

# **Marine Estate Management Authority**

## **Social and economic background information report on the NSW marine estate**

**August 2015**



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## Executive Summary

The Marine Estate Management Act (MEM Act) requires the Marine Estate Management Authority (MEMA) to ensure that an assessment of threats and risks to the NSW marine estate is periodically carried out. This report provides background information on the economic and social benefits of the marine estate, and the threats to those benefits, to support the threat and risk assessments of the NSW marine estate, as well as to support a threat and risk assessment of the Hawkesbury Shelf marine bioregion.

The information contained in this report will be used by expert attendees of threat and risk workshops to attribute a risk ranking to each threat to the economic and social benefits of the NSW marine estate and the Hawkesbury Shelf marine bioregion. These rankings will then be used to identify overall risk levels and priorities for threat management actions.

The information contained in this report was compiled through a literature review, which included relevant data provided by a number of the MEMA agencies, including the NSW Department of Primary Industries, Transport for NSW and the Office of Environment and Heritage. The scope of work did not include any primary research, which means that there are information gaps where relevant data has not been located. These gaps have been noted in the report. In particular, limited information was available on social benefits and the threats to those benefits.

The report is divided into 16 activity categories, which together aim to cover all activities in and connected to the NSW marine estate. The report considers only the social and economic benefits (and risks to those benefits) of the activities in the marine estate. Separate reports have been completed on the environmental benefits of the marine estate and the threats to those benefits. In addition, a separate report has been completed on Aboriginal cultural and contemporary use benefits of the marine estate, and the threats to those benefits. As such, neither environmental benefits nor Aboriginal cultural and contemporary use benefits are covered in this report.

The quantified economic benefits identified in the report are derived from secondary sources and are provided only to give readers an indication of the relative values of the activities. They are not intended to identify the absolute economic value of the activities.

**Consequence and likelihood rankings have been assigned to the threats identified in this report. These rankings are based on the author's interpretation of the information and data sourced for each activity, and should be seen as a guide only for input into the threat and risk assessment workshops.** The final consequence and likelihood rankings, and an overall risk ranking (minimal, low, moderate or high), will be assigned through the threat and risk assessment workshops.

Based on the analysis contained in the report, **Water pollution / Litter and marine debris / Climate change** pose the greatest threat to the economic and social benefits of the marine estate and the Hawkesbury Shelf marine bioregion. This threat is (at minimum) **likely** to have a (at minimum) **moderate** impact on nine of the activity categories. Higher rankings also apply to this threat for some of the activities.

**Depleted fish stocks through overfishing** is likely to have a moderate impact on the economic and social benefits of recreational fishing and charter fishing, and a major impact on the economic and social benefits of commercial fishing activities.

**Limited access and storage infrastructure** is likely to have a moderate impact on the economic and social benefits of recreational boating and boat building activities.

Other threats are likely to have a moderate impact on only one activity. This includes:

- **loss of social licence** is likely to have a moderate impact on the economic and social benefits of cruise shipping activities;
- it is possible that the **availability of land and competing land use**, and likely that **landside congestion**, will have a moderate impact on the economic and social benefits of ports and shipping;
- **access rights** are likely to have a moderate impact on the economic and social benefits of commercial fishing; and
- it is possible that **pests and diseases**, and likely that **theft and black marketing**, will have a moderate impact on the economic and social benefits of aquaculture.

Some economic issues, such as an **economic downturn** or **increased fuel and other base costs**, and constraints such as **reduced land availability**, could have a moderate impact on the benefits arising from water transport services, retail and trade and maritime related activities. However, these threats may be outside of MEMA's ability to control, influence or manage.

Finally, it is noted that some social benefits are not well captured by the activity-based approach contained in this report. For example, the marine estate provides intrinsic and bequest values to the NSW community, as well as nationally and internationally. People want to know that the marine estate is there to enjoy both now and in the future, even if they do not visit it regularly. These types of social benefits should be taken into consideration in the overall ranking of threats.

## Introduction

This chapter provides an introduction to the report, its purpose and methodology.

### **Purpose, scope and structure of this report**

The MEM Act requires MEMA to ensure that an assessment of threats and risks to the marine estate is periodically carried out in order to:<sup>1</sup>

- identify the threats to the environmental, economic and social values<sup>2</sup> of the marine estate;
- assess the risks associated with the threats identified; and
- inform marine estate management decisions by prioritising those threats and risks according to the level of impact on the values derived from the marine estate.

A framework has been developed, the *Threat and Risk Assessment Framework for the NSW Marine Estate* (the framework), to guide the threat and risk assessment.<sup>3</sup>

MEMA is also required to oversee the development of a draft marine estate management strategy in accordance with the MEM Act. The threat and risk assessment(s) must be taken into account in the development of the strategy.<sup>4</sup>

In addition to overseeing the development of the strategy, MEMA is overseeing work to identify options to enhance marine biodiversity in the Hawkesbury Shelf marine bioregion. This work will also be informed by the threat and risk assessment undertaken in accordance with the MEM Act and the framework.

As part of the threat and risk assessment, expert workshops will be held to assign risk levels based on consequence and likelihood of threats to the benefits of the NSW marine estate, at both the state-wide and Hawkesbury Shelf marine bioregion scales.

This report provides background information to assist attendees of the threat and risk assessment workshops to identify and assign risk levels to threats to the economic and social benefits of activities in the marine estate. It documents the current economic and social values (termed 'benefits' or 'community benefits') of the NSW marine estate, and the key threats to those benefits. It also notes where the threats are of consideration in informing the Hawkesbury Shelf marine bioregion assessment.

The report was prepared through a literature review, which included relevant data and unpublished reports provided by MEMA agencies, including the NSW Department of Primary Industries, Transport for NSW and the Office of Environment and Heritage. It includes

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<sup>1</sup> MEM Act, s.20

<sup>2</sup> See the glossary of terms contained in Appendix B. This glossary is consistent with MEMA's glossary of terms, and includes a definition of 'social value'

<sup>3</sup> MEMA, 2015

<sup>4</sup> MEM Act, s.11

consideration of reports completed for MEMA, such as the Marine Estate Community Survey completed by Sweeney Research.<sup>5</sup>

Background reports are being prepared on Aboriginal cultural and contemporary use benefits and threats, and environmental benefits and threats, to inform the threat and risk workshops. As a result, these benefits (and the threats to the benefits) are not covered in this report.

### **The NSW marine estate and Hawkesbury Shelf marine bioregion**

The NSW marine estate extends along the NSW coastline, covering 1,500 km from Tweed Heads at the Queensland boarder to Nadgee at the Victorian Border. The estate covers around one million hectares of estuary and ocean. It extends seaward three nautical miles from the NSW coastline and includes the marine waters around Lord Howe Island. The Estate includes:

- ocean;
- estuaries;
- coastal wetlands (saltmarsh, mangroves, seagrass);
- coastline including beaches, dunes and headlands; and
- coastal lakes and lagoons connected to the ocean.

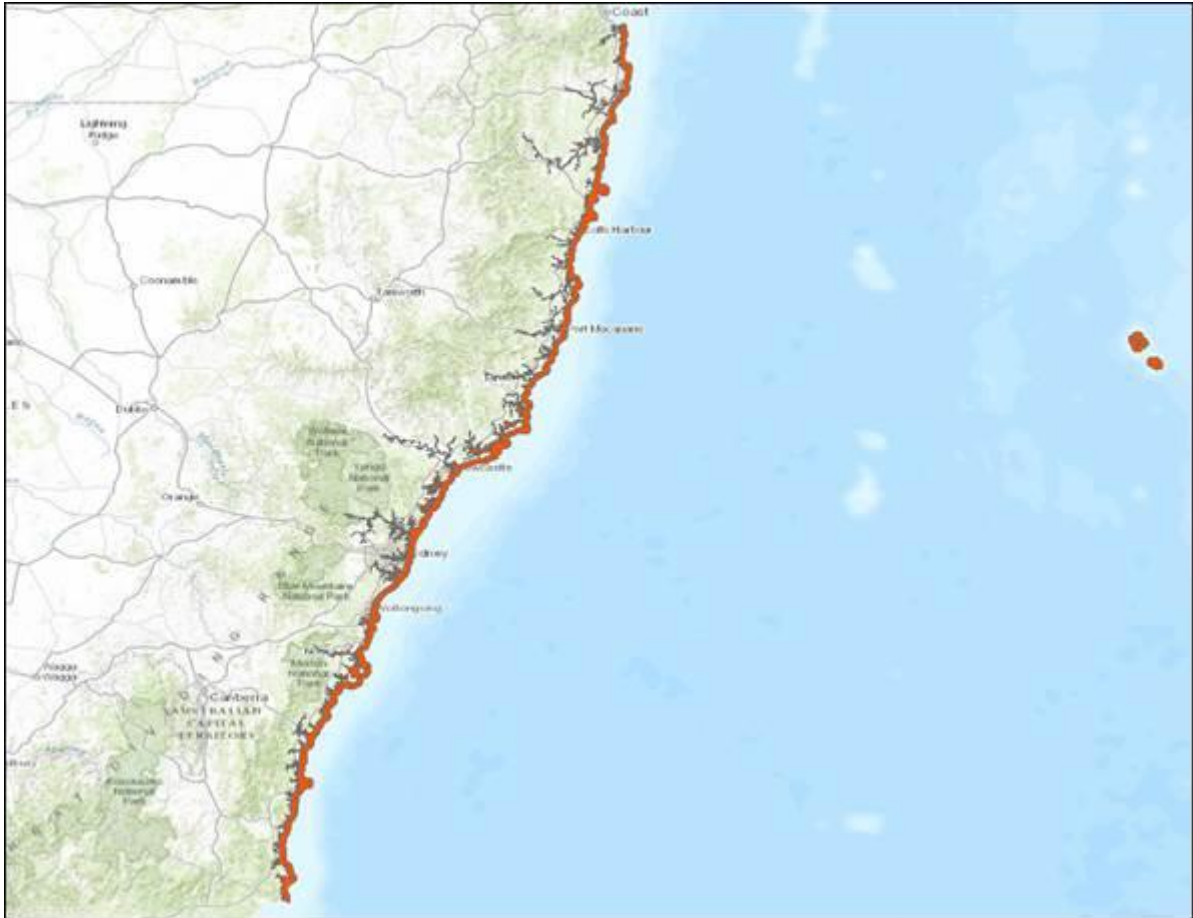
MEMA was established by the MEM Act to advise Ministers on the management of the marine estate, undertake assessments of threats and risks to the marine estate and prepare a draft Marine Estate Management Strategy.<sup>6</sup>

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<sup>5</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>6</sup> MEM Act, s.8

**Figure 1: Map of the NSW marine estate**



The marine estate includes the Hawkesbury Shelf marine bioregion, which covers the estuarine and State marine waters of Greater Sydney. The bioregion extends from Stockton in the north to Shellharbour in the south, as shown in the following map, and is one of two marine bioregions that encompass NSW State waters that does not currently have a marine park. It does, however, include 8 aquatic reserves.

Figure 2: Map of the Hawkesbury Shelf marine bioregion





## Methodology

This report groups the activities undertaken in the marine estate into 16 categories, including recreational activities, commercial and recreational boating and fishing activities, industrial activities such as ports and mining, tourism, retail and urban development. The 16 activity categories are summarised in Appendix A.

For each activity category, the report:

1. provides a description of the sub-activities which fall within the category. This includes where the sub-activity occurs and the extent (scale) of the sub-activity within the NSW marine estate, including its prominence in the Hawkesbury Shelf marine bioregion;
2. identifies trends in the scale or scope of the sub-activities. Indicators and trends which affect all activities in the marine estate are identified below;
3. identifies the economic benefits of the sub-activities. This includes estimates of the economic value of the benefits where such estimates are available;
4. identifies the social benefits of the sub-activities, including estimates of the quantified value of the social benefits where available;
5. identifies threats to the economic and social benefits of the activity, including information on the consequence and likelihood of such threats where this can be ascertained. The approach to assigning consequence and likelihood rankings is outlined below; and
6. notes key information gaps in the analysis (for example, where the scale of an activity in the NSW marine estate or Hawkesbury marine bioregion is not known, or the benefits, and / or threats of the activity have not been quantified).

### Consequence and likelihood of threats

Consistent with the *Threat and Risk Assessment Framework for the NSW marine estate*,<sup>7</sup> consequence and likelihood rankings are assigned in accordance with the following tables, based on the social and economic risk goals and objectives.

The rankings given to the threats in each activity chapter are based only on the author's interpretation of the information and data sourced for each activity, and should be seen as a guide only. The final consequence and likelihood rankings, and an overall risk ranking (minimal, low, moderate or high), have not been given to the threats as this analysis will be undertaken through the threat and risk assessment workshops.

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<sup>7</sup> Marine Estate Management Authority, 2015

**Table 1 Social objective and consequence rankings<sup>8</sup>**

*MEMA's overall socio-economic goal is to have a healthy coast and sea managed for the greatest wellbeing of the community, now and into the future. MEMA's social objective is to provide for recreational, cultural and social uses of the marine estate.*

Consequence level	Consequence of impacts on social benefits
<b>Insignificant</b>	No discernible negative impacts on social benefits are or will be evident at a state-wide scale or to regional communities
<b>Minor</b>	Barely discernible and/or temporary negative impacts are or will be evident on social benefits at a state-wide scale or to regional communities
<b>Moderate</b>	Measurable and ongoing negative impacts are or will be evident on social benefits enjoyed by the NSW community at a state-wide scale, or major negative impacts on the social benefits derived in one region
<b>Major</b>	Substantial measurable and ongoing negative impacts are or will be evident on social benefits enjoyed by communities in multiple regions or at a state-wide scale, or a catastrophic negative impact on social benefits at a regional level
<b>Catastrophic</b>	Substantial measurable on-going negative impacts on a very large proportion of the NSW community are or will be affected, and the long-term social benefits expected from the NSW marine estate are endangered either permanently or over the long term

**Table 2 Economic risk objective and consequence rankings<sup>9</sup>**

*MEMA's overall socio-economic goal is to have a healthy coast and sea managed for the greatest wellbeing of the community, now and into the future. MEMA's economic objective is to provide for economic values, uses and opportunities of the marine estate*

Consequence level	Consequence of impacts on economic benefits
<b>Insignificant</b>	No measurable negative impacts on economic benefits are or will be evident at a state-wide scale or to regional communities
<b>Minor</b>	Barely measurable and/or temporary negative impacts on the economic benefits at either a regional or up to the state-wide scale either are, or unlikely to be, evident
<b>Moderate</b>	Measurable and on-going negative impacts are or will be evident on the economic benefits enjoyed by the NSW community at a state-wide scale, or major negative impacts on the economic benefits derived in one region

<sup>8</sup> Goals, Objectives, Consequences and Likelihoods, NSW Marine Estate Threat and Risk Assessment, MEMA, 2015

<sup>9</sup> Ibid

Consequence level	Consequence of impacts on economic benefits
<b>Major</b>	Substantial measurable on-going negative impacts are or will be evident on the economic benefits enjoyed by communities in multiple regions or a state-wide scale, or a catastrophic negative impact on economic benefits at a regional level
<b>Catastrophic</b>	Substantial measurable on-going impacts are, or are almost certain to occur, at a level that would terminate delivery of the majority of economic benefits expected from the NSW marine estate either permanently or in the long term at a state-wide scale

**Table 3 Likelihood rankings<sup>10</sup>**

The likelihood ranking is assigned based on the likelihood of the consequence occurring.

Likelihood level	Likelihood of impacts
<b>Rare</b>	Never reported for this situation, but still plausible within the timeframe (< 5%)
<b>Unlikely</b>	Uncommon, but has been known to occur elsewhere. Expected to occur here only in specific circumstances within the timeframe (5-30%)
<b>Possible</b>	Some clear evidence exists to suggest this is possible in this situation within the timeframe (30-50%)
<b>Likely</b>	Expected to occur in this situation within the timeframe (50-90%)
<b>Almost certain</b>	A very large certainty that this will occur in this situation within the timeframe (>90%)

### Key indicators relevant to the NSW marine estate

The key indicators for NSW are shown in the following table. These provide context to the trends identified for each activity and sub-activity. Indicators specific to the activities are provided in the relevant activity chapter.

<sup>10</sup> Goals, Objectives, Consequences and Likelihoods, NSW Marine Estate Threat and Risk Assessment, MEMA, 2015

**Table 4 Key indicators for NSW<sup>11</sup>**

	Indicators
<b>Population</b>	<ul style="list-style-type: none"> <li>• 7.5 million in NSW in 2014; projected to grow to 9.2 million in 2031.</li> <li>• 4.3 million in Sydney in 2011; projected to grow to 5.9 million in 2031.</li> <li>• 1.7 million in regional NSW in 2011; projected to grow to 1.9 million in 2031.</li> <li>• 1.2 million in other NSW metropolitan areas in 2011; project to grow to 1.5 million.</li> <li>• 66% of the NSW population lives in coastal local government areas (2015).<sup>12</sup></li> </ul>
<b>Gross product</b>	<ul style="list-style-type: none"> <li>• NSW gross product \$487.637 billion in 2013-14.</li> <li>• Forecast to grow by 2.75% in 2014-15 and 3% in 2015.</li> </ul>
<b>Employment</b>	<ul style="list-style-type: none"> <li>• 3.7 million people employed in 2014.</li> <li>• 6.1% unemployment in 2014.</li> <li>• 63% labour force participation in 2014.</li> </ul>

<sup>11</sup> Australian Demographic Statistics, Dec 2014, Australian Bureau of Statistics; Australian National Accounts: State Accounts, Australian Bureau of Statistics, 2013-14 Statistical Indicators, NSW Parliamentary Research Service, Autumn 2015

<sup>12</sup> Figures provided by the NSW Department of Planning & Environment, July 2015

## 1. Recreation

This chapter considers the activity 'recreation – general', identifies the social and economic benefits of the activity, as well as the potential threats to those benefits.

### 1.1 Activity description

Recreational use of the NSW marine estate includes swimming, surfing, snorkelling, diving, and other water-based recreational and sporting activities, as well as on-land activities such as driving vehicles on beaches, hiking, picnicking and camping. Recreational activities involving fishing are covered in Chapter 2 and involving boats are covered in Chapter 3, and are not included in this activity. It also does not include recreational activities provided on a commercial basis, such as diving tours and outdoor fitness classes. These are covered in chapters 8, 11 and 15.

The range of recreational activities considered in this chapter are described in the following table.

**Table 5 Recreational activities: description**

	Description
<b>Swimming and visiting beaches</b>	<ul style="list-style-type: none"> <li>Any attendance at a beach for pleasure, health and well-being or physical recreation, including sightseeing, walking, running or playing on the beach, swimming and sunbaking.</li> </ul>
<b>Wave surfing and windsurfing</b>	<ul style="list-style-type: none"> <li>Riding waves with a surfboard, boogie board or paddleboard.</li> <li>Windsurfing and kitesurfing.</li> </ul>
<b>Diving and snorkelling</b>	<ul style="list-style-type: none"> <li>Free diving, scuba diving and snorkelling.</li> <li>Does not include dive and snorkelling tours, which are covered in Chapter 8.</li> </ul>
<b>Driving vehicles on beaches</b>	<ul style="list-style-type: none"> <li>Off-road driving along the coast, on beaches and on dunes, for pleasure.</li> </ul>
<b>Walking and hiking</b>	<ul style="list-style-type: none"> <li>Walking and hiking on beaches, headlands and other areas along the marine estate.</li> </ul>
<b>Picnicking, barbecuing and visiting parks</b>	<ul style="list-style-type: none"> <li>Enjoying a meal outside at a park or beach on or along the NSW marine estate.</li> <li>Visiting parks along the NSW marine estate for sightseeing, social outings, or pleasure.</li> </ul>
<b>Physical recreation</b>	<ul style="list-style-type: none"> <li>Running, cycling, mountain biking along the coast, including in parks in or near the marine estate.</li> </ul>
<b>Wildlife watching</b>	<ul style="list-style-type: none"> <li>Bird watching.</li> </ul>

	Description
	<ul style="list-style-type: none"> <li>Whale or marine mammal watching. Note that marine mammal watching tours are covered in Chapter 8.</li> </ul>
<b>Camping</b>	<ul style="list-style-type: none"> <li>Staying overnight at a campground or caravan park on or along the NSW marine estate.</li> </ul>
<b>Events</b>	<ul style="list-style-type: none"> <li>Major events are those events that draw large numbers of people to the NSW marine estate each year, including New Year's Eve, Australia Day celebrations, the Sydney to Hobart Yacht Race and the Vivid Sydney Light Show. Major events in the last few years have also included the Centenary of Navy International Fleet Review celebrations on Sydney Harbour and Jervis Bay.</li> <li>Minor events include ocean and harbour swimming races, triathlons, and those activities in the marine estate which must be licenced under the Marine Safety Act 1998 (NSW). (Any event which disrupts the normal use of navigable waters by other users must obtain a licence, unless exempt).</li> </ul>

The location and scale of each of the sub-activities are considered in the following table.

**Table 6 Recreational activities: location and scale**

	Location	Scale
<b>Swimming and visiting beaches</b>	<ul style="list-style-type: none"> <li>Swimming occurs at more than 830 identified beaches in the NSW marine estate, as well as in many estuaries, lagoons and rivers.<sup>13</sup></li> </ul>	<ul style="list-style-type: none"> <li>Estimated 43.4 million visits to Sydney beaches each year (2013). This estimate was based on an assumed average visitation rate, for Sydney residents, of 6.2 visits per year and an estimated 15.2 million visits by tourists each year.<sup>14</sup> This includes surfers and wind surfers visiting the beach.</li> <li>Estimated 5.7 million beach visits to Surf Life Saving NSW patrolled beaches in 2013-14.<sup>15</sup> This includes surfers and wind surfers visiting the beach.</li> <li>Estimated 4.1 million beach visits to Surf Life Saving NSW patrolled beaches in 2014-15.<sup>16</sup> This includes surfers and wind surfers visiting the beach.</li> <li>65% of coastal residents swim, surf and socialise in the marine estate at least once per month. 56% of visitors to the coast either swim or surf while in the marine estate.<sup>17</sup></li> <li>Swimming accounts for 51% of all coastal visits.<sup>18</sup></li> </ul>
<b>Wave surfing and windsurfing</b>	<ul style="list-style-type: none"> <li>Surfing occurs throughout the marine estate, predominantly at beaches that have exposure to coastal swells.</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 113,200 NSW residents surfed in 2010. Includes sailboarding, surfing and windsurfing.<sup>19</sup></li> <li>Surfing accounts for 13% of coastal visits.<sup>20</sup></li> <li>No data located on number of surfing, and windsurfing trips to NSW marine estate.</li> </ul>
<b>Diving and snorkelling</b>	<ul style="list-style-type: none"> <li>Popular snorkelling and diving sites include</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 25,000 NSW residents scuba dived in 2010.<sup>22</sup></li> </ul>

<sup>13</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>14</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013

<sup>15</sup> Surf Life Saving NSW Annual Report 2013-2014

<sup>16</sup> <http://www.surflifesaving.com.au/news/australian-lifeguard-service-closes-books-on-beach-season>

<sup>17</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>18</sup> 2014 National Coastal Safety Report, Surf Life Saving Australia

<sup>19</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2010

<sup>20</sup> 2014 National Coastal Safety Report, Surf Life Saving Australia

<sup>22</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2010

	Location	Scale
	<p>Merimbula, Eden, Batemans Bay, Narooma and Montague Island, Ulladulla, Jervis Bay, Shellharbour, Sydney, Central Coast, Nelson Bay and Port Stephens, Seal Rocks and Forster-Tuncurry, South West Rocks, Solitary Islands, Byron Bay and Lord Howe Island.</p> <ul style="list-style-type: none"> <li>Several Sydney harbour beaches are among the top recommended spots including Clontarf, Balmoral, Chowder Bay, Manly Cove and Little Manly Beach, Chinamans Beach, Bare Island and Congwong Beach, Camp Cove as well as ocean beaches.<sup>21</sup></li> </ul>	<ul style="list-style-type: none"> <li>Estimated 25% of NSW residents either scuba dive or snorkel or both, including 420,000 divers.<sup>23</sup></li> <li>48,000 new scuba divers certified in Australia in 2007.<sup>24</sup></li> </ul>
<b>Driving vehicles on beaches</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate, but mainly on remote beaches.</li> <li>Popular locations includes Stockton Bight in Worimi Conservation Lands, Hat Head National Park near Kempsey and Myall Lakes National Park near Forster.</li> </ul>	<ul style="list-style-type: none"> <li>There are more than 90 4WD clubs operating in NSW and the ACT.<sup>25</sup></li> <li>Beaches are the fourth most favoured destination for 4WD holiday-makers.<sup>26</sup></li> </ul>
<b>Walking and hiking</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 273,000 NSW residents went bush walking in 2010. This includes bush walking outside the NSW marine estate.<sup>27</sup></li> </ul> <p>No other data has been located on the scale of hiking in the NSW marine estate.</p>
<b>Picnicking, barbecuing</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Locals and visitors use picnic and park facilities in areas that adjoin the NSW</li> </ul>

<sup>21</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>23</sup> Ibid

<sup>24</sup> Recreational Scuba Diving & Snorkelling Safety in Australia, Royal Life Saving Society Australia and DAN, 2008

<sup>25</sup> Four Wheel Drive Association of NSW & ACT, [www.4wdnow.com](http://www.4wdnow.com)

<sup>26</sup> 4WD Desert tourism – an examination of attitudes, motivations and perceptions, A Coghlan and B Prideaux, The Working Paper Series, 2009

<sup>27</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2010



	Location	Scale
<b>and visiting parks</b>		marine estate. <sup>28</sup> <ul style="list-style-type: none"> <li>Sydney Harbour National Park received 1.098 million domestic visitors in 2012.<sup>29</sup></li> </ul>
<b>Physical recreation</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Locals and visitors use trails along the coastline to run and cycle.</li> <li>Some of the most visited coastal runs are in the Sydney area, such as Bondi – Bronte and the Spit Bridge – Manly.</li> <li>No data located on the number of runners and cyclists in or along the marine estate.</li> </ul>
<b>Wildlife watching</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> <li>Key whale watching destinations include Byron Bay, Coffs Harbour, Port Macquarie, Port Stephens, Sydney, Jervis Bay, Batemans Bay and Eden.<sup>30</sup></li> <li>Key bird watching locations include Lord Howe Island, Jervis Bay and Kiama.<sup>31</sup></li> </ul>	<ul style="list-style-type: none"> <li>In 2008, an estimated 800,000 people participated in mammal watching activities in NSW.<sup>32</sup> However this includes whale watching tours which are covered in Chapter 8.</li> <li>2,400-2,500 whales in Australian waters in 2014, or nearly 60% of the world's whale population.<sup>33</sup></li> <li>More than 45 species of whales, dolphins and porpoises can be found in Australian waters.<sup>34</sup></li> <li>Birding NSW has around 160 members, and identifies around 30 other bird watching groups in NSW.<sup>35</sup> However, not all bird watching undertaken by members would occur in the NSW marine estate.</li> <li>Australia has 800 species of birds, or 8% of all species in the world. 313 of these can only be found in Australia.<sup>36</sup></li> </ul>

<sup>28</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>29</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>30</sup> <http://www.wildaboutwhales.com.au/top-spots>

<sup>31</sup> <http://www.environment.nsw.gov.au/askenvironmentlineapp/question.aspx?qald=AEL-161>

<sup>32</sup> Whale Watching Worldwide: tourism numbers, expenditures and expanding economic benefits, report from the International Fund for Animal Welfare, prepared by Economists at Large, O'Connor, S., Campbell, R., Cortez, H. & Knowles, T., 2009

<sup>33</sup> <http://www.australiangeographic.com.au/travel/destinations/2014/06/top-10-whale-watching-spots-in-australia/>

<sup>34</sup> Ibid

<sup>35</sup> <http://www.birdingnsw.org.au/wp-content/uploads/2015/07/Report-on-the-Record-Keeping-survey.pdf>;  
<http://www.birdingnsw.org.au/birding-nsw-links/>

<sup>36</sup> [http://www.crctourism.com.au/wms/upload/resources/bookshop/birdwatching\\_v2.pdf](http://www.crctourism.com.au/wms/upload/resources/bookshop/birdwatching_v2.pdf)

	Location	Scale
<b>Camping</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>150 coast caravan parks in NSW.<sup>37</sup></li> <li>Estimated 10 million visitor nights were spent in NSW caravan and camping parks in 2013.<sup>38</sup></li> </ul>
<b>Events</b>	<ul style="list-style-type: none"> <li>Major events generally occur in highly populated areas, such as Sydney Harbour and Sydney area beaches. However, the same events are held throughout the marine estate and draw local communities and tourists to the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>More than 700 aquatic licences are issued annually by Roads and Maritime Services.<sup>39</sup> Of these:<sup>40</sup> <ul style="list-style-type: none"> <li>20% are for events on Sydney Harbour;</li> <li>17% are for festivals (including firework displays);</li> <li>16% are for swimming events;</li> <li>20% are for sailing events; and</li> <li>10% are for waterskiing events.</li> </ul> </li> <li>The 2013 New Year's Eve fireworks attracted more than 1.6 million people to the Harbour foreshore and generated an economic boost of about \$156 million for local businesses.<sup>41</sup></li> <li>New Year's Eve celebrations in Sydney Harbour National Park drew nearly 10,000 visitors.<sup>42</sup></li> <li>Eight Sydney Harbour National Park precincts supported the International Fleet Review's events over seven days.<sup>43</sup></li> <li>The Vivid Sydney Light Show drew an estimated crowd in excess of 1 million over 18 nights in 2014.<sup>44</sup></li> </ul>

<sup>37</sup> Media Release Friday 3 May 2013, George Souris, Minister for Tourism, Major Events, Hospitality and Racing Minister for the Arts, 2013. The Loss of Low Cost Coastal Caravan Parks – Causes, Cases and Social Consequences, working paper submitted to State of Australian Cities Conference 2015, Gilbert H 2015

<sup>38</sup> Media Release Friday 3 May 2013, George Souris, Minister for Tourism, Major Events, Hospitality and Racing Minister for the Arts, 2015

<sup>39</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>40</sup> Data provided by Transport for NSW

<sup>41</sup> Media report on the fireworks for New Year's Eve in 2013/14, released by the City of Sydney, 2014; Sydney harbour Background Report 2014, Sydney Institute of Marine Science, 2014

<sup>42</sup> NSW Department of Premier and Cabinet, Annual Report, 2013-2014

<sup>43</sup> Ibid

<sup>44</sup> Ibid

## 1.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 7 Recreational activities: trends**

	Data on trends	Trend summary
<b>Swimming and visiting beaches</b>	<ul style="list-style-type: none"> <li>Surf Life Saving NSW estimations of beach attendance have decreased over the past few years – from 6.3 million in 2012-2013, to 5.7 million in 2013-2014 and 4.1 in 2014-2015.<sup>45</sup> These are estimates on patrolled beaches only, and beach attendance is likely to be highly weather dependent. They also include surfers and windsurfers.</li> </ul>	<ul style="list-style-type: none"> <li><b>STABLE</b></li> </ul>
<b>Wave surfing and windsurfing</b>	<ul style="list-style-type: none"> <li>Between 2001 and 2010, the number of NSW residents who surfed decreased by 35%. However, this is likely to be an anomaly in the survey results, as between 2001 and 2009, the number of NSW residents who surfed increased by 11%, and there was a reported 40% drop between 2009 and 2010.<sup>46</sup></li> <li>No further data located on trends associated with surfing.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Diving and snorkelling</b>	<ul style="list-style-type: none"> <li>Between 2001 and 2010, the number of NSW residents who scuba dived decreased by 20%, according to an Australian Sports Commission survey.<sup>47</sup></li> <li>No further data located on trends associated with diving and snorkelling.</li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Driving vehicles on beaches</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with driving vehicles on beaches. However, four-wheel drive sales have more than doubled over the last 10 years, to over 118,000 in 2015.<sup>48</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN, but likely INCREASING</b></li> </ul>
<b>Walking and hiking</b>	<ul style="list-style-type: none"> <li>Between 2001 and 2010, the number of NSW residents who bush walked decreased by just under 20% according to an Australian Sports Commission survey.<sup>49</sup></li> <li>No data located on trends associated with hiking in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

<sup>45</sup> <http://www.surflifesaving.com.au>

<sup>46</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2001, 2009 and 2010

<sup>47</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2001 and 2010

<sup>48</sup> Sales of new motor vehicles, Australian Bureau of Statistics Cat.9314.0, 2015

<sup>49</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2001 and 2010

	Data on trends	Trend summary
<b>Picnicking, barbecuing and visiting parks</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with picnicking, barbecuing and visiting parks in the NSW marine estate. Note that marine parks are considered in Chapter 5 and are not covered here.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Physical recreation</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with physical recreation in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Wildlife watching</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with wildlife watching in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Camping</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with camping in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Events</b>	<ul style="list-style-type: none"> <li>The number of aquatic licences issued over the past four years has remained reasonably steady, varying between 640 in 2010 and 720 in 2014.<sup>50</sup></li> <li>No further data located on trends associated with events in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>STABLE</b></li> </ul>

### 1.3 Economic benefits

Recreational activities draw people to the marine estate and lead to spending in beach retailers, cafes, restaurants, accommodation and local service industries. They also increase demand for real estate, professional services, housing and transportation.

The economic benefits of each of the sub-activities are considered in the following table.

<sup>50</sup> Data provided by Transport for NSW, 2015

**Table 8 Recreational activities: economic benefits**

	<b>Economic benefits</b>
<b>Swimming and visiting beaches</b>	<p><u>Sydney</u></p> <ul style="list-style-type: none"> <li>• In 2012, Sydney beach visitors spent a weighted-average of \$5.05 during a beach visit (over and above what they spent to travel to the beach).<sup>51</sup></li> <li>• Travel costs associated with daytrips to the beach were estimated at \$6 per person per day in 2009.<sup>52</sup></li> <li>• For all Sydney beaches, this resulted in an aggregate expenditure of \$480 million annually (based on the 43.4 million visits to beaches identified in the 2013 report referenced).<sup>53</sup></li> </ul> <p><u>Manly example</u></p> <ul style="list-style-type: none"> <li>• For Manly beach, day trips to the beach were estimated to generate expenditure of around \$50 million per year in travel costs and other expenditure in 2009.<sup>54</sup></li> </ul>
<b>Wave surfing and windsurfing</b>	<ul style="list-style-type: none"> <li>• Over 2005-06, the average surfer in the Gold Coast expended \$4,300 per year on surfing activities.<sup>55</sup></li> <li>• Assuming that NSW surfers spend the same amount, this amounts to over \$485 million in surfing related expenditure annually (2005-06 dollars), based on the estimated 113,200 NSW residents who surf (2010).</li> </ul>
<b>Diving and snorkelling</b>	<ul style="list-style-type: none"> <li>• The dive industry provides a direct economic benefit to NSW of \$300 million (industry figure).<sup>56</sup> This includes benefits driven by dive tours covered in Chapter 8 of this report.</li> <li>• Dive industry employs 5,000 people in NSW (industry figure).<sup>57</sup> This includes employment driven by dive tour activities covered in Chapter 8 of this report. This figure may also include indirect employment – the basis of the figure is not clear.</li> <li>• There are around 12 dives shops in Sydney.<sup>58</sup></li> <li>• No data identified on the economic contribution of snorkelling in the NSW marine estate.</li> </ul>

<sup>51</sup> Estimation of the economic importance of beaches in Sydney, Australia, and the implications for management, David Anning, University of NSW, March 2012

<sup>52</sup> [http://www.sydneycoastalcouncils.com.au/Project/Quantifying\\_Value\\_of\\_Sydney\\_Beaches](http://www.sydneycoastalcouncils.com.au/Project/Quantifying_Value_of_Sydney_Beaches)

<sup>53</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013

<sup>54</sup> [http://www.sydneycoastalcouncils.com.au/Project/Quantifying\\_Value\\_of\\_Sydney\\_Beaches](http://www.sydneycoastalcouncils.com.au/Project/Quantifying_Value_of_Sydney_Beaches)

<sup>55</sup> Lazarow (2006), the value of coastal recreational resources: a case study approach to examine the value of recreational surfing to specific locales, Paper presented at 2006 NSW Coastal Conference, 7-9 November, Coffs Harbour, pp.10-11.

<sup>56</sup> Article by Richard Nicholls, President of the Dive Industry Association of Australia, Sydney Morning Herald, June 9 2014

<sup>57</sup> Ibid

<sup>58</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

	Economic benefits
<b>Driving vehicles on beaches</b>	<ul style="list-style-type: none"> <li>• A permit is required to 4WD on NSW beaches, at a cost of around \$28 per year.</li> <li>• No other data located on the economic contribution of driving vehicles on beaches in the NSW marine estate.</li> </ul>
<b>Walking and hiking</b>	<ul style="list-style-type: none"> <li>• No data identified on the economic contribution of walking and hiking in the NSW marine estate.</li> </ul>
<b>Picnicking, barbecuing and visiting parks</b>	<ul style="list-style-type: none"> <li>• No data identified on the economic contribution of picnicking, barbecuing and visiting parks in the NSW marine estate.</li> </ul>
<b>Physical recreation</b>	<ul style="list-style-type: none"> <li>• No data identified on the economic contribution of physical recreation in the NSW marine estate.</li> </ul>
<b>Wildlife watching</b>	<ul style="list-style-type: none"> <li>• Nature-based tourists spent \$14.6 billion in NSW in the year ending September 2014.<sup>59</sup> Wildlife watching tourism in the NSW marine estate would be captured in this figure.</li> <li>• No further data located on the economic contribution of wildlife watching in the NSW marine estate.</li> <li>• However, the absence of birds in Lamington National Park in Queensland would result in an estimated reduction in visitor expenditure by almost \$7 million annually in 2004.<sup>60</sup></li> <li>• Virtually all of the tourist expenditure generated annually by Lamington National Park (\$35 million in 2004) was attributed to the presence of wildlife in the park.<sup>61</sup></li> </ul>
<b>Camping</b>	<ul style="list-style-type: none"> <li>• NSW caravan and camping parks contributed \$1.5 billion to the NSW economy in 2013.<sup>62</sup> It is not clear how much of this is linked to coastal caravan and camping parks.</li> <li>• For every \$1 spent at caravan and camping sites in NSW, another \$1.38 was spent at local stores and businesses.<sup>63</sup></li> </ul>
<b>Events</b>	<ul style="list-style-type: none"> <li>• Large events draw NSW, national and international visitors to the NSW marine estate. The 1.6 million people who viewed the 2013 New Year's Eve fireworks from the harbour foreshore spent \$156 million at local businesses.<sup>64</sup></li> <li>• Smaller events also provide economic benefits to local communities.</li> </ul>

<sup>59</sup> NSW Nature Based Tourism Year End September 2014, Destination NSW, 2015

<sup>60</sup> Economics, Wildlife Tourism and Conservation, Three Case Studies, Sustainable Tourism CRC, 2004

<sup>61</sup> Economics, Wildlife Tourism and Conservation, Three Case Studies, Sustainable Tourism CRC, 2004

<sup>62</sup> Media Release Friday 3 May 2013, George Souris, Minister for Tourism, Major Events, Hospitality and Racing Minister for the Arts

<sup>63</sup> Ibid

<sup>64</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

	Economic benefits
	For example, the NSW Surf Life Saving Championships are estimated to result in \$18 million in visitor spending in the local community. <sup>65</sup>
<b>Total quantified economic benefits</b>	<p><b>Available data indicates a contribution of over \$1 billion annually, however it could be as high as \$2 billion. This equates to 0.2 - 0.4% of NSW gross domestic product (GDP).</b> Note that \$480 million of this figure extends solely from the Hawkesbury bioregion.</p> <p>However this figure does not capture many of the economic benefits driven by recreational activities in the marine estate.</p> <p>It also includes \$300 million industry estimate that also captures dive and snorkelling tour activity which is covered in Chapter 8 below.</p>

## 1.4 Social benefits

The marine estate provides intrinsic and bequest values to not only the NSW community, but also nationally and internationally. People want to know that the marine estate is there to enjoy both now and in the future, even if they do not visit it regularly. The Marine Estate Community Survey completed by Sweeney Research found that the most important social benefit of the marine estate identified by 48% respondents, was the enjoyment people get from knowing its natural beauty is there, even if they can't visit it regularly.<sup>66</sup>

Recreational activities in the NSW marine estate also provide health and well-being benefits associated with physical activities such as swimming, diving, snorkelling, hiking, running, cycling and mountain biking. They also allow residents and tourists to appreciate the beauty of the marine estate, interact with nature, and raise environmental awareness.

Social benefits are often quantified by estimating a 'consumer surplus', which is the difference between what participants pay for an activity and what they would be willing to pay, and is based on surveys of people undertaking the activities. No data has been located which quantifies the consumer surplus of recreational activities, including intrinsic and bequest values, throughout the NSW marine estate. However, a number of case studies are available. For example, the consumer surplus of swimming, sight-seeing, hiking, picnicking and camping in the Hawkesbury-Nepean River region was estimated to be \$48.1 million in 2006. This estimate was developed by surveying people in the region participating in the activities to determine the average consumer surplus per activity, and multiplying this by the estimated number of times the activity was undertaken in the year.<sup>67</sup> It is noted that this study is old and both the surplus estimates and

<sup>65</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>66</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>67</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

estimates of numbers of visitors / participants may be out of date. It is provided only to give an indication of the social value of the activity.

The social benefits of each of the sub-activities are considered in the following table.

All of these social benefits are relevant to both the State-wide marine estate and the Hawkesbury Shelf marine bioregion.

