Two operate from Fremantle and one from Hillarys. Only one ferry operator has the capacity to operate 365 days of the year subject to weather conditions. There is no exclusivity for ferry operations to Rottnest Island.

Ferry operations are governed by Authority policy, requiring operators to submit timetables for approval as part of the granting of a ferry licence (under the Transport Co-ordination Act 1966). Based on the approved timetable, berthing times placement on the Main Jetty are allocated. The Authority welcomes competition in the area of ferry services on the condition that any ferry service is suitably licenced and is prepared to operate an all year round service.

All ferries must berth at the Main Jetty, and there is presently no alternative entry point for ferries should the Main Jetty become inoperative. While the Authority is required to manage the Main Jetty, there is an absence of supporting legislation to allow the Authority to manage the movement, behaviour or the manner in which any vessels uses Main Jetty.

3.6 Barge Operations

One bulk cargo transport service operates the roll-on, roll-off barge vessel the ‘Spinifex’. This vessel operates between the Fremantle Fishing Boat Harbour and the Main Wharf at Rottnest. Delivery is completed by barge staff, with fees incorporated into transportation expenses. The barge service runs daily all year round subject to weather conditions and a short period of time when the barge goes into dry dock for maintenance. No operator has exclusivity to this service.

Smaller cargo is brought to the Island by passenger ferry, attracting additional delivery costs by contractors.

The barge service performs an important infrastructure support function to the Island and business community. Transport costs are a significant element of business operating costs and affect the ability to offer reasonable products and services to the public. The barge service to Rottnest is not licensed by the RIA and operates on an open market. Other operators can provide a similar service if required.

The location of the barge loading area at the Main Jetty impacts on visitor experience as it creates noise, detracts visually and increases the risk of injury due to traffic movement. An alternative, which would separate these activities and reduce user conflict, would be to relocate the barge loading area to the Army Jetty, together with a realignment of the access road to take bulk cargo behind accommodation. However, the Army Jetty loading ramp does experience significant swell and surge from the north, restricting safe use of the jetty at certain times and the current loading ramp is not ideal for a roll on roll off facility. (See Figure 9)

Management Consideration:

- Ferry operations are critical to Island operations. There is presently no alternative entry point for ferries should the Main Jetty become inoperative.

Management Consideration:

- Current arrangements for barge operations present noise, safety and amenity issues for visitors arriving by ferry. Further consideration of a suitable location for barge operations is required in the context of the overall boating and Island infrastructure requirements and planning.
3.7 Charter Operators

Charter vessels bring visitors to the Island. Most charter vessels are smaller than ferries, with a passenger capacity of less than 50 people. The majority of charter vessels are day operators, as most are not fitted with live aboard facilities. Currently there are two charter operators operating from the Island, with the remainder operating from the mainland.

Any charter vessel carrying fare-paying passengers are lawfully required to be licenced through the Department of Transport as a Surveyed Passenger Vessel (SPV). Licence approvals for SPV’s are subject to design and safety standards for the vessels. Charter operations involving diving, fishing, or any other wildlife interaction are also subject to licensing through the Department of Conservation and Environment and the Department of Fisheries. Human interaction with wildlife is controlled through the Wildlife Conservation Act 1950 and administered by the Department of Parks & Wildlife.

Charter operations at Rottnest fall into several general categories:

- Passenger transport to the Island.
- Social functions to Rottnest bays, which may involve the landing of passengers. These are most common in the months of December and January.
- Dive charters. These occur on most days, and usually involve passive observation. They may also engage in extractive activities such as rock lobster fishing.
- Fishing charters, which, while visiting Island waters, rarely engage in fishing activities within the Reserve. If fishing charters do visit the Island, it is usually a result of winds causing an early cessation of offshore fishing and the vessel seeks shelter in a protected bay for a barbecue. It is rare that fishing charters land their passengers on the Island.

Many are members of the Charter Vessels Association, providing a contact point between the Authority and the charter vessel industry.

Charter operators whose principal activity is fishing or diving and are registered with the Authority can take advantage of concessional fees. Charter Operators are seeking to broaden the activity classification to include “tour” when no passenger comes ashore and if they do they are required to remit full admission fees.

All Charter Operators entering the boundaries of the Reserve are requested to register with the Authority via a telephone logon system. This logon system records the vessels, operator, passengers onboard and purpose for accounting purposes.

There are limited exclusive facilities to offer charter boat operators and they must compete with private vessels for jetty berthing positions. At times this causes conflict and reflects poorly on the charter operator.

Management Consideration:

- Charter operators offer an important dimension to the visitor facilities and experience. Charter operations can be made more attractive and flexible by providing conditions to encourage visits to the Island’s attractions and businesses.
4. Other Management Considerations

4.1 Safety and Hazard Management

Ocean boating activities can be hazardous with injury and loss of vessels an ever-present risk. The waters around Rottnest are hazardous, with a significant number of marine incidents occurring in the past. The most common relate to vessels striking reefs, running aground or being holed. Failure of unattended moorings in winter storms is not uncommon and has also occurred during conditions approaching or exceeding wind limits. Other incidents include swimmers being struck by vessels, vessel collisions, diving accidents, and tenders drifting off.