**Table 9 Recreational activities: social benefits**

	Social benefits
<b>Swimming and visiting beaches</b>	<ul style="list-style-type: none"> <li>Improved health from exercising and relaxation, participating in hobbies and spending quality time socialising with family and friends. The Marine Estate Community Survey found that the marine estate provides a safe space for people and communities to socialise and lead an active healthy lifestyle. This was a key social benefit of the marine estate.<sup>68</sup></li> <li>2006 estimates of 'consumer surplus' associated with swimming and sightseeing on the Hawkesbury-Nepean River had a consumer surplus of \$20 per trip.<sup>69</sup></li> <li>Consumer surplus of a visit to a Sydney beach has been estimated to be between \$2.72 and \$20.63 per day visit.<sup>70</sup></li> <li>Applying a consumer surplus of \$16.18 to a visit to Manly beach led to a total annual recreational value of almost \$14 billion for Manly beach alone.<sup>71</sup> This includes surfing and windsurfing visits to Manly beach.</li> <li>Total consumer surplus (based on willingness to pay for a beach visit) for Manly beach was \$399.3 million in 2009.<sup>72</sup></li> <li>Enjoyment of scenic coastal vistas.</li> </ul>
<b>Wave surfing and windsurfing</b>	<ul style="list-style-type: none"> <li>Improved physical and mental health from exercising and the thrill of catching a wave, moving fast along the waters or performing tricks.</li> <li>Socialising with fellow surfers.</li> <li>Interacting with nature.</li> </ul>
<b>Diving and snorkelling</b>	<ul style="list-style-type: none"> <li>Improved health from exercising and relaxation.</li> <li>Opportunity to interact with marine life and appreciated the beauty of the NSW marine estate.</li> </ul>

<sup>68</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>69</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

<sup>70</sup> Estimation of the economic importance of beaches in Sydney, Australia, and the implications for management, David Anning, University of NSW, March 2012

<sup>71</sup> Ibid

<sup>72</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013



	Social benefits
<b>Driving vehicles on beaches</b>	<ul style="list-style-type: none"> <li>Escaping from the city, experiencing different landscapes, accessing remote areas and experiencing nature are all drivers for the activity and can be seen as social benefits of the activity.<sup>73</sup></li> </ul>
<b>Walking and hiking</b>	<ul style="list-style-type: none"> <li>Improved health from exercising and relaxation and spending quality time socialising with family and friends.</li> <li>Opportunity to interact with nature and appreciate the beauty of the marine estate.</li> <li>2006 estimates of 'consumer surplus' associated with walking near the Hawkesbury-Nepean River had a consumer surplus of \$20 per trip.<sup>74</sup></li> </ul>
<b>Picnicking, barbecuing and visiting parks</b>	<ul style="list-style-type: none"> <li>Beachside and coastal parks provide picturesque surroundings for members of the community and visitors to relax, exercise and spend time with family and friends.<sup>75</sup></li> <li>2006 estimates of 'consumer surplus' associated with picnicking and barbecuing on the Hawkesbury-Nepean River had a consumer surplus of \$20 per trip.<sup>76</sup></li> <li>Enjoyment of scenic coastal vistas.</li> </ul>
<b>Physical recreation</b>	<ul style="list-style-type: none"> <li>Improved health from exercising. The Marine Estate Community Survey found that the marine estate provides a safe space for people to lead an active healthy lifestyle. This was a key social benefit of the marine estate.<sup>77</sup></li> <li>Enjoyment of scenic coastal vistas.</li> </ul>
<b>Wildlife watching</b>	<ul style="list-style-type: none"> <li>Provides an opportunity for the public to view animals in the wild and develop an understanding and appreciation of marine mammals and of the NSW marine estate.</li> <li>Improves education about wildlife and the NSW marine estate, and drives improved environmental outcomes.</li> </ul>
<b>Camping</b>	<ul style="list-style-type: none"> <li>Caravan and holiday parks provide a low-cost alternative to traditional motel and hotel accommodation in prime locations. NSW caravan and holiday parks service mainly families and older travellers, who make up around 80% of annual visitors.<sup>78</sup></li> </ul>

<sup>73</sup> 4WD Desert tourism – an examination of attitudes, motivations and perceptions, A Coghlan and B Prideaux, The Working Paper Series, 2009

<sup>74</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

<sup>75</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>76</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

<sup>77</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>78</sup> Caravan and Camping Industry Profile, Caravan and Camping Industry Association, 2013

	Social benefits
	<ul style="list-style-type: none"> <li>Local residents also gain benefits from having low-cost housing options in NSW caravan parks.<sup>79</sup></li> <li>Caravan and holiday parks can also provide a strong sense of community for visitors and residents.<sup>80</sup></li> <li>2006 estimates of 'consumer surplus' associated with camping at the Hawkesbury-Nepean River had a consumer surplus of \$40 per overnight trip.<sup>81</sup></li> </ul>
Events	<ul style="list-style-type: none"> <li>Opportunity to spend time with family and friends in a safe space.</li> <li>Health benefits of engaging in the excitement of the event.</li> <li>Low-cost entertainment for NSW residents and visitors.</li> <li>Opportunity to appreciate the beauty of the NSW marine estate.</li> </ul>

## 1.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of the threat, are considered in the following table.

**Table 10 Recreational activities: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Adverse wildlife interaction</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Perceived or actual risk of shark attack, sting by bluebottle, jelly-fish or blue-ring octopus, or other adverse interaction with marine life, reduce the incentive for participating in water-based</li> </ul>	<ul style="list-style-type: none"> <li>Social and economic benefits of all water-based recreational activities.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>Perceived or actual risk of shark attack or other adverse interaction with marine life has not been a major deterrent to beach visitors.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>In 2013-14 financial year, there were five confirmed shark attacks (three fatalities).<sup>82</sup> A total of 200 kilometres of coastline and 49 beaches in the</li> </ul>

<sup>79</sup> Gilbert H (2015), The Loss of Low Cost Coastal Caravan Parks – Causes, Cases and Social Consequences, working paper submitted to State of Australian Cities Conference 2015, available from: [www.soacconference.com.au](http://www.soacconference.com.au), pp.3-4

<sup>80</sup> Caravan and Camping Industry Assoc. (2013), Caravan and Camping Industry Profile, available from: p.5

<sup>81</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

<sup>82</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	recreational activities in the marine estate.			Greater Sydney Region contain shark nets, which annually catch between 69 and 158 sharks. There has only been one shark-related fatality on a meshed beach since the shark nets were installed. <sup>83</sup>
<b>Public health and safety</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• The ocean is inherently dangerous and 75,916 volunteer surf life savers help keep the NSW marine estate a safe place to visit.<sup>84</sup></li> <li>• In 2013-14 there were 19 coastal drownings.<sup>85</sup></li> <li>• There were 12 deaths associated with diving between 2002 and 2006 in the NSW marine estate.<sup>86</sup></li> <li>• There were an average of 10 scuba and 12.4 snorkel-related deaths in Australia each year between</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of swimming, surfing and windsurfing activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Although the possibility of drowning can be a significant deterrent to swimming at unpatrolled beaches, the impact is low as generally an alternative beach will be utilised.</li> <li>• The level of Surf Life Saving support provides comfort to users of the NSW marine estate.</li> <li>• Water quality concerns has not been a major deterrent to beach visitors,</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• There are drownings, rescues, first aid treatments, preventative actions and emergency callouts in the NSW marine estate every year.<sup>88</sup></li> <li>• The NSW Government advises residents not to swim in high risk beach areas after heavy rainfall.</li> </ul>

<sup>83</sup> Current Shark Meshing Program in New South Wales Waters, Fisheries Scientific Community, 2005

<sup>84</sup> Surf Life Saving NSW Annual Report 2013-2014

<sup>85</sup> Surf Life Saving NSW Annual Report 2013-2014; 2014 National Coastal Safety Report, Surf Life Saving Australia. This figure does not includes drownings while rock fishing or in a vessel (boat or watercraft)

<sup>86</sup> Recreational Scuba Diving & Snorkelling Safety in Australia, Royal Life Saving Society Australia and DAN, 2008

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>2002 and 2006.<sup>87</sup></p> <ul style="list-style-type: none"> <li>• There are health risks associated with swimming in Sydney Harbour and some Sydney and regional beaches, particularly after heavy rainfall.</li> </ul>		except during times of heavy rainfall and storm activity, and with the exception of some rivers in the greater Sydney region, such as Parramatta River and Cooks River.	
<p><b>Urban development</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• The redevelopment of caravan parks to meet increasing demand from tourism poses a threat to the benefits that local residents gain from having low-cost housing, and the provision of low-cost holiday options for budget travellers.<sup>89</sup></li> <li>• Urban development of the foreshore can also limit or restrict access to the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• All social benefits of recreation.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The costs will be counteracted by benefits to other sectors of the tourist industry.</li> <li>• Urban development may restrict or improve access – depending on the nature of the development.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.<sup>90</sup></li> </ul>
<p><b>Water pollution / Litter and</b></p>	<ul style="list-style-type: none"> <li>• The incentives to swim, dive, snorkel and surf</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown, but potentially</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p>

<sup>88</sup> Surf Life Saving NSW Annual Report 2013-2014

<sup>87</sup> Ibid

<sup>89</sup> The Loss of Low Cost Coastal Caravan Parks – Causes, Cases and Social Consequences, working paper submitted to State of Australian Cities Conference 2015, Gilbert H, 2015

<sup>90</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>marine debris / Climate change</b>  <i>Applies to whole of NSW marine estate</i>	<p>in the NSW marine estate are reduced if there is pollution, litter or debris on the water, beaches or coastal environment.</p> <ul style="list-style-type: none"> <li>• Climate change may result in considerable loss of sand at beaches in the NSW marine estate, due to sea level rise or greater storm activity.<sup>91</sup> This would reduce the incentives for undertaking recreational activities in the marine estate.</li> </ul>	recreational activities.	<p>major.</p> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The impact will depend on the extent of the pollution or environmental changes.</li> <li>• A 10 year beach nourishment campaign in Sydney was estimated to cost \$300,000 million over 10 years.<sup>92</sup> Beach nourishment may become an unaffordable exercise as a result of climate change.</li> <li>• The loss of beaches in NSW could have a significant impact on the number of people visiting the NSW marine estate. However, a survey found that only 40% of people actually go onto the sand or into the water when visiting the beach, and only 30% would be affected by the loss of sand, but not so badly that</li> </ul>	<ul style="list-style-type: none"> <li>• Climate change will almost certainly alter the marine environment.<sup>94</sup></li> <li>• Pollution is also a concern after major storm events or heavy rain.</li> </ul>

<sup>91</sup> Estimation of the economic importance of beaches in Sydney, Australia, and the implications for management, David Anning, University of NSW, March 2012

<sup>92</sup> The Economic Value of Natural and Built Coastal Assets, National Climate change Adaption Research Facility, 2012

Threats	Description	Benefits threatened	Consequence	Likelihood
			they would leave. <sup>93</sup> In addition, the impact is lessened by the likelihood that many beach goers would choose an alternative beach (with sand), and would continue to visit the marine estate.	
<b>Antisocial behaviour</b>  <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Anti-social behaviour by other individuals or groups using the water, such as using boats and other watercraft, spearfishing or recreational fishing near swimmers, divers, snorkelers and other recreational users of the NSW marine estate.</li> <li>• Noise pollution and inconsiderate behaviour have been noted as major problems in popular locales such as the Hawkesbury</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all recreational activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor across recreational activities.</li> <li>• Moderate for some recreational activities in some areas.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Anti-social behavior is seen as a key social threat to the safety and enjoyment of people that use the marine estate.<sup>96</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• In the 10 years from 2002-03 to 2011-12, three persons were fatality hit by a vessel, and 32 persons were seriously injured. In addition, in 10.9% of all fatal incidents and over 30% of all serious injury incidents, the victim was either swimming, diving, snorkelling or being towed at the time of the incident.<sup>97</sup></li> <li>• Transport for NSW is currently consulting on changes to the</li> </ul>

<sup>94</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>93</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013

Threats	Description	Benefits threatened	Consequence	Likelihood
	River catchment. <sup>95</sup>			boating safety regulations (the Marine Safety Regulations 2015) to increase minimum distances between boats and persons in the water. Given the high rate of compliance (91% in 2012-2013) with NSW boating safety regulations, these changes should assist to counter this threat. <sup>98</sup>
<b>Overcrowding</b> <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Large numbers of people using the marine estate can reduce the social benefits and the incentive to use the marine estate for recreational activities.</li> <li>• Overcrowding is seen as a key social threat to the safety and enjoyment of people that use the marine estate.<sup>99</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all recreational activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Gross social and economic benefits should increase as numbers of users increase.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• As the NSW population and the number of visiting tourists grow, the number of people in the NSW marine estate at any given time will increase. Although the data on trends on the sub-activities indicated that some sub-activities were</li> </ul>

<sup>96</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013

<sup>97</sup> Boating Incidents in NSW, Statistical report for the 10-year period ended 30 June 2012, Transport for NSW

<sup>95</sup> Transport for NSW. (2015) Regional Boating Plan: Hawkesbury River, Pittwater and Brisbane Water Region, p.12

<sup>98</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>.

<sup>99</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	<ul style="list-style-type: none"> <li>• Water pollution and litter left behind increased numbers of users has a negative impact on the social benefits of the activities and reduces the economic benefits to the local community by raising clean-up costs.</li> <li>• Increasing numbers of divers can impact on the local fauna and flora and lead to more restrictions on the activity.</li> </ul>			<p>stable or even decreasing in popularity, this could reflect an anomaly in the surveys.</p> <ul style="list-style-type: none"> <li>• This issue particularly affects Sydney Harbour and the beaches in Sydney and its surrounds.</li> </ul>
<p><b>Competing uses</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Passive recreational users of the marine estate are less inclined to undertake activities in areas where there are large numbers of recreational fishers and boats, due to safety and amenity concerns.</li> <li>• Fishing may reduce the amount of sealife available for swimmers,</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all recreational activities in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Any future consequences would depend on the extent of changes to current regulations and allowances for recreational fishing and boating.</li> <li>• Aquaculture activities would impact only on small areas of the marine estate where recreational</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The NSW Government regulates fishing and boating areas and take, with the most recent review in 2015.</li> <li>• On average, one diver or snorkeller is hit by a vessel each year.<sup>100</sup></li> <li>• Safety of persons in the water is supported by</li> </ul>

<sup>100</sup> Dive Safe Strategy, Transport for NSW, 2002-2012



Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>snorkellers and divers to view.</p> <ul style="list-style-type: none"> <li>• Aquaculture leases and aquaculture infrastructure can impact on the amenity of the marine estate and reduce the incentive for participating in recreational activities along the marine park.</li> </ul>		activities are being undertaken.	<p>Marine Safety Regulations, which require safe distances to be maintained, apply speed limits when operating close to persons in the water and require divers to display flags.</p> <ul style="list-style-type: none"> <li>• The 'Good Neighbour Policy' for aquaculture includes clean up and compliance programs and has made the number of complaints negligible.<sup>101</sup></li> </ul>
<p><b>Dredging</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Dredging or other engineering solutions that improve navigability and safety of persons on vessels, but may have negative impacts for swimming, surfing, windsurfing, diving and snorkelling.</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all swimming, surfing, windsurfing, diving and snorkelling in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Dredging tends to be localised.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>
<p><b>Environmental impacts of the activities</b></p>	<ul style="list-style-type: none"> <li>• The environmental impact of the activity could</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of all sub-activities,</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The use of</li> </ul>

<sup>101</sup> Data provided by the NSW Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	lead to greater restrictions being placed on the activity and reduce the incentives for participation.	particularly four wheel driving.		4WDs on beaches is becoming more popular, raising concerns regarding the impact of dune vegetation, bird life and marine life. <sup>102</sup>  • International dive training organisations (e.g. PADI, SSI) and diving codes of conduct help to minimise the impact of divers on the marine environment. <sup>103</sup>
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	• Some recreational activities, and in particular spending associated with the activity (such as purchasing new surfing gear or a 4WD), would be impacted by an economic downturn.	• Social and economic benefits of all surfing, windsurfing, diving and four wheel driving in the marine estate.	• Minor. <u>Basis for ranking:</u>  • Many of the activities considered in this Chapter are low-cost compared to alternatives and may increase in times of economic downturn.	• Likely over the long term.
<b>Increased fuel and other base costs</b> <i>Applies to whole of NSW marine estate</i>	• Almost a third of 2006 survey respondents stated that they take either shorter 4WD trips, fewer trips, or are more selective in	• Social and economic benefits of all recreational activities in the marine estate.	• Minor.	• Likely.

<sup>102</sup> <http://www.theherald.com.au/story/2829218/permits-rangers-planned-to-protect-redhead-beach/>

<sup>103</sup> Bucher et al. (2007) stresses the industry's active education on sanctuary zones and emphasis on neutral buoyancy to minimize impacts in Cape Byron Marine Park.

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>where they go in response to fuel costs.<sup>104</sup></p> <ul style="list-style-type: none"> <li>• These issues could lead to a reduction in recreational visitors to the marine estate.</li> </ul>			
<p><b>Reduced government funding for events</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Without government funding, many events would not occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of events.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Many of the events would not be held without government funding, as not one single entity benefits from the event enough to fund it alone.</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Where governments see an economic and/or social benefit in funding an event, the funding is likely to continue, except in the case of an economic downturn.</li> </ul>
<p><b>Over-regulation or increased compliance costs</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Regulatory changes could affect the dive industry, including changes to Codes of Conduct and international standards.</li> </ul>	<ul style="list-style-type: none"> <li>• Social and economic benefits of diving in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Coroner's have recommended regulating the dive industry in NSW.<sup>105</sup></li> </ul>

<sup>104</sup> 4WD Desert tourism – an examination of attitudes, motivations and perceptions, A Coghlan and B Prideaux, The Working Paper Series, 2009

<sup>105</sup> Recreational Scuba Diving & Snorkelling Safety in Australia, Royal Life Saving Society Australia and DAN, 2008

## 1.6 Key Information gaps

The key information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 11 Recreational activities: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the scale of: <ul style="list-style-type: none"> <li>- surfing and windsurfing;</li> <li>- four wheel driving;</li> <li>- hiking;</li> <li>- physical recreation;</li> <li>- picnicking, barbecuing and visiting parks; and</li> <li>- camping,</li> </ul> in the NSW marine estate.
<b>Trends</b>	There is limited data on trends in recreational activities in the marine estate. Where data exists, there may be anomalies in survey results.
<b>Economic benefits</b>	There is limited data on the quantified benefits of: <ul style="list-style-type: none"> <li>- driving vehicles on beaches;</li> <li>- hiking;</li> <li>- picnicking, barbecuing and visiting parks;</li> <li>- physical recreation;</li> <li>- camping; and</li> <li>- events,</li> </ul> in the NSW marine estate.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 2. Recreational fishing

This chapter considers the activity 'recreational fishing', and identifies the social and economic benefits of the activity, as well as the potential threats to those benefits.

### 2.1 Activity description

Recreational fishing covers all fishing of a non-commercial nature, meaning that fish caught are not sold. It includes:

- shore-based line and trap fishing. This includes beach, jetty and rock fishing;
- boat-based line and trap fishing;
- spearfishing, while diving or snorkelling; and
- net fishing for species such as prawns and spanner crabs;
- hand gathering of molluscs, abalone, pipis, cockles, cuttlefish, mussels and oysters.

Recreational fishing is regulated to preserve fish stocks. A fishing fee is required for all recreational fishing in the NSW marine estate. There are a number of exemptions, including for persons under the age of 18 and Indigenous people.<sup>106</sup> In addition:<sup>107</sup>

- size and bag limits apply to many species;
- gear restrictions apply;
- area or seasonal closures are in place,

and other regulations apply.

The location and scale of recreational fishing is considered in the following table.

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<sup>106</sup> Australian Fisheries Statistics 2012, Department of Agriculture (Commonwealth), November 2013

<sup>107</sup> Factsheet: Sydney Harbour and northern beaches recreational fishing guide, Department of Primary Industries, 2012

**Table 12 Recreational fishing: location and scale**

	Location	Scale
<b>Recreational fishing</b>	<ul style="list-style-type: none"> <li>Recreational fishing can be found throughout the NSW marine estate's lakes, bays, estuaries and waterways.</li> <li>Thirty 'Recreational Fishing Havens', areas largely free of commercial fishing, were created along the NSW coast to provide better angling opportunities for recreational fishers. Money raised from the NSW Recreational Fishing Fee enabled a \$20 million buyout to create the havens.<sup>108</sup> These are shown in Figure 2 below.</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 1 million people fished recreationally in NSW in 2012-13.<sup>109</sup></li> <li>Estimated 13 million finfish and 17.2 million prawns, yabbies and shellfish caught by recreational fishers in NSW in 2000-01.<sup>110</sup></li> <li>342,828 new recreational fishing fees were sold in 2013-14, and a further 84,616 were renewed.<sup>111</sup> On average 512,000 fishing fees have been purchased or renewed annually in NSW, over the last five years.<sup>112</sup></li> <li>Shore-based fishing accounts for 58% of recreational fishing activity.<sup>113</sup></li> <li>Boat-based fishing accounts for 41% of recreational fishing activity.<sup>114</sup></li> <li>58,408 spearfishing events annually (2003), which accounts for 1% of total recreational fishing activity.<sup>115</sup></li> </ul> <p><u>Sydney region</u></p> <ul style="list-style-type: none"> <li>Sydney region accounts for 48% of people who fish in NSW.<sup>116</sup></li> <li>Shore-based fishing accounts for 62% of total recreational fishing effort in Sydney region.<sup>117</sup></li> <li>Over 300,000 daytime fisher hours were expended during the 2007-2008 summer</li> </ul>

<sup>108</sup> <http://www.dpi.nsw.gov.au/fisheries/recreational/info/rfh>

<sup>109</sup> Estimates range from 900,000-1 million. Department of Primary Industries, Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014; Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014; NSW Recreational Fishing Expenditure Survey, Final Report to the Department of Primary Industries, 2013; data provided by the NSW Department of Primary Industries, 2015

<sup>110</sup> Survey of Recreational Fishing in NSW. [http://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0020/171209/Survey-of-Recreational-Fishing-in-New-South-Wales.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0020/171209/Survey-of-Recreational-Fishing-in-New-South-Wales.pdf)

<sup>111</sup> According to a study undertaken by the University of Wollongong in 2013. Department of Primary Industries, Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014

<sup>112</sup> Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014

<sup>113</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>114</sup> Ibid

<sup>115</sup> Data provided by MEMA agencies, 2015

<sup>116</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>117</sup> Data provided by MEMA agencies, 2015

	Location	Scale
		<p>period in Sydney Harbour.<sup>118</sup></p> <ul style="list-style-type: none"> <li>An expert panel recommended that fish and crustaceans caught west of the Sydney Harbour Bridge are not eaten, and that consumption of fish caught east of the Sydney Harbour Bridge is limited to 150 grams per month.<sup>119</sup></li> </ul>
<b>Fishing supply business (tackle shops)</b>	<ul style="list-style-type: none"> <li>Tackle shops are located throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>DPI Fisheries NSW has around 1,000 agents that sell recreational fishing licences statewide through fuel outlets, bait and tackle shops and other outlets.<sup>120</sup></li> <li>No further data located on the number of tackle shops in NSW.</li> </ul>
<b>Fishing competitions</b>	<ul style="list-style-type: none"> <li>Fishing competitions are held throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Includes game fishing, spear fishing, trailer boat fishing, finfish fishing and bream fishing competitions.</li> <li>No data located on the number of competitions or participants in the NSW marine estate.</li> </ul>

<sup>118</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>119</sup> Factsheet: Sydney Harbour and northern beaches recreational fishing guide, NSW Department of Primary Industries

<sup>120</sup> Data provided by the NSW Department of Primary Industries, 2015

**Figure 3 Location of Recreational Fishing Havens in the NSW marine estate where commercial fishing effort was bought out and removed using recreational fishing fees<sup>121</sup>**



<sup>121</sup> Data provided by the NSW Department of Primary Industries, 2015



## 2.2 Trends

The number of recreational fishers in NSW appears to have remained stable based on recreational fishing fee data. Given population increases, this means that there is a downward trend in recreational fishing in the marine estate in relative terms to the total NSW population.

**Table 13 Recreational fishing: trends**

	Trends	Trend summary
<b>Recreational fishing</b>	<ul style="list-style-type: none"> <li>Sales of new recreational fishing fees decreased from 447,425 in 2012-13 to 342,408 in 2013-14. Renewals were also down, from 93,338 to 84,616.<sup>122</sup></li> <li>However, the 2012-13 year was significantly above the 2011-12 year (365,557 new licences sold, 94,653 renewed).<sup>123</sup> The recent decreases are therefore likely to reflect the three year licensing cycle, rather than a downward trend in total participation. It appears that the total number of recreational fishers has remained reasonably steady since 1999.<sup>124</sup></li> <li>There have been significant changes to recreational fishing access rights over the past decade, including the introduction of Recreational Fishing Havens and Marine Parks.<sup>125</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>STABLE</b></li> </ul>
<b>Fishing supply business</b>	<ul style="list-style-type: none"> <li>No data located on trends in fishing supply businesses.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Fishing competitions</b>	<ul style="list-style-type: none"> <li>No data located on trends in fishing competitions.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

## 2.3 Economic benefits

The economic benefits of each of the sub-activities are considered in the following table.

<sup>122</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, NSW Department of Primary Industries, 2014

<sup>123</sup> Ibid

<sup>124</sup> Estimates range from 900,000-1 million. Department of Primary Industries, Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014; Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014; NSW Recreational Fishing Expenditure Survey, Final Report to the Department of Primary Industries, 2013; data provided by the NSW Department of Primary Industries, 2015

<sup>125</sup> Data provided by the NSW Department of Primary Industries, 2015

**Table 14 Recreational fishing: economic benefits**

	<b>Economic benefits</b>
<b>Recreational fishing</b>	<ul style="list-style-type: none"> <li>• Supplementing family diet with caught fish, and resulting reduced grocery costs.</li> <li>• A three day recreational fishing fee costs \$7 and a one year fee costs \$35 in 2015.<sup>126</sup> The 460,210 licences sold in 2012-13 raised \$13.1 million.<sup>127</sup></li> <li>• Recreational fishing contributed around \$3.5 billion of economic output to the NSW economy in 2012.<sup>128</sup></li> <li>• Recreational fishers spent more than \$1.5 billion on fishing related expenses in 2012, including travel, tackle and boat-related items.<sup>129</sup> However, this figure may include some tourism-related expenditure covered in Chapter 11 of this report.</li> <li>• Recreational fishing accounted for 14,254 full time equivalent jobs in NSW in 2012.<sup>130</sup></li> <li>• Interstate recreational fishers spent an average of \$393.31 per trip, while intrastate recreational fishers spent \$184.63 per trip on average.<sup>131</sup></li> </ul> <p><u>Sydney</u></p> <ul style="list-style-type: none"> <li>• Recreational fishing contributed around \$1 billion to the Sydney economy.<sup>132</sup></li> <li>• Recreational fishing accounted for 9,072 full time equivalent jobs in Sydney in 2012.<sup>133</sup></li> </ul> <p><u>Regional Case study: Port Macquarie (2005)</u><sup>134</sup></p> <ul style="list-style-type: none"> <li>• Recreational fishing expenditure accounted for 2.1% of employment</li> </ul> <p><u>Regional Case study: Bermagui and Narooma (2005)</u><sup>135</sup></p> <ul style="list-style-type: none"> <li>• Recreational fishing expenditure accounted for 10.6% of employment.</li> </ul>

<sup>126</sup> <http://www.dpi.nsw.gov.au/fisheries/recreational/licence-fee>

<sup>127</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>128</sup> According to a study undertaken by the University of Wollongong in 2013 (Developing a cost effective state wide expenditure survey method to measure the economic contribution of the recreational fishing sector in NSW in 2012, report to the NSW Recreational Fishing Trust, McIlgorm A & PepperellJ, University of Wollongong, NSW Department of Primary Industries, 2013. Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>129</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>130</sup> Ibid

<sup>131</sup> NSW Recreational Fishing Expenditure Survey, Final Report to the Department of Primary Industries, November 2013

<sup>132</sup> Ibid

<sup>133</sup> Developing a cost effective state wide expenditure survey method to measure the economic contribution of the recreational fishing sector in NSW in 2012, report to the NSW Recreational Fishing Trust, McIlgorm A & PepperellJ, University of Wollongong, NSW Department of Primary Industries, 2013

<sup>134</sup> Recreational Fishing Expenditure in Two Coastal Towns, Dominion Consulting, 2005

<sup>135</sup> Ibid

	Economic benefits
<b>Fishing supply business</b>	<ul style="list-style-type: none"> <li>No data located on the economic benefits of fishing supply businesses, although much of this sub-activity is captured in the data outlined above.</li> </ul>
<b>Fishing competitions</b>	<ul style="list-style-type: none"> <li>No data located on the economic benefits of fishing competitions, although much of this sub-activity is captured in the data outlined above.</li> </ul>
<b>Total quantified economic benefits</b>	<p><b>\$1.5 billion annually in direct expenditure and \$3.5 billion contributed to NSW economy. The \$3.5 billion contribution to the economy equates to 0.7% of NSW gross domestic product.</b></p> <p>Note that \$1 billion of the contribution to the NSW economy extends solely from the Hawkesbury bioregion.</p> <p>(Note that is assumed that these figures include the sub-activities of fishing supply businesses and fishing competitions. They may also include expenditure driven by charter fishing, which is discussed in Chapter 8).</p>

## 2.4 Social benefits

The social benefits of recreational fishing are considered in the following table. All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

**Table 15 Recreational fishing: social benefits**

	Social benefits
<b>All recreational fishing</b>	<ul style="list-style-type: none"> <li>Opportunity to socialise and partake in recreation with friends and family.</li> <li>Opportunity to appreciate the beauty and biodiversity of the NSW marine estate.</li> <li>Excitement and satisfaction of catching and keeping or releasing fish.</li> <li>The consumer surplus of recreational fishing in the Hawkesbury-Nepean River was estimated to be \$35 per trip in 2006. This estimate resulted in a total consumer surplus of \$12.8 million for recreational fishing on the Hawkesbury-Nepean River in 2006.<sup>136</sup></li> </ul>

<sup>136</sup> Quantifying the Economic Value of Activities Dependant on the Hawkesbury-Nepean River, Ag-Econ-Plus, June 2006. Report prepared for the Department of Environment and Conservation NSW

## 2.5 Threats to economic and social benefits

Many of the threats relate to fish stock levels and availability to recreational fishers, as discussed in the following table.

**Table 16 Recreational fishing: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Public health and safety</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Death and serious injury, particularly for rock fishers (who account for 6-7% of recreational fishing activity), and also from severe weather and water conditions, could reduce the incentive for recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Safety risks do not appear to have reduced recreational fishing or rock fishing numbers.</li> <li>• Rock fishing alerts are issued to fishers via media outlets advising of poor weather/high wave conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Average of 17 recreational fishing fatalities in NSW per year between 2000 and 2007.<sup>137</sup></li> <li>• In 2013-2014, 8 people drowned while coastal rock fishing in the NSW marine estate. This was more than the number of people who drowned while swimming in the NSW marine estate.<sup>138</sup></li> </ul>
<b>Water pollution / Litter and marine debris / Climate change</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• In the NSW marine estate, surveyed recreational fishers ranked 'fishing in an unspoiled environment' as a higher priority than catching a fish.<sup>139</sup></li> <li>• Pollution significantly</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Flood events can result in major negative impacts in the benefits derived in</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Climate change will almost certainly alter the marine environment and affect fish stocks.<sup>142</sup></li> </ul>

<sup>137</sup> Recreational Fishing in NSW: An Overview of Drowning Related Fatalities and Current Practices, Royal Life Saving Society Australia, 2011

<sup>138</sup> 2014 Coastal Safety Report, Surf Life Saving Society Australia, 2011

<sup>139</sup> Australian Society for Fish Biology, Workshop for Conference Proceedings. Assessing recreational fisheries: Current and future challenges, 2008

<sup>142</sup> Data provided by MEMA agencies, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>reduces the incentive for people to take fishing trips, and reduces the social benefits gained from recreational fishing where trips are taken.<sup>140</sup></p> <ul style="list-style-type: none"> <li>• Climate change, and the impact of rising water temperatures and the acidification of oceans will impact fish stocks.<sup>141</sup></li> </ul>		<p>one or a number of regions.</p> <ul style="list-style-type: none"> <li>• Broader pollution events or climate change impacts could have measurable and ongoing negative impacts at a state-wide scale.</li> </ul>	<ul style="list-style-type: none"> <li>• Water pollution after flooding events and associated floodplain drainage has resulted in major fish kills in the Tweed, Richmond, Clarence, Macleay and Hunter Rivers. Some rivers were temporarily closed to fishing.<sup>143</sup> Some rivers are currently vulnerable to further 'fish kill' events.<sup>144</sup></li> </ul>
<p><b>Depletion of fish stocks through overfishing</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Depletion can result from commercial overfishing, illegal fishing and recreational overfishing.</li> </ul> <p><u>Commercial overfishing</u></p> <ul style="list-style-type: none"> <li>• Some commercial fishing activities, such as commercial prawn trawling, are high intensity fishing operations which can deplete fish stocks.<sup>145</sup></li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>

<sup>140</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>141</sup> Data provided by MEMA agencies, 2015

<sup>143</sup> Major Fish Kills in the Northern Rivers of NSW in 2001: Causes, Impacts & Responses, NSW Department of Primary Industries, 2004; <http://www.theherald.com.au/story/1363057/fish-kill-stench-of-death-hangs-over-river/>;  
<http://www.ballina.info/blog/2013/01/30/heres-hoping-that-another-fish-kill-doesnt-eventuate/>

<sup>144</sup> <http://www.northernstar.com.au/news/richmond-river-ripe-further-fish-kill-event/2717281/>

<sup>145</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p><u>Interaction with commercial fisheries and other recreational fishers</u></p> <ul style="list-style-type: none"> <li>• Commercial fishing in NSW interacts with Queensland, Victorian and Commonwealth fisheries, and activities in Queensland and Victoria impact on the viability of the NSW fisheries.</li> <li>• Many species captured are targeted by various fisheries in the commercial sector, the recreational sector and Aboriginal communities (eg abalone).</li> </ul> <p><u>Illegal fishing</u><sup>146</sup></p> <ul style="list-style-type: none"> <li>• Compliance and enforcement activities on-the-water found the rate of compliance with fisheries legislation to be 81% for commercial fishing and 90% for recreational fishing.</li> <li>• 6,600 compliance actions were taken in 2013-2014, up from 6,130 in 2012-2013.</li> <li>• In 2007-2008, 51%</li> </ul>			

Industries 2014

<sup>146</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014. Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	of kingfish, 97% of snapper, 76% of tailor and 11% of bream in harvests were undersized.			
<b>Overcrowding</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>•Overcrowding, leads to reduced access to fish and reduces the incentives for recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>•All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>•Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>•Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>•The number of recreational fishers appears to have remained static in recent years.</li> </ul>
<b>Loss of fish habitat</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>•Loss of fish habitat through authorised or illegal land reclamation, dredging, vegetation clearing, shoreline hardening, mining and development reduces fish stocks.</li> </ul>	<ul style="list-style-type: none"> <li>•All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>•Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>•Developments are subject to environmental assessment and conditions of approval to minimise environmental harm under the <i>Environmental Planning and Assessment Act 1979</i> (NSW).</li> </ul>	<ul style="list-style-type: none"> <li>•Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>•Legislative protections are in place and permits/approvals are required to undertake works that could damage fish habitats. A 'no net loss' habitat policy is applied.<sup>147</sup></li> <li>•Developments are subject to environmental assessment and conditions of approval to minimise environmental harm under the <i>Environmental Planning and Assessment Act 1979</i> (NSW).</li> </ul>

<sup>147</sup> Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management, Department of Primary Industries, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
				<ul style="list-style-type: none"> <li>•The Fisheries Conservation and Planning Compliance program is in place to enforce the habitat protection provisions of the <i>Fisheries Management Act 1994</i> (NSW).</li> </ul>
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>•Spending on recreational fishing could decrease in an economic downturn.</li> </ul>	<ul style="list-style-type: none"> <li>•All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>•Minor.</li> </ul>	<ul style="list-style-type: none"> <li>•Likely over the long term.</li> </ul>
<b>Increased fuel and other base costs</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>•Higher fuel costs make it more expensive for boat-based fishing and traveling to regional fishing sites.</li> <li>•This leads to recreational fishing being conducted in more populated areas where catch rates are lower, and reduces the incentive for recreational fishing.<sup>148</sup></li> </ul>	<ul style="list-style-type: none"> <li>•Recreational fishing economic benefits.</li> </ul>	<ul style="list-style-type: none"> <li>•Minor.</li> </ul>	<ul style="list-style-type: none"> <li>•Likely.</li> </ul>
<b>Wildlife connectivity</b> <i>Applies to Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>•In-stream infrastructure limits connectivity of some parts of the coastal rivers and isolates fish stocks on either side.<sup>149</sup></li> </ul>	<ul style="list-style-type: none"> <li>•Recreational fishing economic and social benefits.</li> </ul>	<ul style="list-style-type: none"> <li>•Minor.</li> </ul>	<ul style="list-style-type: none"> <li>•Possible, but further change is unlikely.</li> <li>•In addition, some current barriers to fish</li> </ul>

<sup>148</sup> Australian Society for Fish Biology. (2008). Workshop for Conference Proceedings. Assessing recreational fisheries: Current and future challenges.

<sup>149</sup> <http://www.dpi.nsw.gov.au/fisheries/habitat/threats/barriers#Floodgates>



Threats	Description	Benefits threatened	Consequence	Likelihood
				movements are being removed as part of river fish habitat regeneration programs. <sup>150</sup>
<b>Pests and diseases</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Vessel moving around Australia and internationally can bring pests and diseases into the NSW marine estate, particularly through ballast water (waste water). These could affect marine species in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown.</li> <li>• The threat of pest species and diseases being spread through shipping has been considered in the environmental background information report.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>
<b>Public health and safety - high toxicity of fish caught</b> <i>Applies to Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Dioxin contamination in Sydney Harbour is of concern for recreational fishers who keep and eat their catch.</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational fishing social benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely for Sydney Harbour.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• An expert panel recommended that fish and crustaceans caught west of the Sydney Harbour Bridge are not eaten, and that consumption of fish caught east of the Sydney Harbour Bridge is limited to 150 grams per month.<sup>151</sup></li> </ul>

<sup>150</sup> <http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/weir-removal>

<sup>151</sup> Factsheet: Sydney Harbour and northern beaches recreational fishing guide, NSW Department of Primary Industries

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Over-regulation or increased compliance costs</b>  <i>Applies to whole of NSW marine estate</i>	Increased restrictions on the types and number of fish that can be caught and the areas where recreational fishing can occur would reduce the incentive for recreational fishing. <sup>152</sup>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown. The consequence would depend on the extent of the restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>
<b>Limited access infrastructure</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Lack of continued investment in infrastructure needed to support the activity (such as jetties and boat ramps) would see a degradation of the infrastructure and reduce the access of recreational fishers to the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. Infrastructure is essential for boat-based fishing activities and also supports some shore-based fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The NSW Government has allocated \$70 million over five years on boating infrastructure.<sup>153</sup></li> </ul>

## 2.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

<sup>152</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>153</sup> Duncan Gay MLC, Minister for Roads & Freight, Media Release, 2 August 2014, Boating Now: New Funding for Safe and Accessible Waterways

**Table 17 Recreational fishing: information gaps**

	<b>Information gaps</b>
<b>Activity scale and scope</b>	Limited data has been located on the scale of fishing supply businesses and fishing competitions in NSW marine estate.
<b>Trends</b>	There is limited data on trends in fishing supply businesses and fishing competitions in NSW marine estate.
<b>Economic benefits</b>	There is limited data on the quantified benefits of fishing supply businesses and fishing competitions in NSW marine estate. However, the economic benefits of fishing supply businesses would likely be captured in the general recreational fishing data.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

### 3. Recreational boating

This chapter considers the activity ‘recreational boating’, and identifies the social and economic benefits of the activity, as well as the potential threats to those benefits.

#### 3.1 Activity description

Recreational boating includes all activities undertaken for a recreational purpose, in a vessel, on navigable waterways in the NSW marine estate. It includes the recreational use of kayaks, surf-skis, jet-skis, runabouts, sail boats, catamarans and cruisers, and the storage of boats.

This activity does not include surfing, boogie-boarding, windsurfing or kitesurfing, which are covered in Chapter 1. Chartering a vessel with a skipper is also not included; recreational fishing charters and other vessel charters are covered in Chapter 8. Hire and drive activities are also covered in Chapter 8. This activity also does not include the infrastructure needed to support the activity (such as boat ramps and jetties), except boat storage.

The range of domestic commercial vessel activities considered in this chapter are described in the following table.

**Table 18 Recreational boating: description**

	Description
<b>Human powered boats</b>	<ul style="list-style-type: none"> <li>All recreational boats powered by the person using it, including kayaks, canoes, paddle-boards, dragon boats and surf-skis.</li> </ul>
<b>Sailboats</b>	<ul style="list-style-type: none"> <li>Privately owned boats in the NSW marine estate that are primarily powered by wind.</li> </ul>
<b>Powered vessels</b>	<ul style="list-style-type: none"> <li>Privately owned boats in the NSW marine estate that are primarily powered by an engine.</li> </ul>
<b>Houseboats</b>	<ul style="list-style-type: none"> <li>Privately owned boat which can be moored and used as a dwelling.</li> </ul>
<b>Boat storage</b>	<ul style="list-style-type: none"> <li>Storage facilities for recreational boats in the NSW marine estate, including public and private moorings and marinas. They provide storage berths as well as boat repair and fuel services.</li> </ul>

An estimated 1.8 million people go boating in the NSW marine estate each year.<sup>154</sup> Popular recreational boating areas include:

- the Tweed River catchment;
- the upper North-Coast region (Brunswick, Richmond and Clarence catchments);

<sup>154</sup> Boating Safety Communications and Education Strategy 2012 – 2015, Transport for NSW

- the mid North Coast region (Port Macquarie, Dunbogan, Coffs Harbour);
- the Port Stephens-Hunter region;
- Lake Macquarie and Tuggerah Lakes (including Wallarah Creek, Wyong River, Ourimbah Creek);
- the Pittwater, Brisbane and Hawkesbury River region;
- Sydney Harbour;
- the Georges River, Botany Bay and Port Hacking region;
- the Shoalhaven-Illawarra region; and
- the far South Coast region (Clyde River, Batemans Bay, Twofold Bay, and Eden).

The location and scale of each of the sub-activities are considered in the following table.

**Table 19 Recreational boating: location and scale**

	Location	Scale
<b>Human powered boats</b>	<ul style="list-style-type: none"> <li>• Throughout marine estate, particularly in areas in close proximity to residential communities.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimated 100,000 human powered boats in the marine estate.<sup>155</sup> As human powered boats are not required to be registered, exact numbers are not known.</li> <li>• 'PaddleNSW' covers kayaks, canoes, paddleboards and dragon boats, and had 1,665 members in 2011-2012.<sup>156</sup></li> <li>• Estimated 70,000 NSW residents canoed or kayaked in 2010.<sup>157</sup></li> <li>• Domestic NSW tourists were estimated to have taken 860,000 trips in the NSW marine estate on sailboats, windsurfers and kayaks in 2014.<sup>158</sup> This figure includes the 'sailboat' and 'hire and drive' sub-activities below, and the windsurfing activities covered by Chapter 1.</li> <li>• 171,000 tourists from overseas were expected to go sailing, windsurfing and kayaking in the NSW marine estate (2014).<sup>159</sup> This figure includes the 'sailboat' sub-activity below, hire and drive activities covered in Chapter 8 and the windsurfing activities covered by Chapter 1.</li> </ul>

<sup>155</sup> Boating incidents in NSW, Statistical incidents for the 10 year period ended 30 June 2012, Transport for NSW, 2012

<sup>156</sup> PaddleNSW Annual Report 2012

<sup>157</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2010

<sup>158</sup> Data provided by Tourism Research Australia, 2015, Customized data request.

<sup>159</sup> Ibid

	Location	Scale
<b>Sailboats</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>There are 90 sailing clubs in NSW, including 30 in Sydney Harbour.<sup>160</sup></li> <li>Larger sailboats such as yachts are captured in the registered vessel figures below. Small sailcraft with small engines are not required to be registered.</li> <li>Estimated 52,000 NSW residents participated in sailing activities in 2010.<sup>161</sup></li> </ul>
<b>Powered vessels</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate, particularly in areas of close proximity to residential communities.</li> </ul>	<ul style="list-style-type: none"> <li>Vessels more than 5.5m in length or with an engine over 4kW are required to be registered in NSW.<sup>162</sup></li> <li>Approximately 231,351 registered vessels in NSW in 2015.<sup>163</sup></li> <li>Boat driving licences are required to operate personal watercraft (PWC, also referred to as jet-skis) and other power driven vessels operating at 10 knots or more.<sup>164</sup></li> <li>More than 489,000 people hold a boat or PWC driving licence.<sup>165</sup></li> </ul> <p><u>Hawkesbury Shelf Bioregion</u></p> <ul style="list-style-type: none"> <li>20,000 registered recreational boats (8% of State) and 52,000 boat licence holders (10% of State) are in the Sydney Harbour region in 2015.<sup>166</sup></li> <li>There were 41,000 boat licence holders and 19,000 registered recreational vessels in the Lake Macquarie and Tuggerah Lakes region in 2014.<sup>167</sup></li> </ul>
<b>Boat storage</b>	<p>Key facilities include:<sup>168</sup></p> <ul style="list-style-type: none"> <li>the Rozelle Superyacht Marina;</li> </ul>	<p><u>Moorings</u></p> <ul style="list-style-type: none"> <li>Almost 26,500 mooring sites in NSW, including 20,277 private moorings (which are issued to individuals for individual</li> </ul>

<sup>160</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>161</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2010

<sup>162</sup> *Marine Safety Act 1998* (NSW)

<sup>163</sup> Data provided by Transport for NSW, 2015

<sup>164</sup> *Marine Safety Act 1998* (NSW)

<sup>165</sup> Data provided by Transport for NSW, 2015

<sup>166</sup> Regional Boating Plan, Sydney Harbour Region, Transport for NSW, 2015

<sup>167</sup> Regional Boating Plan, Lake Macquarie-Tuggerah Lakes Region, Transport for NSW, 2015

<sup>168</sup> Moorings Review Issues Paper, Transport for NSW, 2014

	Location	Scale
	<ul style="list-style-type: none"> <li>commercial marinas throughout the marine estate;</li> <li>jetties, slipways, boatsheds, and berths, primarily on private properties; and</li> <li>rowing clubs with boat sheds.</li> </ul> <p>In addition, dinghies stored on Council land throughout the marine estate.</p>	<p>vessels only) and 6,169 commercial mooring sites (which can be used as marine businesses or sailing clubs) in NSW in 2014.<sup>169</sup></p> <ul style="list-style-type: none"> <li>Expenditure on mooring administration, management and compliance activities by the NSW Government is around \$6.25 million per year 2014.<sup>170</sup></li> </ul> <p><u>Marinas</u></p> <ul style="list-style-type: none"> <li>123 marinas in the NSW marine estate in 2013.<sup>171</sup></li> </ul> <p><u>Other storage facilities</u></p> <ul style="list-style-type: none"> <li>Dry-storage facilities are provided in regional NSW, including the Hawkesbury River and Port Stephens.<sup>172</sup></li> </ul> <p><u>Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>Home to 25% of private and 30% of commercial mooring sites.<sup>173</sup></li> <li>40 private marinas in Sydney Harbour.<sup>174</sup></li> <li>Sydney Harbour also has a larger proportion of boats over 6m, and as such has a higher demand for on-water storage.<sup>175</sup></li> </ul>

## 3.2 Trends

The trends for the sub-activities are considered in the following table.