The Department of Transport is responsible for the maintenance and improvement of navigation aids within the Reserve. Over the past three years, upgrades to night time navigation aids in the approaches to Thomson and Geordie Bays have occurred. Further upgrades are also planned for northern anchorages. The Department of Transport is also the lead agency for pollution control with a dedicated team to address oil spills. The Authority’s Rangers have a role as first responders to contain any minor pollution spills.

As the occupier of a popular marine reserve and an agency that charges for use of marine facilities, the Authority can be exposed to claims from people who may have misadventure. Riskcover is a government insurance agency that covers the Authority for all claims made.

Some incidents have resulted in claims against the Authority and other agencies. The Authority is required to control financial risks and facilitate visitor safety, even though the Island and waters are a largely uncontrolled natural area with commensurate hazards. The Authority as the occupier of the Island has significant legal obligations under the Occupiers Liability Act 1985, particularly in relation to the circumstances of entry to the Island. Obligations under the Fair Trading Act 1987 also apply to the Authority where products or services such as marine rental facilities are provided to visitors for a fee.

As long as relevant fees have been paid there are no exclusions for any types of vessels to enter the Marine Reserve. The only limitation imposed is geographical structure of the sea floor, which may limit a vessel’s ability to have sufficient draft clearance. This coupled with vessel’s specifications and the Masters skills may restrict where a vessel may go. Skippers are considered to be the master of the vessel and are responsible for the safe and prudent navigation of the vessel. This obligation applies whether under way, anchored or attached to a mooring.
The Hazard Management Authority for Sea Search and Rescue in Western Australia is the Western Australian Police. In the metropolitan area, the Western Australian Water Police fulfil this role and provide co-ordination for more complex search and rescue operations in regional police districts. The Western Australia Water Police work closely with, and provide support to other government agencies and community groups such as the Department of Transport Marine Division, Rescue Coordination Centre (RCC) Australia, Fire and Emergency Services Authority of Western Australia (FESA), Department of Fisheries, the Department of Parks & Wildlife, the Swan River Trust, Australian Customs Service, Rottnest Island Authority, Fremantle, Cockburn and Hillarys Sea Rescue Groups.

The Authority relies on all staff, particularly Rangers, to identify hazards and patterns of use that may pose risk to visitors. Potential risks are entered into the Authority’s risk register to obtain a priority rating and determine risk mitigation strategies.

Having systems to identify, minimise and mitigate visitor risk are an obligation for a management agency. In 1996 the Authority sought and obtained comprehensive advice on controlling risk in relation to the management of moorings from Phillips Fox Solicitors. The resultant risk management report highlighted that the Authority had significant obligations to ensure due care to minimise risks with both recreational and rental moorings.

While circumstances of mooring use have changed with regard to Authorised Users this document and subsequent clarifications should guide the Authority in the absence of advice to the contrary. In the case of recreational moorings, liability is directed to the commercial mooring contractors who inspect, maintain and certify moorings, and to Licensees who own the mooring gear and have legal obligations to maintain the mooring site.

The Authority has already developed and implemented measures to limit the liability risk relating to mooring use. Control measures include ensuring proper installation and maintenance of recreational moorings; clearly stipulating the conditions of use; displaying warnings and load limits on mooring buoys; and ensuring the proper and careful wording of liability disclaimers. The Authority could also develop an on-line induction for all skippers wishing to enter the Reserve.
4. OTHER MANAGEMENT CONSIDERATIONS

4.2 Insurance

The Authority requires adequate insurance cover (based on length) on all vessels entering the Reserve. Vessels less than 6.4 metres must have $5 million third party legal liability, and vessels greater than 6.4 metres must have $10 million third party legal liability coverage. However, registration with the Authority is the only mechanism available to verify vessel insurance cover and in the event of litigation the onus is still entirely the skipper’s responsibility.

There has been several significant boating issues in the last 5 years resulting in vessel damage, risk of life and environmental issues. The likelihood of a mooring failure resulting from such severe consequences always exists, but it is considered to be a very low level of risk. There is currently no requirement for Licensees to hold insurance cover for mooring failure. The responsibility for which rests with the relevant mooring contractor. The insurance of mooring infrastructure is cost prohibitive for individual owners. Initial discussions with insurance underwriters indicate that any policy would have to encompass all moorings not individuals, suggesting the Authority would need to hold a mooring insurance policy. However, as the government insurer, Riskcover will not insure private property under the control of another person. Riskcover does provide cover to the Authority for claims against the failure or damage to marine hire facilities.

Over time, new legal determinations can affect liability, and it would be prudent for the Authority to undertake a review of its insurance liabilities with regards to marine activities.

The Authority does not retain records of damage to private moorings. Typical reported damage to moorings involves damage to pickup ropes, or the occasional mooring buoy being run over and destroyed. Price of replacing a pickup rope averages about $400 and a replacement mooring buoy $700.

Management consideration:

- The Authority’s legal obligations and liability with regards to marine activities can be subject to change over time, with a corresponding risk of exposure to litigation that must be managed.

4.3 Compliance and education activities

Education programs are delivered by the Authority via publications, face to face conversations, signage, newsletters and visitor tours. A team of four Rangers operate at the coalface of this education and compliance.

While the majority of the boating community are committed to responsible and safe boating activities, there are a small component that challenges expectations and requirements. This is at the detriment of safe boating practices, the potential enjoyment of other users, and at the expense of management resources, which could be otherwise allocated.

The enforcement of boating regulations is the responsibility of the Department of Transport, who in 2003 entered into a Memorandum of Understanding with the Department of Fisheries with regards to vessel safety and compliance around Rottnest Island. However, the limited presence of these departments within the Reserve and the public’s expectation of a response, have resulted in pressure for Authority Rangers to bear additional responsibilities.

With regards to on-water patrols, a large proportion of time is spent by Rangers educating boat owners in correct mooring use; detecting illegal mooring activity; revenue evasion and charter vessel compliance. With the development of remote video linkages technology it may be possible to video monitor outer bays from the settlement to track vessel usage and provide greater overall security.
Rangers are in many cases the first point of contact and their skills can defuse or minimise any potential issue that may escalate if handled incorrectly.

The Authority previously trialed the “Honorary Bay Ranger” and later “Bay Host” programs that identified boat owners with local knowledge of a particular bay and upheld the Authority’s values. The Authority considers that there may be value in reintroducing a similar program again in the future, based on the opportunity to extend a new approach to education that will encourage participation in marine management and care to the general boating community through self regulation.

The Authority has developed a compliance plan to address breaches of the Regulations. This incorporates all aspects of marine application and includes education, enforcement, infringement system, application, and penalties against the individual and or vessel. The plan also includes a three tier offence matrix and appropriate response.

Management considerations:

- Marine rangers need to ensure that Rottnest Island is a welcoming and safe environment for all of the boating community for this reason. Marine rangers need to be supported by legislation to meet responsibilities and community expectations.
- Community on-water volunteer programs offer the opportunity to educate, self-regulate, and enhance boating management services.
5. The Boating Management Strategy

5.1 Vision

The RIMP (2009-14) includes an initiative (Initiative 3) to:

Develop a 20 year vision for Rottnest Island that is founded on preserving the key values that attract people now – outstanding scenery, and environment where visitors can relax and enjoy walking and riding bicycles, boating and other recreational experiences.

As a sub-strategy of the RIMP, the BMS adopts this same vision, and will ensure its initiatives and actions work towards preserving the key values that attract people to Rottnest Island.

5.2 Guiding Principles

The RIMP (2009-14) sets out the following principles to guide all policies, planning decisions and operation of the Authority and its partners. Future proposals are to be tested against these principles to make sure there is a good fit. The initiatives and actions of the BMS have been developed with these positive principles in mind:

- Providing friendly and welcoming customer service will be the paramount focus for Rottnest Island services and facilities.
- Recreation and holiday opportunities for all aspects of boating will be appropriate to the environment and encourage stakeholder expectations.
- The Rottnest Island terrestrial and marine environment will be protected and enhanced to safeguard the landscape and the diverse plant and animal life.
- The sense of escape, discovery and sanctuary as well as the education about and enjoyment of the natural environment will be encouraged.
- Cultural and social heritage will be protected and interpreted to add depth and understanding to the visitor experience.
- Innovative education, interpretation and visitor experiences will be based on the principles of ethical tourism, environmental education, nature conservation and respect for cultural values.
- Fostering appropriate and safe events, activities and experiences and imposing strong controls on anti-social behaviour will encourage family oriented social and healthy participation.

5.3 Management options

Approaches available to the Authority to respond to boating management issues fall in the following categories:

- Infrastructure and facility upgrades and additions;
- Legislative changes;
- Behavioural changes, education and enforcement;
- Research and monitoring; and
- Amendments to management systems.

5.3.1 Infrastructure and facility upgrades and additions

A number of the identified boating management issues highlight the need to upgrade existing infrastructure and facilities, as well as the introduction of new facilities. Appropriate investment in infrastructure enables the Authority to responsibly manage marine based activities, and have the capacity to respond to growing requirements and demands.

In many instances, the capital cost of current facility upgrades and new additions would be in excess of the Authority’s ability to generate revenue from its Island activities. The Authority would therefore need to apply for special budget allocations from government and other funding sources. In addition, the on-going maintenance expenses of any new facilities would need to be incorporated into the Authority’s future operating budget.

For these reasons, it is important the Authority is able to adequately quantify the resulting community and environmental benefit of proposed additional facilities based on the explicit expectation generated from analysis of survey data and sound financial forecasting.

Availability of facilities will never be able to match demand for facilities in peak summer months. The Island’s capacity for boat access and it’s limits must be identified and quantified.
Develop a 20 year vision for Rottnest Island that is founded on preserving the key values that attract people now – outstanding scenery, and environment where visitors can relax and enjoy walking and riding bicycles, boating and other recreational experiences.
The installation of a marina

The RIMP specifically set a task for the BMS to give consideration to a feasibility study for development of a marina for commercial vessels in the vicinity of the Army Jetty. Also a multi-purpose marina at Rottnest Island provides an opportunity to address a number of the management issues identified by this strategy in the one balanced marina complex. They include:

**The need to cater for more boats**

There is already a strong demand for access to appropriate moorings from a greater number and a wider range of predominantly larger vessels. With boat ownership predicted to grow faster than the rate of population growth in the Perth metropolitan region, more flexible work patterns and the need to spread the shoulders of seasonal demand, the Authority will be under increasing pressure to address changes in demand from these customers. A marina would be able to accommodate a greater number of vessels in a smaller overall area with less spatial and environmental impacts than the existing system of swing moorings.

The only mooring bay with any opportunity to introduce additional installation of moorings is South Thomson Bay, in the area that is currently a popular anchorage.