<sup>169</sup> Moorings Review Issues Paper, Transport for NSW, 2014

<sup>170</sup> Recreational Marine Research Center at Michigan State University. (2012) 2011 Health of The Australian Marina Industry Survey

<sup>171</sup> Health of the Australia Marina Industry Survey, NSW Marinas: Economic, Social and Environmental Performance, Recreational Marine Research Centre, Michigan State University, 2013

<sup>172</sup> Sydney Harbour Boat Storage Strategy, NSW Transport, 2013

<sup>173</sup> Moorings Review Issues Paper, Transport for NSW, 2014

<sup>174</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>175</sup> NSW Boat Ownership and Storage: Growth Forecasts to 2026, NSW Maritime, 2010

**Table 20 Recreational boating: trends**

	Trends	Trend summary
<b>Human powered boats</b>	<ul style="list-style-type: none"> <li>Between 2001 and 2010, the number of NSW residents estimated to have canoed or kayaked increased by almost 100%.<sup>176</sup></li> <li>Membership of PaddleNSW rose by 56% between 2008-2009 and 2011-2012.<sup>177</sup></li> <li>No further data located on trends in human powered vessels.</li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Sailboats</b>	<ul style="list-style-type: none"> <li>Between 2001 and 2010, the number of NSW residents estimated to have participated in sailing activities was estimated to have decreased by 18%.<sup>178</sup></li> <li>No further data located on trends in sailboats.</li> </ul>	<ul style="list-style-type: none"> <li><b>DECREASING</b></li> </ul>
<b>Powered vessels</b>	<ul style="list-style-type: none"> <li>Since 1999, vessel registration has grown by 2.9% annually, and is predicted to continue to grow at the same rate until 2026.<sup>179</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Boat storage</b>	<ul style="list-style-type: none"> <li>New facilities are being constructed throughout the NSW marine estate in an effort to address the shortage in recreational vessel storage capacity.</li> <li>The predicted growth in recreational vessel ownership requires an additional 300 new mooring spaces to be created in the NSW marine estate by 2021.<sup>180</sup></li> <li>There are approximately 17,400 registered recreational vessels in Sydney Harbour, but only 9,850 storage spaces.<sup>181</sup></li> <li>There are currently 1,885 applicants in the private mooring waiting lists in NSW.<sup>182</sup></li> <li>New facilities have been targeted in Sydney Harbour for 1,000-1,200 dry-stack storage spaces, 600-800 commercial marina berths, 300 moorings and 150-250 berths at private marinas and domestic facilities.<sup>183</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>

<sup>176</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2001 and 2010

<sup>177</sup> Paddle NSW Annual Report 2009 and 2012.

<sup>178</sup> Participation in Exercise, Recreation and Sport, Australian Sports Commission, 2001 and 2010

<sup>179</sup> NSW Boat Ownership and Storage: Growth Forecasts to 2026, NSW Maritime, 2010

<sup>180</sup> Regional Boating Plan, Sydney Harbour Region, Transport for NSW, 2015

<sup>181</sup> Sydney Harbour Boat Storage Strategy, NSW Transport, 2013

<sup>182</sup> Health of the Australia Marina Industry Survey, NSW Marinas: Economic, Social and Environmental Performance, Recreational Marine Research Centre, Michigan State University, 2013

<sup>183</sup> Sydney Harbour Boat Storage Strategy, NSW Transport, 2013



	Trends	Trend summary
	<p><u>Marinas</u></p> <ul style="list-style-type: none"> <li>Gross revenue fell from \$320 million in 2010-11 to \$202 million in 2012-13, and total direct employees fell from 1,571 to 1,222.<sup>184</sup></li> <li>In 2013, 78% of Marina operators reported their gross revenue as the same or larger in 2012-2013 as compared to 2011-12.<sup>185</sup></li> <li>In 2013, 97% of Marina operators forecast that their gross revenue would be the same or larger in 2013-14 as compared to 2012-13.<sup>186</sup></li> </ul>	

### 3.3 Economic benefits

Recreational boating in the NSW marine estate generates revenue for boating related businesses and supports local employment. Key figures are provided in the following table.

**Table 21 Recreational boating: economic benefits**

	Economic benefits
<b>General</b>	<ul style="list-style-type: none"> <li>The boating industry employed approximately 8,000 people in NSW and supported a further 5,000 full time equivalent jobs in 2012 (boating industry figure).<sup>187</sup> This is likely to include employment generated by activities covered in other chapters of this report, including recreational fishing and boat building.</li> <li>Boating industry generates direct revenue of \$2 billion in NSW (boating industry figure).<sup>188</sup> This is likely to include revenue generated by activities covered in other chapters of this report, including recreational fishing and boat building.</li> <li>Boating industry generates a further \$1.38 billion in indirect spending related travel and tourism (boating industry figure).<sup>189</sup> This is likely to include spending generated by activities covered in other chapters of</li> </ul>

<sup>184</sup> Health of the Australia Marina Industry Survey, NSW Marinas: Economic, Social and Environmental Performance, Recreational Marine Research Centre, Michigan State University, 2011 and 2013

<sup>185</sup> Ibid

<sup>186</sup> Ibid

<sup>187</sup> The Boating Industry Association's Response to Inquiry into the Management of Public Lands in NSW by the Legislative Council of NSW, Boating Industry Association of NSW, 2012

<sup>188</sup> Ibid

<sup>189</sup> Ibid

	<b>Economic benefits</b>
	<p>this report, including recreational fishing and boat building.</p> <ul style="list-style-type: none"> <li>Boating accounts for 4.3% of the NSW “day-trip” market and 9.7% of overnight-stays (boating industry figure).<sup>190</sup> This is likely to include activities covered in other chapters of this report, including recreational fishing and boat building.</li> <li>Boating industry employed more than 30,000 nationally and generated revenue of around \$8.25 billion in 2014 (boating industry figure).<sup>191</sup> This includes revenue and employment generated by activities covered in other chapters of this report, including recreational fishing, commercial boating activities and boat building.</li> </ul>
<b>Human powered boats</b>	<ul style="list-style-type: none"> <li>Domestic visitors were estimated to have spent more than \$452 million on trips on sailboats, windsurfers and kayaks while visiting the NSW marine estate.<sup>192</sup> This figure includes benefits from the ‘sailboat’ and ‘hire and drive’ sub-activities below.</li> </ul>
<b>Sailboats</b>	<ul style="list-style-type: none"> <li>No data located on the economic contribution of sailing in the NSW marine estate, other than the general boating data above.</li> </ul>
<b>Powered vessels</b>	<ul style="list-style-type: none"> <li>No data located on the economic contribution of powered vessels in the NSW marine estate, other than the general boating data above.</li> </ul>
<b>Boat storage</b>	<p><u>Marinas (2012-13)</u><sup>193</sup></p> <ul style="list-style-type: none"> <li>Gross revenues of approximately \$202 million.</li> <li>\$35 million in taxes and lease payments.</li> <li>Including marina tenants, total revenue of \$320 million.</li> <li>1,222 full-time-equivalent direct employees of marinas.</li> <li>Including tenants, there are 4,600 employees.</li> </ul> <p><u>Fees</u><sup>194</sup></p> <ul style="list-style-type: none"> <li>Private mooring fees: \$203 - \$10,244 per mooring per year in 2013, depending on size of vessel and location.</li> <li>Marina berth fees: \$1,100 - \$1,500 per berth per month in Sydney Harbour for a 10 metres vessel.</li> </ul>
<b>Total quantified economic benefits</b>	<b>\$2 billion annually (industry figure). This equates to 0.4% of NSW gross domestic product.</b>

<sup>190</sup> The Boating Industry Association’s Response to Inquiry into the Management of Public Lands in NSW by the Legislative Council of NSW, Boating Industry Association of NSW, 2012

<sup>191</sup> Boating Industry Association NSW, Annual Report 2014

<sup>192</sup> Data provided by Tourism Research Australia, 2015

<sup>193</sup> Health of the Marina Industry Survey, NSW Marinas: Economic, Social and Environmental Performance, Recreational Marine Research Centre, Michigan State University, 2013

<sup>194</sup> Private Mooring Fees 1 July 2013

	<b>Economic benefits</b>
	<p>The proportion of this figure which extends from the Hawkesbury bioregion has not been determined.</p> <p>However this figure is likely to include economic benefits driven by activities considered in other chapters, such as boat building and potentially hire and drive activities.</p>

### 3.4 Social benefits

The social benefits of recreational boating include:

- the enjoyment of being on the water;
- socialising with family and friends;
- the excitement of activities such as dragon boats racing, yacht races and jet skis; and
- the opportunity to enjoy the beauty of the NSW marine estate and to interact with nature and the marine environment.

While no information was available to quantify the social benefits to recreational boaters who make use of the NSW marine estate, a Queensland study estimated that recreational boaters using Moreton Bay gained benefits equivalent to \$714 per annum from their boating experience.<sup>195</sup>

Other specific social benefits of the sub-activities are considered in the following table.

All of the social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

**Table 22 Recreational boating: social benefits**

	<b>Social benefits</b>
<b>Human powered boats</b>	<ul style="list-style-type: none"> <li>• Mental and physical health benefits of physical activity through kayaking, canoeing and so on.</li> </ul>
<b>Sailboats</b>	<ul style="list-style-type: none"> <li>• Mental and physical health benefits of physical activity such as windsurfing, kite surfing, small sail craft and even yachts.</li> </ul>
<b>Powered vessels</b>	<ul style="list-style-type: none"> <li>• Mental health benefits and relaxation associated with being out on the water.</li> <li>• Opportunity to appreciate the beauty of the marine estate.</li> </ul>

<sup>195</sup> Results of a pilot travel cost study of the recreational use of Moreton Bay, FishEcon Working Paper Series 1/10, University of Tasmania, 2010

	Social benefits
<b>Boat storage</b>	<ul style="list-style-type: none"> <li>• Marinas provide social benefits by offering community events such as “try sailing” days.<sup>196</sup> The majority of marinas in NSW also provide services to the general public (such as fuel, pump out facilities and boat repair).<sup>197</sup></li> <li>• If there were no boat storage facilities, a dramatic increase in boats being stored on city streets and driveways would occur.</li> <li>• Storage facilities allow the recreational boating activities to occur and the social benefits described above to be realised.</li> </ul>

### 3.5 Threats to economic and social benefits

The key threats to the benefits of recreational boating are considered in the following table.

**Table 23 Recreational boating: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Reduced discretionary income would reduce demand for purchasing and renting boats and lead to less recreational boating activity.</li> <li>• The global financial crisis resulted in a 26.3% drop in revenue for the boat building and repair services industry across Australia.<sup>198</sup></li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> <li>• Particularly economic and social benefits of powered vessels and hire and drive boating activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• A downturn would likely affect the Australian boating building and repair services activity.</li> <li>• The impact of a downturn on other sub-activities is difficult to predict.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely over the long term.</li> </ul>
<b>Public health and safety</b> <i>Applies to whole</i>	<ul style="list-style-type: none"> <li>• Between 2002-12 there were on average 16.7 boating fatalities</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of</li> </ul>	<ul style="list-style-type: none"> <li>• Insignificant.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Recreational</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul>

<sup>196</sup> <http://www.marinas.net.au/resources/policy-position-papers>

<sup>197</sup> Health of the Australia Marina Industry Survey, NSW Marinas: Economic, Social and Environmental Performance, Recreational Marine Research Centre, Michigan State University, 2013

<sup>198</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
<i>of NSW marine estate</i>	<p>each year, the majority of which involved a recreational vessel.<sup>199</sup></p> <ul style="list-style-type: none"> <li>• In 2013-14, there were eight boating fatalities.<sup>200</sup></li> <li>• Surveyed hire and drive vessels (which include houseboats, yachts and motor cruisers) were significantly over represented in fatal incidents, accounting for 35% of all fatal incidents involving a commercial vessel but only 4.4% of commercial vessels in NSW.<sup>201</sup></li> <li>• Safety concerns reduce the incentive for recreational boating.</li> </ul>	recreational boating.	<p>vessel fatal incidents have decreased by 44% in the 20 years from 1992-12.<sup>202</sup></p> <p>Services such as Surf Lifesaving Australia and Marine Rescue NSW help reduce safety risks and address safety concerns.</p>	
<p><b>Water pollution / Litter and marine debris / Climate change</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Climate change and resulting sea rises and increasing storm activity could also impact on boating infrastructure, as well as have safety implications. This would reduce access to and the incentive for recreational</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown.</li> <li>• The consequences will depend on the extent of the pollution incident and the effects of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Climate change will almost certainly alter the marine environment.<sup>203</sup></li> </ul>

<sup>199</sup> Boating incidents in NSW, Statistical report for the 10 year period ended 30 June 2012, Transport for NSW

<sup>200</sup> Boating incidents in NSW 2013-14, Transport for NSW

<sup>201</sup> Boating Incidents in NSW, Statistical report for the 10-year period ended 30 June 2012, Transport for NSW

<sup>202</sup> Boating incidents in NSW, Statistical report for the 10 year period ended 30 June 2012, Transport for NSW

<sup>203</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	boating. • Pollution in the NSW marine estate would also reduce the incentive for and benefits gained from recreational boating.			
<b>Environmental impacts of the activities</b> <i>Applies to whole of NSW marine estate</i>	• Bank erosion from vessel use could damage boating infrastructure such as jetties, and boat ramps, and reduce access to recreational boating in the NSW marine estate. • Concerns regarding environmental issues with boating could lead to greater restrictions on the activity. Wildlife disturbance, habitat damage marine debris and bank erosion can be caused by recreational boating activities. <sup>204</sup>	• The economic and social benefits of powered vessels.	• Minor. Could have a moderate negative impact on benefits derived in one or a number of regions. <u>Basis for ranking:</u> • Concerns regarding erosion caused by wake boats have led to new powers to restrict the use of wake boats in some areas. • Marine debris from vessel use is considered to be a moderate risk threat. <sup>205</sup> • Habitat damage from anchoring and mooring of vessels is considered to be a significant risk statewide, but particularly in the Hawkesbury bioregion where	• Likely.

<sup>204</sup> Data provided by MEMA agencies, 2015

<sup>205</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
			boating demand and use is the highest. <sup>206</sup>	
<b>Anti-social behaviour</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Anti-social behaviour by other watercraft, such as speeding, passing too close to other vessels, not following navigational rules, reduce the benefits gained from, and the incentives for, recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Anti-social behavior is seen as a key social threat to the safety and enjoyment of people that use the marine estate.<sup>207</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The <i>Marine Safety Act 1998</i> (NSW) and supporting regulations aim to ensure that all users of the marine estate can operate safely. Boating Safety Officers proactively enforce the regulations.</li> <li>• Given the high rate of compliance (91% in 2012-2013) with NSW boating safety regulations, the risk of the consequence being realised is low.<sup>208</sup></li> </ul>
<b>Competing uses / Overcrowding</b> <i>Applies to whole of NSW marine estate, and to the Hawkesbury bioregion in particular</i>	<ul style="list-style-type: none"> <li>• Recreational boaters share space with other recreational users (swimmers, surfers) and commercial vessels (barges, cruise ships, ferries, charter vessels).</li> <li>• Shared space and</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The NSW Government and local councils take steps to manage congestion – for example, by restricting PWC</li> </ul>

<sup>206</sup> Data provided by MEMA agencies, 2015

<sup>207</sup> Ibid

<sup>208</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>.

Threats	Description	Benefits threatened	Consequence	Likelihood
	overcrowding can negatively impact on the safety of recreational boating and the benefits gained from recreational boating.			use and kitesurfing to certain parts of the marine estate. <sup>209</sup>
<b>Over-regulation or increased compliance costs</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Regulation restricts access to recreational boating.</li> <li>• Increased requirements (for example, requiring more types of vessels to be operated by a person holding a boat driving licence) can reduce the demand for recreational boating.</li> <li>• Other regulations could include not allowing some recreational boating activities in specified areas (for example, not allowing wake-boats to operate in areas where bank erosion is a concern).</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The consequences of new regulatory arrangements would depend on the change. In addition, the new arrangements would only be introduced where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Regulations are subject to consultation and cost benefit analysis. They would generally only be introduced where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.</li> </ul>
<b>Limited access and storage infrastructure</b>  <i>Applies to whole of NSW marine estate, and to the Hawkesbury</i>	<ul style="list-style-type: none"> <li>• The availability and condition of boating infrastructure, such as boat ramps, boat storage facilities and parking, can reduce the</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating, particularly of powered</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• \$150 million has recently been allocated to new recreational boating</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Marine infrastructure development has not matched the growth in</li> </ul>

<sup>209</sup> Transport for NSW. (2015) Regional Boating Plan: Sydney Harbour Region, p.8



Threats	Description	Benefits threatened	Consequence	Likelihood
<i>bioregion in particular</i>	<p>incentive for recreational boating, lessen enjoyment of recreational boating and raise the cost of boat ownership.</p> <ul style="list-style-type: none"> <li>• In addition, a lack of boat storage facilities may reduce the incentive for boat ownership and result in boat owners storing their boats on public streets, increasing congestion in those areas.</li> </ul>	boats.	<p>facilities, such as boat ramps and marinas.<sup>210</sup></p> <ul style="list-style-type: none"> <li>• In Sydney Harbour, \$9.9 million in grants from Roads and Maritime Services was provided for marine infrastructure between 2009-10 and 2013-14.<sup>211</sup></li> </ul>	<p>recreational boating.<sup>212</sup></p> <ul style="list-style-type: none"> <li>• A lack of boat storage facilities is prevalent in the marine estate.<sup>213</sup></li> <li>• The relatively slow growth of recreational boat registrations in Sydney Harbour (as compared to the rest of the State) has been in part attributed to the lack of on-water storage capacity and the limited space to store trailerable vessels in residential streets.<sup>214</sup></li> </ul>
<b>Increased fuel or other base costs</b>	<ul style="list-style-type: none"> <li>• Rising fuel prices reduce the incentive for powered recreational boating activities.</li> <li>• Rising fuel prices also reduce the incentive for participants to travel to the NSW marine estate to participate in recreational boating activities.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of recreational boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul>

<sup>210</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>211</sup> Sydney Harbour Regional Boating Plan, Transport for NSW

<sup>212</sup> The Boating Industry Association's Response to Inquiry into the Management of Public Lands in NSW by the Legislative Council of NSW, Boating Industry Association of NSW, 2012

<sup>213</sup> Regional Boating Plan: Mid-North Coast Region, Transport for NSW, 2015

<sup>214</sup> Sydney Harbour Boat Storage Strategy, Transport for NSW, 2013

### 3.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 24 Recreational boating: information gaps**

	Information gaps
<b>Activity scale and scope</b>	No apparent information gaps.
<b>Trends</b>	There is limited data on trends in human powered boats and sail boats in the marine estate.
<b>Economic benefits</b>	There is limited data on the quantified benefits of the sub-activities. The data focusses on total expenditure drive by boating activities in NSW.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 4. Research and education

This chapter considers the activity ‘research and education’, and identifies the social and economic benefits of the activity, as well as the potential threats to those benefits.

### 4.1 Activity description

Schools, universities, government departments and agencies and other non-governmental organisations undertake research activities in the coastal waters and estuaries of the NSW marine estate. Research activities may be undertaken directly by the organisation, or indirectly by engaging other users of the marine estate (such as recreational fishers).

Government bodies and non-governmental organisations also carry out community engagement and educational activities in the marine estate.

**Table 25 Research and education: description**

	Description
<b>Research</b>	<ul style="list-style-type: none"> <li>Research into the NSW marine estate, its marine life, and human use of the marine estate.</li> </ul>
<b>Education / community engagement</b>	<ul style="list-style-type: none"> <li>Educational and engagement activities, including raising awareness of environmental and safety issues.</li> </ul>

The location and scale of each of the sub-activities are considered in the following table.

**Table 26 Research and education: location and scale**

	Location	Scale
<b>Research</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>No data located on the extent of research in or on the marine estate across NSW. Some case studies and examples and have been provided only.</li> </ul> <p><u>DPI Fisheries</u></p> <ul style="list-style-type: none"> <li>Undertakes extensive research in the NSW marine estate. For example, a proportion of the recreational fishing fees are allocated to recreational fishing research and education activities.</li> <li>26 vessels undertaking research and education programs.<sup>215</sup></li> <li>17 marine parks vessels undertaking research and compliance activities.<sup>216</sup></li> <li>DPI Fisheries 2014-18 strategic research plan includes seven priority research programs, covering issues such as threats to fishery resources, ecosystem assessment and fish habitat improvement.<sup>217</sup></li> <li>In 2013, 121 research publications were completed by DPI Fisheries research teams.<sup>218</sup> However, not all of these would be relevant to the marine estate.</li> </ul> <p><u>Office of Environment and Heritage</u></p> <ul style="list-style-type: none"> <li>Carries out research on marine mammals and the coastal, marine and estuarine environment.</li> </ul> <p><u>Sydney Institute of Marine Science</u></p> <ul style="list-style-type: none"> <li>Carries out research on marine related issues, including climate change, biodiversity, ocean resources and marine management.</li> <li>Currently undertaking a five year, \$10 million research program based on Sydney Harbour.<sup>219</sup></li> </ul> <p><u>Surf Life Saving NSW</u></p> <ul style="list-style-type: none"> <li>Surf Life Saving NSW undertakes or supports research into safety issues in the marine estate, such as rip current behaviour.<sup>220</sup></li> </ul>

<sup>215</sup> Data provided by the Department of Primary Industries (DPI) Fisheries, 2015

<sup>216</sup> Ibid

<sup>217</sup> Fisheries NSW Strategic Research Plan 2014-2018, Department of Primary Industries, 2014

<sup>218</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-14, Department of Primary Industries, 2015

<sup>219</sup> <http://sims.org.au/>

<sup>220</sup> Surf Life Saving NSW Annual Report 2013-2014

	Location	Scale
<b>Education / community engagement</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>No data located on the extent of education and community engagement in the marine estate across NSW. Some case studies and examples have been provided only.</li> <li>The Department of Primary Industries, including through Fishcare volunteers, engage in face-to-face education with anglers to help familiarise them with fishing rules and promote responsible fishing practices. In 2013-14 there were 302 Fishcare volunteers.<sup>221</sup></li> <li>Transport for NSW and Roads and Maritime Services are responsible for delivering the Boating Safety Communications and Education Strategy 2012–15. The strategy has a budget of \$5 million and includes training young boaters at schools and boating safety campaigns.<sup>222</sup></li> <li>Surf Life Saving NSW conducts community engagement activities which support water safety, including the nippers program (for children 5-13 years of age).<sup>223</sup></li> <li>The NSW Rural Fire Service uses boats in the NSW marine estate to conduct community engagement activities in regional and rural NSW. Community engagement on fire safety is central to fire prevention and preparedness planning.<sup>224</sup></li> </ul>

## 4.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

<sup>221</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-14, Department of Primary Industries, 2015

<sup>222</sup> Boating Safety Communications and Engagement Strategy 2012 – 2015, Transport for NSW.

<sup>223</sup> Surf Life Saving NSW Annual Report 2013-2014

<sup>224</sup> Bushfire Bulletin, NSW Rural Fire Service, 2015

**Table 27 Research and education: trends**

	Trends	Trend summary
<b>Research</b>	<ul style="list-style-type: none"> <li>No data located on trends in research activities in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Education / community engagement</b>	<ul style="list-style-type: none"> <li>No data located on trends in research activities in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

### 4.3 Economic benefits

Research and education activities support other activities in the marine estate by:

- promoting the long-term viability of fishing in the marine estate. Without research into fish stock levels and engagement with fishers on rules and regulations, fish stocks would likely be depleted through over-fishing and illegal fishing. Research, education and engagement support the ongoing achievement of the economic benefits of recreational and commercial fishing, which are considered in Chapters 2, 13 and 14;
- promoting the long-term viability of whale watching tour activities, by ensuring that the 'sustainability' threshold for interactions with whales and other cetaceans are not exceeded; and
- improving safety outcomes in recreational and commercial activities (such as swimming and surfing), recreational fishing activities and recreational boating activities. Research, education and engagement by Surf Life Saving NSW, Transport for NSW, Roads and Maritime Services and other organisations, significantly reduces the number of fatalities and serious incidents in the marine estate each year. The economic impact of a death is valued at \$4.3 million (in 2015 dollars),<sup>225</sup> a serious injury at \$497,687.71 and a non-serious injury \$19,224.93.<sup>226</sup> Beyond the immediate economic impact, fatal and serious injury incidents also reduce the incentives for other people to participate in the activity, and therefore reduce the value of the activity to NSW.

Research and education in the NSW marine estate directly support the economic benefits of recreation, recreational fishing, recreational boating, commercial boating and commercial fishing identified in Chapters 1, 2, 3, 8, 13 and 14. It also indirectly supports all other activities, as they all benefit from improved environmental and safety outcomes.

The extent of the economic benefits which extend from the Hawkesbury bioregion has not been determined.

<sup>225</sup> Best Practice Regulation, Guidance Note, Value of Statistical Life, Office of Best Practice Regulation, 2014

<sup>226</sup> Guide to project evaluation: part 4: project evaluation data, AGPE04/12, Austroads 2012.

## 4.4 Social benefits

By contributing to improved environmental and safety outcomes, research and education supports the achievement of social benefits of many of the activities in the NSW marine estate. The Marine Estate Community Survey found that the key benefits of the marine estate to the people of NSW were:<sup>227</sup>

- its natural beauty; and
- providing a safe space for people and communities to socialise and lead active health lifestyles.

In addition, a large proportion of survey respondents believed that scientific information should be used to inform the management of the marine estate, and one fifth of respondents saw that using the marine estate as a source of scientific discovery was an important social benefit.<sup>228</sup>

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

## 4.5 Threats to economic and social benefits

The threats to the economic and social benefits of research and community engagement, and the consequence and likelihood of each threat, are considered in the following table.

**Table 28 Research and education: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn / Change in government funding priorities</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• An economic downturn could reduce funding available to research and education activities.</li> <li>• Funding is often sourced from other activities (such as boat registration and licensing fees and fishing licence fees). An economic downturn could see the number of registrations and licences issued</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of research and education.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Reduced registrations and licences would reduce the usage of the marine estate, and the impact on the environment and safety outcomes. As a result, reduced research and education funding may not significantly impact on safety and environmental outcomes and</li> </ul>	<ul style="list-style-type: none"> <li>• Possible over the long term.</li> </ul>

<sup>227</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>228</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	reduced, and therefore reduce funding available for research and education.		benefits. • Changing governments and government priorities could significantly reduce funding for research activities relevant to the marine estate.	
<b>Over-regulation or increased compliance costs</b> <i>Applies to whole of NSW marine estate</i>	• Vessels used for research by universities, schools and government and non-government organisations are subject to safety regulation. Changes in regulation which increased compliance costs would impact the viability of the research activity.	• All economic and social benefits of on-water research in the marine estate.	• Minor. <u>Basis for ranking:</u> • The consequences of new regulatory arrangements would depend on the change, and would only effect some on-water research activity.	• Possible. <u>Basis for ranking:</u> • Regulations are generally subject to consultation and cost benefit analysis. They would generally only be introduced where their benefits (eg in protecting the safety of researchers) outweigh their costs.
<b>Increased fuel or other base costs</b> <i>Applies to whole of NSW marine estate</i>	• Rising costs of fuel and wages would impact on the amount of research that can be undertaken under current funding levels.	• All economic and social benefits of research in the marine estate.	• Minor.	• Likely.

#### 4.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.



**Table 29 Research and education: information gaps**

	<b>Information gaps</b>
<b>Activity scale and scope</b>	Limited data has been located on the full scale of research and education activities in the marine estate.
<b>Trends</b>	No data located on trends in research and education in the marine estate.
<b>Economic benefits</b>	No data located on the quantified benefits of research and education in the marine estate.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 5. Conserving heritage and the environment

This chapter considers the activity ‘conserving heritage’, and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 5.1 Activity description

The NSW marine estate is home to iconic images of Australia which promote tourism. It also includes a large number of registered Aboriginal sites, sites relevant to Australia’s maritime heritage and other heritage sites in the marine estate such as quarantine stations and war relics.

A separate background information report focuses on the Aboriginal cultural and contemporary use benefits of the marine estate, and the threats to those benefits. As such, Aboriginal heritage is only briefly considered in this chapter.

This activity also includes the establishment and management of marine parks and conservation areas in the NSW marine estate.

**Table 30 Conserving heritage and the environment: description**

	Description
<b>Aboriginal heritage</b>	<ul style="list-style-type: none"> <li>Aboriginal places of significance, including ceremonial sites, burial grounds, mountains, sacred sites, occupation sites, massacre sites.</li> <li>Aboriginal objects and art such as stone tools, rock art, shell middens, stone artefacts, carved trees, scarred trees and stone arrangements.</li> </ul>
<b>Maritime heritage</b>	<ul style="list-style-type: none"> <li>Historical ships, shipwrecks and remains.</li> <li>Jetties and wharves.</li> <li>Customs houses, pilot stations, bond stores and other port facilities and navigational aids including lighthouses.</li> <li>Shipyards, coastal defences and cemeteries.</li> </ul>
<b>Other NSW marine estate heritage</b>	<ul style="list-style-type: none"> <li>Heritage items on or near the NSW marine estate, such as the Sydney Opera House and the Harbour Bridge.</li> <li>Plane wrecks are also located in the marine estate.</li> </ul>
<b>Coastal and marine conservation</b>	<ul style="list-style-type: none"> <li>Establishment and management of marine parks.</li> <li>Establishment of aquatic reserves.</li> <li>Compliance and enforcement marine conservation activities.</li> </ul>

51% of visitors in Australia participated in a cultural or heritage activity in 2009. 11% of international tourists visited an aboriginal site or community, and the same number visited a heritage site, building or monument.<sup>229</sup> Not all of these sites, communities and building are, however, in the NSW marine estate.

A large number of heritage items, as well as marine conservation management efforts, occurs in national parks in NSW. The National Parks and Wildlife Service has more than 6,500 volunteers contributing more than 126,000 hours of effort each year.<sup>230</sup> However, the extent of volunteer activity in national parks connected to the marine estate is unclear. The location and scale of each of the sub-activities are considered further in the following table.

**Table 31 Conserving heritage and the environment: location and scale**

	Location	Scale
<b>Aboriginal heritage</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate, including underwater and on land.</li> </ul>	<ul style="list-style-type: none"> <li>7,000 recorded sites in NSW, many of which are in the NSW marine estate.<sup>231</sup></li> </ul>
<b>Maritime heritage</b>	<ul style="list-style-type: none"> <li>Throughout the NSW marine estate, with many sites in Newcastle and Sydney.</li> </ul>	<ul style="list-style-type: none"> <li>The NSW marine estate contains 1,800 historic shipwrecks, including: a World War One battlecruiser, HMAS Australia (1910-1924), a Japanese type A midget submarine, M24 (1942), Scottish clipper ships, colonial trading vessels, steamships and harbour craft.<sup>232</sup></li> <li>Ship wrecks can be found on-land (under sand dunes), off-shore and in rivers in the marine estate.</li> <li>Wharves, piers, custom houses, pilot stations, Defence sites, breakwaters, shipping buildings, fishing boat harbours and other maritime heritage sites can be found throughout the marine estate.</li> </ul>
<b>Other NSW marine estate heritage</b>	<ul style="list-style-type: none"> <li>Throughout the NSW marine estate, particularly in Sydney and Newcastle harbours.</li> </ul>	<ul style="list-style-type: none"> <li>There are more than 25,000 heritage sites and items on statutory lists in NSW, some of which are on or near the NSW marine estate.<sup>233</sup></li> <li>Plane wrecks are an emerging area for heritage and conservation effort / interest.</li> </ul>

<sup>229</sup> Snapshots 2009, Cultural and Heritage Tourism in Australia, Department of Resources, Energy and Tourism (Commonwealth)

<sup>230</sup> NSW Department of Premier and Cabinet, Annual Report, 2013-2014

<sup>231</sup> <http://www.environment.nsw.gov.au/cultureandheritage.htm>

<sup>232</sup> Ibid

<sup>233</sup> Ibid

	Location	Scale
<b>Coastal and marine conservation</b>	<ul style="list-style-type: none"> <li>Throughout marine estate.</li> </ul>	<p><u>Hawkesbury Shelf Bioregion</u></p> <ul style="list-style-type: none"> <li>No marine parks.<sup>234</sup></li> <li>Eight aquatic reserves which protect small areas from recreational fishing and commercial activity.<sup>235</sup></li> <li>11 national parks and nature reserves which include areas below the mean high tide, including estuary, mangrove and wetland.<sup>236</sup></li> </ul> <p><u>Marine Parks</u></p> <ul style="list-style-type: none"> <li>Six Marine Parks in the NSW marine estate, namely: <ul style="list-style-type: none"> <li>Port Stephens Great Lakes Marine Park;</li> <li>Batemans Marine Park;</li> <li>Cape Byron Marine Park;</li> <li>Solitary Islands Marine Park;</li> <li>Jervis Bay Marine Park; and</li> <li>Lord Howe Island Marine Park.</li> </ul> </li> <li>12 aquatic reserves which protect small areas from recreational fishing and commercial activity.<sup>237</sup></li> <li>62 national parks and nature reserves which include areas below the mean high tide, including estuary, mangrove and wetland.<sup>238</sup></li> </ul> <p><u>DPI Fisheries</u><sup>239</sup></p> <ul style="list-style-type: none"> <li>17 marine parks vessels undertaking research and compliance activities (2015).</li> <li>10 marine parks staff (2015), and over 70 compliance officers and researchers support marine park management.</li> </ul>

<sup>234</sup> Systematic Conservation Assessment for Marine Protected Areas, Hawkesbury Shelf Assessments, Daniel Breen, 2007

<sup>235</sup> Ibid

<sup>236</sup> Ibid

<sup>237</sup> <http://www.marine.nsw.gov.au/nsw-marine-estate/marine-protected-areas>

<sup>238</sup> Ibid

<sup>239</sup> Data provided by the Department of Primary Industries (DPI) Fisheries, 2015

## 5.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 32 Conserving heritage and the environment: trends**

	Trends	Trend summary
<b>Aboriginal heritage</b>	<ul style="list-style-type: none"> <li>No data located on trends in Aboriginal heritage.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Maritime heritage</b>	<ul style="list-style-type: none"> <li>The NSW Government recently intentionally sank a historic vessel to create a dive tourism attraction, the HMAS <i>Adelaide</i> off Avoca in the Central Coast, based on requests from the dive community.</li> <li>Interest in redevelopment of maritime heritage sites, such as Woolloomooloo Wharf in Sydney Harbour or lighthouses through the marine estate, can bring new value to the site.</li> <li>No other data located on trends in maritime heritage.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Other NSW marine estate heritage</b>	<ul style="list-style-type: none"> <li>Plane wrecks are an emerging area for conservation.</li> <li>No data located on trends in other NSW marine estate heritage.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Coastal and marine conservation</b>	<ul style="list-style-type: none"> <li>Marine Parks first declared in 1998.</li> <li>No data located on trends associated with coastal and marine conservation.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

## 5.3 Economic benefits

Heritage sites provide economic value through tourism. International cultural and heritage visitors spent \$16 billion on trips to Australia in 2009. Domestic cultural and heritage visitors spent a further \$10.9 billion. This includes tourists who visited heritage cultural and sites in Australia outside the NSW marine estate.<sup>240</sup>

Marine protected areas, marine parks and other coastal and marine conservation efforts also provide economic benefits through tourism. Nature-based tourists spent \$14.6 billion in NSW in

<sup>240</sup> Snapshots 2009, Cultural and Heritage Tourism in Australia, Department of Resources, Energy and Tourism (Commonwealth)

the year ending September 2014. 83.5% of international nature-based tourists went to the beach and around 60% of domestic tourists went to the beach.<sup>241</sup>

**Table 33 Conserving heritage and the environment: economic benefits**

	<b>Economic benefits</b>
<b>Aboriginal heritage</b>	<ul style="list-style-type: none"> <li>National parks in or along the NSW marine estate are home to a large number of places of Aboriginal cultural significance. National Parks provide economic benefits in visitor fees, jobs and visitor expenditure in local communities.</li> <li>No data located, other than the general tourism information above.</li> </ul>
<b>Maritime heritage</b>	<ul style="list-style-type: none"> <li>Diving shipwrecks is an increasingly popular recreational activity and tourist drawcard. The SS Yongala shipwreck in Queensland is estimated to earn dive tour and charter operators more than \$1 million annually (2006).<sup>242</sup> The scuttling of the HMAS Brisbane off the Sunshine Coast in Queensland to create a dive tourism attraction and artificial reef was expected to result in an additional \$1 million per year for the Queensland economy.</li> <li>Shipwrecks in coastal rivers can provide tourism economic benefits to local communities through 'wreck trails', such as in Newcastle and the Hastings River.<sup>243</sup></li> <li>The redevelopment of maritime sites, including Wharves (such as Woolloomooloo Wharf), lighthouses (such as Sugarloaf Point Lighthouse on the mid North Coast), ship buildings (such as Woolwich Dock in Sydney Harbour), customs buildings (such as Customs House in Sydney Harbour) provide economic benefits in terms of rental income, accommodation, boat moorings, cafes and restaurants, shops and other commercial activities.</li> <li>No further data located on the economic benefits of maritime heritage.</li> </ul>
<b>Other NSW marine estate heritage</b>	<ul style="list-style-type: none"> <li>National parks in or along the NSW marine estate are home to a large number of historical sites. This includes Goat Island and Sugarloaf Point Lighthouse. National Parks provide economic benefits in visitor fees, jobs and visitor expenditure in local communities.</li> <li>National Parks in north-eastern NSW, far south NSW and the Greater Shoalhaven area were estimated to generate \$351.9 million in direct and indirect expenditure through visitors and in the management of the parks and protected areas.</li> <li>Other heritage sights also provide a source of revenue to the NSW</li> </ul>

<sup>241</sup> NSW Nature Based Tourism Year End September 2014, Destination NSW, 2015

<sup>242</sup> Impacts of Diving on Shipwrecks in Australia and the Pacific, Journal of Humanities and Social Sciences, Joanne Edney, 2006

<sup>243</sup> <http://www.environment.gov.au/topics/heritage/historic-shipwrecks/shipwreck-trails>

	<b>Economic benefits</b>
	<p>Government and local communities. For example, Cockatoo Island in Sydney Harbour provides economic revenue in visitor expenditure on ferry fees, food and drinks, tours and accommodation.</p> <ul style="list-style-type: none"> <li>The Sydney Harbour Federation Trust was established to manage former defence and Commonwealth sites around Sydney Harbour, including Cockatoo Island, Snapper Island, Woolwich Dock and Parklands, HMAS Platypus in Neutral Bay, Headland Park and Chowder Bay in Mosman, North Head Sanctuary in Manly, Marine Biological Station in Watsons Bay and Macquarie Lightstation in Vaucluse. These public spaces and parklands generate income through major events, exhibitions, venue hire, accommodation, tours and business tenancy. In 2013-14, the Sydney Harbour Federation Trust generated just under \$17 million in income, the majority of which was rental income.<sup>244</sup></li> <li>No data located, other than the general tourism information above.</li> </ul>
<b>Coastal and marine conservation</b>	<ul style="list-style-type: none"> <li>Provide a spillover benefit to commercial and recreational fisheries, as a result of more stable catches and less stock depletion. However, this benefit can be offset by reduced areas for commercial fishing.</li> <li>Ecotourism benefits, including expanding tourism in the region.</li> </ul> <p><u>Port Stephens Great Lakes Marine Park</u><sup>245</sup></p> <ul style="list-style-type: none"> <li>58 commercial operators in 2007, including charter fishing, houseboat hire, dive operators, mammal viewing tours, hire and drive operators, kayak tours, surf lesson providers.<sup>246</sup></li> <li>Establishment of the Marine Park was estimated to cost \$2.0m to \$4.2m in direct lost revenue and flow on effects from the restrictions on commercial fishing. However, the local economy was predicted to expand by 22% as a result of the establishment of the Marine Park, outweighing the impact on commercial fishing.<sup>247</sup></li> </ul> <p><u>Batemans Marine Park</u></p> <ul style="list-style-type: none"> <li>73 commercial operators in 2007, mainly charter fishing vessels. Houseboat hire, dive operators, marine mammal viewing tours, hire and drive operators, and surf lesson providers are also operating under permits in the Marine Park.<sup>248</sup></li> </ul>

<sup>244</sup> Sydney Harbour Federation Trust Annual Report 2013-14

<sup>245</sup> Economic Impacts of Licensing Commercial Activities in NSW Marine Parks, Department of Environment and Climate change, AgEconPlus, 2008

<sup>246</sup> Ibid

<sup>247</sup> The Estimated Economic Impact Of The Proposed Port Stephens – Great Lakes Marine Park On Commercial Activities Final Report NSW Marine Park Authority, 2004

<sup>248</sup> Economic Impacts of Licensing Commercial Activities in NSW Marine Parks, Department of Environment and Climate change, AgEconPlus, 2008

	Economic benefits
	<p><u>Cape Byron Marine Park</u></p> <ul style="list-style-type: none"> <li>• 18 commercial operator permits in 2007, including charter fishing vessels, dive operators, kayak tours, surf schools, kite surfing and horse riding.<sup>249</sup></li> <li>• The dive tour operators, kayak tours, surf schools and whale watching tours in the Marine Park generated \$4.17 million in revenue in 2013-14.<sup>250</sup></li> </ul> <p><u>Solitary Islands Marine Park</u><sup>251</sup></p> <ul style="list-style-type: none"> <li>• 35 commercial operators in 2007, including charter fishing vessels, dive operators, marine mammal viewing tours, hire and drive operators, and surf lesson providers.</li> </ul> <p><u>Jervis Bay Marine Park</u><sup>252</sup></p> <ul style="list-style-type: none"> <li>• 26 commercial operators in 2007, including charter fishing vessels,, dive operators, marine mammal viewing tours, hire and drive operators, and kayak tours.</li> <li>• Estimate \$2.4 million value of commercial activities per annum in 2008.<sup>253</sup></li> <li>• Tourism increased in the local area since the establishment of the Marine Park. Accommodation takings rose from \$4 million in 2002 to \$6.8 million in 2005.<sup>254</sup></li> </ul> <p><u>Lord Howe Island Marine Park</u></p> <ul style="list-style-type: none"> <li>• 29 commercial operators in 2007, including charter fishing vessels, dive operators and marine mammal viewing tours.<sup>255</sup></li> </ul> <p><u>Montague Island Nature Reserve</u></p> <ul style="list-style-type: none"> <li>• Generated \$838,000 in direct expenditure from visitors to the area and \$808,000 in value added in 1998.<sup>256</sup></li> </ul> <p><u>Management costs and expenditure</u></p> <ul style="list-style-type: none"> <li>• Operating expenditure across five of the marine parks (Port Stephens Great Lakes, Cape Byron, Batemans, Jervis Bay and Solitary Islands)</li> </ul>

<sup>249</sup> Economic Impacts of Licensing Commercial Activities in NSW Marine Parks, Department of Environment and Climate change, AgEconPlus, 2008

<sup>250</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>251</sup> Economic Impacts of Licensing Commercial Activities in NSW Marine Parks, Department of Environment and Climate change, AgEconPlus, 2008

<sup>252</sup> Ibid

<sup>253</sup> Jervis Bay Marine Park, Summary of Social, Cultural and Economic Uses, Marine Parks Authority, 2008

<sup>254</sup> Ibid

<sup>255</sup> Economic Impacts of Licensing Commercial Activities in NSW Marine Parks, Department of Environment and Climate change, AgEconPlus, 2008

<sup>256</sup> The Contribution of Montague Island Nature Reserve to Regional Economic Development, National Parks and Wildlife Service, 1998



	Economic benefits
	<p>was \$1.08 million in 2010, 75% of which was spent in the local area in which the marine park is located.<sup>257</sup></p> <ul style="list-style-type: none"> <li>These five marine parks expended just over \$3 million on employee wages across 35.5 full time equivalent staff.<sup>258</sup></li> </ul> <p><u>Impact of marine parks on local businesses</u></p> <ul style="list-style-type: none"> <li>A survey of businesses in local government areas near five of the marine parks (Port Stephens Great Lakes, Cape Byron, Batemans, Jervis Bay and Solitary Islands) found that 64% of local businesses believed that the marine park had a positive effect on their business.<sup>259</sup></li> </ul>
<b>Total quantified benefit</b>	<p>Insufficient data available to provide an estimate of the total quantified benefit of this activity, either across the marine estate, or in the Hawkesbury bioregion.</p> <p>In addition, this activity overlaps with other activities, including recreation, recreational fishing, recreational boating and tourism and accommodation, the economic benefits of which are considered in Chapters 1 – 3 and 11 of this report.</p>

## 5.4 Social benefits

The marine estate provides intrinsic and bequest values to the NSW community, and also nationally and internationally. People want to know that the marine estate is there to enjoy both now and in the future, even if they do not visit it regularly. The Marine Estate Community Survey completed by Sweeney Research found that the most important social benefit of the marine estate identified by 48% respondents was the enjoyment people get from knowing its natural beauty is there, even if they can't visit it regularly.<sup>260</sup> Conserving both heritage and the environment are essential to achieving this social benefit.