Beyond this, the development of new mooring areas is contrary to the perceived marine aesthetic values of mooring free bays, and would not offer adequate protection in extreme weather, thereby failing to meet the needs of users.

**The need to accommodate larger vessels**

The current trend towards ownership of larger boats in Western Australia will continue. Under the current mooring configuration, there is little scope to provide for larger vessels without reducing the overall number of swing moorings in mooring bays. A marina would safely accommodate a wide variety of boat sizes for example, from 5 metres to 25 metres, and also provide facilities to charter vessels that are currently not specifically catered for.

**Improved vessel protection and access for smaller vessels**

A marina can be designed to offer greater protection for vessels in a wider range of weather conditions than current jetties and swing moorings. Aside from the advantages for users, this may result in people choosing to undertake travel at other times of the year and extend Rottnest’s ‘peak’ boating season. It could also encourage smaller vessels to stay overnight or extend stays within the Reserve in a protected location. Access to the Island by dinghy is often hazardous, can restrict people to their boats. Dinghies cause some issues while on beaches.

**An alternative commercial entry point to the Island**

At present there is no emergency alternative to the Main Jetty for passenger ferries and barges. This was previously the Army Jetty, however, in its current condition this is no longer possible nor safe.

**Separation of commercial users**

A number of user conflicts have been identified at the Main Jetty, which caters for passenger ferries and associated cargo, as well as the barges. Relocation of barge activity (for example to a marina facility) would eliminate the conflict between ferry passengers and barge cargo, it may also open up space for point of entry business opportunities for the Island, eg. hire facilities.

**Provision of boating facilities, including sullage disposal**

Although recognised as an important environmental requirement, the introduction of sullage facilities to the Island is likely to be cost prohibitive. Incorporating sullage facilities at the time of marina construction is anticipated to be the most cost effective method of offering these facilities. It would also present an opportunity to incorporate and upgrade fuel and water facilities.

In addition, a marina must be designed to be attractive to all types of commercial charter operators as a base to operate from, which would offer a greater range of activities for Island visitors. Consultation with the charter businesses at an early stage is essential to allow potential business access and capital investment.
It should be recognised that the concept of a marina for Rottnest Island is not new. It was first proposed in the original management plan for Rottnest Island in 1985. At this time, the proposal included a land based development consisting of 100 rooms, a 300 seat function centre, 50 serviced apartments and included a 200 pen marina. At that time there was strong community opposition and the proposal did not proceed. However in the most recent Survey of the boating community (TNS, 2012) just over half (53%) of respondents indicated their support for a marina with 38% not in favour and 8% indicating no preference. Thomson Bay (54%) was the preferred location, and the majority (68%) of those in favour indicated available power and water was essential for marina pens.

It is recognised that the decision to pursue a marina for Rottnest Island is significant both in capital outlay and operating costs, and in ensuring a facility that is compatible with the environmental and social values of the Island. Given the ability of such a facility to address future infrastructure issues, while also providing additional recreational and visitor experiences, further exploration by the Authority is warranted. For this reason, a number of detailed feasibility studies have been identified and commenced in order to guide any decisions about such a facility.

These studies include:

- A process of site selection against established criteria;
- investigation into construction and staging options;
- financial modelling which assesses the size; viability; type of activity, including retail and commercial components; and a further analysis of demand, which is currently highly seasonal (annual and weekly);
- environmental, geotechnical and demographic effects, including coastal processes, effects on sea grass and visual compatibility;
- social issues, including aesthetics and landscaping; and
- acceptance by all Island users.

These progressively staged studies will inform the Authority and the State government about the appropriateness, viability and scale of any proposed the marina.
5. THE BOATING MANAGEMENT STRATEGY CONTINUED

5.3.2 Legislative changes

The Rottnest Island Authority needs to create a safe and welcoming environment for the entire boating community.

Changes to RIA legislation may be required to ensure the Authority has sufficient powers to effectively manage boating activity on the Island. The RIMP recognised the need to review the Rottnest Island Authority Act 1987 (Initiative 1). There are a number of issues identified in this BMS that should be incorporated into this review. A major concern is the current Regulations refer to identifying the person when a breach occurs. Other state legislation places the onus on the owner to identify the responsible person otherwise they are held responsible.

5.3.3 Behavioural change and enforcement

The Authority engages in a wide range of marine education and awareness raising initiatives, communicated through publications such as the Marine and Boating Guide, the Rotto Marine News, as well as stakeholder meetings as required. Providing users with adequate information to understand the implications of their actions on others and on the Reserve is an effective process, which can result in self-regulation and personal “ownership” of positive outcomes. Resources allocated to behavioural change can in turn reduce the resources needed for compliance and enforcement and improve visitors holiday experience.

5.3.4 Research and monitoring

Ongoing research and monitoring allows information on potential boating impact and the relationship of boating activities with the Island environment and values to be monitored. There are many instances where the Authority works in partnership with research institutions to build its understanding of the Rottnest environment, and the relationship between the environment and user activities.

Developing a clear list of research requirements and priorities provides opportunities to engage with research institutions and direct research into practical areas that will be of greatest benefit for management of the Reserve.

5.3.5 Operational reviews

The Authority has a number of booking and infrastructure allocation systems, the operational details of which are not currently supported by legislation. Reviews and amendments can deal with specific problems as and when they arise without requiring additional resources. For example, further amendments to on-line rental booking systems and the renewal process. A major investigation into refinements of online booking, induction and phone applications will be proposed as an urgent priority.
## 5.4 Considerations

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<tr>
<th>SUBJECT</th>
<th>MANAGEMENT CONSIDERATION</th>
<th>ACTIONS</th>
<th>RESPONSE TYPE</th>
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<tbody>
<tr>
<td>Planning framework</td>
<td>The actions and initiatives arising from the BMS will need to be compatible with the Authority’s other plans, policies and strategies, in particular the RIMP, environmental policy and risk register.</td>
<td>1. Ensure consistency between the Authority’s plans, policies and strategies, in particular the environmental policy and risk register.</td>
<td>Planning Framework</td>
</tr>
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<td></td>
<td></td>
<td>2. Investigate opportunities for new visitor experiences in accordance with the current and future RIMPs.</td>
<td>Planning Framework</td>
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<tr>
<td></td>
<td>Boating management should consider the identification and development of new visitor experiences.</td>
<td>3. Uphold the values of the marine environment in future marine boating responses.</td>
<td>Planning Framework</td>
</tr>
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<td></td>
<td>Boating management should uphold the identified values of the marine environment, including the retention of bays free of moorings and infrastructure.</td>
<td>4. Consider and respond to the impact of weather patterns on the demand for services throughout the year.</td>
<td>Planning Framework</td>
</tr>
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<td></td>
<td>Climate and weather patterns have a significant effect on seasonal boating activity and user requirements.</td>
<td>5. Respond to the growing demand for boating facilities within the Reserve by:</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td>Understanding boating visitors</td>
<td>Rottnest boating activity and the corresponding demand for facilities varies substantially across the week, with a marked rise in activity between Friday and Sunday. Rottnest boating activity is highly seasonal with peak periods correlating with summer months, and at is its maximum in the first few week of the calendar year.</td>
<td>a. Investigating feasibility studies into a marina facility that incorporates private pens as a possibility to meet demand from the boating community for protected stays; b. Upgrading the existing utilities and infrastructure;</td>
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<tr>
<td></td>
<td>Boat ownership in the Perth metropolitan region is growing at a rate faster than the expected rate of population growth, with a trend towards ownership of larger vessels. This growth will impact on visitation to Rottnest Island and the nature of future demand for facilities.</td>
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| Understanding boating visitors | Boating users visit Rottnest as a good place to relax and to go with friends and visitors. Reasons the boating community may not visit Rottnest include mooring costs, access and upkeep; the condition of shared facilities; and non-boating developments relative to other destinations. The boating community are divided in their views on the cost of moorings, with a similar proportion of boating visitors saying it is good or reasonable value for money (36%) as say it is poor value for money (38%). A high proportion of recent boating survey respondents are open to changes on Rottnest, while a quarter of respondents would like Rottnest to remain unchanged. Opinions about the idea of the Authority assuming ownership of all moorings were divided (43% for, 44% against). Similar mixed views were apparent about a comprehensive marina style development (53% for, 38% against). | 6. Ensure management approaches:  
   a. Retain experiences highly valued by boating visitors;  
   b. Investigate the impact of changes on future decisions to visit the Island; and  
   c. Seek opportunities to keep visitor costs as reasonable as possible.  
7. Pursue surveys of the boating community at regular intervals to identify and monitor views and expectations with regards to Rottnest Island Reserve. – Boating Community will be included in annual satisfaction surveys.  
8. Investigate the implementation of an electronic monitoring system to accurately record vessels entering the Reserve and vessel movement. | Infrastructure upgrades/additions  
Research and Monitoring |
| Jetties and Pens | The Main, Army and Stark jetties have current outstanding and ongoing maintenance issues which need to be addressed to ensure their ongoing structural integrity, requiring substantial investment. | 9. Main Jetty – work in collaboration with the Department of Transport to ensure the structural integrity of all jetty structures is maintained and to develop a costed, prioritised asset maintenance register for all Island jetties.  
10. Work in collaboration with the Department of Transport to ensure the maintenance and upkeep of the Island’s jetties remain viable and maintain the integrity of the structures into the future.  
11. Review funding structures, including main jetty berthing fees to determine opportunities to match required maintenance budgets. | Infrastructure upgrades/additions |