In addition, heritage is a valuable cultural resource which provides important information about the history of NSW, the communities which lived in NSW in the past, and how NSW has been shaped over time. Heritage also provides scenic and amenity value, contributing to a high quality of life for NSW residents.

Shipwrecks, for example, are unique and fragile cultural resources, with archaeological, anthropological, historic and social value. They provide valuable information about naval architecture, shipbuilding, Defence, engineering skills, technology, commerce and culture.<sup>261</sup> Shipwrecks can be of social importance to local communities, by providing diving and fishing

<sup>257</sup> Local Businesses Servicing Visitation and Management of NSW Marine Parks, Arche Consulting Pty Ltd, 2010

<sup>258</sup> Local Businesses Servicing Visitation and Management of NSW Marine Parks, Arche Consulting Pty Ltd, 2010

<sup>259</sup> Ibid

<sup>260</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research, 2014

<sup>261</sup> Ibid

sites. Their role as a grave site is also of significance to families and descendants in Australia and internationally. For example:<sup>262</sup>

- the discovery of the remains of the MV Limerick in 2012 brought an end to an enduring mystery of Australia and New Zealand's shared maritime heritage. The Limerick was off the coast of Ballina heading towards Brisbane when it was torpedoed by the Japanese submarine I-177. The shipwreck of the Limerick is a tangible link to actions of Australian and New Zealand merchant seamen and for two, their last resting place; and
- in 2013, a traditional Japanese tea ceremony was held over the site of the M24 midget submarine wreck. The ceremony was held with Japanese representatives to commemorate the dead submariners, and indicates the importance of the site to both Australia and Japan.

As noted above, a separate background information report considers the specific social benefits of Aboriginal cultural and contemporary use of the marine estate, and they are not considered here.

Other social benefits of coastal and marine conservation are:

- protection of the coastal and marine environment;
- protection of marine biodiversity; and
- provision of zones for passive recreational activities, such as swimming, snorkelling, diving, kayaking and nature appreciation.

Consumer surpluses have been estimated for a number of the Marine Parks, including:

- Batemans Marine Park: \$800,000 – \$1.6 million annual consumer surplus in 2007;<sup>263</sup>
- Cape Byron Marine Park: \$2 – \$2.5 million annual consumer surplus in 2007;<sup>264</sup>
- Solitary Islands Marine Park: \$1 – \$1.4 million annual consumer surplus in 2007;<sup>265</sup> and
- Jervis Bay Marine Park: \$1.3 – \$1.9 million annual consumer surplus in 2007.<sup>266</sup>

Importantly, this activity supports the achievement of many social benefits of other activities in the marine estate, including recreation, recreational fishing, recreational boating, cruise shipping, commercial and charter boating, coastal urban settlement, tourism and accommodation and retail and trade.

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

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<sup>262</sup> <http://www.asha.org.au/uploads/37600/ufiles/newsletters/2013-2.pdf>

<sup>263</sup> The Recreation Use Value of NSW Marine Parks, Department of Environment and Climate change, Gillespie Economics, 2007

<sup>264</sup> Ibid

<sup>265</sup> Ibid

<sup>266</sup> Ibid

## 5.5 Threats to economic and social benefits

The threats to the economic and social benefits of conserving heritage, and the consequence and likelihood of each threat, are considered in the following table.

**Table 34 Conserving heritage and the environment: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>An economic downturn could reduce the number of domestic and international cultural, heritage and nature-based tourists, and reduce the economic benefits of heritage sites and coastal and marine conservation in the NSW marine estate.</li> <li>An economic downturn could also limit funds available to preserve and protect heritage sites.</li> </ul>	<ul style="list-style-type: none"> <li>The economic and social benefits of all conserving heritage and the environment activities.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>A reduced number of international and interstate visitors in an economic downturn would be partially offset by increased numbers of local tourists, who elect to holiday in NSW as a result of reduced discretionary incomes or economic uncertainty.</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>
<b>Degradation of heritage sites from human activity</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Dredging, fishing, boat anchors and other human activities can cause damage to heritage sites such as shipwrecks.<sup>267</sup></li> <li>Diving can also damage shipwrecks through the removal of artefacts, disturbing and destroying the wreck and contributing to the deterioration of the</li> </ul>	<ul style="list-style-type: none"> <li>The economic and social benefits of heritage sites, particularly those within the waters in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The extent of the impact will vary from site to site.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul>

<sup>267</sup> <http://www.environment.nsw.gov.au/cultureandheritage.htm>

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>wreck through exhaled air bubbles and human contact.<sup>268</sup></p> <ul style="list-style-type: none"> <li>• Pollution and environmental changes from climate change can also contribute to the deterioration of heritage sites.</li> </ul>			
<p><b>Increased fuel or other base costs</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Rising costs would increase the cost of preserving, protecting and maintaining heritage and the environment in the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• The economic and social benefits of all conserving heritage and the environment activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The extent of the impact will vary depending on the importance of the sites and the willingness of governments and other bodies to contribute funds to their maintenance and protection.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>
<p><b>Urban and coastal development</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Development can impact on the marine environment and heritage sites.</li> </ul>	<ul style="list-style-type: none"> <li>• All benefits of conserving heritage and the environment activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The impacts are site-specific, and are managed through regulatory processes which consider the impact of development proposals on the environment as well as on heritage sites.</li> <li>• In addition, development</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul>

<sup>268</sup> <http://www.environment.nsw.gov.au/cultureandheritage.htm>

Threats	Description	Benefits threatened	Consequence	Likelihood
			can revitalise and bring new life to a heritage site, which may otherwise have been destroyed.	
<b>Water pollution / Litter and marine debris / Climate change</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Erosion and storm events can lead to the degradation of a heritage site or impact on the environment.</li> </ul>	<ul style="list-style-type: none"> <li>All benefits of conserving heritage and the environment activities.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>The extent of the impact will depend on the environmental change or storm event.</li> </ul>	<ul style="list-style-type: none"> <li>Likely</li> </ul>

## 5.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 35 Conserving heritage and the environment: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the scale of heritage activities in the NSW marine estate. Most data considers heritage activities across NSW.
<b>Trends</b>	Very limited data has been located on trends in this activity.
<b>Economic benefits</b>	<p>Limited data has been located on the economic benefits of heritage activities in the NSW marine estate. Most data considers heritage activities across NSW.</p> <p>No data has been located on the economic benefits of the coastal and marine environment management across the NSW marine estate, as all data is site-specific.</p>
<b>Social benefits</b>	No apparent information gaps, however there is limited quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 6. Cruise shipping

This chapter considers the activity 'cruise shipping', and identifies the social and economic benefits of the activity, as well as the potential threats to those benefits.

### 6.1 Activity description

Cruise ships are large passenger ships used for pleasure voyages. They generally stop at a number of ports on a given voyage.

The main cruise shipping terminals in the NSW marine estate are located in Sydney Harbour at Circular Quay (the overseas passenger terminal) and White Bay. The Port of Newcastle and Port of Eden also receive cruise ships. The Defence facilities at Garden Island in Sydney Harbour berth large international ships on an ad-hoc basis.

In total, in 2013-14, there were 1,178,958 visit days at ports within the NSW marine estate by passengers and crew. The scale of cruise shipping activity at each port is considered in the following table.

**Table 36 Cruise shipping: description and scale**

	Description	Scale
<b>Sydney Harbour (Sydney Ports)</b>	<ul style="list-style-type: none"> <li>The domestic cruise market consists of 8-14 day cruises that use Sydney as their home port. These generally dock at White Bay.</li> <li>International cruise ships stopover in Sydney. These ships are generally larger and unable to pass under the Harbour Bridge. They generally use the Overseas Passenger Terminal (OPT), with some also docking at the Defence facilities at Garden Island.</li> </ul>	<ul style="list-style-type: none"> <li>Two dedicated cruise facilities, with capacity to host three cruise ships simultaneously (two berths at White Bay, one at the OPT).<sup>269</sup></li> <li>261 cruise ships annually (2013-14), 142 at OPT and 119 at White Bay.<sup>270</sup></li> <li>1.2 million cruise passengers (2013-14).<sup>271</sup></li> <li>Three cruise ships have made Sydney their home port.<sup>272</sup></li> </ul>
<b>Newcastle</b>	<ul style="list-style-type: none"> <li>A small number of cruise ships stopover in Newcastle each year.</li> </ul>	<ul style="list-style-type: none"> <li>9 cruise ships (2013-14).<sup>273</sup></li> <li>22,000 cruise passengers (2013-14).<sup>274</sup></li> </ul>

<sup>269</sup> Sydney Ports Corporation Annual Report 2013/2014

<sup>270</sup> Ibid

<sup>271</sup> Ibid

<sup>272</sup> Ibid

<sup>273</sup> Newcastle Port Corporation Annual Report 2013/2014

<sup>274</sup> Ibid

	Description	Scale
<b>Eden</b>	<ul style="list-style-type: none"> <li>A small number of cruise ships stopover in Eden each year.</li> </ul>	<ul style="list-style-type: none"> <li>Two cruise ships (2013-14).<sup>275</sup></li> </ul>

## 6.2 Trends

Since 2004, there has been significant growth in the number of cruise ship visits to Sydney Harbour. Cruise ship visits to Eden and Newcastle have remained steady over the last five years.

**Table 37 Cruise shipping: trends**

	Trends	Trend summary
<b>Sydney Harbour (Sydney Ports)</b>	<ul style="list-style-type: none"> <li>Average annual growth over three years of more than 23.5%.<sup>276</sup></li> <li>153 cruise ship visits in 2010-11, 199 in 2011-12, 240 in 2012-13.<sup>277</sup></li> <li>The number of port visits by cruise ships, passenger numbers and expenditure is forecast to grow at 5-7% per year between 2015 and 2020.<sup>278</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Newcastle</b>	<ul style="list-style-type: none"> <li>Five cruise ship visits in 2009-10.</li> <li>Average 9-13 cruise ship visits each year since 2009-10.<sup>279</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>
<b>Eden</b>	<ul style="list-style-type: none"> <li>1-2 cruise ship visits over the last few years.<sup>280</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>

## 6.3 Economic benefits

Estimates of the economic value of cruise shipping to the NSW economy have generally been prepared by consultants on behalf of cruise shipping companies and industry associations. The estimates include:

- \$424 million in direct expenditure by passengers, crew and tour operators (in 2011);<sup>281</sup>

<sup>275</sup> Sydney Ports Corporation Annual Report 2013/2014

<sup>276</sup> Ibid

<sup>277</sup> Ibid

<sup>278</sup> Carnival Australia Submission to the Independent Review of Enhanced Cruise Ship Access to Garden Island, 2011

<sup>279</sup> Newcastle Port Corporation Annual Report 2009/10, 13/14

<sup>280</sup> Sydney Ports Corporation Annual Report 2011/12 and 2013/2014

<sup>281</sup> Economic contribution of the cruise sector, Deloitte Access Economics, 2012 (prepared for Carnival Australia)

- over \$1 billion in direct expenditure by passengers, crew and tour operators (in 2012-13);<sup>282</sup>
- \$1.26 billion indirect expenditure by passengers, crew and tour operators (in 2013);<sup>283</sup>
- 1,900 full-time-equivalent direct employment (in 2011);<sup>284</sup>
- 3,230 full-time-equivalent direct employment and 1 (in 2012-13);<sup>285</sup>
- full-time-equivalent direct employment (in 2013).<sup>286</sup>

As shown above, estimates vary depending on the assumptions and methodology used. Estimated direct expenditure per passenger underpins the figures listed above, and is likely to vary between reports.

The economic benefits on a port basis shown in the following table are taken from a 2012-13 report prepared by AEC for Cruise Down Under and Tourism Australia in 2013.

**Table 38 Cruise shipping: economic benefits**

	Economic benefits
<b>Sydney Harbour (Sydney Ports)</b>	<ul style="list-style-type: none"> <li>• Direct expenditure by passengers, crew and tour operators in Sydney of \$1.0247 billion.<sup>287</sup></li> <li>• In 2012, regulatory reform allowed Sydney Ports to introduce a passenger-based charge for cruise ships. This significantly increased revenue – the current charge is \$25 per passenger for a 24 hour period.<sup>288</sup></li> </ul>
<b>Newcastle</b>	<ul style="list-style-type: none"> <li>• Direct expenditure by passengers, crew and tour operators of \$10.5 million.<sup>289</sup></li> </ul>
<b>Eden</b>	<ul style="list-style-type: none"> <li>• Direct expenditure of by passengers, crew and tour operators of \$0.4 million.<sup>290</sup></li> </ul>
<b>Total quantified economic benefits</b>	<b>\$1-1.1 billion annually.</b> This equates to 0.2% of NSW gross domestic product. Almost all of this benefit extends from the Hawkesbury bioregion.

<sup>282</sup> Economic Impact Assessment of the Cruise Shipping Industry in Australia, AEC Group, 2013 (prepared for Cruise Down Under and Tourism Australia)

<sup>283</sup> Cruise industry study, Business, Research and Economic Advisors, 2014 (prepared for Cruise Line International Association Australasia)

<sup>284</sup> Economic contribution of the cruise sector, Deloitte Access Economics, 2012 (prepared for Carnival Australia)

<sup>285</sup> Economic Impact Assessment of the Cruise Shipping Industry in Australia, AEC Group, 2013 (prepared for Cruise Down Under and Tourism Australia)

<sup>286</sup> Cruise industry study, Business, Research and Economic Advisors, 2014 (prepared for Cruise Line International Association Australasia)

<sup>287</sup> Economic Impact Assessment of the Cruise Shipping Industry in Australia, AEC Group, 2013 (prepared for Cruise Down Under and Tourism Australia)

<sup>288</sup> Sydney Ports Corporation Annual Report 2013/2014

<sup>289</sup> Economic Impact Assessment of the Cruise Shipping Industry in Australia, AEC Group, 2013 (prepared for Cruise Down Under and Tourism Australia)

<sup>290</sup> Ibid



## 6.4 Social benefits

The social benefits of cruise shipping include:

- providing domestic and international holiday options for NSW residents. Cruise lines vary significantly in price and cater to a wide market;
- providing opportunities to appreciate the beauty of the NSW marine estate; and
- community excitement over large international cruise ship visits, such as the QEII. Large international cruise ship visits can draw NSW residents to the marine estate.

All of these social benefits are relevant mainly to the Hawkesbury bioregion.

It is noted that local communities can also suffer social costs from cruise activity, including from marine effluents, atmospheric emissions, noise pollution and traffic congestion. Communities around White Bay terminal in Sydney's inner west have been particularly vocal about the impact of the cruise terminals.<sup>291</sup>

## 6.5 Threats to economic and social benefits

The threats to the economic and social benefits of cruise shipping, and the consequence and likelihood of the threat, are considered in the following table.

**Table 39 Cruise shipping: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Loss of social licence</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Local residents lobbying for change can lead to restrictions being placed on cruise ships and reduce the incentive for cruise ships to dock in Sydney.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of cruise shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• Increased costs are generally passed to cruise passengers, reducing the incentives for undertaking a cruise.</li> <li>• Requirements which reduce the impact on local</li> </ul>	<ul style="list-style-type: none"> <li>• Likely. <u>Basis for ranking:</u></li> <li>• Resident complaints about noise, emissions and vibrations from cruise ships at White Bay led to a NSW Senate Inquiry which recommends a number of changes to the regulation of cruise ships, including shore-to-</li> </ul>

<sup>291</sup> <http://www.abc.net.au/radionational/programs/backgroundbriefing/2015-03-15/6293472>;

<http://www.dailytelegraph.com.au/newslocal/inner-west/m-white-bay-cruise-ship-terminal-a-serious-error-says-nsw-upper-house-report/story-fngr8h4f-1227256891070>

Threats	Description	Benefits threatened	Consequence	Likelihood
			communities also ensure that the overall social impact of the activity is positive.	<p>ship power. These reforms would impose costs on the NSW Government and cruise ship operators.</p> <ul style="list-style-type: none"> <li>• To date, the NSW Government has committed to mandating the use of low sulfur fuel by cruise ships in NSW ports. Draft legislation is currently subject to public consultation and is proposed to take effect from 1 October 2015 in Sydney Harbour and from 1 July 2016 in all other NSW Ports.<sup>292</sup></li> <li>• Overnight berthing at White Bay has been suspended until low sulphur fuel is required.<sup>293</sup></li> </ul>
<p><b>Limited access infrastructure</b> <i>Applies mainly to the Hawkesbury bioregion</i></p>	<ul style="list-style-type: none"> <li>• Garden Island Defence facilities have provided berthing for large international cruise ships on an ad-hoc basis.</li> <li>• As cruise ship sizes and the number of cruise ships visiting Sydney increase, the full economic benefits of cruise shipping will not</li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social benefits of cruise shipping in Sydney.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Lack of appropriate facilities will prevent the full economic benefits from cruise shipping activities being realised in the future.<sup>295</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Defence needs for Garden Island make it difficult to confirm availability 12-24 months in advance, as required by the cruise operators.</li> <li>• Suitable alternative facilities for large cruise ships have not been located.</li> </ul>

<sup>292</sup> <http://www.epa.nsw.gov.au/MediaInformation/white-bay.htm>

<sup>293</sup> ABC online news, 13 June 2015

<sup>295</sup> Independent Review of the Potential for Enhanced Cruise Ship Access to Garden Island Sydney, Allan Hawke, 2012

Threats	Description	Benefits threatened	Consequence	Likelihood
	be realised unless infrastructure is available to berth more large cruise vessels. <sup>294</sup>			
<b>Economic downturn</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>An economic downturn would reduce demand for cruise ship voyages.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of cruise shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>
<b>Cost of access infrastructure</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Until 2012, cruise ships paid a site occupation charge based only on the amount of time the ship was berthed in the port. Fees collected did not cover the costs of housing the cruise ships.<sup>296</sup></li> <li>The introduction of passenger-based charges in 2012 led to far higher fees being charged, and a reasonable rate of return being provided to Sydney Port Corporation for investments in White Bay and OPT.<sup>297</sup></li> <li>The passenger-based charges are subject to</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of cruise shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The 2012 charges were introduced to reflect the earning capacity of the vessel, and are calculated on a passenger levy basis. They are a minor cost compared to the full costs of a cruise.<sup>299</sup> Future changes would be developed in consultation with the cruise industry and would be designed to minimise the impact of the price rise.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Sydney Ports Corporation reviews pricing strategies on a periodic basis.</li> </ul>

<sup>294</sup> Independent Review of the Potential for Enhanced Cruise Ship Access to Garden Island Sydney, Allan Hawke, 2012

<sup>296</sup> Ports and Maritime Administration Regulation 2012 Regulatory Impact Statement, Transport for NSW, 2012

<sup>297</sup> Ports and Maritime Administration Regulation 2012 Regulatory Impact Statement, Transport for NSW, 2012

<sup>299</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
	periodic increases, which could impact on the viability of the cruise sector. <sup>298</sup>			
<b>Increased fuel or other base costs</b>  <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Rising fuel costs, increased minimum wages and other base cost increases could impact on the viability of the cruise sector in NSW.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of cruise shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul>

## 6.6 Information gaps

The information gaps and dated (pre-2010) data for cruise shipping have been noted in the tables above. They are summarised in the following table.

**Table 40 Cruise shipping: information gaps**

	Information gaps
<b>Activity scale and scope</b>	No apparent information gaps.
<b>Trends</b>	Limited data located on forecasts for cruise activity in Newcastle and Eden.
<b>Economic benefits</b>	No apparent information gaps. However, the data located has generally been industry association driven data.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

<sup>298</sup> Sydney Ports Corporation Annual Report 2011/12 and 2013/2014

## 7. Ports and shipping

This chapter considers the activity 'ports and shipping (domestic and international trade) and other commercial vessel activity (excluding those commercial vessel activities discussed in other chapters)', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 7.1 Activity description

Thousands of domestic and international commercial vessels operate in the NSW marine estate each year. This chapter considers the benefits of commercial vessels which operate in the marine estate for the purposes of transporting freight. It also includes activities ancillary to freight shipping, including the operation of ports, tugs and pilot boats and port and Harbour dredging. It does not include ship building and maintenance activities which are covered in Chapter 8. The range of domestic commercial vessel activities considered in this chapter are described in the following table.

**Table 41 Ports and shipping: description**

	Description
<b>Ports in NSW</b>	<ul style="list-style-type: none"> <li>• NSW's major commercial shipping ports are Port Jackson, Port Botany, Port Kembla and the Port of Newcastle.</li> <li>• Port Jackson (Sydney Harbour) is primarily used for the importation of bulk products such as cement, salt, soda ash, lubrication oil and petroleum products.</li> <li>• Port Botany is Australia's second largest container port and has a significant role in the importation of bulk liquids and gases.</li> <li>• Port Kembla is the State's leading port for car importation and is one of Australia's largest grain export ports.</li> <li>• The Port of Newcastle is one of the world's largest coal export ports.</li> <li>• The Port of Eden's major trade is the export of woodchips, supplemented by exports of softwood logs and general cargo.</li> <li>• The Port of Yamba exports timber and hardwood logs, explosives and general cargo.</li> </ul>
<b>Trading ships</b>	<ul style="list-style-type: none"> <li>• International and domestic ships import and export goods in NSW.</li> <li>• 'Coastal' trading ships are international and domestic ships that move goods between ports in Australia.</li> </ul>
<b>Tugs and pilot boats</b>	<ul style="list-style-type: none"> <li>• Pilot boats, tugboats and barges provide navigation, loading/unloading and other support services to larger trading vessels.</li> </ul>

	Description
<b>Port dredging</b>	<ul style="list-style-type: none"> <li>Dredging is used to maintain shipping channels for port access in the NSW marine estate.</li> </ul>

The location and scale of each of the sub-activities are considered in the following table.

**Table 42 Ports and shipping: location and scale**

	Scale
<b>Ports in NSW</b>	<p><u>All</u></p> <ul style="list-style-type: none"> <li>172.6 million tonnes total throughput in 2013-14.<sup>300</sup></li> </ul> <p><u>Port Jackson</u></p> <ul style="list-style-type: none"> <li>549 vessel visits in 2013-14.<sup>301</sup></li> <li>2,126,272 TEU containers (including Port Botany) in 2012-13.<sup>302</sup></li> <li>4,074,433 million mass tonnes in 2012-13.<sup>303</sup></li> </ul> <p><u>Port Botany</u></p> <ul style="list-style-type: none"> <li>1,854 vessel visits in 2013-14.<sup>304</sup></li> <li>2,126,272 TEU containers (including Port Jackson) (2012-13).<sup>305</sup></li> <li>19.1 million mass tonnes.<sup>306</sup></li> </ul> <p><u>Port Kembla</u></p> <ul style="list-style-type: none"> <li>946 vessel visits in 2012-13.<sup>307</sup></li> <li>29 million tonnes total trade in 2012-13.<sup>308</sup></li> </ul> <p><u>Port of Newcastle</u></p> <ul style="list-style-type: none"> <li>2,170 vessel visits in 2012-13.<sup>309</sup></li> <li>164.3 million tonnes total trade in 2013-14.<sup>310</sup></li> </ul>

<sup>300</sup> Australian Sea Freight 2012-13, Bureau of Infrastructure, Transport and Regional Development, 2014

<sup>301</sup> Sydney Port Corporation Annual Report 2013-2014

<sup>302</sup> Sydney Ports Trade Statistics 2012-2013

<sup>303</sup> <http://www.portsaustralia.com.au/aus-ports-industry/trade-statistics/?id=1&period=13>

<sup>304</sup> Sydney Ports Corporation Annual Report 2013-2014

<sup>305</sup> Sydney Ports Trade Statistics 2012-2013

<sup>306</sup> Sydney Ports Corporation Annual Report 2013-2014

<sup>307</sup> Port Kembla Port Corporation Annual Report 2012-2013

<sup>308</sup> Ibid

<sup>309</sup> Newcastle Port Corporation Annual Report 2013-2014

<sup>310</sup> <http://www.portofnewcastle.com.au/News/Items/2014/The-Port-of-Newcastle-achieves-another-record-trade-year.aspx>

	Scale
	<p><u>Port of Eden</u></p> <ul style="list-style-type: none"> <li>• 46 vessel visits in 2013-14.<sup>311</sup></li> <li>• 800,803 mass tonnes total trade in 2013-14.<sup>312</sup></li> </ul> <p><u>Port of Yamba</u></p> <ul style="list-style-type: none"> <li>• 19 vessel visits in 2013-14.<sup>313</sup></li> <li>• 1,792 mass tonnes total trade in 2013-14.<sup>314</sup></li> </ul>
<b>Trading ships</b>	<ul style="list-style-type: none"> <li>• Over 5,300 chargeable ship visits to NSW ports (not including cruise ship visits) in 2013-14.<sup>315</sup></li> <li>• 96 ships in the Australian trading fleet in 2012-13, which includes vessels owned or operated by Australian companies that have called at an Australian port in the year.<sup>316</sup></li> </ul>
<b>Tugs and pilot boats</b>	<ul style="list-style-type: none"> <li>• 4,600 pilot transfers in Jackson, Botany, Eden and Yamba ports in 2013-14.<sup>317</sup></li> <li>• No data located on the number of tugs and other pilot boats in the NSW marine estate, or on the number of pilot transfers in Newcastle Port or Port Kembla.</li> </ul>
<b>Port dredging</b>	<ul style="list-style-type: none"> <li>• No major dredging works planned for Sydney Harbour, Botany, Eden or Yamba.</li> <li>• However, these Ports do occasionally dredge for operational purposes.<sup>318</sup></li> <li>• Dredging has been part of the Outer Harbour Development at Port Kembla.<sup>319</sup></li> <li>• Maintenance dredging is also undertaken on a continual basis at the Port of Newcastle, to provide safe, deep-water access to the port. The Port's dredge vessel operates 12 hours per day, seven days per week.<sup>320</sup></li> </ul>

<sup>311</sup> Sydney Port Corporation Annual Report 2013-2014

<sup>312</sup> Ibid

<sup>313</sup> Ibid

<sup>314</sup> Ibid

<sup>315</sup> Ibid

<sup>316</sup> Australian Sea Freight 2012-13, Bureau of Infrastructure, Transport and Regional Development, 2014

<sup>317</sup> Sydney Port Corporation Annual Report 2013-14

<sup>318</sup> [http://www.sydneyports.com.au/\\_\\_data/assets/pdf\\_file/0013/6214/PBE\\_-\\_Q\\_\\_and\\_\\_Dredging\\_Nov\\_08.pdf](http://www.sydneyports.com.au/__data/assets/pdf_file/0013/6214/PBE_-_Q__and__Dredging_Nov_08.pdf)

<sup>319</sup> Port Kembla Port Corporation Annual Report 2012-2013

<sup>320</sup> <http://www.portofnewcastle.com.au/Shipping--Operations/Dredging.aspx>

## 7.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 43 Ports and shipping: trends**

	Trends	Trend summary
<b>Ports in NSW</b>	<p><u>All</u></p> <ul style="list-style-type: none"> <li>Total throughput increased by 9% per year on average over 5 years to 2012-13.<sup>321</sup></li> </ul> <p><u>Port Jackson and Port Botany</u></p> <ul style="list-style-type: none"> <li>Total containerised trade increased by 6.5% per year over the 14 years to 2012-13.<sup>322</sup></li> <li>Total containerised trade projected to increase by 6.2% a year over the next five years.<sup>323</sup></li> <li>Non-containerised trade through Sydney declined slightly over the last 14 years, from 13.9 million tonnes in 1998-99 to 13.7 million tonnes in 2012-13.<sup>324</sup></li> <li>Non-containerised trade through Sydney projected to increase by 0.7% a year over the next twenty years.<sup>325</sup></li> <li>Bulk liquid trade grew at a compound average annual growth rate of 5.8% between the 1996 and 2013 financial years.<sup>326</sup></li> <li>Bulk liquids cargo forecast to increase by 4.2% per year over the next five years.<sup>327</sup></li> </ul> <p><u>Port Kembla</u></p> <ul style="list-style-type: none"> <li>Total trade figures down 10% in 2012-13 as compared to 2011-12, as a result of downturn of operations at BlueScope Steel.<sup>328</sup></li> </ul> <p><u>Port of Newcastle</u></p> <ul style="list-style-type: none"> <li>5.3% increase in total throughput (mass tonnes) between</li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>

<sup>321</sup> Australian Sea Freight 2012-13, Bureau of Infrastructure, Transport and Regional Development, 2014

<sup>322</sup> Containerised and non-containerised trade through Australian ports to 2032-33, Report 138, Department of Infrastructure and Regional Development, 2014

<sup>323</sup> Five year port development plan, NSW Ports, 2014

<sup>324</sup> Containerised and non-containerised trade through Australian ports to 2032-33, Report 138 Department of Infrastructure and Regional Development, 2014

<sup>325</sup> Ibid

<sup>326</sup> Five year port development plan, NSW Ports, 2014

<sup>327</sup> Ibid

<sup>328</sup> 2012/13 Trade Report, NSW Ports, 2014



	Trends	Trend summary
	<p>2012-13 and 2013-14.<sup>329</sup></p> <ul style="list-style-type: none"> <li>44% increase in total throughput since 2010-11.</li> </ul> <p><u>Port of Eden</u></p> <ul style="list-style-type: none"> <li>35% increase in total throughput (mass tonnes) between 2011-12 and 2013-14.<sup>330</sup></li> </ul> <p><u>Port of Yamba</u></p> <ul style="list-style-type: none"> <li>1% decrease in total throughput (mass tonnes) between 2011-12 and 2013-14.<sup>331</sup></li> </ul>	
<b>Trading ships</b>	<ul style="list-style-type: none"> <li>Australian trading fleet, which includes vessels owned or operated by Australian companies that have called at an Australian port in the last year, has reduced in size by an average of 2% per year over last five years.<sup>332</sup></li> <li>Ships sizes continue to increase. Australian ports cannot handle the largest ships ('Cape size vessels' – vessels too large to navigate the Panama Canal).</li> <li>The majority of container ships servicing Port Botany have a capacity of less than 4000 TEUs, however vessels with a carrying capacity of up to 6000 TEUs are beginning to visit the Port.<sup>333</sup></li> <li>No further data located on trends in trading ships.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Tugs and pilot boats</b>	<ul style="list-style-type: none"> <li>No data located on trends in tugs and pilot boats.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Port dredging</b>	<ul style="list-style-type: none"> <li>No data located on trends in port dredging.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

### 7.3 Economic benefits

The economic benefits of ports and shipping in the NSW marine estate are significant.

- The value of goods exported from NSW ports was \$32 billion in 2012-13.<sup>334</sup>
- Imported goods discharged at NSW ports were worth \$54.1 billion in 2012-13.<sup>335</sup>

<sup>329</sup> <http://www.portofnewcastle.com.au/News/Items/2014/The-Port-of-Newcastle-achieves-another-record-trade-year.aspx>

<sup>330</sup> Sydney Port Corporation Annual Report 2011-12, 2013-2014

<sup>331</sup> Ibid

<sup>332</sup> Australian Sea Freight 2012-13, Bureau of Infrastructure, Transport and Regional Development, 2014

<sup>333</sup> Port Botany Five Year Port Development Plan, NSW Ports, 2014

<sup>334</sup> Australian Sea Freight 2012-13, Bureau of Infrastructure, Transport and Regional Economics, 2014

<sup>335</sup> Ibid

The economic benefits of each of the sub-activities are considered in the following table.

**Table 44 Ports and shipping: economic benefits**

	Economic benefits
Ports in NSW	<u>Sydney Ports Corporation (including Eden and Yamba)</u>
	<ul style="list-style-type: none"> <li>• \$52.4 million profit after tax in 2011-12.<sup>336</sup></li> <li>• Nil dividend to government in 2011-12.<sup>337</sup></li> <li>• Handled \$61 billion in trade in 2011-12.<sup>338</sup></li> <li>• Contributed \$2.5 billion to NSW economy in 2011-12.<sup>339</sup></li> <li>• 17,000 full-time-equivalent employment associated with port-related activities in 2011-12.<sup>340</sup></li> </ul>
	<u>Port Kembla</u>
	<ul style="list-style-type: none"> <li>• \$19.5 million profit after tax in 2011-12.<sup>341</sup></li> <li>• \$13.6 million dividend to government in 2011-12.<sup>342</sup></li> <li>• In 2001-2002, generated a total impact on the NSW economy of around \$1.5 billion.<sup>343</sup></li> </ul>
	<u>Port of Newcastle</u>
	<ul style="list-style-type: none"> <li>• \$19.6 million profit after tax in (2011-12).<sup>344</sup></li> <li>• \$13.2 million dividend to government in 2011-12.<sup>345</sup></li> <li>• Estimated that in 2017:<sup>346</sup> <ul style="list-style-type: none"> <li>- Newcastle Port operations will indirectly generate \$2.5 billion for the regional economy;</li> <li>- the associated consumption of goods and services will account for an additional \$2.1 billion;</li> <li>- the Port will create 4,250 full time jobs; and</li> <li>- the total value of output generated in the Hunter would be \$11.5 billion.</li> </ul> </li> </ul>

<sup>336</sup> NSW Auditor General's Report to Parliament, Volume 8, Ports Overview, 2012

<sup>337</sup> Ibid

<sup>338</sup> Sydney Port Corporation Annual Report 2011-12

<sup>339</sup> Ibid

<sup>340</sup> Ibid

<sup>341</sup> NSW Auditor General's Report to Parliament, Volume 8, Ports Overview, 2012

<sup>342</sup> Ibid

<sup>343</sup> Port Kembla Economic Impact Study, Econsearch, 2009

<sup>344</sup> NSW Auditor General's Report to Parliament, Volume 8, Ports Overview, 2012

<sup>345</sup> Ibid

<sup>346</sup> Draft Strategic Development Plan for the Port of Newcastle, Newcastle Port Corporation, 2013

	Economic benefits
<b>Trading ships</b>	<ul style="list-style-type: none"> <li>The benefits of trading ships in the NSW marine estate have largely been captured above.</li> <li>Data on total employment on trading vessels has not been located. However, it is noted that most employment on these vessels will not be connected to NSW.</li> </ul>
<b>Tugs and pilot boats</b>	<ul style="list-style-type: none"> <li>Supports the safe berthing of ships at the ports and the achievement of the economic benefits outlined above.</li> </ul>
<b>Port dredging</b>	<ul style="list-style-type: none"> <li>Supports the safety of ships at the ports and the achievement of the economic benefits outlined above.</li> <li>Allows larger and more efficient ships to visit ports in the NSW marine estate.</li> </ul>
<b>Total quantified benefits</b>	<p><b>Ports in NSW contribute around \$6.5 billion to the NSW economy (NSW Port Corporation figure). This equates to 1.3% of NSW gross domestic product.</b></p> <p>Annual profit across the Ports of around \$85 million.</p> <p>Almost all of this benefit extends from the Hawkesbury bioregion.</p>

#### 7.4 Social benefits

International freight movement by sea is generally the least-cost mode of transport, and allows goods to be imported and exported cost effectively. As a result, ports and shipping provide the NSW community with access to a wide range of goods, many of which are not produced locally and would not be able to be produced locally at the same cost.

The coastal shipping trade also reduces demand for land-based freight transportation, and reduces congestion on the road and rail networks.

Finally, some goods are too large to be transported long distances on road or rail – particularly for large infrastructure – and can only be transported by sea.

These social benefits are mainly relevant to the Hawkesbury bioregion, where the State's major ports are located.

#### 7.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of each threat, are considered in the following table.

**Table 45 Ports and shipping: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>An economic downturn would reduce demand for the import and export of goods through the ports and reduce the economic benefits received from ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>
<b>Availability of land and competing land use</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Competition for land around city-based ports, such as Port Botany, is a significant threat to the ongoing expansion of the Port. This includes land for direct Port activities, as well as support industries such as empty container parks.</li> <li>Internationally, ports and shipping face a range of logistical and supply chain issues as a result of increasing trade volume.</li> </ul>	<ul style="list-style-type: none"> <li>Growth in economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate. <u>Basis for ranking:</u></li> <li>The Port Growth Plans, if executed, should reduce the impact of this threat.</li> </ul>	<ul style="list-style-type: none"> <li>Possible in the longer term. <u>Basis for ranking:</u></li> <li>NSW Ports considers that there is sufficient land capacity at Port Kembla to meet the incremental growth needs of current Port users over the next five years. However, new business opportunities would require land reclamation and berth construction.</li> <li>NSW Ports considers terminal capacity to be sufficient to accommodate the growth in total containers at Port Botany over the next five years.</li> <li>This threat is being managed through Port Growth Plans at all NSW Ports.</li> </ul>

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Inability to undertake dredging activities</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Regular dredging is necessary to maintain safe navigation for large commercial vessels at some NSW ports.</li> <li>• The cost, logistics and environmental implications of dredging activities is a potential threat to the continued, and expanded, ability of the Ports to accommodate large ships.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The channel deepening project at the Port of Melbourne was delayed as a result of legal actions by community groups.</li> <li>• A proposal by the Port of Newcastle to build 10 new berths raised concerns from environmental groups regarding the dredging involved.<sup>347</sup></li> </ul>
<b>Inability to access funds for infrastructure upgrades</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• An inability to access funds for infrastructure upgrades (including transportation links) could prevent the ports from realising the full potential of their economic benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• This is a risk for lower return infrastructure, such as rail links, and for less profitable, smaller ports.</li> <li>• The recent construction of White Bay terminal and the current renovation of the Overseas Passenger Terminal indicates that funding is available where a return on investment is likely.</li> </ul>

<sup>347</sup> <http://www.abc.net.au/news/2013-10-08/newcastle-port-corporation-dismisses-dredging-concerns/5004122>

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Congestion</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Land-side traffic congestion makes it difficult to move goods in and out of the Port, increases the cost of moving freight through the port and reduces the economic benefits of the Port.</li> <li>Water-side congestion also increases the costs of moving freight through the port. Ships queue at both Newcastle and Wollongong due to congested ports and incur demurrage costs (charges that the charterer pays to the ship owner for its extra use of the vessel).<sup>348</sup></li> </ul>	<ul style="list-style-type: none"> <li>The economic benefits of ports and shipping, particularly at Port Botany.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>In its Five Year Port Development Plan, NSW Ports stated that the “provision of efficient road and rail connections to and from the Ports” was “the greatest challenge” facing the Ports.<sup>349</sup></li> </ul>
<b>Public health and safety</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Safety incidents at the ports could lead to greater regulation and compliance costs.</li> </ul>	<ul style="list-style-type: none"> <li>All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The ports in NSW have a strong safety culture and are highly regulated. Visiting international vessels are subject to Port-State inspections by the Australian Maritime Safety Authority.</li> </ul>

<sup>348</sup> Data provided by Alistair McIlgorm, Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong, 2015

<sup>349</sup> Five year port development plan, NSW Ports, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Water pollution / Litter and marine debris</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Environmental concerns with port operations can create community unrest and lead to changes in port operations, potentially increasing costs and reducing the economic benefits of the port.</li> <li>• An oil or chemical spill at a port could lead to community concerns and increased regulation of, or restrictions on, port activities.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor. <u>Basis for ranking:</u></li> <li>• The economic impacts of any new requirements may be offset by greater social benefits (or less social costs).</li> </ul>	<ul style="list-style-type: none"> <li>• Possible. <u>Basis for ranking:</u></li> <li>• Community unrest regarding the environmental impacts of cruise vessels at White Bay has lead to new requirements to use low-sulfur fuel.</li> <li>• Port safety and environmental regulations, as well as State oil spill response arrangements, prevent and reduce the consequences of environmental incidents.</li> </ul>
<b>Climate change</b> <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Climate change will bring more intense storm events including heavy precipitation, high wind velocity, increased wave action and higher storm surges.<sup>350</sup></li> <li>• These events will impact ports by increasing siltation and necessitating more dredging activity, increasing the number of high wind stoppages under Occupational Health and Safety requirements, causing delays to</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown but potentially major.</li> <li>• The extent of the consequences will depend on the impact of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>• Almost certain.</li> </ul>

<sup>350</sup> Climate change Risks to Australia's Coast, A first pass assessment, Department of Climate change, 2009

Threats	Description	Benefits threatened	Consequence	Likelihood
	berthing, and requiring upgrades to wharves, piers, gantries and other cargo handling equipment. <sup>351</sup> All of these changes will increase the costs of moving goods through the Port.			
<b>Increased compliance costs</b>  <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• Regulations associated with border control issues, such as customs, quarantine and security, slow the handling of the goods and add to the cost of imports and exports moving through the Port.<sup>352</sup></li> <li>• Responding to a marine pest incursion through requirements such as dry docking vessel, quarantine and pest surveillance could increase compliance costs.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The new arrangements should only be introduced where their benefits (in enforcing customs, security and other laws) outweigh their costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul>
<b>Increased fuel or other base costs</b>  <i>Applies mainly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• The ageing maritime workforce poses future challenges to the benefits of ports and coastal shipping.<sup>353</sup> As skilled workers become less available, their</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of ports and shipping.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The recent contraction of the mining industry has removed some of the competition for skilled maritime</li> </ul>

<sup>351</sup> Climate change Risks to Australia's Coast, A first pass assessment, Department of Climate change, 2009

<sup>352</sup> Maritime Policy Agenda, Transport for NSW, 2012

<sup>353</sup> Reform Australia's Shipping, Regulatory Impact Statement, 2011



Threats	Description	Benefits threatened	Consequence	Likelihood
	costs increase.			workers.

## 7.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 46 Ports and shipping: information gaps**

	Information gaps
<b>Activity scale and scope</b>	No data has been located on the number of tugs and other pilot boats in the NSW marine estate, or on the number of pilot transfers in Newcastle Port or Port Kembla.
<b>Trends</b>	No forecasts located for the Port of Newcastle, Port Kembla, Port of Eden or Port of Yamba.  There is limited data on trends in trading ships, tugs and pilot boats and port dredging.
<b>Economic benefits</b>	Data on total employment on trading vessels has not been located.  Limited data located on the economic benefits of tugs and pilot vessels, and dredging in the marine estate.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 8. Boating – commercial and charter

This chapter considers the activity ‘boating – commercial and charter’, and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 8.1 Activity description

This activity includes all domestic commercial vessel activity in the NSW marine estate other than:

- vessels used for research (these are discussed in Chapter 4 above);
- cruise ships (these are discussed in Chapter 6 above);
- large commercial vessels used to transport goods and services (these are discussed in Chapter 8 above);
- port support and dredging vessels (these are discussed in Chapter 7 above); and
- water transport services, including ferries, water-taxis and vehicular ferries (these are discussed in Chapter 8 below).