5. THE BOATING MANAGEMENT STRATEGY CONTINUED
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### 5.4 Considerations

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<tbody>
<tr>
<td>Jetties and Pens</td>
<td>There are a number of structural improvements to the Main jetty which would improve efficiency, and assist in meeting peak demand and passenger safety. These include amendments to Berth four and cargo traffic or resiting these facilities elsewhere.</td>
<td>12. Work with the Department of Transport to provide for structural improvements to the Main Jetty including modification to Berth 5 to provide greater shelter to Berth 4 in adverse weather conditions, the installation of shelter for pedestrians and barriers to ensure passenger safety separation from cargo handling. Any changes to the Main Jetty should be considered if the barge facility is relocated.</td>
<td>Infrastructure upgrades/ additions</td>
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<td>13. Review, develop and implement instruments that ensure the Authority has adequate capacity to manage jetty users and improve overall jetty management.</td>
<td>Operational Review</td>
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<td></td>
<td>Ensure appropriate instruments are in place to enable the Authority to better manage jetty activity.</td>
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</tbody>
</table>
| Moorings         | Demand for mooring ownership has always exceeded current availability. Peak weekend, special events and prime holiday period demand exceeds availability under the current mooring management system. Under the current dispersed system of mooring ownership and management, it is not possible for the Authority to quantify the remaining capacity to accommodate additional users. There is therefore a strong reliance on the results of user surveys and feedback. Proposals to introduce additional moorings must be mindful of the need to retain the values of the marine environment and landscape. The current mooring ownership and management system present some equity issues:  
  - for authorised users gaining access;  
  - for Licensees to bear total costs whilst being required to share;  
  - and for the RIA in addressing compliance issues.                                                                                                                                                                                                                                                                                                                     | 14. Respond to the growing demand for boating facilities within the Reserve by:  
  a. Undertaking feasibility studies into a marina facility that incorporates private pens as a possibility to meet demand from the boating community for protected stays;  
  b. Continue to upgrade the existing utilities and infrastructure;  
  15. Examine the financial feasibility of offering a discount to Licensees where the Authority has appointed Authorised Users to their mooring.  
  16. Develop a single mooring operational policy to include:  
    a. Centre point relocations;  
    b. Casual Usage - off peak;  
    c. Mooring License swap between mooring areas;  
    d. Mooring standards;  
    e. Administration of the shared mooring system; and  
    f. Define the term “financial gain” as it applied to commercial vessels.  
  17. Publish a list of Licensees on the Authority website.                                                                                                                                                                                                                                                                                                                      | Infrastructure upgrades/ additions, Legislation, Operational review                                                                 |
### 5.4 Considerations

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>MANAGEMENT CONSIDERATION</th>
<th>ACTIONS</th>
<th>RESPONSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorings</td>
<td></td>
<td>18. Moorings licenses that are relinquished to the RIA will be considered as potential rental facilities based on size and demand.</td>
<td>Legislation</td>
</tr>
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<td>19. Consider the introduction of additional rental moorings in established bays.</td>
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<td>20. Review and potentially implement regulations on conformity of % joint ownership of a Licensee nominated vessel to be consistent with yacht clubs.</td>
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<td></td>
<td>The RIA must ensure that Mooring Contractors are operating to a minimum standard and “best-practice”.</td>
<td>21. Amend the Rottnest Island Regulations to license mooring contractors who operate within the Reserve by setting minimum standards for their operation.</td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22. Investigate the viability/ feasibility of the RIA managing all mooring maintenance and compliance. All costs associated with the maintenance will be spread proportionally across all vessel users.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There are a number of issues that need to be addressed in the hire mooring booking system.</td>
<td>23. Continue to monitor and review the Authority’s booking system for Hire Moorings and pens make ongoing amendments as required, including:</td>
<td>Research and monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. The introduction of an application for smart phone use;</td>
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<tr>
<td></td>
<td></td>
<td>b. Establishment of minimum boat length for hire moorings over 25 metres.</td>
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<td>24. On-line development to include:</td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. induction</td>
<td></td>
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<td></td>
<td></td>
<td>b. rental mooring availability checker;</td>
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<td></td>
<td></td>
<td>c. Licensee mooring rent back;</td>
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<td></td>
<td></td>
<td>d. Mooring ownerships list;</td>
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<td></td>
<td></td>
<td>e. Wait list position;</td>
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<tr>
<td></td>
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<td>f. Licensee’s wishing to swap, and.</td>
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<tr>
<td></td>
<td></td>
<td>g. webcam</td>
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<tr>
<td></td>
<td>The installation of additional courtesy moorings at popular locations within the Reserve such as Crystal Palace and Roe Reef dive sites, would offer environmental benefits and additional amenity for boating users.</td>
<td>25. Apply for external funding from the Recreational Boating Facilities Scheme for the installation of additional courtesy moorings at popular locations such as Crystal Palace and Roe Reef dive sites. Once installed, allocate resources for ongoing maintenance from the Authority’s operating budget.</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26. Develop and implement a rafting policy consistent with safe boat moorings practice. Rafting on a single anchor is restricted to a vessel plus one of equal or lesser size.</td>
<td></td>
</tr>
</tbody>
</table>
5. THE BOATING MANAGEMENT STRATEGY CONTINUED