The range of domestic commercial vessel activities considered in this chapter are described in the following table.

**Table 47 Boating – commercial and charter activities: description**

	Description
<b>Compliance, enforcement and surveillance activity</b>	<ul style="list-style-type: none"> <li>• Compliance, enforcement and surveillance activities on the water, including by the NSW Water Police, Roads and Maritime Services, Fisheries NSW, Office of Environment &amp; Heritage and the Ports Authority of NSW.</li> </ul>
<b>Search and rescue</b>	<ul style="list-style-type: none"> <li>• Search and rescue vessels, including those operated by Surf Lifesaving NSW and volunteer marine rescue organisations.</li> </ul>
<b>Commercial fishing vessels</b>	<ul style="list-style-type: none"> <li>• Vessels used to catch seafood for sale in the NSW marine estate, including the prawn and ocean trawlers, ocean trap and line fishing vessels and estuarine punts which operate in the 10 managed fisheries in the NSW marine estate.</li> <li>• Vessels used in the aquaculture industry.</li> </ul>
<b>Harbour cruises</b>	<ul style="list-style-type: none"> <li>• Includes sightseeing cruises on harbours in the marine estate. They cruises may involve sightseeing only, or may include some form of dining experience, such as lunch, dinner or coffee.</li> </ul>
<b>Scuba diving, snorkelling and</b>	<ul style="list-style-type: none"> <li>• Commercial scuba diving, snorkelling, kayaking, surfing and paddle boarding activity in the marine estate.</li> </ul>

	Description
<b>kayak tours, and surf / paddleboard lessons</b>	
<b>Charter vessels (except fishing)</b>	<ul style="list-style-type: none"> <li>• Private vessel charter (with a skipper) by a person or organisation, for functions, holiday or sightseeing.</li> </ul>
<b>Charter fishing</b>	<ul style="list-style-type: none"> <li>• A boat and skipper are hired for the purposes of a recreational fishing excursion. Charter fishing is a restricted access fishery and operators must have a charter fishing licence.</li> </ul>
<b>General hire and drive</b>	<ul style="list-style-type: none"> <li>• Hiring a boat from a commercial operator for recreational use, such as to go sailing, fishing, cruising or jet-skiing.</li> <li>• Includes 'bareboat charter' – the hiring of a yacht or other vessel without a skipper being provided.</li> <li>• Also includes boats provided by holiday accommodation for the use of guests.</li> </ul>
<b>Hire and drive houseboats</b>	<ul style="list-style-type: none"> <li>• Hiring a boat which can be moored and used as a dwelling.</li> </ul>
<b>Adventure sports</b>	<ul style="list-style-type: none"> <li>• Marine adventure tours involving boats, including parasailing and jet boating.</li> </ul>
<b>Whale and dolphin watching tours</b>	<ul style="list-style-type: none"> <li>• Mammal watching tours in the NSW marine estate. Includes whale, dolphin and seal watching tours.</li> </ul>
<b>Naval vessels and facilities</b>	<ul style="list-style-type: none"> <li>• Vessels and facilities owned or operated by the Royal Australian Navy, including warships and submarines.</li> </ul>

There are just under 5,000 'Class 2' (non-passenger) and 'Class 3' (fishing) domestic commercial vessels certified in NSW.<sup>354</sup> As Class 2 vessels can carry up to 12 passengers, this figure includes:

- some vessels used for water transport, which are covered in Chapter 8 below; and
- some large trading vessels which are used to transport goods and are covered by Chapter 7 above.

The 5,000 vessel figure does not include vessels certified in other States which operate in the NSW marine estate on occasion or on a seasonal basis. It is also significantly higher than the figures provided by the Commercial Vessel Association, which estimates that there are around

<sup>354</sup> Figures provided by the Australian Maritime Safety Authority

1,500 commercial vessel operators in NSW operating around 2,000 vessels (including ferries and fishing boats).<sup>355</sup>

In addition, there are approximately 13,000 commercial certificate of competency holders in NSW. This figure includes certificates for crew on Australian vessels used in the coastal trade and for water transport (covered in Chapters 7 above and 9 below).

The location and scale of each of the sub-activities are considered in the following table.

**Table 48 Boating – commercial and charter activities: location and scale**

	Location	Scale
<b>Compliance, enforcement and surveillance activity</b>	<ul style="list-style-type: none"> <li>Boating Safety Officers (BSOs) employed by Roads and Maritime Services operate throughout the marine estate, focussing on high traffic areas.</li> <li>The operators of the ports of Botany Bay, Newcastle and Kembla have officers with the authority to give directions to vessels in order to maintain safety in the port.</li> <li>Water Police vessels and personnel are located at Broken Bay, Newcastle, Port Stephens, Coffs Harbour, Botany Bay, Port Kembla and Eden.<sup>356</sup></li> <li>The NSW Department of Primary Industries (DPI) Fisheries, has vessels used for marine park and fisheries compliance and research programs at 20 offices, located in coastal towns along the marine estate.</li> <li>The NSW Environment Protection Authority has compliance officers who conduct inspections and investigate reported breaches of</li> </ul>	<p><u>Boating Safety Officers</u></p> <ul style="list-style-type: none"> <li>62 BSOs operate around NSW (as at January 2014).<sup>357</sup></li> <li>In 2012-13, BSOs conducted 45,000 boating safety checks, issued 3,850 written warnings and 2,000 penalty notices.<sup>358</sup></li> </ul> <p><u>Water Police</u><sup>359</sup></p> <ul style="list-style-type: none"> <li>11 sea going craft and a number of smaller boats.</li> <li>123 personnel, including operational water police, marine intelligence unit, marine crime prevention officers, divers, detectives and the marine operational support team.</li> </ul> <p><u>DPI Fisheries</u><sup>360</sup></p> <ul style="list-style-type: none"> <li>54 compliance vessels in 2015.</li> <li>62 compliance staff in 2015.</li> </ul> <p><u>NSW Port Authority</u></p> <ul style="list-style-type: none"> <li>Sydney Ports, Port Kembla and the Port of Newcastle employ officers to ensure that vessels comply with navigation, safety and environmental rules in the port.</li> <li>No data has been located on the number of compliance officers</li> </ul>

<sup>355</sup> <http://cvansw.org.au/industry-facts/>

<sup>356</sup> Ibid

<sup>357</sup> Media release, 23 January 2014, Andrew Fraser MP

<sup>358</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>359</sup> Data provided by the Department of Primary Industries (DPI) Fisheries, 2015

<sup>360</sup> <http://www.dpi.nsw.gov.au/fisheries/compliance/fisheries-compliance-wishes-to-publish-a-new-2013-2014>

	Location	Scale
	environmental legislation.	employed by Ports in the marine estate.
<b>Search and rescue</b>	<ul style="list-style-type: none"> <li>Throughout the NSW marine estate but focussed on high activity areas, including popular beaches.</li> </ul>	<p><u>Surf Life Saving NSW</u><sup>361</sup></p> <ul style="list-style-type: none"> <li>129 Surf Life Saving clubs in 2013-14.</li> <li>5,322 rescues in 2013-14.</li> <li>373,843 preventative actions in 2013-14.</li> <li>10,344 first aid treatments in 2013-14.</li> <li>75,916 members in 2013-14.</li> <li>67 staff in 2013-14.</li> <li>474,055 total patrol hours in 2013-14.</li> </ul> <p><u>Marine Rescue NSW</u></p> <ul style="list-style-type: none"> <li>3,300 member volunteer members in 2013-14.<sup>362</sup></li> <li>45 units in 2013-14.<sup>363</sup></li> <li>80 rescue vessels in 2013-14,<sup>364</sup> 59 of which were new or refurbished between 2009-2015, at a cost of more than \$14 million.<sup>365</sup></li> <li>3,046 vessels assisted in 2013-14.<sup>366</sup></li> <li>749 lifesaving responses in 2013-14.<sup>367</sup></li> <li>364,368 lifesaving calls in 2013-14.<sup>368</sup></li> <li>\$1.52 million grant from Roads and Maritime Services (allocated from boat driving licence and registration fees) in 2013-14.<sup>369</sup></li> <li>An annual 'Marine Rescue contribution' is also collected as part of boat driving licence and boat registration fees. In 2012-13, \$6.4 million was collected</li> </ul>

<sup>361</sup> Surf Life Saving NSW Annual Report 2013-2014

<sup>362</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>363</sup> <http://www.marinerescuensw.com.au/>

<sup>364</sup> Ibid

<sup>365</sup> <http://www.marinerescuensw.com.au/>

<sup>366</sup> Marine Rescue NSW Annual Report 2013-2014

<sup>367</sup> Ibid

<sup>368</sup> Ibid

<sup>369</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

	Location	Scale
		and forwarded to the Ministry of Police and Emergency Services for this purpose. <sup>370</sup>
<b>Harbour cruises</b>	<ul style="list-style-type: none"> <li>• Sydney Harbour is the main location for harbour cruise activities.</li> <li>• Harbour cruises are also available in Newcastle.</li> </ul>	<p><u>In Sydney Harbour</u><sup>371</sup></p> <ul style="list-style-type: none"> <li>• Over 100 tour operators in 2007.</li> <li>• Over 1,500 people were directly employed in the industry in 2007, including vessel crews, ticket sales, marketing and administrative staff and maintenance personnel.</li> <li>• The three largest companies (Blue Line Cruises, Captain Cook Cruises and Matilda Cruises) employed over 500 staff in 2007.</li> <li>• The preferred activity of almost 90% of all tourists visiting Sydney in 2007 was a Sydney Harbour cruise.</li> <li>• Over 80% of the market was international tourists and national tourists who do not reside in NSW in 2007.</li> <li>• The NSW Government received \$4.5 million from the three largest operators for access to Wharf 6 at Circular Quay in 2007.</li> </ul> <p><u>Beyond Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>• No data on the scope of the Harbour cruise industry outside Sydney Harbour has been located.</li> </ul>
<b>Scuba diving, snorkelling and kayak tours, and surf / paddleboard lessons</b>	<ul style="list-style-type: none"> <li>• Key areas in Jervis Bay, Byron Bay and Sydney.</li> </ul>	<p><u>Byron Bay</u><sup>372</sup></p> <ul style="list-style-type: none"> <li>• 25,528 divers and snorkelling went on a dive/snorkelling tour in 2013-14.</li> <li>• 20,354 people went on a kayak tour in 2013-14.</li> <li>• 18,749 people had a surfing or paddle boarding lesson in 2013-14.</li> </ul>

<sup>370</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>371</sup> Report for the NSW Minister for Ports, Options to Support, Promote & Regulate the Cruise Industry on Sydney Harbour

<sup>372</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

	Location	Scale
		<p><u>Jervis Bay</u><sup>373</sup></p> <ul style="list-style-type: none"> <li>• Scuba diving is extremely important to the local economy, with around 10,000 charter boat dives undertaken in the marine park in 2008.</li> <li>• Around 90% of all divers were from areas other than Jervis Bay and Nowra in 2008.</li> </ul> <p><u>NSW dive industry generally</u></p> <ul style="list-style-type: none"> <li>• Hundreds of dive tourism operators, equipment retailers, dive training organisations, and dive publications.<sup>374</sup></li> <li>• Around 120,000 'discover scuba diving' experiences take place in NSW annually (2015) (industry figure).<sup>375</sup></li> <li>• The dive industry directly employs over 5,000 people in NSW,<sup>376</sup> including 3,000 dive instructors (2015) (industry figure).<sup>377</sup></li> </ul>
<b>Charter vessels (except fishing)</b>	<ul style="list-style-type: none"> <li>• Sydney Harbour is a key location for charter sightseeing and function cruises.</li> <li>• There are also operators of charter sightseeing and function vessels in other parts of the marine estate, including Newcastle.</li> <li>• Charter vessels (including skippered yacht charter) are available in Sydney Harbour, the greater Sydney area such as in Pittwater and Hardys Bay, Jervis Bay, Lake Macquarie and Lord Howe Island.</li> </ul>	<p><u>Charter cruises on Sydney Harbour</u><sup>378</sup></p> <ul style="list-style-type: none"> <li>• Charter cruises are usually provided for specific functions, include catering and extend about 4 hours at a time.</li> <li>• Over 100 vessel operators in 2007.</li> <li>• In 2007, 20% of the market was from international tourists and national tourists who did not reside in NSW. 80% of the market was NSW residents and companies.</li> <li>• In 2000, the NSW Government created a hub for charter vessels at King St Wharf. Vessels operating out of King St Wharf can pick up and drop off passengers in Circular Quay.</li> </ul>

<sup>373</sup> Jervis Bay Marine Park – Summary of social, cultural and economic uses, Marine Parks Authority NSW 2008

<sup>374</sup> [http://www.diveindustry.com.au/default2.asp?active\\_page\\_id=127](http://www.diveindustry.com.au/default2.asp?active_page_id=127)

<sup>375</sup> Article by Richard Nicholls, President of the Dive Industry Association of Australia, Sydney Morning Herald, June 9 2014

<sup>376</sup> [http://www.diveindustry.com.au/default2.asp?active\\_page\\_id=127](http://www.diveindustry.com.au/default2.asp?active_page_id=127)

<sup>377</sup> Article by Richard Nicholls, President of the Dive Industry Association of Australia, Sydney Morning Herald, June 9 2014

<sup>378</sup> Report for the NSW Minister for Ports, Options to Support, Promote & Regulate the Cruise Industry on Sydney Harbour

	Location	Scale
		<ul style="list-style-type: none"> <li>The NSW Government received over \$1.5 million in 2007 from the three largest operators for access to King Street Wharf.</li> </ul> <p><u>Charter vessels generally</u></p> <ul style="list-style-type: none"> <li>No data has been located on the scale of the non-fishing charter boat industry in the NSW marine estate generally.</li> </ul>
<b>Charter fishing</b>	<ul style="list-style-type: none"> <li>Throughout the NSW marine estate.</li> <li>89% of trips are 'nearshore', 6% involve estuary fishing and 5% involve gamefishing in ocean waters.<sup>379</sup></li> </ul>	<ul style="list-style-type: none"> <li>211 vessels with charter fishing licences in 2012.<sup>380</sup></li> <li>131 vessels completed and returned logbooks to the Department of Primary Industries NSW in 2012.<sup>381</sup></li> <li>44,547 people took a charter fishing trip in 2012. 22% of these trips were in Sydney.<sup>382</sup></li> <li>NSW Government coast infrastructure berthed 312 charter fishing vessels in 2014.<sup>383</sup></li> </ul>
<b>General hire and drive</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>There are approximately 3,788 hire and drive vessels registered in NSW in 2015.<sup>384</sup></li> </ul>
<b>Hire and drive houseboats</b>	<ul style="list-style-type: none"> <li>Houseboat activities in the NSW marine estate are predominantly along the Hawkesbury River, Batemans Bay / Clyde River, Tweed Heads and Lake Macquarie.</li> </ul>	<ul style="list-style-type: none"> <li>There are approximately 425 surveyed hire and drive vessels registered in NSW, a large number of which are houseboats.<sup>385</sup></li> </ul>
<b>Adventure sports</b>	<ul style="list-style-type: none"> <li>Jet-boating occurs mainly in Sydney Harbour, but is also available at key tourist locations in the marine estate including</li> </ul>	<ul style="list-style-type: none"> <li>No data has been located on the scale of the adventure sports industry in the NSW marine estate.</li> </ul>

<sup>379</sup> NSW Charter Industry Economics 2012, Dominion Consulting, 2014

<sup>380</sup> Ibid

<sup>381</sup> Ibid

<sup>382</sup> Ibid

<sup>383</sup> Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014

<sup>384</sup> Figures provided by the Australian Maritime Safety Authority. Consistent with figures in the Boating Incidents in NSW, Statistical report for the 10-year period ended 30 June 2012, Transport for NSW. This is believed to be an underestimation of the number of hire and drive vessels in NSW, as some are registered as operations (covering multiple vessels) and not yet registered as individual vessels.

<sup>385</sup> Boating Incidents in NSW, Statistical report for the 10-year period ended 30 June 2012, Transport for NSW



	Location	Scale
	<p>Lake Macquarie and Port Macquarie.</p> <ul style="list-style-type: none"> <li>Parasailing tours are available in Sydney Harbour and Port Stephens.</li> </ul>	
<b>Whale and dolphin watching tours</b>	<ul style="list-style-type: none"> <li>Marine mammal watching tours take place in Tweed Heads, Byron Bay, Coffs Harbour, South West Rocks, Port Macquarie, Forster, Port Stephens, the Central Coast, Sydney, Wollongong/Kiama, Jervis Bay, Batemans Bay, Narooma, Eden and Merimbula.<sup>386</sup></li> <li>The NSW industry is split into two segments: <ul style="list-style-type: none"> <li>seasonal offshore tours, with longer trip times and higher fares; and</li> <li>year-round dolphin and seal watching tours, concentrated in Port Stephens and Jervis Bay.</li> </ul> </li> <li>Humpback whales are the focus of whale watching in NSW. Other species, such as the southern right whale and, to a lesser extent, the sperm, pilot, false killer, killer, brides, fin, sei, blue, and minke whales are also viewed.</li> </ul>	<ul style="list-style-type: none"> <li>In 2008, an estimated 800,000 people participated in mammal watching activities in NSW, however this may include land-based viewing. 78% of participants were domestic tourists and 22% were international tourists.<sup>387</sup></li> <li>In 2003, it was estimated that there were 133 mammal watching operators in the NSW marine estate, which employed 170 full time crew and operated approximately 160 vessels.<sup>388</sup></li> <li>In Byron Bay, 3,128 people went on a whale watching tour in 2013-14.<sup>389</sup></li> </ul>
<b>Naval vessels and facilities</b>	<ul style="list-style-type: none"> <li>There are servicing facilities at Sydney Harbour and Jervis Bay.</li> <li>These are utilised by the Australian fleet as well as by</li> </ul>	<ul style="list-style-type: none"> <li>The Royal Australian Navy has a national fleet of 53 vessels.<sup>390</sup> No data on the number of vessels in the NSW marine estate at any point in time could</li> </ul>

<sup>386</sup> Economic Analysis of Proposed Regulation of the Marine Mammal Observation Tour Industry, January 2003. Whale Watching Worldwide: tourism numbers, expenditures and expanding economic benefits, report from the International Fund for Animal Welfare, prepared by Economists at Large, O'Connor, S., Campbell, R., Cortez, H. & Knowles, T., 2009

<sup>387</sup> Whale Watching Worldwide: tourism numbers, expenditures and expanding economic benefits, report from the International Fund for Animal Welfare, prepared by Economists at Large, O'Connor, S., Campbell, R., Cortez, H. & Knowles, T., 2009

<sup>388</sup> Economic Analysis of Proposed Regulation of the Marine Mammal Observation Tour Industry, January 2003.

<sup>389</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>390</sup> <http://www.navy.gov.au/fleet>

	Location	Scale
	<p>visiting naval vessels from other countries.</p> <ul style="list-style-type: none"> <li>Large cruise ships also dock at the Garden Island facilities (where the vessels are too large for White Bay and the Overseas Passenger Terminal, or to accommodate excess demand for cruise ship facilities.)</li> </ul>	be located.

## 8.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 49 Boating – commercial and charter activities: trends**

	Trends	Trend summary
<b>Compliance, enforcement and surveillance activity</b>	<ul style="list-style-type: none"> <li>Compliance rates of recreational vessels has remained steady (around 90% compliance identified by Boating Safety Officers) over the five years to 2013-14.<sup>391</sup></li> <li>Compliance rates of commercial vessels has improved slightly over the past five years, from 88% in 2009-2010 to 93% in 2013-2014.<sup>392</sup></li> <li>No data located on trends associated with numbers of compliance and enforcement officers and the extent of their activities.</li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>
<b>Commercial fishing vessels</b>	<ul style="list-style-type: none"> <li>No data located on trends in commercial fishing vessel activities in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Search and rescue</b>	<p><u>Surf Life Saving NSW</u><sup>393</sup></p> <ul style="list-style-type: none"> <li>Surf lifesaving membership has remained relatively static over the last five years, with 70,000 members in 2009-2010, 76,922 in 2012-2013 and 75,916 in 2013-2014.</li> <li>Drownings, rescues, first aid treatments, preventative actions and emergency callouts fluctuate significantly</li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>

<sup>391</sup> Roads and Maritime Services Annual Report 2013-2014

<sup>392</sup> Ibid

<sup>393</sup> Surf Life Saving NSW Annual Report 2013-2014

	Trends	Trend summary
	<p>each year. In 2012-2013 there were 48 drownings and 5,158 rescues, while in 2013-2014 there were 30 drownings and 5,322 rescues.</p> <p><u>Marine Rescue NSW</u><sup>394</sup></p> <ul style="list-style-type: none"> <li>Continued expansion of Marine Rescue NSW activities and facilities.</li> <li>10 new vessels in 2013-2014, as part of a 6 year scheme to obtain 59 new or refurbished vessels.</li> <li>2,225 vessels assisted in 2011-2012, 3,226 vessels assisted in 2012-13, 3,046 vessels assisted in 2013-2014.</li> </ul>	
<b>Harbour cruises</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with Harbour cruises.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Scuba diving, snorkelling and kayak tours, and surf / paddleboard lessons</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with scuba diving and snorkelling tours generally.</li> <li>However, the number of charter boat dives in Jervis Bay was considered to have remained reasonably constant in the years preceding 2008.<sup>395</sup></li> <li>In Byron Bay:<sup>396</sup> <ul style="list-style-type: none"> <li>dive tour numbers have increased by 125%;</li> <li>snorkel tour numbers have decreased by 58%;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Charter vessels (except fishing)</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with charter vessels.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Charter fishing</b>	<ul style="list-style-type: none"> <li>Since 2008, demand has steadily declined.<sup>397</sup></li> <li>More than 80% of charter fishing licence holders are now part time, which is a reflection of the seasonal basis of the activity, the dependence on weather conditions, reducing fish stocks and resulting variability in the experience of clients.<sup>398</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>DECREASING</b></li> </ul>

<sup>394</sup> | Surf Life Saving NSW Annual Report 2013-2014

<sup>395</sup> Jervis Bay Marine Park – Summary of social, cultural and economic uses, Marine Parks Authority NSW 2008

<sup>396</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>397</sup> NSW Charter Industry Economics 2012, Dominion Consulting, 2014

<sup>398</sup> Ibid

	Trends	Trend summary
<b>General hire and drive</b>	<ul style="list-style-type: none"> <li>No data located on trends in hire and drive activities in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Hire and drive houseboats</b>	<ul style="list-style-type: none"> <li>No data located on trends in hire and drive houseboat activities in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Adventure sports</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with adventure sports involving commercial vessels.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Whale and dolphin watching tours</b>	<ul style="list-style-type: none"> <li>Significant industry growth across NSW in the mid-1990s.<sup>399</sup></li> <li>Only Port Stephens experienced significant industry growth in the early 2000s. Other areas were static or in slight decline.<sup>400</sup></li> <li>In 1999, it was estimated that 282,000 international tourists participated in a mammal watching tour in the NSW marine estate.<sup>401</sup> In 2008, it was estimated that 176,000 international tourists participated in mammal watching in NSW.<sup>402</sup> This represents a 38% decrease in participation by international tourists.</li> <li>In 2001, it was estimated that 121,000 domestic tourists made overnight trips to NSW that included whale or dolphin watching.<sup>403</sup> In 2008, it was estimated that 624,000 domestic tourists participated in mammal watching,<sup>404</sup> however, it is not known how many of these made overnight trips to do so.</li> <li>In Byron Bay, whale tour numbers increased by 48% over the five years to 2013-14.<sup>405</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>
<b>Naval vessels and facilities</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with navy vessels and facilities.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

<sup>399</sup> Economic Analysis of Proposed Regulation of the Marine Mammal Observation Tour Industry, January 2003

<sup>400</sup> Ibid

<sup>401</sup> Ibid

<sup>402</sup> Whale Watching Worldwide: tourism numbers, expenditures and expanding economic benefits, report from the International Fund for Animal Welfare, prepared by Economists at Large, O'Connor, S., Campbell, R., Cortez, H. & Knowles, T., 2009

<sup>403</sup> Ibid

<sup>404</sup> Ibid

<sup>405</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

### 8.3 Economic benefits

The economic benefits of each of the sub-activities are considered in the following table.

**Table 50 Boating – commercial and charter activities: economic benefits**

	Economic benefits
<b>Compliance, enforcement and surveillance activity</b>	<ul style="list-style-type: none"> <li>Ensures that there is a level playing field among commercial operators by improving compliance rates.</li> <li>Maintains safety on water and in ports, with associated economic benefits.</li> <li>No data located on the economic contribution of compliance and enforcement activity in the NSW marine estate.</li> </ul>
<b>Commercial fishing vessels</b>	<ul style="list-style-type: none"> <li>Essential to the \$133 million (value of catch at first point of sale) commercial fishing and aquaculture industry in NSW.<sup>406</sup></li> </ul>
<b>Search and rescue</b>	<ul style="list-style-type: none"> <li>Prevents drowning, injuries and loss of assets in the NSW marine estate, with associated economic benefits. Improved safety outcomes also provide economic benefits by increasing the incentives for people to participate in activities in the NSW marine estate.</li> <li>Surf lifesaving provided \$163.6 million in economic value in 2009-2010, using an input-based approach (number of patrol hours and other inputs), or \$3.4 billion using an output-based approach (deaths, serious injuries and minor injuries avoided).<sup>407</sup></li> <li>No data located on the economic benefits of Marine Rescue NSW.</li> </ul>
<b>Harbour cruises</b>	<p><u>In Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>Over 1,500 direct employment in 2007.<sup>408</sup></li> <li>The three largest operators paid over \$1 million per year in payroll tax to the NSW Government and over \$4.5 million per year in wharf fees in 2007.<sup>409</sup></li> <li>Proposed pricing policy for community wharf permits includes annual fees of \$1,300 - \$38,500 depending on the size of the vessel and the number of berthings.<sup>410</sup></li> </ul> <p><u>Harbour cruise industry generally</u></p> <ul style="list-style-type: none"> <li>Indirect economic contribution to boat building and maintenance activities, wharf maintenance activities and the catering and</li> </ul>

<sup>406</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>407</sup> The Economic Value of Natural and Built Coastal Assets, National Climate change Adaption Research Facility, 2012

<sup>408</sup> Report for the NSW Minister for Ports, Options to Support, Promote & Regulate the Cruise Industry on Sydney Harbour

<sup>409</sup> Ibid

<sup>410</sup> Wharf Access Policy, Transport for NSW, 2014

	Economic benefits
	<p>hospitality industries.</p> <ul style="list-style-type: none"> <li>• A drawcard for tourists to NSW, supporting the tourism industry.</li> <li>• No data located on the total economic contribution of the harbour cruise industry in the NSW marine estate.</li> </ul>
<b>Scuba diving, snorkelling and kayak tours, and surf / paddleboard lessons</b>	<ul style="list-style-type: none"> <li>• Dive industry provides a direct economic benefit to NSW of \$300 million (industry figure).<sup>411</sup> This includes benefits driven by recreational dive activities covered in Chapter 1 of this report.</li> <li>• Dive industry directly employs 5,000 people in NSW (industry figure).<sup>412</sup> This may include employment driven by recreational dive activities covered in Chapter 1 of this report.</li> <li>• In Byron Bay, dive and snorkelling tours generated approximately \$1.48 million in revenue in 2013-14.<sup>413</sup></li> <li>• In Byron Bay, surfing and paddle boarding lessons generated approximately \$1.1 million in revenue in 2013-14.<sup>414</sup></li> <li>• No data identified on the economic contribution of snorkelling and kayaking tours, and surfing / paddle board lessons in the NSW marine estate. However to a large extent snorkelling tours would be captured in the dive tour data, as tours are often multi-purpose.</li> </ul>
<b>Charter vessels (except fishing)</b>	<ul style="list-style-type: none"> <li>• In 2007, the NSW Government received over \$1.5 million from the three largest charter operators on Sydney Harbour, for access to King Street Wharf.<sup>415</sup></li> <li>• No further data located on the economic contribution of charter vessels in the NSW marine estate.</li> </ul>
<b>Charter fishing</b>	<ul style="list-style-type: none"> <li>• \$10.12 million in fees across the NSW marine estate in 2012.<sup>416</sup></li> <li>• Customers spent an additional \$10.9 million on their trips and accommodation on either side of the one day fishing trip in 2012.<sup>417</sup></li> <li>• Accounted for 79 full-time-equivalent direct employment jobs in 2012.<sup>418</sup></li> </ul>

<sup>411</sup> Article by Richard Nicholls, President of the Dive Industry Association of Australia, Sydney Morning Herald, June 9 2014

<sup>412</sup> Ibid

<sup>413</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>414</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>415</sup> Report for the NSW Minister for Ports, Options to Support, Promote & Regulate the Cruise Industry on Sydney Harbour

<sup>416</sup> NSW Charter Industry Economics 2012, Dominion Consulting, 2014

<sup>417</sup> Ibid

<sup>418</sup> Ibid

	<b>Economic benefits</b>
<b>General hire and drive</b>	<ul style="list-style-type: none"> <li>No data located on the economic contribution of hire and drive activities in the NSW marine estate.</li> </ul>
<b>Hire and drive houseboats</b>	<ul style="list-style-type: none"> <li>No data located on the economic contribution of hire and drive houseboats in the NSW marine estate.</li> </ul>
<b>Adventure sports</b>	<ul style="list-style-type: none"> <li>A drawcard for tourists to NSW, supporting the tourism industry.</li> <li>No data located on the economic contribution of adventure sport tours in the NSW marine estate.</li> </ul>
<b>Whale and dolphin watching tours</b>	<ul style="list-style-type: none"> <li>In 2008, mammal watching tourism in NSW was worth \$12.9 million in direct sales and \$65.3 million to the NSW economy.<sup>419</sup></li> <li>In 2003, the mammal watching tour industry directly employed 170 full time crew in NSW.<sup>420</sup></li> <li>In Byron Bay, whale watching tours generated approximately \$700,000 in revenue in 2013-14.<sup>421</sup></li> </ul>
<b>Naval vessels and facilities</b>	<ul style="list-style-type: none"> <li>The Navy facilities in Sydney Harbour, including Garden Island dockyard, enable visiting naval ships of Australian and overseas origin to dock in Sydney Harbour, and inject economic activity into Sydney.</li> <li>Supports the cruise ship industry in Sydney Harbour by providing cruise ships which are too large for the White Bay or Overseas Passenger Bay terminals to dock in Sydney Harbour at Garden Island – see Chapter 6 of this report.</li> <li>No data located on the economic contribution of naval vessels and facilities in the NSW marine estate.</li> </ul>
<b>Total quantified economic benefits</b>	<p><b>At least \$323 million in direct expenditure. This equates to 0.07% of NSW gross domestic product.</b></p> <p>The proportion of this figure which extends from the Hawkesbury bioregion has not been determined.</p> <p>This does not take into account the economic benefits associated with search and rescue activities. In addition, most sub-activities have not been able to be quantified.</p>

<sup>419</sup> Whale Watching Worldwide: tourism numbers, expenditures and expanding economic benefits, report from the International Fund for Animal Welfare, prepared by Economists at Large, O'Connor, S., Campbell, R., Cortez, H. & Knowles, T., 2009

<sup>420</sup> Ibid

<sup>421</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

## 8.4 Social benefits

The social benefits of each of the sub-activities are considered in the following table. All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

**Table 51 Boating – commercial and charter activities: social benefits**

	Social benefits
<b>Compliance, enforcement and surveillance activity</b>	<ul style="list-style-type: none"> <li>• Dangers to swimmers from recreational activities such as boating and jet skiing reduce the incentive for persons to use the marine estate.<sup>422</sup> As such, improved safety outcomes driven by compliance and enforcement activities increase the incentive for people to participate in activities in the NSW marine estate and achieve the social benefits of those activities.</li> <li>• Reduced risk of anti-social behaviour, which is seen as a key threat to the safety and enjoyment of all people who use the NSW marine estate.<sup>423</sup></li> </ul>
<b>Commercial fishing vessels</b>	<ul style="list-style-type: none"> <li>• Essential to the commercial fishing and aquaculture industries in NSW, which: <ul style="list-style-type: none"> <li>- support the availability of fresh and high quality seafood in the NSW market;</li> <li>- support food security in NSW; and<sup>424</sup></li> <li>- provide health benefits to the community associated with fresh seafood, including as a source of omega-3 fatty acids, zinc and protein.</li> </ul> </li> </ul>
<b>Search and rescue</b>	<ul style="list-style-type: none"> <li>• Improved safety outcomes and increased incentive for people to participate in activities in the NSW marine estate and achieve the social benefits of those activities.</li> <li>• Assists in ensuring that the NSW marine estate is a safe space for members of the community to socialise, spend quality time with friends and family and live a healthy and active lifestyle.<sup>425</sup></li> </ul>
<b>Harbour cruises</b>	<ul style="list-style-type: none"> <li>• Allows participants to enjoy the beauty and appreciate the heritage of the NSW marine estate.</li> </ul>
<b>Scuba diving, snorkelling and kayak tours, and surf / paddleboard</b>	<ul style="list-style-type: none"> <li>• Health and well-being benefits associated with the physical activity of diving, snorkelling, kayaking, surfing and paddle boarding.</li> <li>• Allows participants to interact with marine life.</li> <li>• Improves education about the NSW marine estate and drives</li> </ul>

<sup>422</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research

<sup>423</sup> Ibid

<sup>424</sup> Aquaculture in NSW, Facts and Figures 2013, Department of Primary Industries, 2013

<sup>425</sup> Ibid



	Social benefits
<b>lessons</b>	improved environmental outcomes in the NSW marine estate.
<b>Charter vessels (except fishing)</b>	<ul style="list-style-type: none"> <li>• A means for the community to socialise and celebrate important occasions.</li> <li>• A mechanism through which employers can show their appreciation for employees.</li> <li>• Allows participants to enjoy the beauty and appreciate the heritage of the NSW marine estate, and interact with marine life.</li> </ul>
<b>Charter fishing</b>	<ul style="list-style-type: none"> <li>• Opportunities for recreational anglers to undertake estuarine or marine fishing.</li> <li>• Provides a form of adventure tourism for intrastate, interstate and overseas visitors within the NSW marine estate.</li> </ul>
<b>General hire and drive</b>	<ul style="list-style-type: none"> <li>• Opportunity for those who do not own a vessel to gain the social benefits of boating activities.</li> <li>• Provides access to the NSW marine estate for short-term visitors such as tourists.</li> </ul>
<b>Hire and drive houseboats</b>	<ul style="list-style-type: none"> <li>• Mental health benefits and relaxation associated with being out on the water.</li> <li>• Opportunity to appreciate the beauty of the marine estate.</li> <li>• Opportunity to undertake an overnight adventure holiday.</li> </ul>
<b>Adventure sports</b>	<ul style="list-style-type: none"> <li>• Provides participants with physical and mental excitement and an 'adrenaline rush'.</li> <li>• Allows participants to enjoy the beauty and appreciate the heritage of the NSW marine estate. For example, jet-boating tours sometimes incorporate a whale watching element.</li> </ul>
<b>Whale and dolphin watching tours</b>	<ul style="list-style-type: none"> <li>• Provides an opportunity for the public to view animals in the wild and develop an understanding and appreciation of marine mammals and of the NSW marine estate.</li> <li>• Improves education about marine mammals and the NSW marine estate, and drives improved environmental outcomes.</li> </ul>
<b>Naval vessels and facilities</b>	<ul style="list-style-type: none"> <li>• Facilitates the protection of NSW waters from invasion and terrorism activities.</li> <li>• Allows the NSW community to view navy vessels in NSW waters, and visit them when open to the public.</li> <li>• Housing key navy bases in NSW allows officers of the Royal Australian Navy to live in Sydney and other key locations in NSW such as Jervis Bay.</li> </ul>

## 8.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of the threat, are considered in the following table.

**Table 52 Boating – commercial and charter activities: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>An economic downturn would affect tourism and reduce demand for all these activities. It would also reduce corporate spending on events, including events involving chartering vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of the harbour cruise, scuba dive, snorkelling and kayak tour, charter vessel, charter fishing, fishing vessel, adventure sports and marine mammal watching industries.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>
<b>Public health and safety</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Safety incidents involving commercial vessels could reduce the incentive for participation in these activities. Between 2002 and 2012, there were 20 fatal incidents involving a commercial vessel and 86 serious injury incidents.<sup>426</sup></li> <li>Deaths of scuba divers and snorkellers doubled between 1980 and 2006. Between 2002 and 2006, there were 12 death per year in NSW on average.<sup>427</sup></li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of commercial vessels (charter, fishing charter and fishing), scuba diving, snorkelling and kayak tours and adventure tours.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate. <u>Basis for ranking:</u></li> <li>A significant safety issue or incident could have a large impact on the particularly industry involved. .</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely. <u>Basis for ranking:</u></li> <li>Australia has a good safety record in these areas and incidents have been decreasing over time.<sup>428</sup> Commercial vessel activities are subject to safety</li> </ul>

<sup>426</sup> Boating Incidents in NSW Statistical report for the 10-year period ended 30 June 2012, Transport for NSW, 2012

<sup>427</sup> Recreational Scuba Diving and Snorkelling Safety in Australia, The Royal Life Saving Society Australia and Divers Alert Network Asia Pacific, 2008

<sup>428</sup> Recreational Scuba Diving and Snorkelling Safety in Australia, The Royal Life Saving Society Australia and Divers Alert Network Asia Pacific, 2008; Boating Incidents in NSW Statistical report for the 10-year period ended 30 June 2012,

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>This includes deaths from recreational diving activity not associated with a commercial tour which is covered in Chapter 1 of this report.</p> <ul style="list-style-type: none"> <li>• Adventure sports are also vulnerable to safety issues. In January 2015, a commercial jet boat in Queenstown, New Zealand hit a rock, injuring one passenger. In 1999, a jet boat crash in the same location killed one person and injured 11.</li> </ul>			regulation and oversight.
<p><b>Water pollution / Litter and marine debris / Climate change</b></p> <p><i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i></p>	<ul style="list-style-type: none"> <li>• A healthy marine environment is the foundation of the dive and snorkelling industry and the hire and drive vessel industry.</li> <li>• A healthy marine mammal population is essential to the mammal watching tour industry.</li> <li>• Climate change, pollution and interactions with humans and other activities could impact on the health of the marine environment and marine mammal population of the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social benefits of the dive, snorkelling and kayak tour, hire and drive, charter vessel, charter fishing, fishing and mammal watching industries.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown.</li> <li>• Consideration has been given to placing greater restrictions on whale watching tours and kayak tours in Bryon Bay, to ensure that they do not disturb the dolphin and whale populations.<sup>432</sup></li> <li>• The National Parks and Wildlife Act 1974 NSW</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Climate change will almost certainly alter the marine environment.<sup>433</sup></li> <li>• Human interaction with the environment of the marine estate and the mammal population is also likely given the mammal</li> </ul>

Transport for NSW, 2012

<sup>432</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

<sup>433</sup> Data provided by MEMA agencies, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	<ul style="list-style-type: none"> <li>• Pollution would reduce the incentive for people to take charter fishing trips.<sup>429</sup></li> <li>• Climate change, and the impact of rising water temperatures and the acidification of oceans will impact fish stocks.<sup>430</sup> Loss of fish habitat through authorised or illegal land reclamation, dredging, vegetation clearing, shoreline hardening, mining and development reduces fish stocks. Reduced fish stocks will reduce the incentive for people to take charter fishing trips, and reduce the total catch for fishing vessels.</li> <li>• In addition, concerns regarding environmental issues with commercial boating could lead to great restrictions and costs for operators. Oil/chemical spills from vessels, wildlife disturbance, marine debris and bank erosion can be caused by commercial vessel activity.<sup>431</sup></li> </ul>		<p>prescribes standards and distances for mammal watching. Commercial operators are not currently managed by a licence or permit system, except within marine parks.</p>	<p>watching and snorkelling/diving industries.</p> <ul style="list-style-type: none"> <li>• Marine debris and bank erosion from commercial vessels are seen as high risk threats in Sydney Harbour.<sup>434</sup></li> <li>• Climate change will almost certainly alter the marine environment and affect fish stocks.<sup>435</sup></li> </ul>

<sup>429</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

<sup>430</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>431</sup> Ibid

<sup>434</sup> Ibid

<sup>435</sup> Ibid.