5.4 Considerations

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>MANAGEMENT CONSIDERATION</th>
<th>ACTIONS</th>
<th>RESPONSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchoring</td>
<td>Beach anchoring points have proven to provide a safe and secure means for securing vessel less than 7.5 metres on the beach without jeopardising pedestrian or vessel safety. There is potential to install and manage numbers by installing beach anchoring points in Geordie and Longreach Bays.</td>
<td>27. Apply for external funding under the Recreational Boating Facilities Scheme for the installation and ongoing maintenance and inspections of beach anchoring points in Geordie and Longreach Bays.</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td>Sullage</td>
<td>Illegal and inappropriate sullage disposal presents as significant threat to the marine environment of Rottnest Island.</td>
<td>28. Monitor use of shore based ablutions across the Island and continue to seek feedback through future user surveys about the adequacy of these facilities.</td>
<td>Research and monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29. Continue to monitor water quality in mooring bays to assess pollutant levels, which may be attributable to illegal sullage disposal.</td>
<td>Research and monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30. Continue to assess the costs and options for introduction of sullage treatment and disposal mechanisms on the Island, including as a component of a future marina facility.</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td></td>
<td>In the absence of pump out facilities on the Island, the installation of sullage holding tanks on vessels is the most effective management tool.</td>
<td>31. Continue education and awareness of boating users about the importance of responsible disposal of sullage and general waste.</td>
<td>Education and enforcement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32. Examine financial feasibility of offering a discount to vessels with holding tanks or imposing a levee on vessels without holding tanks.</td>
<td>Operational reviews</td>
</tr>
<tr>
<td></td>
<td>Ensuring the supply of an adequate number of conveniently located shore based ablutions for boat users will assist to minimise illegal and inappropriate sullage disposal into the marine Reserve of Rottnest Island.</td>
<td>33. Continue to monitor the adequacy of shared shore based ablation facilities through user surveys and feedback.</td>
<td>Operational reviews</td>
</tr>
<tr>
<td></td>
<td>There is an inconsistency in the management of sullage disposal among government entities such as the Department of Transport and Swan River Trust.</td>
<td>34. Continue to engage with other regulators to identify and address conflicts and overlap between the Rottnest Island Regulations and other legislation with regards to sullage control.</td>
<td>Operational reviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35. As per Regulation 38C from the Rottnest Island Regulations 1988, Discharging or depositing sullage from a vessel other than by means of an approved treatment system will result in a $200 on the spot fine. The maximum penalty for a serious offense is $1000.</td>
<td>Operational reviews</td>
</tr>
</tbody>
</table>
### 5.4 Considerations

<table>
<thead>
<tr>
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<th>MANAGEMENT CONSIDERATION</th>
<th>ACTIONS</th>
<th>RESPONSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubbish</td>
<td>The Authority is committed to the collection of rubbish and litter, and pursues community education and awareness programs on collection and recycling.</td>
<td>36. Continue to engage the community on the importance of rubbish management through on-going community awareness campaigns.</td>
<td>Education and awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37. As per Regulation 60B from the Rottnest Island Regulations 1988, Authorised officers will penalise contractors/persons for inappropriate waste disposal, littering, pollution. Littering will result in a $200 on the spot fine. The maximum penalty for a serious offence is $1000.</td>
<td>Legislation</td>
</tr>
<tr>
<td>Ferry operators</td>
<td>Ferry operations are critical to Island operations. There is presently no alternative suitable entry point for ferries should the Main Jetty become inoperative.</td>
<td>38. Investigate options to secure an alternative location, possibly within a marina development for ferry operations should the Main Jetty become inoperative.</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td>Barge operations</td>
<td>Current arrangements for barge operations present noise, safety and amenity issues for visitors arriving by ferry. Further consideration of a suitable location for barge operations is required in the context of the overall boating and Island infrastructure requirements and planning.</td>
<td>39. Consider options for relocating barge loading facilities that reduce the negative noise, safety and amenity issues for visitors, and ensure efficient cargo movements for business activities, either through: a. Incorporation of barge activity into a marina facility. b. Changes to existing passenger controls on main jetty.</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td>Charter vessels</td>
<td>Charter operators offer an important dimension to the visitor facilities and experience. Charter operations can be made more attractive and flexible by providing conditions that encourage visits to the Island’s attractions and businesses.</td>
<td>40. Work with the charter industry to improve the operating environment for charter operators to provide additional visitor facilities and experiences.</td>
<td>Operational review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41. Work with charter vessel industry to review Regulation 7A(1)(b) to include “tour” and develop a new fee structure to benefit both parties.</td>
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<td></td>
<td>42. License all Charter Operators wanting to operate within the Reserve to ensure a “code of condition”.</td>
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</tr>
<tr>
<td>Insurance</td>
<td>The Authority’s legal obligations and liability with regards to marine activities can be subject to change over time, with a corresponding risk of exposure to litigation that must be managed.</td>
<td>43. Review the Authority’s legal liability associated with marine activities.</td>
<td>Operational review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44. Investigate the feasibility of a single mooring insurance policy to cover damage and accidents as a component of Licensee’s fees.</td>
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</tbody>
</table>
## 5.4 Considerations

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>MANAGEMENT CONSIDERATION</th>
<th>ACTIONS</th>
<th>RESPONSE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and compliance</td>
<td>Marine rangers need to be supported by all legislation to meet responsibilities and community expectations.</td>
<td>45. Amend the Rottnest Island Regulations to provide Rangers with adequate enforcement tools to manage non-compliance in the marine environment. eg. direct a vessel to leave the Reserve.</td>
<td>Legislation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>46. Develop a Marine Ranger “You’re welcome campaign.</td>
<td></td>
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<tr>
<td></td>
<td>Community on-water volunteer programs offer the opportunity to educate, self-regulate, and enhance boating management services.</td>
<td>47. Introduce Marine watch programme (part of e-watch) throughout the Reserve in consultation with RIA, WA police, industry groups and vessel owners.</td>
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<td>48. Develop an on-line training module to be available as part of the mooring licence renewal process.</td>
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<td></td>
<td>49. Amend the Rottnest Island Authority Act to allow “owner onus” to apply to all Regulations.</td>
<td>Legislation</td>
</tr>
<tr>
<td>Marina</td>
<td></td>
<td>50. Complete a detailed feasibility study to inform decisions about the merits of a marina facility within the Rottnest Reserve, that include:</td>
<td>Infrastructure upgrades/ additions</td>
</tr>
<tr>
<td></td>
<td>a. A site selection process against established criteria;</td>
<td>a. A site selection process against established criteria;</td>
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<td></td>
<td>b. Construction options;</td>
<td>b. Construction options;</td>
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<td></td>
<td>c. Financial feasibility, including:</td>
<td>c. Financial feasibility, including:</td>
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<tr>
<td></td>
<td>i. size and viability;</td>
<td>i. size and viability;</td>
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<tr>
<td></td>
<td>ii. type of activity to be included including retail and commercial components; and</td>
<td>ii. type of activity to be included including retail and commercial components; and</td>
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<tr>
<td></td>
<td>iii. a further analysis of demand, which is currently highly seasonal (annual and weekly).</td>
<td>iii. a further analysis of demand, which is currently highly seasonal (annual and weekly).</td>
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<tr>
<td></td>
<td>d. Environmental impacts, including the impact on coastal processes, seabed and seagrass; and</td>
<td>d. Environmental impacts, including the impact on coastal processes, seabed and seagrass; and</td>
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</tr>
<tr>
<td></td>
<td>e. Social impacts, including aesthetics and landscapes.</td>
<td>e. Social impacts, including aesthetics and landscapes.</td>
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</tbody>
</table>

## 5.5 Implementation

Implementation of the BMS will rest with the General Manager Sales, Marketing and Product Development, working closely with stakeholders and other government agencies and statutory authorities. A considerable amount of work will be performed in-house and within current budget allocations. Where it has been identified that special funding is needed, the Authority will seek to secure and allocate funds on a priority basis. Special funding may become available through grants and government allocation. A time line over a three year period will be developed in consultation with internal and external stakeholders to implement these actions.
6. References

<table>
<thead>
<tr>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babcock, R.C., Phillips, J.C., Lourey, M., Clapin, G., 2007. Increased density, biomass and egg production in</td>
</tr>
<tr>
<td>an unfished population of Western Rock Lobster (Panulirus cygnus) at Rottnest Island, Western Australia.</td>
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<tr>
<td>for Rottnest Island Authority.</td>
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<tr>
<td>scientist-for-a-day program with Leighton Contractors’ (in prep). National Marine Science Centre, Southern Cross</td>
</tr>
<tr>
<td>University.</td>
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<tr>
<td>Rottnest Island Authority.</td>
</tr>
</tbody>
</table>
6. References

APPENDIX 1.
APPENDIX 2.

RIMP Legislative and policy framework

Key legislation impacting on Rottnest Island Authority activities.

Western Australian State Legislation
Aboriginal Heritage Act 1972
Aboriginal Heritage Regulations 1974
Auditor General Act 2006
Conservation and Land Management Act 1984
Contaminated Sites Act 2003
Disability Services Act 1993
Electricity Industry Act 2004
Energy Operators (Powers) Act 1979
Environmental Protection Act 1986
Equal Opportunity Act 1984
Financial Management Act 2006
Fines Penalties and Infringement Notices Enforcement Act 1994
Fish Resources Management Act 1994
Freedom of Information Act 1992
Government Employees Housing Act 1964
Health (Rottnest Island) By-laws 1989
Heritage of Western Australia Act 1990
Industrial Relations Act 1979
Jetties Act 1926
Liquor Licensing Act 1988
Marine and Harbours Act 1981
Maritime Archaeology Act 1973
Minimum Conditions of Employment Act 1993
Navigable Waters Regulations 1958
Occupational Safety and Health Act 1984
Occupiers’ Liability Act 1985
Public Interest Disclosure Act 2003
Public Sector Management Act 1994
Salaries and Allowances Act 1975
Soil and Land Conservation Act 1945
State Records Act 2000
State Supply Commission Act 1991
State Superannuation Act 2000
Statutory Corporations (Liability of Directors) Act 1996
Volunteers (Protection from Liability) Act 2002
Water Services Licensing Act 1995
Western Australian Marine Act 1982
Western Australian Tourism Commission Act 1983
Wildlife Conservation Act 1950
APPENDIX 3.

Rottnest Island Mooring Standard

When applying the formula below there are a number of other elements to be considered. Utilising a minimum separation of 20% of the vessel length appears to be in line with common practice worldwide. They are:

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>ABBREVIATION</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Buoys Swing Radius</td>
<td>BSR</td>
<td>The distance the mooring buoy can move from the centre point location in any horizontal direction at the lowest low water</td>
</tr>
<tr>
<td>Pickup Rope Length</td>
<td>PRL</td>
<td>The length of the rope from the point of attachment on the buoy to the end other end if laid flat</td>
</tr>
<tr>
<td>Maximum Swing Room</td>
<td>MSR</td>
<td>Least distance from the centre point of the mooring to the nearest mooring centre point</td>
</tr>
<tr>
<td>2 metres</td>
<td>2m</td>
<td>Error factor for Global Positioning System (GPS)</td>
</tr>
<tr>
<td>Maximum Vessel Length</td>
<td>MVL</td>
<td>The maximum vessel length permitted to be used on the mooring</td>
</tr>
</tbody>
</table>

The formula is used by the Authority and is:

$$MVL = \frac{(MSR - 2m - BSR - PRL)}{1.2}$$

The components described above are shown on the figure below.

Moorings overlap and rely on the weathervane effect to operate. There are rare occasions when wind, tide and vessel type disrupt this weathervane effect and the consequences are that vessels can collide. However any collisions are usually minor.