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Decreasing biodiversity</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Increased recreational or commercial fishing could reduce the number and variety of fish, and reduce incentives for scuba dive and snorkelling tours.<sup>436</sup></li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of the dive and kayak tour industries.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>The consequence will depend on the extent of the changes.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The NSW Government regulates commercial and recreational take, with the most recent review in 2015.<sup>437</sup></li> </ul>
<b>Market saturation / Overcrowding</b> <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>In the mammal watching industry, Port Stephens is the only region likely to experience problems in the near future from too many vessels attempting to view marine mammals (in this case dolphins).<sup>438</sup></li> <li>Market saturation is also a risk for the harbour, cruise, charter vessel, scuba dive and snorkelling tour, adventure sports and marine mammal watching tours sub-activities.</li> <li>Charter fishing operators see the possibility of increased numbers of charter fishing licences being issued as a potential threat to their operations.<sup>439</sup></li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of the harbour cruise, scuba dive, snorkelling and kayak tour, charter vessel, charter fishing, fishing, adventure sports and mammal watching industries.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely for most sub-activities.</li> <li>Possible for charter fishing and fishing vessels.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Unless demand reduces significantly, the cost of entry into these markets (due to the cost of a commercial vessel and crew costs) helps to prevent market</li> </ul>

<sup>436</sup> [http://www.diveindustry.com.au/default2.asp?active\\_page\\_id=127](http://www.diveindustry.com.au/default2.asp?active_page_id=127)

<sup>437</sup> Ibid

<sup>438</sup> Economic Analysis of Proposed Regulation of the Marine Mammal Observation Tour Industry, January 2003, Department of Natural Resources and Environment, 2001

<sup>439</sup> Economic Value of Charter and Recreational Fishing in Australia's Eastern Tuna and Billfish Fishery, ABARE, 2004

Threats	Description	Benefits threatened	Consequence	Likelihood
	<ul style="list-style-type: none"> <li>• Overfishing and illegal fishing driven by overcrowding could reduce fish stocks. This would reduce the incentive for charter fishing and reduce the total catch for fishing vessels.</li> </ul>			<p>saturation.</p> <ul style="list-style-type: none"> <li>• The Department of Primary Industries manages the threat to fish stocks by monitoring stocks and adjusting restrictions.</li> </ul>
<p><b>Economically inefficient regulation or increased compliance costs</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• New regulatory arrangements for commercial vessels generally or for the sub-activities could have a positive or negative impact.</li> <li>• For example, in 2013, the Australian Maritime Safety Authority became the National Regulator for domestic commercial vessels around Australia. From that date, a National Law (Commonwealth legislation) applied to commercial vessels in NSW, replacing the previous NSW law.</li> <li>• The regulatory arrangements for whale watching have also been reviewed recently. Any regulation aims to ensure that the 'sustainable threshold' for interaction between marine mammals and</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of harbour cruise, scuba diving and snorkelling tours, charter vessels, charter fishing, fishing vessels, adventure sports and whale and dolphin watching industries.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The consequences of new regulatory arrangements would depend on the change. For example, the move to the National Law Act for domestic commercial vessels has not had a significant detrimental impact on the industry to date due to the transitional and grandfathering arrangement</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Regulations are generally subject to consultation and cost benefit analysis. They are generally introduced only where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.</li> </ul>

<sup>440</sup> Data provided by the Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>observation boats is not breached.<sup>441</sup> Regulatory options considered included licensing arrangements and passenger levies, both of which would be designed to restrict access. Such regulations could reduce the number of operators and impact on the value of the benefits of the activity.</p> <ul style="list-style-type: none"> <li>• Changes in regulatory arrangements could also affect the charter industry (for example, liquor licensing and 'lock-out' requirements), the scuba dive and snorkelling tour industry (new safety regulations or codes of conduct) and the adventure sport industry (new vessel and crew competency standards and safety regulations).</li> <li>• Increased restrictions on the types and number of fish that can be caught and the areas where recreational fishing can occur would reduce the incentive for charter fishing and the opportunities for commercial fishing vessels.<sup>442</sup> Regulatory</li> </ul>		<p>s, and extent of national cooperation prior to 2013.</p> <ul style="list-style-type: none"> <li>• In addition, new arrangements should only be introduced where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.</li> </ul>	

<sup>441</sup> Economic Analysis of Proposed Regulation of the Marine Mammal Observation Tour Industry, January 2003, Department of Natural Resources and Environment, 2001

<sup>442</sup> Marine Estate Community Survey Final Report, Sweeney Research, 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
	uncertainty is an ongoing risk for the charter fishing sector. <sup>443</sup>			
<b>Limited access infrastructure / Cost of access infrastructure</b>  <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>• For the Harbour cruise, mammal watching and charter boat industries, changes in access to infrastructure (for example, wharves in Sydney Harbour and direct ticketing facilities) or to the cost of accessing such infrastructure, could impact on the scope of the activity and the extent of its economic and social benefits.</li> <li>• For example, private sector access to Circular Quay is limited to Wharf 6, which reduces the number of private sector operators able to participate in the Harbour cruise and charter activities.<sup>444</sup></li> <li>• Lack of continued investment in access and other supporting infrastructure could prevent the full potential benefits of this activity from being realised.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of harbour cruise, charter vessels, adventure sports and whale and dolphin watching industries.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor. <u>Basis for ranking:</u></li> <li>• There are likely to be winners and losers in any change.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely. <u>Basis for ranking:</u></li> <li>• The NSW Government has recently introduced a new policy on accessing infrastructure in Sydney Harbour, including new pricing schedules.<sup>445</sup></li> </ul>

<sup>443</sup> NSW Charter Industry Economics 2012, Dominion Consulting, 2014

<sup>444</sup> Report for the NSW Minister for Ports, Options to Support, Promote & Regulate the Cruise Industry on Sydney Harbour

<sup>445</sup> Wharf Access Policy, Transport for NSW; Implementation of a Commuter Wharf Access Permit to Sydney Harbour, Consultation Draft, February 2015



Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Depletion of fish stocks through fishing activities</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Depleted fish stocks means less fish for recreational fishing and less incentive for undertaking the activity.</li> <li>• Depletion can result from commercial fishing, illegal fishing and overfishing in popular areas.<sup>446</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social benefits of scuba diving, charter fishing and fishing vessels.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely. <u>Basis for ranking:</u></li> <li>• Offshore game charter fishing operators saw commercial fishing as the biggest threat to their business.<sup>447</sup></li> <li>• The Department of Primary Industries manages this threat by monitoring fish stocks and adjusting restrictions.<sup>448</sup></li> </ul>
<b>Increased fuel or other base costs</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Commercial vessel operators are reliant on employing appropriately qualified crew. Where there are shortages in skilled mariners (for example, due to the demands of other industries such as offshore gas or mining), operators must offer higher wages to attract appropriate crew. This can impact on the viability and profitability of the industry.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of commercial and charter boating.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• The impact is likely to be highest on single-vessel operators who may have limited ability to wear cost increases.</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely. <u>Basis for ranking:</u></li> <li>• The recent contraction of the mining industry has removed some of the competition for skilled maritime workers.</li> </ul>

<sup>446</sup> Data provided by MEMA agencies, 2015

<sup>447</sup> Economic Value of Charter and Recreational Fishing in Australia's Eastern Tuna and Billfish Fishery, ABARE, 2004

<sup>448</sup> Data provided by the Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	<ul style="list-style-type: none"> <li>• Rising fuel, higher equipment or maintenance costs, and rises in other base costs could also impact on the size of this activity and its economic and social contribution to NSW.</li> </ul>			

## 8.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 53 Boating – commercial and charter activities: information gaps**

	Information gaps
<b>Activity scale and scope</b>	<p>Limited data has been located on the scale of:</p> <ul style="list-style-type: none"> <li>- Port Authority compliance and enforcement activities;</li> <li>- the harbour cruise industry outside Sydney Harbour;</li> <li>- charter and hire and drive vessels generally in the NSW marine estate; and</li> <li>- adventure sports in the NSW marine estate.</li> </ul>
<b>Trends</b>	<p>There is limited data on trends in:</p> <ul style="list-style-type: none"> <li>- the number of compliance and enforcement officers and extent of their activities;</li> <li>- fishing vessels;</li> <li>- the harbour cruise industry;</li> <li>- the scuba and snorkelling tour industry;</li> <li>- charter and hire and drive vessels;</li> <li>- adventure sports; and</li> <li>- naval vessels and facilities,</li> </ul> <p>in the NSW marine estate. In addition, the data on the mammal watching industry is not recent (pre-2010).</p>

	Information gaps
<b>Economic benefits</b>	<p>There is limited data on the quantified benefits of:</p> <ul style="list-style-type: none"> <li>- compliance and enforcement activities;</li> <li>- Marine Rescue NSW;</li> <li>- the harbour cruise industry;</li> <li>- the charter vessel and hire and drive industry;</li> <li>- adventure sports; and</li> <li>- naval vessels and facilities,</li> </ul> <p>in the NSW marine estate. In addition, the benefits of some of the other sub-activities have been developed by industry – including some of the dive tour industry figures.</p>
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 9. Water transport services

This chapter considers the activity 'water transport services', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 9.1 Activity description

'Water transport services' include public transport (ferries, vehicular ferries and water taxis) and private commercial transport (vessels chartered for transportation) in the NSW marine estate.

The range of water transport services considered in this chapter are described in the following table.

**Table 54 Water transport services: description**

	Description
<b>Ferries</b>	<ul style="list-style-type: none"> <li>Large vessels used for public transportation.</li> </ul>
<b>Vehicular ferries</b>	<ul style="list-style-type: none"> <li>Vehicular ferries are used to transport cars and people across rivers and waterways where bridges have not been constructed.</li> </ul>
<b>Water taxis</b>	<ul style="list-style-type: none"> <li>Vessels licenced as water taxis and available to charter for transportation on short notice.</li> </ul>
<b>Charter transport vessels</b>	<ul style="list-style-type: none"> <li>Vessels available for charter for transportation.</li> </ul>

The location and scale of each of the sub-activities are considered in the following table.

**Table 55 Water transport services: location and scale**

	Location	Scale
<b>Ferries</b>	<ul style="list-style-type: none"> <li>Harbour City Ferries provide Sydney Ferries services to Manly, on the Parramatta River and in the Inner Harbour.</li> <li>Other operators deliver public ferry passenger services in Pittwater, Clarence River, Parramatta River, Port Hacking, Hawkesbury, Newcastle and the Central Coast.</li> <li>Deregulated services on the busiest route between Manly and Circular Quay supplement Sydney Ferries services.</li> </ul>	<p><u>Sydney Ferries</u><sup>449</sup></p> <ul style="list-style-type: none"> <li>15,977,360 passengers carried in 2013-14.</li> <li>177,577 scheduled ferry trips in 2013-14.</li> <li>31% of trips were made by people commuting to work or education; 47% for sightseeing/leisure; 21% for private business, such as shopping, meeting friends or attending appointments in 2011-12.</li> </ul> <p><u>Other ferry operators</u></p> <ul style="list-style-type: none"> <li>1.35 million passengers each year in 2013-14.<sup>450</sup></li> </ul>
<b>Vehicular ferries</b>	<ul style="list-style-type: none"> <li>Generally inland, throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Roads and Maritime Services operated nine vehicular ferries in NSW in 2013-14.<sup>451</sup></li> </ul>
<b>Water taxis</b>	<ul style="list-style-type: none"> <li>Sydney Harbour, Palm Beach and Brooklyn.</li> </ul>	<ul style="list-style-type: none"> <li>15 water taxi companies in Sydney Harbour in 2014.<sup>452</sup></li> <li>No data located on the scale of water taxis elsewhere in the marine estate.</li> </ul>
<b>Charter transport vessels</b>	<ul style="list-style-type: none"> <li>Throughout marine estate, particularly in Sydney Harbour.</li> </ul>	<ul style="list-style-type: none"> <li>No data located on the scale of charter transport vessels in the marine estate.</li> </ul>

## 9.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

<sup>449</sup> Transport for NSW Annual Report 2013-2014

<sup>450</sup> Ibid

<sup>451</sup> <http://www.rms.nsw.gov.au/roads/using-roads/trip-information/vehicular-ferries.html>

<sup>452</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

**Table 56 Water transport services: trends**

	Trends	Trend summary
<b>Ferries</b>	<u>Sydney Ferries</u> <ul style="list-style-type: none"> <li>• Passenger numbers up 6.9% in 2013-14 compared to 2012-13.<sup>453</sup></li> <li>• Scheduled trips up 2% in 2013-14 compared to 2012-13.<sup>454</sup></li> </ul>	<ul style="list-style-type: none"> <li>• <b>INCREASING</b></li> </ul>
<b>Vehicular ferries</b>	<ul style="list-style-type: none"> <li>• The number of vehicular ferries has reduced over time as bridges have been built.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DECREASING</b></li> </ul>
<b>Water taxis</b>	<ul style="list-style-type: none"> <li>• No data located on trends in water taxis.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>UNKNOWN</b></li> </ul>
<b>Charter transport vessels</b>	<ul style="list-style-type: none"> <li>• No data located on trends in charter transport vessels.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>UNKNOWN</b></li> </ul>

### 9.3 Economic benefits

The economic benefits of each of the sub-activities are considered in the following table.

**Table 57 Water transport services: economic benefits**

	Economic benefits
<b>Ferries</b>	<u>Sydney Ferries</u> <ul style="list-style-type: none"> <li>• Total revenue \$163 million in 2011-12.<sup>455</sup> Note that later financial data is not available due to the engagement of a private company to operate Sydney Ferries.</li> <li>• Gross operating surplus \$9.8m in 2011-12.<sup>456</sup></li> <li>• 656 jobs in 2011-12.<sup>457</sup></li> <li>• \$90m in wages and employee benefits in 2011-12.<sup>458</sup></li> <li>• Cost effective and efficient public transport system between Manly and the CBD.<sup>459</sup></li> </ul>

<sup>453</sup> Transport for NSW Annual Report 2013-2014

<sup>454</sup> Ibid

<sup>455</sup> Sydney Ferries Annual Report 2011-2012

<sup>456</sup> Ibid

<sup>457</sup> Ibid

<sup>458</sup> Ibid

<sup>459</sup> Report of the Special Commission of Inquiry into Sydney Ferries Corporation, Bret Walker SC, 2007

	Economic benefits
	<ul style="list-style-type: none"> <li>4.1% of people travelling to work in inner Sydney travelled by ferry in 2007.<sup>460</sup></li> <li>Ferries play an important part in the tourism industry. Approximately half of Sydney Ferry's passengers were not commuters, and use the service for sightseeing or leisure in 2007.<sup>461</sup></li> </ul>
<b>Vehicular ferries</b>	<ul style="list-style-type: none"> <li>Enable commuters to access areas that are otherwise inaccessible.</li> <li>Facilitates tourism in some parts of the NSW marine estate.</li> <li>No data located on quantified economic benefits of vehicular ferries.</li> </ul>
<b>Water taxis</b>	<ul style="list-style-type: none"> <li>Supports tourism, particularly in Sydney Harbour.</li> <li>No data located on quantified economic benefits of water taxis.</li> </ul>
<b>Charter transport vessels</b>	<ul style="list-style-type: none"> <li>Supports tourism in many locations in the marine estate.</li> <li>No data located on quantified economic benefits of charter transport vessels.</li> </ul>
<b>Total quantified economic benefits</b>	<p><b>\$163 million in revenue annually.</b> This equates to 0.03% of NSW gross domestic product. All of this figure extends from the Hawkesbury bioregion.</p> <p>However, this does not include revenue associated with vehicular ferries, water taxis or charter transport vessels.</p>

## 9.4 Social benefits

The social benefits of each of the sub-activities are considered in the following table. These benefits extend mainly from the Hawkesbury bioregion.

**Table 58 Water transport services: social benefits**

	Social benefits
<b>Ferries</b>	<ul style="list-style-type: none"> <li>Lower external costs per passenger (including pollution, car accidents and congestion) than vehicle transport.<sup>462</sup></li> <li>Pleasant journey to work, with the ability to read, relax and enjoy the beauty of the NSW marine estate.</li> <li>Key method of transport for local communities, particularly within</li> </ul>

<sup>460</sup> Report of the Special Commission of Inquiry into Sydney Ferries Corporation, Bret Walker SC, 2007

<sup>461</sup> Ibid

<sup>462</sup> Ibid

	Social benefits
	<p>Sydney Harbour.<sup>463</sup></p> <ul style="list-style-type: none"> <li>• Catching the ferry is a healthier way to travel than driving to work, with over 40% of commuters walking from home to the ferry wharf and 68.9% of commuters walking from the wharf to their ultimate destination in 2007.<sup>464</sup></li> <li>• The overall external benefit from Sydney ferries operations were estimated at \$1.9 million per annum in 2013.<sup>465</sup></li> <li>• Iconic presence on the harbour.</li> <li>• Improves the accessibility of the harbour for all Sydneysiders.<sup>466</sup></li> </ul>
<b>Vehicular ferries</b>	<ul style="list-style-type: none"> <li>• Enables access to local communities and areas which are otherwise inaccessible, or where alternative routes are much slower.</li> </ul>
<b>Water taxis</b>	<ul style="list-style-type: none"> <li>• Provides access to Sydney Harbour.</li> <li>• Provides an alternative means of transport which allows travellers to appreciate the beauty of the marine estate.</li> </ul>
<b>Charter transport vessels</b>	<ul style="list-style-type: none"> <li>• Provides access to Sydney Harbour.</li> <li>• Provides an alternative means of transport which allows travellers to appreciate the beauty of the marine estate.</li> </ul>

## 9.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of the threat, are considered in the following table.

<sup>463</sup> Report of the Special Commission of Inquiry into Sydney Ferries Corporation, Bret Walker SC, 2007

<sup>464</sup> Ibid

<sup>465</sup> Review of External benefits of Sydney Ferries, Sapere, 2013

<sup>466</sup> Report of the Special Commission of Inquiry into Sydney Ferries Corporation, Bret Walker SC, 2007



**Table 59 Water transport services: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Rising fares</b> <i>Applies to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>The rising cost of fares for ferry services pose a threat to the net surplus that passengers gain from using ferry services.<sup>467</sup></li> </ul>	<ul style="list-style-type: none"> <li>Social benefits of ferries.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Ferries remain a low-cost option for accessing Sydney Harbour. There are also off-peak rates and low rates for concession pass holders.</li> </ul>	<ul style="list-style-type: none"> <li>Likely. Fares rise over time.</li> </ul>
<b>Public health and safety</b> <i>Applies to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Incidents involving a ferry, water taxi or charter vessel could reduce the incentive for utilising water transport services.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of water transport services.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>A significant safety issue or incident could damage the reputation of the ferry providers.</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Sydney Ferries were involved in three collisions and one grounding while berthing in 2013-14.<sup>468</sup> However, generally the passenger vessel fleet in NSW has a good safety record.<sup>469</sup></li> </ul>
<b>Environmental impacts of the activities</b> <i>Applies to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Ferries, water taxis and charter vessels contribute to marine environmental issues including litter, vessel</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of water transport services.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>A Humpback with calf was accidentally hit and injured by a ferry in Sydney</li> </ul>

<sup>467</sup> Fact Sheet: Review of fares for Sydney's Ferries' services from January 2013, IPART, 2013

<sup>468</sup> Transport for NSW Annual Report 2013-2014

<sup>469</sup> Boating Incidents in NSW, Statistical Report for the 10 year period ending 2012, Transport for NSW, 2012

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>strike on wildlife (eg whales, penguins), wildlife disturbance and bank erosion.</p> <ul style="list-style-type: none"> <li>Environmental effects of water transport services could lead to restrictions on the services, increasing costs and reducing the economic benefits of the activity, and could also offset the social benefits of the activity.</li> </ul>			<p>Harbour in 2012.<sup>470</sup></p> <ul style="list-style-type: none"> <li>The operation of River Cat Ferries in the Parramatta River has been associated with bank erosion, habitat loss and damage, and changes to macro-benthic infauna.<sup>471</sup></li> </ul>
<p><b>Economically inefficient regulation or increased compliance costs</b></p> <p><i>Applies to the Hawkesbury bioregion</i></p>	<ul style="list-style-type: none"> <li>New regulatory arrangements for passenger vessels could have positive or negative impact.</li> <li>For example, in 2013, the Australian Maritime Safety Authority became the National Regulator for domestic commercial vessels around Australia. From that date, a National Law (Commonwealth legislation)</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of water transport services.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The consequences of new regulatory arrangements would depend on the change. For example, the move to the National Law Act for domestic commercial vessels has not had a significant detrimental impact on the industry to date due to the</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Regulations are generally subject to consultation and cost benefit analysis. They should only be introduced where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.</li> </ul>

<sup>470</sup> Data provided by MEMA agencies, 2015

<sup>471</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>applied to passenger vessels in NSW, replacing the previous NSW law.</p> <ul style="list-style-type: none"> <li>Passenger vessels are also regulated under public transport legislation by NSW. This can include licensing and other requirements.</li> </ul>		transitional and grandfathering arrangements, and extent of national cooperation prior to 2013. In addition, the new arrangements should only be introduced where their benefits (in protecting the safety and long-term sustainability of the activity) outweigh their costs.	
<b>Limited access infrastructure / Cost of access infrastructure</b>  <i>Applies to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Access to and cost of access to wharves for water-taxis and charter vessels could impact on their viability.</li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of taxis and charter transport vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>The consequences would depend on the extent of the change.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The NSW Government has recently introduced a new policy on accessing infrastructure in Sydney Harbour, including new pricing schedules. This mainly affects charter vessels.<sup>472</sup></li> </ul>
<b>Increased fuel or other base costs</b>  <i>Applies to the Hawkesbury</i>	<ul style="list-style-type: none"> <li>Cost of wages for skilled maritime workers could impact on the viability of water transport</li> </ul>	<ul style="list-style-type: none"> <li>All economic benefits of water transport services.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The recent contraction of the mining</li> </ul>

<sup>472</sup> Wharf Access Policy, Transport for NSW; Implementation of a Commuter Wharf Access Permit to Sydney Harbour, Consultation Draft, February 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
<i>bioregion</i>	vessels.			industry has removed some of the competition for skilled maritime workers. However, high wage costs has been a cost pressure for Sydney Ferries in the past.

## 9.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 60 Water transport services: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the scale of water taxis outside Sydney Harbour and charter transport vessels in the marine estate.
<b>Trends</b>	There is limited data on trends in vehicular ferries, water taxis and charter transport vessels in the NSW marine estate.
<b>Economic benefits</b>	There is limited data on the quantified benefits of the activity, except in relation to Sydney Ferries.
<b>Social benefits</b>	No apparent information gaps, however there is limited quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 10. Maritime related activities

This chapter considers the activity ‘maritime related activities, including waterway access’, and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 10.1 Activity description

This activity includes boat services related to activities occurring in the marine estate, including boat building repairs and maintenance, slipways, sewage pump outs, refuelling facilities and berthing facilities. It also includes facilities provided in the marine estate to support other activities, including boat ramps, vessel launching facilities, boat trailer parking, jetties, wharves, pontoons, toilets, car parks, lighting, fish cleaning facilities and so on.

**Table 61 Maritime related activities: description**

	Description
<b>Minor ports and boat harbours</b>	<ul style="list-style-type: none"> <li>Minor ports and boat harbours provide berthing, launching and mooring facilities for commercial and recreational boats operating in the NSW marine estate.<sup>473</sup></li> </ul>
<b>Boat and ship building repairs and maintenance</b>	<ul style="list-style-type: none"> <li>‘Boat building’ includes designing, building, repairing, surveying and undertaking maintenance work on recreational and commercial boats which operate in the marine estate. Includes work on dinghies, cruisers, runabouts, sailboats and catamarans and ski and wake boats. Also includes equipment retailing and servicing.</li> <li>‘Ship building’ in Australia (by private companies) is largely focussed on the Defence industry (over 77% of activity)<sup>474</sup> and involves building, repairing and maintaining warships and submarines for the Royal Australian Navy. It also includes commercial shipbuilding and repair, including of barges, cargo ships, cruise liners, container vessels, passenger ships, patrol boats and sailing ships.</li> </ul>
<b>Slipways and vessel launching facilities</b>	<ul style="list-style-type: none"> <li>Slipways are used for launching, landing, building, anti-fouling and repairing boats. They primarily service the commercial fleet but can be used by private recreational vessels also. They are leased by the NSW Government to private operators.<sup>475</sup></li> </ul>
<b>Sewage pump out facilities</b>	<ul style="list-style-type: none"> <li>The Marine Pollution Regulation 2014 (NSW) prohibits the discharge of untreated sewage from any vessels into the NSW marine estate, and requires all sewage to be deposited into a waste collection</li> </ul>

<sup>473</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>474</sup> Ship Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>475</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

	Description
	<p>facility.</p> <ul style="list-style-type: none"> <li>Sewage pump out facilities provide a safe, environmental friendly and permitted means of discharging sewage waste from recreational and commercial vessels so that it is not discharged into the marine estate.</li> </ul>
<b>Refuelling facilities</b>	<ul style="list-style-type: none"> <li>Marine refuelling facilities provide for the refuelling of recreational and commercial vessels within minimal risk to the environment. They are often located in marinas, slipways and ports.</li> </ul>
<b>Aids to navigation provision and maintenance</b>	<ul style="list-style-type: none"> <li>Lights, buoys and lighthouses are operated and maintained to support safe navigation and identify hazards.<sup>476</sup></li> <li>'Bar crossing' safety cameras enable boaters to check conditions before they attempt to cross a bar, and to reschedule their trip offshore if conditions are unsafe.<sup>477</sup></li> </ul>
<b>Boat ramps, jetties wharves, pontoons and courtesy moorings</b>	<ul style="list-style-type: none"> <li>Boat ramps, jetties, wharves and pontoons provide a means of boarding, loading and unloading vessels.<sup>478</sup></li> <li>Courtesy and emergency moorings provide safe havens in adverse weather conditions, and may also provide an environmentally friendly means of securing a vessel in popular or sensitive locations if an environmental friendly mooring is used.<sup>479</sup></li> </ul>
<b>Breakwaters, training walls and revetments</b>	<ul style="list-style-type: none"> <li>Breakwaters form critical protection structures for coastal communities, by fixing the location of river and estuary entrances, ensuring navigation channels remain passable, providing shelter from the wave climate of the coastline and protecting built infrastructure assets in the region.<sup>480</sup></li> </ul>
<b>Ancillary facilities on land</b>	<ul style="list-style-type: none"> <li>Accessways provide road access to land-based coastal infrastructure and parking for users.</li> <li>Ancillary facilities include toilets, shade structures, fish cleaning facilities, lighting and carparks (including boat trailer parking). They support public access and use of the NSW marine estate.</li> </ul>
<b>Dredging</b>	<ul style="list-style-type: none"> <li>Dredging is performed to make waterways safe for users, predominantly in harbour and river entrances.<sup>481</sup></li> <li>Dredging can also assist in maintaining boat access to moorings and</li> </ul>

<sup>476</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>477</sup> Ibid

<sup>478</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>479</sup> Ibid

<sup>480</sup> Ibid

<sup>481</sup> Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014. Maintaining Safe Navigation of Key River and Port Entrances in NSW, NSW Department of Lands, 2007

	Description
	marinas, tidal creeks, oyster leases and private property. <sup>482</sup>

The location and scale of these activities in the marine estate is considered in the following table.

**Table 62 Maritime related activities: location and scale**

	Location	Scale
<b>Minor ports and boat harbours</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>377 minor ports and harbours.<sup>483</sup></li> <li>The bulk of the commercial fishing fleet operates from these minor ports and harbour.<sup>484</sup></li> </ul>
<b>Boat and ship building repairs and maintenance</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> <li>Concentrated in the Sydney region, particularly north of Sydney.</li> </ul>	<p><u>Boat building</u></p> <ul style="list-style-type: none"> <li>433 boat building and repair companies (includes 10% export activity) in 2014-15.<sup>485</sup></li> <li>Approximately 1,500 full time equivalent workers in NSW (includes 10% export activity) in 2014-15.<sup>486</sup></li> <li>More than 1,100 marine mechanics and more than 1,000 shipwrights/boat builders in 2014-15.<sup>487</sup></li> <li>The Shipwrights and Boatbuilders Association has 27 boat building and maintenance company members, and 11 boat survey company members in 2015.<sup>488</sup></li> <li>Industry primarily comprises of small firms, with the majority employing less than 20 workers in 2014-15.<sup>489</sup></li> </ul> <p><u>Ship building</u></p> <ul style="list-style-type: none"> <li>135 ship building and repair</li> </ul>

<sup>482</sup> Maintaining Safe Navigation of Key River and Port Entrances in NSW, NSW Department of Lands

<sup>483</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>484</sup> Ibid

<sup>485</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>486</sup> Ibid

<sup>487</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>488</sup> <http://www.shipwrights.com.au/>

<sup>489</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

	Location	Scale
		<p>companies in NSW in 2014-15.<sup>490</sup></p> <ul style="list-style-type: none"> <li>5 major companies have over 70% market share (across Australia) in 2014-15.<sup>491</sup></li> <li>Huge fluctuation in activity, due to variability of Commonwealth Government Defence spending.<sup>492</sup></li> </ul>
<b>Slipways and vessel launching facilities</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> <li>Generally located at marinas.</li> </ul>	<ul style="list-style-type: none"> <li>An online marine directory listed 29 slipways in NSW in 2015.<sup>493</sup></li> <li>No data located to verify the number of slipways in NSW.</li> </ul>
<b>Sewage pump out facilities</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate. Only five are reported on the NSW South Coast, with the majority in the Greater Sydney region and the North Coast.<sup>494</sup></li> </ul>	<ul style="list-style-type: none"> <li>116 sewage pump-out facilities. A few of these are for club members only, but the majority are available to the general public.<sup>495</sup></li> </ul>
<b>Refuelling facilities</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>No data found on the number of refuelling facilities in the marine estate.</li> </ul>
<b>Aids to navigation provision and maintenance</b>	<ul style="list-style-type: none"> <li>Navigation markers are located throughout the marine estate.<sup>496</sup></li> <li>Thirteen lighthouses including at Point Danger, Ballina, Evans Head, Norah Head, Barrenjoey Head, and Kiama.<sup>497</sup></li> </ul>	<ul style="list-style-type: none"> <li>3,500 navigation markers, including lights and buoys in 2015.<sup>498</sup></li> <li>System of 14 'bar crossing' safety cameras in 2015.<sup>499</sup></li> <li>13 lighthouses in 2015.</li> </ul>

<sup>490</sup> Ship Building and Repair Services in Australia, IBIS World Industry Report, September 2014

<sup>491</sup> Ibid

<sup>492</sup> Ibid

<sup>493</sup> [http://www.sydneypoating.com.au/listings/search-dir.php?keyword=&category=326&did=&firmname=&custom\\_8=&custom\\_9=&custom\\_10=&custom\\_16=&custom\\_19=&loc\\_id=&pl=&pu=&poa=&ll=&lu=&ltype=&page=2](http://www.sydneypoating.com.au/listings/search-dir.php?keyword=&category=326&did=&firmname=&custom_8=&custom_9=&custom_10=&custom_16=&custom_19=&loc_id=&pl=&pu=&poa=&ll=&lu=&ltype=&page=2)

<sup>494</sup> <http://www.rms.nsw.gov.au/about/environment/environmental-compliance/vessel-waste-disposal/pumpout-facilities.html>

<sup>495</sup> Ibid

<sup>496</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>497</sup> Ibid

<sup>498</sup> Ibid

<sup>499</sup> Ibid



	Location	Scale
<b>Boat ramps, jetties wharves, pontoons and courtesy moorings</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>70 wharves and jetties with a total replacement value in excess of \$90 million in 2014.<sup>500</sup></li> <li>Provision of 128 courtesy moorings and 72 emergency moorings in 2015.<sup>501</sup></li> <li>In Sydney Harbour there are (2015):<sup>502</sup> <ul style="list-style-type: none"> <li>16 boat ramps; and</li> <li>137 public jetties, wharves and pontoons;</li> <li>26 courtesy moorings; and</li> <li>23 emergency moorings.</li> </ul> </li> </ul>
<b>Breakwaters, training walls and revetments</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>NSW Trade and Investment identified \$12.9 million being required to replace and upgrade current breakwaters in the NSW marine estate in 2014.<sup>503</sup></li> <li>No data on the number of breakwaters, training walls and revetments in the NSW marine estate has been located.</li> </ul>
<b>Ancillary facilities on land</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Although no data on the total value of ancillary facilities has been located, replacement costs for some facilities has been identified. 2003 figures include:<sup>504</sup> <ul style="list-style-type: none"> <li>carpark: \$50,000 - \$70,000;</li> <li>toilet block: \$120,000; and</li> <li>shade structure: \$30,000 - \$3 million.</li> </ul> </li> </ul>
<b>Dredging</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate, mainly in river and port entrances.</li> </ul>	<ul style="list-style-type: none"> <li>The NSW Government maintains 21 river entrances and 25 minor port entrances in the NSW marine estate (2015).<sup>505</sup></li> </ul>

<sup>500</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>501</sup> <http://www.rms.nsw.gov.au/maritime/using-waterways/boating-fees-at-work.html>

<sup>502</sup> Transport for NSW Regional Boating Plan, February 2015

<sup>503</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>504</sup> The Economic Value of Natural and Built Coastal Assets, National Climate change Adaption Research Facility 2012

<sup>505</sup> Maintaining Safe Navigation of Key River and Port Entrances in NSW, NSW Department of Lands

	Location	Scale
		<ul style="list-style-type: none"> <li>A major dredging exercise (60,000 cubic metres of sediment) costs around \$600,000 (2008 dollars). A medium exercise (30,000 cubic metres) cost \$400,000 while a minor exercise costs \$200,000.<sup>506</sup></li> </ul>

## 10.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 63 Maritime related activities: trends**

	Trends	Trend summary
<b>Minor ports and boat harbours</b>	<ul style="list-style-type: none"> <li>Proposed \$45 million program for new capital works over the next four years (from 2014).<sup>507</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Boat and ship building, repairs and maintenance</b>	<p><u>Boat building</u></p> <ul style="list-style-type: none"> <li>The boat building and repair services industry is declining (2014-15).<sup>508</sup></li> <li>26.3% drop in revenue for boat building and repair in 2009-10 due to financial crisis. Continued decline of 5% per year over the following five years (across Australia) to 2013-14.<sup>509</sup></li> <li>Revenue forecast to increase in 2014-2015 by 1.5% (across Australia). However, it is expected to continue to decrease slightly over the next five years to 2019-20 (1.6% per annum). The long term future is uncertain.<sup>510</sup></li> </ul> <p><u>Ship building</u></p> <ul style="list-style-type: none"> <li>The ship building and repair services industry is growing (2014-15).<sup>511</sup></li> <li>Annual industry growth between 2010 and 2015 has been</li> </ul>	<ul style="list-style-type: none"> <li><b>DECREASING</b></li> <li><b>INCREASING</b></li> </ul>

<sup>506</sup> Ibid

<sup>507</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>508</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>509</sup> Ibid

<sup>510</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>511</sup> Ship Building and Repair Services in Australia, IBIS World Industry Report, September 2014

	Trends	Trend summary
	<p>4% (across Australia and including exports).<sup>512</sup></p> <ul style="list-style-type: none"> <li>Continued 3.5% growth over next 5 years to 2019-20 in expected (across Australia and including exports).<sup>513</sup></li> </ul>	
<b>Slipways and vessel launching facilities</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with slipways and vessel launching facilities. However, there is considered to be a shortfall in the number and availability of launching facilities.<sup>514</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Sewage pump out facilities</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with sewerage pump-out facilities.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Refuelling facilities</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with refuelling facilities.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Aids to navigation provision and maintenance</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with aids to navigation provision and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Boat ramps, jetties, wharves, pontoons and courtesy moorings</b>	<ul style="list-style-type: none"> <li>NSW Government has allocated an average \$14 million a year over five years to 2020 to support boating infrastructure, including upgrades and new infrastructure such as boat ramps, jetties, pontoons, car parks and sewage pump out facilities between 2015 and 2017.<sup>515</sup></li> <li>No further data located on trends associated with boat ramps, jetties, wharves, pontoons and courtesy moorings. Note that boat storage facilities and trends are considered in Chapter 3 of this report.</li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Breakwaters, training walls and revetments</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with breakwaters, training walls and revetments. However, it is considered that significant maintenance and replacement work is required.<sup>516</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Ancillary facilities on land</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with ancillary facilities on land.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

<sup>512</sup> Ship Building and Repair Services in Australia, IBIS World Industry Report, September 2014

<sup>513</sup> Ibid

<sup>514</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>515</sup> NSW Boating Statement, March 2015, Transport for NSW

<sup>516</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

	Trends	Trend summary
<b>Dredging</b>	<ul style="list-style-type: none"> <li>No data located on trends associated with dredging.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

### 10.3 Economic benefits

Many activities in the NSW marine estate rely on the coastal infrastructure and other maritime related activities considered in this chapter. Recreation, recreational boating, recreational and commercial fishing, tourism, water transport services and commercial and charter activities all depend on the provision of infrastructure and services included in this activity.<sup>517</sup> The economic benefits of each of the sub-activities are considered in the following table.

**Table 64 Maritime related activities: economic benefits**

	Economic benefits
<b>Minor ports and boat harbours</b>	<ul style="list-style-type: none"> <li>Central to many maritime-based regional economies.<sup>518</sup></li> <li>Vital to the economic benefits driven by other activities in the marine estate, including benefits from recreational boating, recreational and commercial fishing, and other commercial vessel activities such as tourism. These benefits have been captured in chapters 2, 3, 8, 9, 11 and 13 of this report.</li> <li>No data located on extent of economic benefits driven by or connected to minor ports and boat harbours.</li> </ul>
<b>Boat and ship building, repairs and maintenance</b>	<ul style="list-style-type: none"> <li>The boat building and repair services industry is a \$270 million industry in NSW, however around 10% of this revenue is export-driven and not connected to the NSW marine estate.<sup>519</sup></li> <li>The ship building and repair services industry is a \$1 billion industry in NSW, a very small proportion of which is export-driven and not connected to the NSW marine estate. A significant proportion is, however, for activities around Australia and therefore not directly connected with the marine estate (particularly given that over 77% of revenue relates to Defence spending).<sup>520</sup></li> </ul>
<b>Slipways and vessel launching</b>	<ul style="list-style-type: none"> <li>Provide a safe means of boarding vessels, loading and unloading vessels.</li> <li>Provide safe havens in adverse weather conditions.<sup>521</sup></li> </ul>

<sup>517</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>518</sup> Ibid

<sup>519</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>520</sup> Ship Building and Repair Services in Australia, IBIS World Industry Report, September 2014

<sup>521</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

	<b>Economic benefits</b>
<b>facilities</b>	<ul style="list-style-type: none"> <li>Without local slipways, vessel operators and owners would face significant costs in travelling to the nearest facility for boat maintenance, anti-fouling of boat hulls and other boat and equipment servicing needs.<sup>522</sup></li> <li>These benefits support a wide range of activities in the NSW marine estate,<sup>523</sup> including recreational boating, recreational and commercial fishing and other commercial vessel activities. The economic benefits of these activities have been captured in chapters 2, 3, 8, 9 and 13 of this report.</li> <li>No data located on extent of economic benefits driven by or connected to slipways and vessel launching facilities.</li> </ul>
<b>Sewage pump out facilities</b>	<ul style="list-style-type: none"> <li>Supports other activities in the marine estate by allowing vessels to comply with sewerage pump out requirements.<sup>524</sup> The benefits of these activities are captured in other chapters of this report.</li> <li>No data located on extent of economic benefits driven by or connected to these facilities.</li> </ul>
<b>Refuelling facilities</b>	<ul style="list-style-type: none"> <li>Enables vessels to be refuelled with minimal risk to the environment.<sup>525</sup></li> <li>Supports a range of other activities in the marine estate, the benefits of which are captured in other chapters.</li> <li>No data located on extent of economic benefits driven by or connected to refuelling facilities.</li> </ul>
<b>Aids to navigation provision and maintenance</b>	<ul style="list-style-type: none"> <li>Supports the safe operation of all vessels in the marine estate.</li> <li>Supports a range of other activities in the marine estate, the benefits of which are captured in other chapters.</li> <li>No data located on extent of economic benefits driven by or connected to aids to navigation.</li> </ul>
<b>Boat ramps, jetties wharves, pontoons and courtesy moorings</b>	<ul style="list-style-type: none"> <li>Supports a range of other activities in the marine estate, the benefits of which are captured in other chapters.</li> <li>No data located on extent of economic benefits driven by or connected to boat ramps, jetties, pontoons and courtesy and emergency moorings.</li> </ul>
<b>Breakwaters, training walls</b>	<ul style="list-style-type: none"> <li>Protect marine infrastructure and support the safety of other activities in the marine estate.<sup>526</sup> The economic benefits of marine infrastructure and the other activities have been captured above, or in other chapters of this</li> </ul>

<sup>522</sup> | NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>523</sup> Ibid

<sup>524</sup> Ibid

<sup>525</sup> Ibid

<sup>526</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

	Economic benefits
<b>and revetments</b>	<p>report.</p> <ul style="list-style-type: none"> <li>No data located on extent of economic benefits driven by or connected to breakwaters, training walls and revetments.</li> </ul>
<b>Ancillary facilities on land</b>	<ul style="list-style-type: none"> <li>Improves the accessibility of a range of recreational, recreational boating, recreational fishing and tourism activities in the marine estate. The economic benefits of these activities have been captured in other chapters of this report.</li> <li>No data located on extent of economic benefits driven by or connected to ancillary facilities on land.</li> </ul>
<b>Dredging</b>	<ul style="list-style-type: none"> <li>Encourages regional economic growth, and supports tourism and community recreation.<sup>527</sup></li> <li>Investment in existing port and entrance infrastructure.</li> <li>Supports the safety of recreational and commercial boating activities, with positive effects for the tourism and commercial fishing industries.<sup>528</sup></li> <li>Resource recovery (beneficial use or resale of dredge material).<sup>529</sup></li> <li>The NSW Government's Sustainable Dredging Strategy (2012-13 to 2014-15) identified three phases of funding for dredging activities.<sup>530</sup> <ul style="list-style-type: none"> <li>Projects in specific waterways previously identified as priorities (including waterway entrances at Lake Cathie, Camden Haven River, Hastings River and Manning River as well as projects at Myall River, Fishermans Bay and Wallis Lake). Funding includes \$1.5 million allocated over three years.</li> <li>Other dredging of estuaries to provide public benefits with preference for projects where the main purpose is to aid navigation by recreational and commercial vessels. Funding includes \$1.5 million allocated over three years. Under this program 11 dredging projects were funded including at Eurobodalla, Shoalhaven, Sutherland Shire, Gosford, Wyong, Taree and Coffs Harbour.<sup>531</sup></li> <li>Dredging to maintain navigation access to government-owned maritime infrastructure and at "trained" river entrances. \$2.250 million has been allocated over three years from 2012/2013.</li> </ul> </li> </ul>

<sup>527</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>528</sup> Ibid

<sup>529</sup> Ibid

<sup>530</sup> NSW Sustainable Dredging Strategy (2012-13 to 2014-15), Crown Lands, NSW Trade and Investment, 2013

<sup>531</sup> Rescuing our Waterways Fact Sheet, Crown Lands, NSW Trade and Investment, 2014

	Economic benefits
	<ul style="list-style-type: none"> <li>Many dredging case studies are available. For example, dredging the Swansea Channel in Lake Macquarie in 2009: <ul style="list-style-type: none"> <li>cost \$300,000;</li> <li>the sediment (sand) removed was used in local land development work, saving money in transporting and disposing of the sediment and providing income through the sale of the sediment; and</li> <li>benefitted the significant number of users of the Lake. The channel provides vessel access between the Lake and the Tasman Sea.</li> </ul> </li> <li>During 2013-14, a further \$2.5 million was allocated to dredging the Swansea Channel.<sup>532</sup></li> </ul>
<b>Total quantified economic benefits</b>	<p><b>The boat building and repair services industry is a \$270 million industry in NSW. This equates to 0.06% of NSW gross domestic product.</b></p> <p>The proportion of this figure which extends from the Hawkesbury bioregion as not been determined.</p> <p>Insufficient data to quantify the economic benefits of the other sub-activities across the NSW marine estate.</p>

## 10.4 Social benefits

The activity supports and facilitates many other activities in the marine estate, and therefore is connected to the social benefits of those activities. This activity also improves the accessibility and amenity of the marine estate, and supports the safety of persons in the marine estate. The social benefits of each of the sub-activities are considered in the following table. All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

**Table 65 Maritime related activities: social benefits**

	Social benefits
<b>Minor ports and boat harbours</b>	<ul style="list-style-type: none"> <li>Facilitates access to the marine estate, which is seen as providing substantial support to local economies.<sup>533</sup></li> <li>Vital to the social benefits driven by other activities in the marine estate, including benefits from recreational boating, recreational and commercial fishing, and other commercial vessel activities such as tourism. These benefits have been captured in Chapters 2, 3, 8, 9, 11 and 13 of this report.</li> </ul>

<sup>532</sup> Transport for NSW Annual Report 2013-2014

<sup>533</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research. NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

	Social benefits
<b>Boat and ship building repairs and maintenance</b>	<ul style="list-style-type: none"> <li>• Supports local industries in regional and metropolitan NSW, providing employment and other social benefits.</li> <li>• Supports a range of other activities in the marine estate including recreational boating, recreational and commercial fishing, tourism, commercial boating activities, water transport services and aquaculture, the benefits of which are captured in other chapters.</li> </ul>
<b>Slipways and vessel launching facilities</b>	<ul style="list-style-type: none"> <li>• Supports local industries in regional and metropolitan NSW.</li> <li>• Supports a range of other activities in the marine estate including recreational boating, recreational and commercial fishing, tourism, commercial boating activities and water transport services, the benefits of which are captured in other chapters.</li> </ul>
<b>Sewage pump out facilities</b>	<ul style="list-style-type: none"> <li>• Facilitates the protection of environment from sewerage pollution, which supports the amenity and use of the NSW marine estate and the value of the marine estate to the community.<sup>534</sup></li> <li>• Supports a range of other activities in the marine estate including recreational boating, recreational and commercial fishing, tourism, commercial boating activities and water transport services, the benefits of which are captured in other chapters.</li> </ul>
<b>Refuelling facilities</b>	<ul style="list-style-type: none"> <li>• Supports a range of activities in the marine estate including recreational boating, recreational and commercial fishing, tourism, commercial boating activities, water transport services and aquaculture, the benefits of which are captured in other chapters.</li> </ul>
<b>Aids to navigation provision and maintenance</b>	<ul style="list-style-type: none"> <li>• Supports the safety of all persons participating in water-related activities in the marine estate.</li> <li>• Supports a range of other activities in the marine estate, the benefits of which are captured in other chapters.</li> </ul>
<b>Boat ramps, jetties wharves, pontoons and courtesy moorings</b>	<ul style="list-style-type: none"> <li>• Make the marine estate accessible for members of the community who wish to utilise it.<sup>535</sup></li> <li>• Provides access to marine waters and harbours via trained river entrances.</li> </ul>
<b>Breakwaters, training walls and revetments</b>	<ul style="list-style-type: none"> <li>• Protect local infrastructure such as marinas, boat ramps, surf clubs, restaurants, cafes and wharves.</li> <li>• Supports the safety of persons participating in activities in the marine estate.</li> </ul>

<sup>534</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research. This report found that the community believes that the environmental well-being of the marine estate should take priority and that it was important that the waters and coastline of the marine estate stay clean and unpolluted.

<sup>535</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research



	Social benefits
<b>Ancillary facilities on land</b>	<ul style="list-style-type: none"> <li>The presence of facilities such as amenities blocks make the marine estate accessible for all members of the community that may want to utilise it.<sup>536</sup></li> <li>Supports a range of other activities in the marine estate, the benefits of which are captured in other chapters.</li> </ul>
<b>Dredging</b>	<ul style="list-style-type: none"> <li>Enhanced access for waterway users.<sup>537</sup></li> <li>Safer boating, both recreational and commercial.<sup>538</sup> In the 10 years between 2002-03 and 2011-12 there were three incidents involving one or more fatalities, and five incidents involving one or more serious injuries, where the vessel was crossing a bar in NSW.<sup>539</sup></li> </ul>

## 10.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of the threat, are considered in the following table.

**Table 66 Maritime related activities: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Public health and safety</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>There are significant workplace health and safety and public safety issues associated with existing marine infrastructure due to their current condition. Existing public moorings and pontoons are being proposed for upgrading or replacement in order</li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of boat ramps, jetties, wharves, breakwaters, training walls and revetments.</li> </ul>	<ul style="list-style-type: none"> <li>Minor. <u>Basis for ranking:</u></li> <li>NSW Government agencies have plans in place to address the risk.<sup>542</sup></li> </ul>	<ul style="list-style-type: none"> <li>Likely. <u>Basis for ranking:</u></li> <li>The NSW Government has been subject to a number of injury claims relating to maritime assets.<sup>543</sup></li> </ul>

<sup>536</sup> Marine Estate Community Survey Final Report, July 2014, Sweeney Research

<sup>537</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case. January 2014

<sup>538</sup> Ibid.

<sup>539</sup> Boating incidents in NSW, Statistical incidents for the 10 year period ended 30 June 2012, Transport for NSW

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>to reduce safety risks.<sup>540</sup></p> <ul style="list-style-type: none"> <li>• Significant risks associated with existing breakwaters overtopping.<sup>541</sup></li> </ul>			
<p><b>Climate change</b> <i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Sea level rise and increased storm impact will lead to increased overtopping of breakwaters, which could impact the integrity of infrastructure by increasing wear and tear.<sup>544</sup></li> <li>• Increased storm impact could also result in lost or severely damaged infrastructure.<sup>545</sup></li> <li>• Sea level rise and increased storm impact could also shift the location of river channels and make existing infrastructure inaccessible or redundant.<sup>546</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social benefits of boat ramps, jetties, wharves, breakwaters, training walls and revetments.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• The risks are managed through design criteria for infrastructure upgrades and new infrastructure.<sup>547</sup></li> <li>• The NSW Government allocated \$5 million to assist with emergency repairs to boating infrastructure, particularly after storm events.<sup>548</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Likely.<sup>549</sup></li> </ul>

<sup>542</sup> Sydney Harbour Regional Boating Plan, Transport for NSW, 2015

<sup>543</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>540</sup> Ibid

<sup>541</sup> Ibid

<sup>544</sup> Ibid

<sup>545</sup> Ibid

<sup>546</sup> Ibid

<sup>547</sup> Ibid

<sup>548</sup> Sydney Harbour Regional Boating Plan, Transport for NSW, 2015

<sup>549</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• This risk particularly affects the boat and ship building sub-activity. The global financial crisis resulted in a 26.3% drop in revenue for the boat building and repair services industry across Australia.<sup>550</sup></li> <li>• An economic downturn would also reduce the availability of government funds for other sub-activities, such as infrastructure development and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>• The economic and social benefits of boat building and ship building activities.</li> <li>• The social and economic benefits of boat ramps, jetties, wharves, breakwaters, training walls and revetments.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• The boat building industry in NSW is already in a slow decline.<sup>551</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Likely over the long term.</li> </ul>
<b>Market saturation</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• This risk is relevant to the boat and ship building sub-activity.</li> <li>• Market saturation would see the availability of ship/boat builders, repairers, surveyors and equipment providers greatly exceed the needs of activities in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• The economic and social benefits of boat building and ship building activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• The boat building industry in NSW is already in a slow decline.<sup>552</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely. <u>Basis for ranking:</u></li> <li>• Australia is not producing enough shipwrights, marine mechanisms and surveyors for this to be likely unless there was an economic downturn.<sup>553</sup></li> </ul>

<sup>550</sup> Boat Building and Repair Services in Australia, IBIS World Industry Report, March 2015

<sup>551</sup> Ibid

<sup>552</sup> Ibid

<sup>553</sup> Boat Industry Training Market Analysis and Conceptual Model, The Allen Consulting Group, August 2013

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Limited access and storage infrastructure</b>  <i>Applies to Hawkesbury bioregion in particular</i>	<ul style="list-style-type: none"> <li>A shortage of marinas and boat infrastructure (particularly storage facilities) in some locations impacts on the increasing demand for boats.<sup>554</sup></li> </ul>	<ul style="list-style-type: none"> <li>The economic and social benefits of boat building activities.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate. <u>Basis for ranking:</u></li> <li>Likely to act as a bottleneck for the boating industry over the next five years, hindering new boat sales.<sup>555</sup></li> <li>The NSW Government allocated \$5 million to establishing dedicated off-street boat trailer parking facilities.<sup>556</sup></li> </ul>	<ul style="list-style-type: none"> <li>Likely.<sup>557</sup> <u>Basis for ranking:</u></li> <li>Transport for NSW has set targets for 300 new moorings and 200 new marina berths in NSW.</li> </ul>

## 10.6 Information gaps

The information gaps for this activity have been noted in the tables above. They are summarised in the following table.

**Table 67 Maritime related activities: information gaps**

	Information gaps
<b>Activity scale and scope</b>	<p>Limited data has been located on the number of:</p> <ul style="list-style-type: none"> <li>- slipways and launching facilities;</li> <li>- refuelling facilities;</li> <li>- breakwaters, training walls and revetments; and</li> <li>- ancillary facilities on land,</li> </ul>

<sup>554</sup> Boat Building and Repair in Australia, IBIS World Industry Report, March 2015

<sup>555</sup> Ibid

<sup>556</sup> Sydney Harbour Regional Boating Plan, Transport for NSW, 2015

<sup>557</sup> Ibid

	Information gaps
	in the NSW marine estate
<b>Trends</b>	There is limited data on the trends of the sub-activities, except for boat / ship building and repair activities.
<b>Economic benefits</b>	There is limited data on the quantified benefits of this activity. With the exception of boat / ship building and repair services, quantified benefits are in the form of case studies and examples only.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 11. Tourism and accommodation

This chapter considers the activity 'tourism and accommodation', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 11.1 Activity description

The NSW marine estate is a key, if not the key, tourist drawcard in NSW. Sydney Harbour, Bondi Beach, Byron Bay and Lord Howe Island are iconic locations and many other key tourist destinations occur in the NSW marine estate. However, it should be acknowledged that Sydney can be the entry point for international tourists to Australia, and visitor numbers are also linked to other major national tourism attractions, including Uluru and the Great Barrier Reef.

This chapter overlaps somewhat with other chapters in the report, as recreational, recreational boating and recreational and charter fishing activities cover use of the marine estate by locals and tourists. Cruise shipping, harbour cruises, charter boats, mammal watching and water transport services also include the use of the marine estate by both locals and tourists – in some cases, tourists are the predominant user of the activity (for example, harbour cruises).

As a result, this chapter considers the broader role of the marine estate in tourism in NSW, and does not delve into specific sub-activities.

**Table 68 Tourism and accommodation: scale**

	Scale
<b>Tourism and accommodation generally</b>	<ul style="list-style-type: none"> <li>81.1 million visitors and 163.5 million visitor nights in NSW in 2014.<sup>558</sup></li> <li>22.2 million nature-based tourists in NSW in the year ending September 2014. 83.5% of international nature-based tourists went to the beach and around 60% of domestic tourists went to the beach.<sup>559</sup></li> <li>4,028 accommodation businesses in NSW as at June 2013.<sup>560</sup></li> </ul>
<b>Sydney</b>	<ul style="list-style-type: none"> <li>30.5 million visitors and 87.5 million visitor nights in NSW in 2014.<sup>561</sup></li> </ul>
<b>Regional NSW</b>	<ul style="list-style-type: none"> <li>There were 33.5 million visitors to non-metropolitan coastal regions in 2011-2012.<sup>562</sup></li> </ul>

<sup>558</sup> NSW Tourism Performance Scorecard Year End December 2014, Destination NSW, 2015

<sup>559</sup> NSW Nature Based Tourism Year End September 2014, Destination NSW, 2015

<sup>560</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>561</sup> Travel to Sydney Year Ended December 2014, Destination NSW, 2015

<sup>562</sup> Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, 2014

	Scale
	<p><u>Byron Bay example<sup>563</sup></u></p> <ul style="list-style-type: none"> <li>• 1.376 million visitors per year, four year average to September 2014.</li> <li>• 3.272 million visitor nights per year, four year average to September 2014.</li> <li>• 64% of domestic overnight visitors and 42% of domestic day trip visitors went to the beach.</li> </ul> <p><u>Ballina example<sup>564</sup></u></p> <ul style="list-style-type: none"> <li>• 620,000 people visited Ballina per year, four year average to September 2014.</li> <li>• 40% of domestic overnight visitors went to the beach.</li> </ul> <p><u>North Coast example<sup>565</sup></u></p> <ul style="list-style-type: none"> <li>• 10.4 million visitors in 2014.</li> <li>• 20.6 million visitor nights in 2014.</li> <li>• \$3.25 billion in visitor expenditure in 2014.</li> </ul> <p><u>South Coast accommodation example<sup>566</sup></u></p> <ul style="list-style-type: none"> <li>• Accommodation on the South Coast includes: <ul style="list-style-type: none"> <li>- branded hotels, apartment hotels and serviced apartments;</li> <li>- over 100 motel properties;</li> <li>- over 120 caravan / holiday parks;</li> <li>- over 5,000 holiday rental properties (houses and apartments);</li> <li>- hosted (on-site management) holiday apartments and cabin complexes;</li> <li>- boutique, innovative accommodation (small number);</li> <li>- bed &amp; Breakfast (B&amp;B) and farm stay properties;</li> <li>- backpacker accommodation (limited numbers);</li> <li>- primitive camping grounds; and</li> <li>- other accommodation – including house boats, student accommodation (University of Wollongong) and rooms in pub hotels.</li> </ul> </li> </ul>

<sup>563</sup> LGA Profile – Byron, Dec 2014, Destination NSW, 2015

<sup>564</sup> LGA Profile – Ballina, Destination NSW, 2014

<sup>565</sup> North Coast Year End 2014, Destination NSW, 2015

<sup>566</sup> South Coast NSW Destination Management Plan, 2013-2020, South Coast Regional Tourism Organisation

In 2011-2012, regional tourism in NSW was responsible for 7,461 full time equivalent in total accommodation employment, and a further 513 in accommodation related sector businesses. Other than the Hunter region, where wine is a significant draw, the most significant drawcard for regional tourism is the NSW marine estate.<sup>567</sup>

## 11.2 Trends

The trends, in regards to the scale and location of each of the sub-activities, are considered in the following table.

**Table 69 Tourism and accommodation: trends**

	Trends	Trend summary
<b>Tourism and accommodation generally</b>	<ul style="list-style-type: none"> <li>• Tourism expenditure in NSW has grown at just under 3.5% per year in the 10 years from 2005 to 2014. Between 2013 and 2014, expenditure grew by 1.4%.<sup>568</sup></li> <li>• The number of visitors to NSW has grown at just under 2% per year in the 10 years from 2005 to 2014. Between 2013 and 2014, the number of visitors grew by 0.6%.<sup>569</sup></li> <li>• Marine tourism in NSW grew from accounting for 72.3% of total marine industry direct value added in NSW in 1995-96 to 76.3% in 2002-03.<sup>570</sup></li> <li>• Employment in marine tourism in NSW grew from just over 60,000 in 1995-96 to just over 75,000 in 2002-03.<sup>571</sup></li> </ul>	<ul style="list-style-type: none"> <li>• <b>INCREASING</b></li> </ul>
<b>Sydney</b>	<ul style="list-style-type: none"> <li>• Tourism expenditure in Sydney has grown at just over 3% per year in the 10 years from 2005 to 2014. Between 2013 and 2014, expenditure grew by 1.8%.<sup>572</sup></li> <li>• The number of visitors to Sydney has grown at just under 3% per year in the 10 years from 2005 to 2014. Between 2013 and 2014, the number of visitors dropped by 0.4%.<sup>573</sup></li> </ul>	<ul style="list-style-type: none"> <li>• <b>INCREASING</b></li> </ul>

<sup>567</sup> Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, NSW Trade and Investment, January 2014

<sup>568</sup> Travel to NSW Year Ended December 2014, Destination NSW, 2015

<sup>569</sup> Ibid

<sup>570</sup> The economic contribution of Australia's marine industries, The Allen Consulting Group, 2004

<sup>571</sup> Ibid

<sup>572</sup> Travel to Sydney Year Ended December 2014, Destination NSW, 2015

<sup>573</sup> Ibid



	Trends	Trend summary
<b>Regional NSW</b>	<ul style="list-style-type: none"> <li>Total number of visitors to regional NSW has grown from 45.8 million in 2005 to 51.8 million in 2014.<sup>574</sup></li> <li>Total expenditure by visitors to regional NSW has grown from \$10 billion in 2005 to \$13.6 billion in 2014.<sup>575</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>

### 11.3 Economic benefits

The economic benefits of each of the sub-activities are considered in the following table.

**Table 70 Tourism and accommodation: economic benefits**

	Economic benefits
<b>Tourism generally</b>	<ul style="list-style-type: none"> <li>\$28.1 billion was spent by visitors in NSW during 2014. \$12 billion of this was spent by visitors in NSW for a holiday.<sup>576</sup></li> <li>\$20.6 billion was spent by visitors to Sydney, the North Coast, the South Coast, and the Central Coast during 2014.<sup>577</sup> The marine estate is the key attraction for these areas of NSW.</li> <li>Tourism in NSW provided for 159,000 jobs in direct full time equivalent employment across 91,000 tourism business.<sup>578</sup></li> <li>In 2004, marine tourism was the largest marine industry in NSW, accounting for 76% of the state marine industry value added in 2002-03. In 2002-03, it accounted for over \$4 billion in direct value add to the NSW economy and over 70,000 employees.<sup>579</sup></li> <li>Nature-based tourists spent \$14.6 billion in NSW in the year ending September 2014. 83.5% of international nature-based tourists went to the beach and around 60% of domestic tourists went to the beach.<sup>580</sup></li> <li>\$4.3 billion direct expenditure at accommodation businesses in NSW and a further \$2.3 in gross value added to the NSW accommodation by accommodation businesses in 2013-14.<sup>581</sup></li> <li>43,000 people employed in accommodation businesses in NSW as at June 2013.<sup>582</sup></li> </ul>

<sup>574</sup> Travel to Regional NSW Year Ended December 2014, Destination NSW, 2015

<sup>575</sup> Ibid

<sup>576</sup> NSW Tourism Performance Scorecard Year End December 2014, Destination NSW, 2015

<sup>577</sup> Ibid

<sup>578</sup> Ibid

<sup>579</sup> The economic contribution of Australia's marine industries, The Allen Consulting Group, 2004

<sup>580</sup> NSW Nature Based Tourism Year End September 2014, Destination NSW, 2015

<sup>581</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

	Economic benefits
<b>Sydney</b>	<ul style="list-style-type: none"> <li>• \$14.5 billion was spent by visitors in Sydney during 2014.<sup>583</sup></li> <li>• Tourism in Sydney alone contributed \$13.5 billion to the economy in 2012.<sup>584</sup> However, it is not known what proportion of this is connected to the NSW marine estate.</li> <li>• 55% of international, 30% of domestic overnight and 45% of domestic day trippers primary motivation in visiting Sydney was for holiday or pleasure.<sup>585</sup></li> </ul>
<b>Regional NSW</b>	<ul style="list-style-type: none"> <li>• Non-metropolitan coastal regions received 30.4% of all NSW tourism expenditure (\$7.8 billion) in 2011-12.<sup>586</sup></li> </ul> <p><u>North Coast example<sup>587</sup></u></p> <ul style="list-style-type: none"> <li>• \$3.25 billion in visitor expenditure in 2014.</li> </ul> <p><u>Byron Bay example<sup>588</sup></u></p> <ul style="list-style-type: none"> <li>• \$350 million in visitor expenditure per year, four year average to September 2014.</li> <li>• 64% of domestic overnight visitors and 42% of domestic day trip visitors went to the beach, four year average to September 2014.</li> <li>• Assuming that at least 40% of visitors visited the NSW marine estate, the marine estate is connected to at least \$140 million per year in tourism expenditure in one local government area alone.</li> </ul> <p><u>Ballina example<sup>589</sup></u></p> <ul style="list-style-type: none"> <li>• \$181 million in visitor expenditure per year, four year average to September 2014.</li> <li>• 40% of domestic overnight visitors went to the beach, four year average to September 2014.</li> <li>• If 40% of visitors visited the NSW marine estate, the marine estate is connected to at least \$72 million in tourism expenditure in one regional local government area.</li> </ul>
<b>Total quantified economic benefits</b>	<p><b>\$20.6 billion was spent by visitors to Sydney, the North Coast, the South Coast, and the Central Coast during 2014.</b> This equates to 4% of NSW gross domestic product.</p> <p>At least \$14.5 billion of this extends from the Sydney, which is in the</p>

<sup>582</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>583</sup> Travel to Sydney Year Ended December 2014, Destination NSW, 2015

<sup>584</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>585</sup> Travel to Sydney Year ended June 2010, Tourism New South Wales

<sup>586</sup> NSW Trade and Investment, Coastal Infrastructure Capital Works and Maintenance Program, New Capital Works 2015-2019 Business Case, January 2014

<sup>587</sup> North Coast Year End 2014, Destination NSW, 2015

<sup>588</sup> LGA Profile – Byron, Dec 2014, Destination NSW, 2015

<sup>589</sup> LGA Profile – Ballina, Destination NSW, 2014

	Economic benefits
	<p>Hawkesbury bioregion.</p> <p>However, it is not known what proportion of this expenditure is linked to the NSW marine estate.</p>

## 11.4 Social benefits

The social benefits of tourism in the NSW marine estate include:

- the opportunity to enjoy the beauty of the NSW marine estate and to interact with nature;
- greater appreciation for the NSW marine estate and awareness of conservation issues and actions. (However, it is noted that this benefit can be outweighed by the environmental impacts of marine tourism);
- socialising with family and friends;
- the excitement of activities such as cruising, swimming, surfing, jet-boating, yachting and marine mammal watching.

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

## 11.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of the threat, are considered in the following table.

**Table 71 Tourism and accommodation: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• An economic downturn would reduce the number of tourists connected to the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic benefits of tourism and accommodation.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely over the long term.</li> </ul>
<b>Public health and safety</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Public health and safety with tourist-based activities, such as Harbour cruises, kayak tours, diving or snorkelling could reduce the incentive</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of tourism and accommodation.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• A significant safety issue or incident</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• Australia has a good safety record and a</li> </ul>

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>for tourists to visit the NSW marine estate.</p> <ul style="list-style-type: none"> <li>Includes shark attacks in the marine estate.</li> </ul>		could damage the specific sectors in which the incident occurred.	strong safety culture in tourist-based marine activities. These activities are also generally tightly regulated in NSW.
<p><b>Environmental impact of the activities</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>Tourist activities, such as commercial boating, fishing and mammal watching have an impact on the NSW marine estate.</li> <li>Tourist visitors to the marine estate can also litter and disturb wildlife, which can reduce the amenity of the marine estate and reduce the incentive for tourists to visit the NSW marine estate.</li> <li>Visitor infrastructure (such as marinas, harbours, shark mesh nets) can also change habitat structure and impact on the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of tourism and accommodation.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Local councils are proactive in cleaning beaches and highly visited areas of the marine estate.</li> <li>The potential disturbance of marine life, such as penguins in Sydney Harbour and dolphins in Port Stephens and Byron Bay is being monitored closely.<sup>590</sup></li> </ul>
<p><b>Climate change</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>Rising sea levels associated with climate change will reduce the amenity of the marine estate – for example, through the loss of beaches.</li> <li>Climate change could</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of tourism and accommodation.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> <li>The loss of beaches in NSW could have a significant impact on the number of</li> </ul>	<ul style="list-style-type: none"> <li>Almost certain.</li> </ul>

<sup>590</sup> Sustaining a multi-use environment, Assessing the sustainability of commercial tourism operation in the Cape Byron Marine Park, Cape Byron Marine Park, 2013-14

Threats	Description	Benefits threatened	Consequence	Likelihood
	also impact of marine life, reducing fish stocks and the numbers of marine mammals in the NSW marine estate. This would reduce the incentives for tourists to visit the NSW marine estate.		tourists visiting the NSW marine estate. However, a survey found that only 40% of people actually go onto the sand or into the water when visiting the beach, and only 30% would be affected by the loss of sand, but not so badly that they would leave. <sup>591</sup>	

## 11.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 72 Tourism and accommodation: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the connection between tourists in NSW, Sydney and regional NSW and the NSW marine estate.
<b>Trends</b>	Limited data has been located on trends between tourists in NSW, Sydney and regional NSW and the NSW marine estate.
<b>Economic benefits</b>	Limited data has been located on the connection between tourists in NSW, Sydney and regional NSW and the NSW marine estate.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of

<sup>591</sup> Sydney Beaches Valuation Project, Overview and Summary, Sydney Coastal Councils Group and UNSW, 2013

	Information gaps
	social benefits associated with this activity.
Threats to benefits	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 12. Coastal urban settlement

This chapter considers the activity 'coastal urban settlement', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 12.1 Activity description

Coastal urban settlement includes existing and new development along the coastline of NSW. It includes:

- residential property;
- commercial property;
- transport infrastructure;
- Surf Life Saving Clubs; and
- services such as water and electricity infrastructure.

Maritime related infrastructure (such as seawalls, beach amenities, car parking, jetties, ports and so on) have been considered under previous activities (in Chapters 8 and 10).

The scale of this activity is considered in the following table.

**Table 73 Coastal urban settlement: scale**

	Scale
<b>Residential property</b>	<ul style="list-style-type: none"> <li>• 85% of the NSW population lives within 50km of the NSW coastline (2011).<sup>592</sup></li> <li>• 58% of the NSW population lives within 25km of the NSW coastline (2015).<sup>593</sup></li> <li>• 16% of the NSW population lives within 3km of the NSW coastline (2015).<sup>594</sup></li> <li>• 66% of the NSW population lives in coastal local government areas (2015).<sup>595</sup></li> <li>• Residential property within 50km of the NSW coastline had a replacement value of \$14-\$20 billion in 2011.<sup>596</sup></li> </ul> <p><u>Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>• Over 545,000 people lived in the Sydney Harbour area (the Statistical Local Areas located adjacent to the main part of the</li> </ul>

<sup>592</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>593</sup> Figures provided by the NSW Department of Planning & Environment, July 2015

<sup>594</sup> Ibid

<sup>595</sup> Ibid

<sup>596</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

	Scale
	<p>harbour) in 2007, which was 13% of the population in the Sydney Statistical Division.<sup>597</sup></p> <ul style="list-style-type: none"> <li>• Total value of residential property in the Sydney Harbour area was over \$1.2 billion in 2007.<sup>598</sup></li> </ul>
<b>Commercial and industrial property</b>	<ul style="list-style-type: none"> <li>• Commercial buildings within 50km of the NSW coastline had a replacement value of \$5 - \$9 billion in 2011.<sup>599</sup></li> <li>• Light industrial buildings within 50km of the NSW coastline had a replacement value of \$0.8 - \$1.1 billion in 2011.<sup>600</sup></li> </ul> <p><u>Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>• Total value of non-residential property in the Sydney Harbour area was over \$1.8 billion in 2007.<sup>601</sup></li> </ul>
<b>Transport infrastructure</b>	<ul style="list-style-type: none"> <li>• Road infrastructure within 50km of the NSW coastline has a replacement value of \$7 billion (2011).<sup>602</sup></li> <li>• Rail infrastructure within 50km of the NSW coastline has a replacement value of \$0.6 - \$1.3 billion (2011).<sup>603</sup></li> </ul>
<b>Surf Lifesaving Club buildings</b>	<ul style="list-style-type: none"> <li>• Replacement value of a single Surf Life Saving Club building in Newcastle ranged from \$450,000 - \$5.67 million in 2011.<sup>604</sup></li> <li>• There are 129 Surf Life Saving clubs in NSW.<sup>605</sup></li> </ul>
<b>Water, electricity and other infrastructure for services</b>	<ul style="list-style-type: none"> <li>• No data located on the extent or value of services infrastructure in the coastal zone.</li> </ul>

## 12.2 Trends

Coastal urban settlement trends are considered in the following table.

<sup>597</sup> Data provided by MEMA agencies, sourced from the Australian Bureau of Statistics, National Regional Profile 2004-2008. The area classifications are from the Australian Standard Geographical Classification

<sup>598</sup> Data provided by MEMA agencies, sourced from the Australian Bureau of Statistics, National Regional Profile 2004-2008

<sup>599</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>600</sup> Ibid

<sup>601</sup> Data provided by MEMA agencies, sourced from the Australian Bureau of Statistics, National Regional Profile 2004-2008

<sup>602</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>603</sup> Ibid

<sup>604</sup> Ibid

<sup>605</sup> Surf Life Saving NSW Annual Report 2013-2014



**Table 74 Coastal urban settlement: trends**

	<b>Trends</b>	<b>Trend summary</b>
<b>Residential property</b>	<ul style="list-style-type: none"> <li>The percentage of the NSW population living in coastal local government areas has increased from 65.3% to 66.1% between 1991 and 2014.<sup>606</sup></li> <li>The number of people living in coastal local government areas in NSW has risen from 3.9 million in 1991 to 5 million in 2014.<sup>607</sup></li> <li>No further data located on the trends associated with residential property in the coastal zone.</li> </ul>	<ul style="list-style-type: none"> <li><b>INCREASING</b></li> </ul>
<b>Commercial and industrial property</b>	<ul style="list-style-type: none"> <li>No data located on the trends associated with commercial and industrial property in the coastal zone.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Transport infrastructure</b>	<ul style="list-style-type: none"> <li>No data located on the trends associated with transport infrastructure in the coastal zone.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>
<b>Surf Lifesaving Club buildings</b>	<ul style="list-style-type: none"> <li>The number of clubs in NSW has remained steady since 2010-11.</li> <li>No further data located on the trends associated with Surf Life Saving Clubs in the coastal zone.</li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>
<b>Water, electricity and other infrastructure for services</b>	<ul style="list-style-type: none"> <li>No data located on the trends associated with water, electricity and other infrastructure in the coastal zone.</li> </ul>	<ul style="list-style-type: none"> <li><b>UNKNOWN</b></li> </ul>

### 12.3 Economic benefits

The economic benefits of coastal urban settlement are considered in the following table.

<sup>606</sup> Figures provided by the NSW Department of Planning & Environment, July 2015

<sup>607</sup> Ibid

**Table 75 Coastal urban settlement: economic benefits**

	<b>Economic benefits</b>
<b>Residential property</b>	<ul style="list-style-type: none"> <li>Coastal views have been estimated to add up to 25% to the value of property.<sup>608</sup></li> <li>Beach front property has been estimated to be worth up to 40% more than the identical property immediately landward of the first row.<sup>609</sup></li> <li>Land value in coastal areas has increased at a faster rate than typical Sydney property (311% over 10 years from 1996 – 2005 in Manly as compared to 276% across Sydney).<sup>610</sup></li> </ul> <p><u>Sydney Harbour</u></p> <ul style="list-style-type: none"> <li>In Sydney, the closer property is to Sydney Harbour, the higher the average price. 'Middle ring' prices were 85% of 'inner ring' prices on average and 'outer ring' prices were 69% of 'inner ring' prices on average.<sup>611</sup></li> </ul> <p><u>Collaroy-Narrabeen example</u></p> <ul style="list-style-type: none"> <li>Beachfront properties were worth 200% more than otherwise identical properties in the area in 2013. Houses one block back from the beach were worth 40% less than those with beach front access.<sup>612</sup></li> <li>Premiums paid to secure beachfront access totalled \$110 million for the Collaroy-Narrabeen beach in 2013.<sup>613</sup></li> </ul>
<b>Commercial and industrial property</b>	<ul style="list-style-type: none"> <li>Provide the land, buildings and infrastructure to support economic activities along the marine estate.</li> <li>No data located quantifying the benefits of commercial and industrial property in the coastal zone.</li> </ul>
<b>Transport infrastructure</b>	<ul style="list-style-type: none"> <li>Facilitate the transport of goods and people through the coastal zone.</li> <li>Underpin economic activities in the coastal zone and beyond, including the movement of goods to and from the ports.</li> <li>No data located quantifying the benefits of commercial and industrial property in the coastal zone.</li> </ul>
<b>Surf Lifesaving Club buildings</b>	<ul style="list-style-type: none"> <li>Surf Life Saving club buildings enable the clubs to host Surf Life Saving events, which can have significant value. For example, the NSW Surf Life Saving Championships are estimated to have a value of \$18 million in visitor spending (2012).<sup>614</sup></li> </ul>

<sup>608</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>609</sup> [http://www.sydneycostalouncils.com.au/Project/Quantifying\\_Value\\_of\\_Sydney\\_Beaches](http://www.sydneycostalouncils.com.au/Project/Quantifying_Value_of_Sydney_Beaches)

<sup>610</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

<sup>611</sup> Data provided by MEMA agencies, sourced from the Australian Bureau of Statistics, National Regional Profile 2004-2008

<sup>612</sup> Sydney Beach Valuation Project, University of NSW, 2013

<sup>613</sup> Ibid

<sup>614</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

	<b>Economic benefits</b>
	<ul style="list-style-type: none"> <li>Surf club buildings also enable Surf Life Saving Clubs to carry out their safety activities, which help prevent drowning, injuries and loss of assets in the NSW marine estate. Improved safety outcomes also provide economic benefits by increasing the incentives for people to participate in activities in the NSW marine estate.</li> <li>No further data located quantifying the benefits of Surf Life Saving Club buildings.</li> </ul>
<b>Water, electricity and other infrastructure for services</b>	<ul style="list-style-type: none"> <li>Provide the infrastructure (such as electricity and water) to support economic activities along the marine estate.</li> <li>No data located quantifying the benefits of water and electricity infrastructure in the coastal zone.</li> </ul>
<b>Total quantified benefits</b>	<b>Insufficient data to quantify benefits across the marine estate or in the Hawkesbury bioregion.</b>

## 12.4 Social benefits

66% of the NSW population lives in coastal local government areas.<sup>615</sup> Living near the NSW marine estate is highly valued due to the leisure and lifestyle options offered by coastal living.

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

**Table 76 Coastal urban settlement: social benefits**

	<b>Social benefits</b>
<b>Residential property</b>	<ul style="list-style-type: none"> <li>Allow communities to live near the NSW marine estate and incorporate coastal activities into their daily lifestyle.</li> </ul>
<b>Commercial and industrial property</b>	<ul style="list-style-type: none"> <li>Support local industries and employment.</li> </ul>
<b>Transport infrastructure</b>	<ul style="list-style-type: none"> <li>Allow communities to live near the NSW marine estate and incorporate coastal activities into their daily lifestyle.</li> </ul>
<b>Surf Lifesaving Club buildings</b>	<ul style="list-style-type: none"> <li>Integral to the local community.<sup>616</sup></li> <li>Provide a meeting point for local communities.</li> <li>Facilitate inter-generation interactions.</li> </ul>

<sup>615</sup> Figures provided by the NSW Department of Planning & Environment, July 2015

<sup>616</sup> The economic value of natural and built coastal assets, National Climate change Adaption Research Facility, 2012

	Social benefits
<b>Water, electricity and other infrastructure for services</b>	<ul style="list-style-type: none"> <li>• Allow communities to live near the NSW marine estate and incorporate coastal activities into their daily lifestyle.</li> <li>• Provide for a minimum standard of living for coastal communities.</li> </ul>

## 12.5 Threats to economic and social benefits

The threats to the economic and social benefits of coastal urban settlement, and the consequence and likelihood of the threats, are considered in the following table.

**Table 77 Coastal urban settlement: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• An economic downturn may see a reduction in the value of property in the coastal zone. This could reduce the economic benefit of owning residential or commercial property in the coastal zone.</li> <li>• An economic downturn would also reduce money available to build and maintain facilities in the coastal zone, such as roads, water and electricity infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• The economic benefits of residential and commercial / industrial property in coastal areas.</li> <li>• The economic and social benefits of transport, water, electricity and other infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor. The impact would depend on the extent of the downturn.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely over the long term.</li> </ul>

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Climate change</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Sea rises associated with climate change pose the largest threat to coastal urban settlement infrastructure.</li> <li>• Climate change may also lead to changes in the frequency and intensity storms, and to riverine flooding, which also pose a threat to coastal urban settlement infrastructure.<sup>617</sup></li> <li>• Climate change may also lead to increased erosion due sea level rises and more frequent and higher intensity storms. Erosion could damage or destroy coastal urban settlement infrastructure.<sup>618</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social benefits of residential property, commercial / industrial property, Surf Life Saving Club buildings and transport, water, electricity and other infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Major. <u>Basis for ranking:</u></li> <li>• The most severe risks will be from coincident events of several hazards. For example, sea-level rise, an extreme storm tide and a severe riverine flood could result from the same weather event. In a highly urbanised area, this combined series of events has the potential to cause large social and economic impacts.<sup>619</sup></li> <li>• 40,800-62,400 residential buildings are identified as potentially exposed to inundation with a sea-level rise scenario of 1.1 metres. These have a replacement value of \$12.4 billion - \$18.7 billion (2009).<sup>620</sup></li> <li>• Local government areas of Lake Macquarie, Wyong, Gosford, Wollongong Shoalhaven and Rockdale represent over 50% of the residential buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Likely. <u>Basis for ranking:</u></li> <li>• Climate change will almost certainly cause sea levels to rise.</li> </ul>

<sup>617</sup> Climate change Risks to Australia's Coast, A first pass assessment, Department of Climate change, 2009

<sup>618</sup> Ibid

<sup>619</sup> Ibid

<sup>620</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
			<p>at risk from a sea level rise.<sup>621</sup></p> <ul style="list-style-type: none"> <li>• There are approximately 3,600 residential buildings located within 110 metres of 'soft' shorelines and at risk from accelerated erosion due to sea-level rise and changing climate conditions.<sup>622</sup></li> <li>• The delivery of essential services such as electricity generation and wastewater management will increasingly be impacted by inundation, erosion, the effects of sea water intrusion into coastal freshwater systems and drainage systems, and increased corrosion.<sup>623</sup></li> </ul>	
<p><b>Environmental impact of the activities</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Concerns regarding the environmental impact of foreshore developments, such as shoreline hardening, reclamation, dredging, can prevent the development or</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits of commercial / industrial property, transport infrastructure and Surf Life Saving Club buildings.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The conditions and restrictions to development in the marine estate support the long-term sustainability of the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• All developments are subject to environmental assessment.</li> </ul>

<sup>621</sup> Climate change Risks to Australia's Coast, A first pass assessment, Department of Climate change, 2009

<sup>622</sup> Ibid

<sup>623</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
	result in conditions of approval which add costs. <sup>624</sup>			
<b>Reduced land availability for settlement</b> <i>Applies to whole of NSW marine estate, and the Hawkesbury bioregion in particular</i>	<ul style="list-style-type: none"> <li>Limited coastal land availability increases land value, and reduces its accessibility.</li> </ul>	<ul style="list-style-type: none"> <li>The economic benefits of residential and commercial / industrial property, transport and other infrastructure in coastal areas.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul>

## 12.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 78 Coastal urban settlement: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the scale of water, electricity and other services infrastructure.
<b>Trends</b>	There is limited data on trends in the activity, with the exception of coastal population trends.
<b>Economic benefits</b>	<p>There is limited data on the quantified benefits of:</p> <ul style="list-style-type: none"> <li>commercial and industrial property;</li> <li>transport infrastructure;</li> <li>Surf Life Saving Club buildings; and</li> <li>water, electricity and other services infrastructure,</li> </ul> <p>in the NSW marine estate.</p>

<sup>624</sup> Data provided by MEMA agencies, 2015

	Information gaps
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.



## 13. Commercial fishing

This chapter considers the activity 'commercial fishing', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 13.1 Activity description

The 'commercial fishing' activity includes all wild harvest seafood caught for sale in the NSW marine estate. It does not include aquaculture, which is considered in the following chapter.

Commercial fishing vessels, including prawn and ocean trawlers, ocean trap and line fishing vessels and estuarine punts, operate in 10 managed fisheries in the NSW marine estate. Of these, seven are share management fisheries (Abalone, Lobster, Estuary General, Estuary Prawn Trawl, Ocean Hauling, Ocean Trawl, Ocean Trap & Line), which means that commercial fishers must hold sufficient shares to be eligible for an endorsement to operate in the fishery. An endorsement authorises the use of specific gear to take fish for sale from certain waters.<sup>625</sup>

The remaining three are restricted fisheries (Inland, Sea Urchin & Turban Shell, and Southern Fish Trawl), which are managed by input controls (restrictions on the numbers of fishers involved, fishing effort and gear, time and areas fished).<sup>626</sup>

Commercial fishing is currently banned in Sydney Harbour and limited in Pittwater.

To provide a picture of some of the commercial fishing activities in the marine estate, four of the share management fisheries are described in the following table.

In 2012-13, 11,612 tonnes of seafood worth just under \$80 million per annum at first point of sale,<sup>627</sup> was sourced from the NSW marine estate by:

- 1,269 commercial fishing licences;<sup>628</sup>
- 1,307 commercial fishing businesses;<sup>629</sup> and
- 1,821 registered fishing vessels.<sup>630</sup>

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<sup>625</sup> <http://www.dpi.nsw.gov.au/fisheries/commercial>

<sup>626</sup> Ibid

<sup>627</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>628</sup> Data provided by the Department of Primary Industries, 2015

<sup>629</sup> Ibid

<sup>630</sup> Data provided by the Australian Maritime Safety Authority, 2015

**Table 79 Commercial fishing: description of four share management fisheries**

	Description
<b>Ocean Trap and Line fishery</b>	<ul style="list-style-type: none"> <li>• Multi-method, multi-species fishery targeting demersal and pelagic fish.</li> <li>• Along the entire NSW coast, in continental shelf and slope waters.</li> <li>• Snapper, yellowtail kingfish, leatherjackets, bonito and silver trevally form the bulk of the commercial catch.</li> <li>• Fishing methods include: demersal fish trap, setlines/trotlines, driftlines, hand-held line, dropline, trolling/leadlining and spanner crab nets.</li> </ul>
<b>The Ocean Trawl Fishery<sup>631</sup></b>	<ul style="list-style-type: none"> <li>• Prawn trawling and fish trawling.</li> <li>• The prawn trawl sector is the State's most valuable fishery.</li> <li>• Prawn trawlers use otter trawl nets to target prawns and school whiting.</li> <li>• School whiting, eastern king, school and royal red prawns, tiger flathead, silver trevally, squid and octopus form the bulk of the catch.</li> <li>• Produces over 4,000 tonnes seafood annually, worth \$36 million at first point of sale.</li> <li>• Employs 800 – 1,300 people.</li> <li>• Economic value of the fishery to the NSW economy is \$50-55 million per annum.</li> </ul>
<b>Estuary General</b>	<ul style="list-style-type: none"> <li>• Multi-method, multi-species fishery.</li> <li>• 600 fishing businesses.</li> <li>• The most frequently used fishing methods are mesh and haul netting. Trapping, hand-lining and hand-gathering are also used.</li> <li>• Sea mullet, luderick, yellowfin bream, school prawn, blue swimmer crab are the key species caught.</li> <li>• Aboriginal people hold entitlements in the Estuary General, and catch target fish species for consumption, trade or barter within their communities.</li> </ul>
<b>Ocean Hauling</b>	<ul style="list-style-type: none"> <li>• Seven regions along the NSW coast, targeting 17 finfish species using commercial hauling, bait, garfish hauling, lift and purse seine nets.</li> <li>• Pilchards, sea mullet, Australian salmon and blue mackerel are the key species caught.</li> <li>• In 2012-13, the 3,300 tonne of product was landed in the fishery, worth just under \$9 million. The sea mullet haul alone was worth over</li> </ul>

<sup>631</sup> Data provided by the Department of Primary Industries, 2015

	Description
	<p>\$7 million.</p> <ul style="list-style-type: none"> <li>Aboriginal people hold entitlements in the Ocean Hauling Fishery, and catch target fish species for consumption, trade or barter within their communities.</li> </ul>

## 13.2 Trends

The number of fishing businesses and total catch are **decreasing**. However, the value of the product (although subject to considerable fluctuation) has remained **steady**. The key statistics are:

- the number of fishing businesses decreased by almost 40% between 2008-09 and 2011-12;<sup>632</sup>
- the total volume of catch decreased by over 20% between 2008-09 and 2011-12;<sup>633</sup>
- gross value has fluctuated but remained steady between 2008-09 and 2011-12.<sup>634</sup>

For example, in 2011-12, total volume of catch decreased by 11% as compared to 2010-11, but total value rose slightly (by 2%).<sup>635</sup> Fin fish catch suffered the largest drop, decreasing by 13% between 2010-11 and 2011-12.<sup>636</sup>

## 13.3 Economic benefits

In 2012-13, the total catch of 11,612 tonnes was worth just under \$80 million at first point of sale.<sup>637</sup>

Prawn is the most valuable wild-caught fisheries product, worth around \$17 million at first point of sale in 2011-2012.<sup>638</sup>

Fishing supports the development of local industries and local employment, and also provides tourism benefits to NSW in terms of fresh and high quality seafood.

Data on the number of full-time-equivalent jobs in the commercial fishing sector in the NSW marine estate has not been located. However, in 2002-03, the fisheries and seafood industry directly employed 5,030 people, including employment driven by the aquaculture industry.<sup>639</sup> It is

<sup>632</sup> NSW Fishing Cooperative Viability Study, Report for the NSW Department of Primary Industries, GHD, 2014

<sup>633</sup> Ibid

<sup>634</sup> Ibid

<sup>635</sup> Australian fisheries statistics 2012, Commonwealth Department of Agriculture, November 2013

<sup>636</sup> Ibid

<sup>637</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>638</sup> Ibid

<sup>639</sup> The economic contribution of Australia's marine industries, The Allen Consulting Group, 2004

also estimated that there were around 3,000 seafood processing and wholesale jobs in 2012, driven by both wild catch fishing and aquaculture production.<sup>640</sup>

The proportion of these benefits which extend from the Hawkesbury bioregion has not been determined.

### 13.4 Social benefits

The social benefits of commercial fishing include:

- availability of fresh and high quality seafood in the NSW market;
- supporting food security in NSW;<sup>641</sup> and
- health benefits of seafood, including as a source of omega-3 fatty acids, zinc and protein.

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

### 13.5 Threats to economic and social benefits

The threats to the economic and social benefits of commercial fishing, and the consequence and likelihood of the threat, are considered in the following table.

**Table 80 Commercial fishing: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Depletion of fish stocks through overfishing</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Depletion can result from commercial overfishing, illegal fishing and recreational overfishing.</li> </ul> <u>Commercial overfishing</u> <ul style="list-style-type: none"> <li>• Commercial prawn trawling is a high intensity fishing operation which can deplete fish stocks.<sup>642</sup></li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Major.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Depleting fish stocks affects the long-term viability of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• There are six species of fish which are currently characterised as 'overfished', five which are 'growth overfished' (ie caught too small) and 28 that are 'fully-</li> </ul>

<sup>640</sup> Australian fisheries statistics 2012, Commonwealth Department of Agriculture, November 2013

<sup>641</sup> Aquaculture in NSW, Facts and Figures 2013, Department of Primary Industries, 2013

<sup>642</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p><u>Interaction with other commercial fisheries and recreational fishers</u></p> <ul style="list-style-type: none"> <li>• Commercial fishing in NSW interacts with Queensland, Victorian and Commonwealth fisheries, and activities in Queensland and Victoria impact on the viability of the NSW fisheries.</li> <li>• Many species captured are targeted by various fisheries in the commercial sector, the recreational sector and Aboriginal communities (eg abalone).</li> </ul> <p><u>Illegal fishing</u><sup>643</sup></p> <ul style="list-style-type: none"> <li>• Compliance and enforcement activities on-the-water found the rate of compliance with fisheries legislation to be 81% for commercial fishing and 90% for recreational fishing.</li> <li>• 6,600 compliance actions were taken in 2013-2014, up from 6,130 in 2012-</li> </ul>			<p>fished' (ie cannot support increased catch rates without impacting on the population size).<sup>644</sup></p> <ul style="list-style-type: none"> <li>• The Department of Primary Industries manages this threat by monitoring fish stocks and adjusting catch rates and other restrictions. For example, 'closed areas' were introduced to the Ocean Trawl Fishery to manage threats to habitat from trawling.<sup>645</sup></li> </ul>

Industries 2014

<sup>643</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014. Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>644</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>645</sup> Data provided by the Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	<p>2013.</p> <ul style="list-style-type: none"> <li>• In 2007-2008, 51% of kingfish, 97% of snapper, 76% of tailor and 11% of bream in harvests were undersized.</li> </ul>			
<p><b>Pests and diseases</b></p> <p><i>Applies to whole of NSW marine estate</i></p>	<ul style="list-style-type: none"> <li>• Vessels moving around Australia and internationally can bring pests and diseases into the NSW marine estate, particularly through ballast water (waste water). These could affect marine species in the NSW marine estate.<sup>646</sup></li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown.</li> <li>• The extent of the impact will depend on the pest or disease, and the seafood affected.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The abalone viral ganglioneuritis caused extensive mortalities in farmed and wild abalone stocks in Victoria in 2005.<sup>647</sup> To prevent the disease from spreading, a fishing closure banning recreational and commercial use of abalone viscera (gut) as bait or berley was implemented in December 2007. The closure was remade in December 2014 for a five year period.<sup>648</sup></li> </ul>

<sup>646</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>647</sup> Data provided by the Department of Primary Industries, 2015

<sup>648</sup> <http://www.dpi.nsw.gov.au/fisheries/recreational/info/abalone-disease-closure>

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Climate change</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Climate change, including altered currents and changes in upwelling frequency, sea temperature rise, ocean acidification, sea level rise, increased storm frequency and intensity and altered nutrient, sediment and freshwater inputs, could impact of fish available and quality.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>The extent of the consequence will depend on impact of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Climate change will almost certainly alter the marine environment and affect fish stocks.<sup>649</sup></li> </ul>
<b>Loss of fish habitat</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Loss of fish habitat through land reclamation, dredging, vegetation clearing, shoreline hardening, mining and development reduces fish stocks.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Developments are subject to environmental assessment and conditions of approval to minimise environmental harm under the <i>Environmental Planning and Assessment Act 1979</i> (NSW).</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Permits are required to undertake works that could damage fish habitats and such works are highly regulated.</li> </ul>
<b>Wildlife connectivity</b> <i>Applies to Hawkesbury</i>	<ul style="list-style-type: none"> <li>In-stream infrastructure limits connectivity of some parts of coastal rivers and isolates</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Further change is unlikely. However, Sydney Harbour suffers from</li> </ul>

<sup>649</sup> Data provided by MEMA agencies, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
<i>bioregion</i>	fish stocks on either side. <sup>650</sup>			modified water flows in a number of locations.
<b>Access rights</b> <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Limited access security and lack of long term access rights are impediments for fishers to develop long-term business plans and for making large investments.</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The Commercial Fisheries Reform Program aims to address property right issues by issuing commercial fishing shares that are linked to resource access.<sup>651</sup></li> </ul>
<b>Loss of social licence</b> <i>Applies to whole of NSW marine estate, but particularly to the Hawkesbury bioregion</i>	<ul style="list-style-type: none"> <li>Recreational fishers and other stakeholders may lobby for the removal of commercial fishing from certain areas.</li> </ul>	<ul style="list-style-type: none"> <li>Economic and social benefits of commercial fishing in the affected area.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>The full extent of the impact will depend on the change.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Stakeholders have lobbied to remove commercial fishing from the Hawkesbury River and Lake Macquarie.<sup>652</sup></li> </ul>
<b>Public health and safety</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Fatal and serious injury incidents in the fishing sector could result in increased regulatory requirements which impose costs on the sector.</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>The safety benefits of any new regulatory requirements should</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>Commercial fishing vessels in NSW were involved in 7 fatal incidents and 9 serious injury incidents</li> </ul>

<sup>650</sup> <http://www.dpi.nsw.gov.au/fisheries/habitat/threats/barriers#Floodgates>

<sup>651</sup> <http://www.dpi.nsw.gov.au/fisheries/commercial/reform>

<sup>652</sup> <http://www.dailytelegraph.com.au/newslocal/the-hills/commercial-fishing-reforms-threaten-livelihood-of-men-who-have-fished-hawkesbury-for-generations/story-fngr8i1f-1227249060901>



Threats	Description	Benefits threatened	Consequence	Likelihood
			outweigh the costs, however increased costs may impact on the viability of some operations.	between 2002-12. <sup>653</sup>
<b>Over-regulation or increased compliance costs</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Fishing regulations also cover issues such as equipment size and type, fishing zones, seasonal allowance and total catch allowances.</li> <li>Changes to these allowances could impact on the viability of some operations.</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>The extent of the impact will depend on the change.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>Recent policies indicate that regulatory controls will be reduced once shares are linked to catch in the medium term.<sup>654</sup></li> </ul>
<b>Increased fuel or other base costs</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Rising fuel, higher equipment or maintenance costs, and rises in other base costs could impact on the size of this activity and its economic and social contribution to NSW.</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of commercial fishing.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>The greatest impact will be likely to be on smaller operators who may have less capacity to absorb cost base increases.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul>

<sup>653</sup> Boating Incidents in NSW, Statistical Report for the 10 year period ending 2012, Transport for NSW, 2012

<sup>654</sup> <http://www.dpi.nsw.gov.au/fisheries/commercial/reform/sarc-draft-recommendations>

## 13.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 81 Commercial fishing: information gaps**

	Information gaps
<b>Activity scale and scope</b>	No apparent information gaps.
<b>Trends</b>	No apparent information gaps.
<b>Economic benefits</b>	No apparent information gaps. However, there is limited data on the number of full-time-economic employees in the commercial fishing sector in the NSW marine estate.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 14. Aquaculture

This chapter considers the activity ‘aquaculture’, and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 14.1 Activity description

Aquaculture covers the breeding, rearing, and harvesting of plants and animals in water environments. In the NSW marine estate, aquaculture production includes oysters, prawns, marine and freshwater fish, yabbies and mussels.

At July 2015, there were:<sup>655</sup>

- 2,264 estuarine and marine water-based aquaculture leases covering 2,928 hectares of water; and
- 135 land-based aquaculture farms across NSW covering 1,564 hectares of land.

Approximately 49% of leases granted to conduct aquaculture are located in marine protected areas.

**Table 82 Aquaculture: location and scale**

	Location	Scale
<b>Oyster production</b>	<ul style="list-style-type: none"> <li>33 estuaries along the NSW coast utilising approximately 2,828 hectares (ha) of leases.</li> </ul>	<ul style="list-style-type: none"> <li>Oyster production is the main aquaculture activity in NSW.</li> <li>5,051,300 dozen oysters cultivated in 2013/14.<sup>656</sup></li> <li>The Sydney Rock Oyster accounts for over 90% of oysters farmed in NSW.</li> </ul>
<b>Prawns and Yabbies</b>	<ul style="list-style-type: none"> <li>Black Tiger Prawns are produced on the north coast.<sup>657</sup></li> <li>Prawn farms rely on saline water from the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Black Tiger Prawns account for vast majority of prawn aquaculture production.</li> <li>287,307 kg prawns produced in 2013-14.<sup>658</sup></li> <li>17,522 kg Yabbies produced in 2013-14.<sup>659</sup></li> </ul>

<sup>655</sup> Aquaculture Administration database July 2015, NSW Department of Primary Industries

<sup>656</sup> Aquaculture production report 2013—2014, Department of Primary Industries, 2015

<sup>657</sup> NSW Aquaculture Industry Directory 2013, Department of Primary Industries, 2013

<sup>658</sup> Aquaculture production report 2013—2014, Department of Primary Industries, 2015

<sup>659</sup> Ibid

	Location	Scale
<b>Fish farms</b>	<ul style="list-style-type: none"> <li>Throughout the marine estate, often in regional and rural areas.<sup>660</sup></li> <li>Some operations rely on saline water from the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Silver Perch, Barramundi and Mulloway are farmed.</li> <li>718,897kg produced in 2013-14.<sup>661</sup></li> </ul>
<b>Mussels</b>	<ul style="list-style-type: none"> <li>Blue Mussels are produced on the south coast.<sup>662</sup></li> </ul>	<ul style="list-style-type: none"> <li>Two operators produce blue mussels.<sup>663</sup></li> <li>Data withheld for confidentiality. It is a small proportion of the annual aquaculture production of the NSW marine estate.<sup>664</sup></li> </ul>

## 14.2 Trends

Aquaculture is **growing** as an industry in the NSW marine estate.

- Annual growth rate of over 12% per year between 1992-93 and 2012-13.<sup>665</sup>
- In 2011-2012, total product increased by 17% as compared to 2010-2011, and total value rose by 14%.<sup>666</sup>

Oyster production has been the main driver of growth. There was a 16% increase in the total volume of edible oyster production between 2010-11 and 2011-12.<sup>667</sup>

Recently, new aquaculture leases have been approved. Three new Jervis Bay lease areas were approved in November 2014 for shellfish and marine algae, and two finfish sea pen farms approved off Port Stephens (one 30 ha commercial snapper lease and one 20 ha research lease).<sup>668</sup>

<sup>660</sup> NSW Aquaculture Industry Directory 2013, Department of Primary Industries, 2013

<sup>661</sup> Aquaculture production report 2013—2014, Department of Primary Industries, 2015

<sup>662</sup> NSW Aquaculture Industry Directory 2013, Department of Primary Industries, 2013

<sup>663</sup> Ibid

<sup>664</sup> Aquaculture production report 2013—2014, Department of Primary Industries, 2014

<sup>665</sup> Aquaculture in NSW, Facts and Figures 2013, Department of Primary Industries, 2013

<sup>666</sup> Australian fisheries statistics 2012, Commonwealth Department of Agriculture, November 2013

<sup>667</sup> Ibid

<sup>668</sup> <http://www.dpi.nsw.gov.au/fisheries/aquaculture/info/research-lease;>  
<http://www.dpi.nsw.gov.au/fisheries/aquaculture/info/commercial-shellfish-aquaculture-leases-jervis-bay,-nsw>

### 14.3 Economic benefits

Aquaculture product contributed more than \$53 million to the NSW economy annually at first point of sale in 2013-14.<sup>669</sup> This included:<sup>670</sup>

- \$36 million in oyster production;
- \$10 million in fish production; and
- \$5 million in crustacean production.

Water-based leases account for over \$36 million, while land-based farms account for just under \$15 million in 2012-13.<sup>671</sup>

Aquaculture provided 1,500 full and part time jobs in NSW in 2012-13.<sup>672</sup> It is estimated that there are also around 3,000 seafood processing and wholesale jobs which are driven by both wild catch fishing (which is covered in Chapter 14 above) and aquaculture production.<sup>673</sup>

Nationally, aquaculture accounted for almost 40% of the gross value of fish commercially produced or caught.<sup>674</sup>

Aquaculture also:

- supports the development of regional industries and regional employment;
- supports tourism in NSW through the provision of fresh and high quality seafood and regional seafood festivals; and
- creates tourism opportunities aquaculture production, such as the NSW 'Oyster Trail' and the mussel farming activities at Eden which provide the opportunity to obtain fresh seafood direct from the boat.<sup>675</sup>

It has not been determined what proportion of these benefits extend from the Hawkesbury bioregion.

### 14.4 Social benefits

The social benefits of aquaculture include:

- establishing a sustainable seafood supply and long history of farmed seafood production (140 year old oyster industry);<sup>676</sup>

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<sup>669</sup> Aquaculture production report 2013—2014, Department of Primary Industries, 2015

<sup>670</sup> Ibid

<sup>671</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>672</sup> Ibid

<sup>673</sup> Australian fisheries statistics 2012, Commonwealth Department of Agriculture, November 2013

<sup>674</sup> Ibid

<sup>675</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>676</sup> Aquaculture in NSW, Facts and Figures 2013, Department of Primary Industries, 2013

- supporting food security in NSW;<sup>677</sup>
- making best use of freshwater resources by integrating aquaculture with fish production;
- health benefits of seafood, including as a source of omega-3 fatty acids, zinc and protein;
- stocking of hatchery reared fish stock for fish species conservation purposes;
- improving fishing opportunities for recreational fishers through restocking of hatchery reared fish into waterways;
- environmental benefits of oyster farms, which acts as a filtering system and provide an indicator of the health of the estuary,<sup>678</sup> and farmers ongoing water quality monitoring programs; and
- providing fish habitats and enhancing recreational fishing.<sup>679</sup>

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

## 14.5 Threats to economic and social benefits

The threats to the economic and social benefits of aquaculture, and the consequence and likelihood of the threat, are considered in the following table.

**Table 83 Aquaculture: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Adverse changes to lease and access rights</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Changes to access arrangements (such as access to water and port facilities) would impact aquaculture production.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Unknown. The impact will depend on the nature of the change.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible. <u>Basis for ranking:</u></li> <li>• Land use zoning of aquaculture areas has helped to provide greater certainty to the aquaculture industry.<sup>680</sup></li> </ul>
<b>Water pollution / Litter and marine debris / Climate change /</b>	<ul style="list-style-type: none"> <li>• All forms of aquaculture in the NSW marine estate rely upon the quality</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate. <u>Basis for ranking:</u></li> <li>• Food safety</li> </ul>	<ul style="list-style-type: none"> <li>• Likely. <u>Basis for ranking:</u></li> <li>• Climate change</li> </ul>

<sup>677</sup> Aquaculture in NSW, Facts and Figures 2013, Department of Primary Industries, 2013

<sup>678</sup> Aquaculture in NSW, Department of Primary Industries

<sup>679</sup> Ibid

<sup>680</sup> Data provided by the NSW Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Adverse environmental event</b>  <i>Applies to whole of NSW marine estate</i>	<p>of the environment in the marine estate, including oysters.</p> <ul style="list-style-type: none"> <li>• Ocean acidification caused by increasing atmospheric CO<sub>2</sub> is reducing the pH of seawater and make it harder for oysters (and other molluscs) to sequester calcium to build shells.<sup>681</sup></li> <li>• Oysters are also sensitive to increased suspended solids in the water, water salinity, sewerage effluent, and pesticide, herbicide and fertiliser runoff.<sup>682</sup></li> <li>• The shellfish industry routinely monitors water quality in oyster growing areas as well as shellfish meat quality to ensure that shellfish meet stringent food safety standards under the NSW Shellfish Program.<sup>683</sup></li> <li>• Flooding can also disrupt oyster production.</li> </ul>		<p>concerns could have a significant impact on the oyster industry.</p> <ul style="list-style-type: none"> <li>• Oyster species resistant to ocean acidification are being developed.<sup>684</sup></li> </ul>	<p>will almost certainly alter the marine environment.<sup>685</sup></p> <ul style="list-style-type: none"> <li>• Oyster production in NSW is significantly lower than in the 1970s, as a result of environmental changes. (9,156 tonnes in 1976-77 and 2,934 tonnes in 2012-13).<sup>686</sup></li> </ul>

<sup>681</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries

<sup>682</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>683</sup> <http://www.foodauthority.nsw.gov.au/industry/industry-sector-requirements/shellfish/#.VaYIVmwVhg8>

<sup>684</sup> Fisheries, Aquaculture and Aquatic Conservation Key Highlights and Statistics 2013-2014, Department of Primary Industries, 2014

<sup>685</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>686</sup> Data provided by the NSW Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Pests and diseases</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Vessels moving around Australia and internationally can bring pests and diseases into the NSW marine estate, particularly through ballast water (waste water) and on the hull/intakes of ships. These could affect aquaculture production.<sup>687</sup></li> <li>• Diseases and pests can also impact on production levels and increase cleaning and maintenance costs.</li> <li>• Ornamental fisheries, bait and fish trade can pose a significant risk to the environment, including through the introduction of pests and diseases.</li> </ul>	<ul style="list-style-type: none"> <li>• All economic and social benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The Pacific Oyster had an historic impact for Sydney Rock Oyster farmers (which are comprise of 88% of oyster production in NSW).<sup>688</sup> Current strategies of habitat partitioning help to control the impact of the Pacific Oyster.</li> <li>• The extent of the impact depends on the extent of the outbreak.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The Pacific Oyster is a noxious species which settles on and can smother native species such as the Sydney Rock Oyster.<sup>689</sup></li> <li>• Winter Mortality can kill up to 80% of all Sydney Rock Oysters in an area.<sup>690</sup></li> <li>• Other diseases include the QX disease (affecting Sydney Rock Oysters), the Pacific Oyster Mortality Syndrome.<sup>691</sup></li> </ul>
<b>Physical damage</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Physical damage to aquaculture product from boat traffic can reduce production levels.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The oyster industry has requested a review of their lease arrangements to allow for exclusive possession and prevent damage from other</li> </ul>

<sup>687</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

<sup>688</sup> Ibid

<sup>689</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>690</sup> Ibid

<sup>691</sup> Ibid



Threats	Description	Benefits threatened	Consequence	Likelihood
				waterway users. <sup>692</sup>
<b>Theft and black marketing</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Theft of product is a particular problem for the oyster industry which is based on public land.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Theft can have a significant impact on the viability of an operation.<sup>693</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Anecdotal evidence is that the threat is increasing. NSW DPI, Fisheries, Food Authority and NSW Police run a joint compliance program to prevent theft.<sup>694</sup></li> </ul>
<b>Loss of social licence</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Neighbour concerns regarding visual and other amenity impacts of aquaculture – particularly oyster production – could lead to restrictions or non-renewal of leases.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The 'Good Neighbour Policy' which includes clean up and compliance programs has made the number of complaints negligible.<sup>695</sup></li> </ul>
<b>Economically inefficient regulation or increased compliance costs</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Regulations impacting on commercial vessels used in aquaculture have been discussed in Chapter 9 above.</li> <li>• Aquaculture operators are also subject to food production licensing</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• The consequences of new regulatory arrangements would depend on the change.</li> <li>• Food safety</li> </ul>	<ul style="list-style-type: none"> <li>• Possible.</li> </ul> <u>Basis for ranking:</u> <ul style="list-style-type: none"> <li>• Regulations are generally subject to consultation and cost benefit analysis. They should only be introduced where their</li> </ul>

<sup>692</sup> Data provided by the NSW Department of Primary Industries, 2015

<sup>693</sup> Ibid

<sup>694</sup> Ibid

<sup>695</sup> Ibid

Threats	Description	Benefits threatened	Consequence	Likelihood
	and regulation under the <i>Food Act 2003</i> (NSW).		standards protect the long term viability of the activity by ensuring that the product is safe for human consumption.	benefits (in protecting the long-term sustainability of the activity) outweigh their costs.
<b>Increased fuel or other base costs</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>• Rising fuel, higher equipment, feed or maintenance costs, and rises in other base costs could impact on the size of this activity and its economic and social contribution to NSW.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic benefits of aquaculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Minor.</li> </ul> <p><u>Basis for ranking:</u></p> <ul style="list-style-type: none"> <li>• The greatest impact may be on smaller operators who may have less capacity to absorb cost base increases.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely.</li> </ul>

## 14.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 84 Aquaculture: information gaps**

	Information gaps
<b>Activity scale and scope</b>	No apparent information gaps.
<b>Trends</b>	No apparent information gaps.
<b>Economic benefits</b>	No apparent information gaps.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## 15. Retail and trade

This chapter considers the activity 'retail and trade', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 15.1 Activity description

This activity includes coastal and river-side restaurants, cafes, food outlets and bars, surf shops, dive shops and other coastal and riverside retailers.<sup>696</sup> This activity also includes activities such as boot camps and yoga in the marine estate.

Note that surf schools and hire and drive activities (such as canoe/kayak hire, jet ski hire) are considered in Chapters 4 and 8 above.

The scale of these activities are considered in the following table.

**Table 85 Retail and trade: scale**

	Scale
<b>Cafes, restaurants and other food outlets</b>	<ul style="list-style-type: none"> <li>• 19,832 cafes, restaurants and takeaway businesses in NSW at June 2013.<sup>697</sup></li> <li>• 3,155 clubs, pubs, taverns and bars in NSW at June 2013.<sup>698</sup></li> <li>• No data located on the number of these businesses which are in the NSW marine estate. However: <ul style="list-style-type: none"> <li>- 63.1% of tourism businesses in NSW are in Sydney.<sup>699</sup> This includes cafes, restaurants and other food outlets.</li> <li>- 7.8% of tourism businesses in NSW are on the North Coast.<sup>700</sup></li> <li>- 5.2% of tourism businesses in NSW are on the South Coast.<sup>701</sup></li> <li>- 3% of tourism businesses in NSW are on the Central Coast.<sup>702</sup></li> </ul> </li> </ul>
<b>Surf shops, dive shops and coastal retailers</b>	<ul style="list-style-type: none"> <li>• 43,278 retail businesses in NSW as at June 2013.<sup>703</sup></li> <li>• There are around 12 dives shops in Sydney.<sup>704</sup></li> <li>• No data located on the number of these businesses which are in the NSW marine estate. However:</li> </ul>

<sup>696</sup> NSW Transport. 2012. Sydney Ferries Annual Report 2011-12, p.11

<sup>697</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>698</sup> Ibid

<sup>699</sup> Ibid

<sup>700</sup> Ibid

<sup>701</sup> Ibid

<sup>702</sup> Ibid

<sup>703</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>704</sup> Sydney Harbour Background Report, Sydney Institute of Marine Science, 2014

	Scale
	<ul style="list-style-type: none"> <li>- 63.1% of tourism businesses in NSW are in Sydney.<sup>705</sup> This includes retail outlets.</li> <li>- 7.8% of tourism businesses in NSW are on the North Coast.<sup>706</sup></li> <li>- 5.2% of tourism businesses in NSW are on the South Coast.<sup>707</sup></li> <li>- 3% of tourism businesses in NSW are on the Central Coast.<sup>708</sup></li> </ul>
<b>Outdoor exercise classes</b>	<ul style="list-style-type: none"> <li>• Exercise classes in most coastal areas of NSW are required to obtain a licence or permit from the local council.</li> <li>• Randwick council, for example, requires personal trainers and commercial fitness groups to be licenced.<sup>709</sup></li> <li>• 3,600 exercise professionals in NSW (industry figure).<sup>710</sup></li> <li>• No data located on the number of group exercise classes in the NSW marine estate. However, 58% of fitness organisations in Australia provide bootcamp or outdoor group fitness activities.<sup>711</sup></li> </ul>

## 15.2 Trends

The trends, in regards to the scale and location of each of retail and trade in the NSW marine estate, are considered in the following table.

**Table 86 Retail and trade: trends**

	Trends	Trend summary
<b>Cafes, restaurants and other food outlets</b>	<ul style="list-style-type: none"> <li>• Since 2006-07, tourism consumption in NSW has increased by 28.2%, equal to an average growth rate of 3.6% per annum. This includes consumption at cafes, restaurants and other food outlets.<sup>712</sup></li> <li>• Cafes and restaurants in NSW experienced 14.7% growth between year end March 2014 and year end March 2015, with turnover increasing to \$7.8 billion.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>UNKNOWN but likely INCREASING</b></li> </ul>

<sup>705</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>706</sup> Ibid

<sup>707</sup> Ibid

<sup>708</sup> Ibid

<sup>709</sup> [https://www.randwick.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0016/12562/POLICY-ON-THE-USE-OF-COUNCIL-RESERVES-BY-COMMERCIAL-FITNESS-GROUPS.pdf](https://www.randwick.nsw.gov.au/__data/assets/pdf_file/0016/12562/POLICY-ON-THE-USE-OF-COUNCIL-RESERVES-BY-COMMERCIAL-FITNESS-GROUPS.pdf)

<sup>710</sup> Fitness Australia Submission to the IPART Review – Reforming Licensing in NSW, Fitness Australia, 2012

<sup>711</sup> 2008 Fitness Industry Profile Report, Fitness Australia, 2009

<sup>712</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

	Trends	Trend summary
<b>Surf shops, dive shops and coastal retailers</b>	<ul style="list-style-type: none"> <li>• Clothing, footwear and specialist retailer turnover in NSW increased by 5 – 10% between 2012 and 2013.<sup>713</sup></li> <li>• No data located on trends in retail outlets in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>UNKNOWN but likely INCREASING</b></li> </ul>
<b>Outdoor exercise classes</b>	<ul style="list-style-type: none"> <li>• Fitness industry clients across Australia predicted to double between 2012 and 2020 (from 3.3 million Australians to 7.15 million Australians) (industry figure).<sup>714</sup></li> <li>• No data located on trends in group exercise classes in the NSW marine estate. However, the licensing policies reflect the increased popularity of these activities and the need for councils to manage the use of public spaces.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>UNKNOWN but likely INCREASING</b></li> </ul>

### 15.3 Economic benefits

Retail and trade in and along the marine estate supports the development of local industries and provides local employment. It provides essential infrastructure for the tourism industry in NSW.

The further economic benefits of each of the sub-activities are considered in the following table.

**Table 87 Retail and trade: economic benefits**

	Economic benefits
<b>Cafes, restaurants and other food outlets</b>	<ul style="list-style-type: none"> <li>• \$5.7 billion in direct expenditure and \$1.44 billion in gross value added at cafes, restaurants and takeaway businesses in NSW in 2013-14.<sup>715</sup></li> <li>• 42,000 jobs at cafes, restaurants and takeaway businesses in NSW at June 2013.<sup>716</sup></li> </ul>
<b>Surf shops, dive shops and coastal retailers</b>	<ul style="list-style-type: none"> <li>• \$1.72 billion in gross value added by retail businesses in NSW in 2013-14.<sup>717</sup></li> <li>• 32,000 jobs at retail businesses in NSW as at June 2013.<sup>718</sup></li> </ul>
<b>Outdoor exercise classes</b>	<ul style="list-style-type: none"> <li>• Fitness industry contributes more than \$1.2 billion to the national economy and provides services to over 3.3 million Australians (industry figure).<sup>719</sup></li> </ul>

<sup>713</sup> Retail Market Overview, Propell, 2014

<sup>714</sup> Fitness Australia Submission to the IPART Review – Reforming Licensing in NSW, Fitness Australia, 2012

<sup>715</sup> Economic Contribution of Tourism to NSW 2013-2014, Destination NSW

<sup>716</sup> Ibid

<sup>717</sup> Ibid

<sup>718</sup> Ibid

	<b>Economic benefits</b>
	<ul style="list-style-type: none"> <li>No data located on the economic benefits of exercise classes in the NSW marine estate.</li> </ul>
<b>Total quantified economic benefit</b>	Insufficient data to quantify economic benefits of retail and trade that is linked to the NSW marine estate or the Hawkesbury bioregion.

## 15.4 Social benefits

The social benefits of retail and trade in the NSW marine estate include:

- providing outdoor fitness options for residents and tourists. This promotes health and fitness and provides a social activity for the community;
- improving the amenity of the local area for the local community and tourists; and
- providing access to goods and services for the local community and tourists.

All of these social benefits apply to the State-wide marine estate and the Hawkesbury bioregion.

## 15.5 Threats to economic and social benefits

The threats to the economic and social benefits of each of the sub-activities, and the consequence and likelihood of each threat, are considered in the following table.

**Table 88 Retail and trade: threats to benefits**

<b>Threats</b>	<b>Description</b>	<b>Benefits threatened</b>	<b>Consequence</b>	<b>Likelihood</b>
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>An economic downturn would reduce spending on retail and trade in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>All economic benefits of retail and trade.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>
<b>Market saturation</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Market saturation would see the supply of retail and trade services greatly exceed the needs of activities in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>All economic benefits of retail and trade.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul>

<sup>719</sup> Fitness Australia Submission to the IPART Review – Reforming Licensing in NSW, Fitness Australia, 2012

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Over-regulation or increased compliance costs</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Changes to licensing requirements and fees, for example for outdoor exercise classes in the marine estate or for café outdoor areas, could make the activity unviable for some operators.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of outdoor exercise classes and cafes and restaurants.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> <li>As these forms of regulation tend to be localised, changes would only affect local areas.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> <li><u>Basis for ranking:</u></li> <li>In a submission to an IPART review of licencing in NSW, Fitness Australia stated that some local government licences fees amounted to 30% of revenue from an outdoor class.<sup>720</sup></li> </ul>
<b>Increased fuel or other base costs</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Rising rent, licence fees, wages, insurance and other base costs could make the activity unviable for some operators.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of retail and trade.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul>
<b>Water pollution / Litter and marine debris / Climate change</b>  <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>Adverse environmental change could lead to reduced visitation of the marine estate, and reduced expenditure on retail and trade connected to the marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of retail and trade.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Possible.</li> </ul>
<b>Competing uses / Overcrowding</b>  <i>Applies to whole of NSW marine estate, but in particular</i>	<ul style="list-style-type: none"> <li>Competing uses for space could prevent the full realisation of the benefits of this activity.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of retail and trade.</li> </ul>	<ul style="list-style-type: none"> <li>Minor.</li> </ul>	<ul style="list-style-type: none"> <li>Likely.</li> </ul>

<sup>720</sup> Fitness Australia Submission to the IPART Review – Reforming Licensing in NSW, Fitness Australia, 2012

Threats	Description	Benefits threatened	Consequence	Likelihood
<i>to the Hawkesbury bioregion</i>				
<b>Seafood supply and safety</b> <i>Applies to whole of NSW marine estate</i>	•Lack of secure supply of safe seafood could impact on cafes and restaurants.	•Economic and social benefits of cafes, restaurants and other food outlets.	•Minor.	•Possible

## 15.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table.

**Table 89 Retail and trade: information gaps**

	Information gaps
<b>Activity scale and scope</b>	Limited data has been located on the scale of retail and trade in the NSW marine estate. Data located considers the activity across NSW.
<b>Trends</b>	Limited data has been located on trends in retail and trade in the NSW marine estate. Data located considers the activity across NSW.
<b>Economic benefits</b>	Limited data has been located on the economic benefits of retail and trade in the NSW marine estate. Data located considers the activity across NSW.
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.



## 16. Extractive and disposal industries

This chapter considers the activity 'extractive and disposal industries and uses', and identifies the social and economic benefits of the activity, as well as the potential threats to these benefits.

### 16.1 Activity description

No mining currently occurs in the NSW marine estate, however there is significant potential for extracting marine aggregate (sand). Mining is prohibited in marine parks and aquatic reserves in the marine estate.<sup>721</sup>

Note that dredging activities are covered in chapters 7 and 10 above. It is also noted that no information on disposal activities in the marine estate has been located.

**Table 90 Extractive and disposal industries: description**

	Description
<b>Marine aggregate (sand)</b>	<ul style="list-style-type: none"> <li>Quartz-rich sands used for construction, glass manufacture and other industrial uses, as well as beach nourishment.</li> </ul>
<b>Other mineral resources (including coal and petroleum)</b>	<ul style="list-style-type: none"> <li>All other mineral deposits in the NSW marine estate, including coal, petroleum and coal-seam methane and heavy minerals (rutile, zircon, ilmenite and phosphates).</li> </ul>

The location and scale of each of the extractive and disposal industry in the NSW marine estate is considered in the following table. Note that there is limited certainty around potential resources due to limited exploration having been undertaken.

**Table 91 Extractive and disposal industries: location and scale**

	Location	Scale
<b>Marine aggregate (sand)</b>	<ul style="list-style-type: none"> <li>Significant untouched deposits in offshore areas near Sydney, Montague Island and Tweed Heads.<sup>722</sup></li> </ul>	<p><u>Hawkesbury Shelf Bioregion</u></p> <ul style="list-style-type: none"> <li>Potential for hundreds of millions of tons of marine aggregate to be extracted from the untouched deposits.<sup>723</sup></li> </ul>
<b>Other mineral resources</b>	<ul style="list-style-type: none"> <li>The Offshore Sydney Basin (including Newcastle and the Central Coast) has resources</li> </ul>	<ul style="list-style-type: none"> <li>There is no current coal mining in the marine estate, however there was historic coal mining offshore in the Newcastle</li> </ul>

<sup>721</sup> MEM Act

<sup>722</sup> Quarterly Notes, Geological Survey of NSW, Evaluation of mineral resources of the continental shelf, NSW Department of Primary Industries, 2007

<sup>723</sup> Information provided by the Department of Primary Industries, 2015

	Location	Scale
	<p>of black coal and potential for petroleum resources.<sup>724</sup></p> <ul style="list-style-type: none"> <li>Potential for coal exploration between the Central Coast and Newcastle.<sup>725</sup></li> </ul>	<p>region.<sup>726</sup></p> <ul style="list-style-type: none"> <li>Potential for petroleum resources including coal seam methane, but no exploration wells have been drilled in NSW coastal waters.<sup>727</sup></li> <li>Limited potential for other mineral extraction. Further exploration would be required to test economic viability of their extraction.<sup>728</sup></li> </ul>

## 16.2 Trends

The trends, in regards to the scale and location of the extractive and disposal industry in the NSW marine estate, are considered in the following table.

**Table 92 Extractive and disposal industries: trends**

	Trends	Trends summary
<b>Marine aggregate (sand)</b>	<ul style="list-style-type: none"> <li>NSW is facing a long term shortage of sand needed to support the current construction and industrial markets in NSW.<sup>729</sup></li> <li>Onshore sand resources currently being extracted in the Sydney region are diminishing in supply.</li> <li>The development of new quarries and expansion of existing sand extraction operations in NSW are subject to increasing land use constraints and community concerns. Material is increasingly being sourced from more distant locations.</li> <li>The Sydney region consumes up to 7 million tonnes of fine aggregate sand each year. Future requirements for the period 2010-2040 are estimated at between 140 million tonnes<sup>730</sup> and 245 million tonnes.<sup>731</sup> Predicted</li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>

<sup>724</sup> Quarterly Notes, Geological Survey of NSW, Evaluation of mineral resources of the continental shelf, NSW Department of Primary Industries, 2007

<sup>725</sup> Ibid

<sup>726</sup> Quarterly Notes, Geological Survey of NSW, Evaluation of mineral resources of the continental shelf, NSW Department of Primary Industries, 2007

<sup>727</sup> Ibid

<sup>728</sup> Information provided by the Department of Primary Industries, 2015

<sup>729</sup> Ibid

<sup>730</sup> Supply and demand for construction sand in the Sydney planning region, Geological Survey of New South Wales Department of mineral resources, 2001

<sup>731</sup> The case for marine aggregate (sand) extraction from Commonwealth waters off NSW, Skene, 2012, Slide 5

	Trends	Trends summary
	growth in demand and exhaustion of onshore deposits is likely to put pressure on the marine estate as a new source of supply.	
<b>Other mineral resources (including coal and petroleum)</b>	<ul style="list-style-type: none"> <li>No extraction or exploration has been undertaken in recent years.</li> </ul>	<ul style="list-style-type: none"> <li><b>STEADY</b></li> </ul>

### 16.3 Economic benefits

The current economic benefits of each of the extractive and disposal industry are considered in the following table.

**Table 93 Extractive and disposal industries: economic benefits**

	Economic benefits
<b>Marine aggregate (sand)</b>	<ul style="list-style-type: none"> <li>Untouched deposits potentially contain hundreds of millions of tonnes of sand.<sup>732</sup> No data located on potential value of the untouched deposits in the marine estate.</li> <li>The predicted shortfall in the supply of sand in the Sydney region means that an increased supply of sand will need to be imported. This is estimated to add 15-35% to the total cost of sand in Sydney.<sup>733</sup></li> </ul>
<b>Other mineral resources (including coal and petroleum)</b>	<ul style="list-style-type: none"> <li>No other mineral extraction at this point.</li> <li>There has not been sufficient exploration of the other mineral resources to determine potential value.</li> </ul>
<b>Total quantified economic benefits</b>	No current economic benefits. However, the extraction of sand from the marine estate could generate potential future benefits (notably in the form of reduced infrastructure and housing construction costs).

<sup>732</sup> Information provided by the Department of Primary Industries, 2015

<sup>733</sup> Ibid

## 16.4 Social benefits

If pursued, sand extraction could provide a local source of sand in NSW, and in the Sydney region in particular. This would reduce truck movements and have an associated reduction in congestion, pollution and other externalities of heavy vehicle transport. The predicted shortfall in the supply of sand in the Sydney region is estimated to add an additional 226,000 truck movements per year when onshore sources in Sydney are exhausted.<sup>734</sup> There may also be broad social benefits stemming from lower housing and infrastructure construction costs, if sand was extracted from the marine estate.

These potential social benefits are relevant to the Hawkesbury bioregion in particular.

## 16.5 Threats to economic and social benefits

The threats to the economic and social benefits of the extractive and disposal industry in the NSW marine estate, and the consequence and likelihood of the threat, are considered in the following table.

**Table 94 Extractive and disposal industries: threats to benefits**

Threats	Description	Benefits threatened	Consequence	Likelihood
<b>Regulatory barriers to extraction</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>The extraction of sand from the marine estate would require the development of a robust regulatory framework encompassing environmental, social and economic considerations.</li> </ul>	<ul style="list-style-type: none"> <li>All economic and social benefits of extraction and disposal in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>There is no impact on current benefits.</li> <li>However, the impact on the potential benefits of extraction from the NSW marine estate could be significant.</li> </ul>	<ul style="list-style-type: none"> <li>Likely</li> </ul>
<b>Economic downturn</b> <i>Applies to whole of NSW marine estate</i>	<ul style="list-style-type: none"> <li>An economic downturn would reduce construction activity and the demand for mineral</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits of extraction and disposal in the NSW marine estate.</li> </ul>	<ul style="list-style-type: none"> <li>Unknown.</li> <li>There is no impact on current benefits.</li> <li>However, the impact on the</li> </ul>	<ul style="list-style-type: none"> <li>Likely over the long term.</li> </ul>

<sup>734</sup> Information provided by the Department of Primary Industries, 2015

Threats	Description	Benefits threatened	Consequence	Likelihood
	deposits and other minerals.		potential benefits of extraction from the NSW marine estate could be moderate, although this is unclear at this time.	

## 16.6 Information gaps

The information gaps and dated (pre-2010) data for this activity have been noted in the tables above. They are summarised in the following table. It is also noted that no information on disposal activities in the marine estate has been located.

**Table 95 Extractive and disposal industries: information gaps**

	Information gaps
<b>Activity scale and scope</b>	The full extent of mineral deposits in the NSW marine estate is not known due to limited exploration.
<b>Trends</b>	No apparent information gaps
<b>Economic benefits</b>	There is limited data on the value of: <ul style="list-style-type: none"> <li>- sand extracted from Kurnell;</li> <li>- untouched deposits of sand in the marine estate; and</li> <li>- other mineral resources in the marine estate.</li> </ul>
<b>Social benefits</b>	No apparent information gaps, however there is no quantification of social benefits associated with this activity.
<b>Threats to benefits</b>	Information gaps are unknown. Threat and risk workshop should consider further, unknown threats.

## Appendix A

### Activity categories

No.	Activity section	Section includes benefits and threats arising from the following sub-activities
1	Recreation, General	Swimming and visiting beaches Wave surfing and windsurfing Diving and snorkelling Driving vehicles on beaches Hiking Picnicking, barbecuing and visiting parks Physical recreation Wildlife watching Camping Events
2	Recreational Fishing	Recreational fishing Fishing supply business Fishing competitions
3	Recreational Boating	Human powered boats Sailboats Powered vessels Boat storage
4	Research and education	Research Education / community engagement
5	Conserving heritage and the environmental	Indigenous heritage Maritime heritage Other NSW marine estate heritage Coastal and marine conservation
6	Cruise shipping	Domestic and international tourism from cruise shipping sector, direct expenditure both domestic and international passenger, crew, operator and corporate expenditure.
7	Ports and shipping (domestic and international trade); other commercial vessel activity (excluding those in 8; 9 below)	Ports in NSW Trading ships Tugs and pilot boats Port dredging
8	Boating – commercial and charter	Compliance, enforcement and surveillance activity Fishing vessels Search and rescue

		<p>Harbour cruises</p> <p>Scuba diving, snorkelling and kayak tours, and surf / paddleboard lessons</p> <p>Charter vessels (except fishing)</p> <p>Charter fishing</p> <p>General hire and drive</p> <p>Hire and drive houseboats</p> <p>Adventure sports</p> <p>Whale and dolphin watching</p> <p>Naval vessels and facilities</p>
<b>9</b>	Water transport services	<p>Ferries</p> <p>Vehicular ferries</p> <p>Water taxis</p> <p>Charter transport vessels</p>
<b>10</b>	Maritime related activities, including waterway access	<p>Minor ports and boat harbours</p> <p>Boat and ship building, repairs and maintenance</p> <p>Slipways and vessel launching facilities</p> <p>Sewage pump out facilities</p> <p>Refuelling facilities</p> <p>Aids to navigation provision and maintenance</p> <p>Boat ramps, jetties wharves, pontoons and courtesy moorings</p> <p>Breakwaters, training walls and revetments</p> <p>Ancillary facilities on land</p> <p>Dredging</p>
<b>11</b>	Tourism and accommodation	<p>Tourism and accommodation generally</p> <p>Tourism in Sydney</p> <p>Tourism in regional NSW</p>
<b>12</b>	Coastal urban settlement	<p>Residential property</p> <p>Commercial and industrial property</p> <p>Transport infrastructure</p> <p>Surf Lifesaving Club buildings</p> <p>Water, electricity and other infrastructure for services</p>
<b>13</b>	Commercial fishing	<p>All wild harvest seafood caught for sale</p>
<b>14</b>	Aquaculture	<p>Oyster production</p> <p>Prawns and yabbies</p> <p>Fish farms</p> <p>Mussel production</p>
<b>15</b>	Retail and trade	<p>Cafes, restaurants and other food outlets</p> <p>Surf shops, dive shops and coastal retailers</p> <p>Outdoor exercise classes</p>
<b>16</b>	Extractive & disposal industries/uses	<p>Marine aggregate (sand)</p> <p>Other mineral resources</p>

## Appendix B

### Glossary

**Benefit** – see ‘community benefit’.

**Community benefit** - anything that contributes to the wellbeing of the community. There are three separate categories of community benefits: economic, social and environmental benefits. Many community benefits are based on what people think is important (what they value). A community benefit of the marine estate could be:

- swimming at the beach,
- boating in an estuary,
- doing something as a hobby (e.g. fishing, kayaking, surfing, bird watching, etc.),
- running a business (e.g. whale watching business, charter fishing, commercial fishing, etc.),
- clean waters and marine biodiversity.

**Community value** – the term used by the *Marine Estate Management Act 2014* for ‘community benefit’.

**Consequence** – the result of something happening, including a change in circumstances affecting objectives. It can be certain or uncertain and have positive or negative effects on objectives. A consequence can be expressed qualitatively or quantitatively.

**Consumer surplus:** The difference between what participants pay for an activity and what they would be willing to pay.

**Cultural use** - the use of the marine estate to demonstrate or perform skills, arts, beliefs and customs and to pass these on from one generation to the next.

**Economic** - the production, distribution, and use of income, wealth, and commodities.

**Economic benefits** - benefits derived by the community from the marine estate that are of an economic or financial nature.

**Effect** - a deviation from the measured status. Effects can be positive or negative.

**Impact** - the outcome of the direct or indirect effect of activities and natural events on the assets or values of the environmental, social or economic components (i.e. pressure + response).

**Likelihood** - the chance of something happening.

**Risk** - the chance of something happening that will have an impact on achieving environmental, social or economic objectives.

**Risk analysis** – a process to comprehend the nature or level of risk.

**Risk assessment** - overall process of risk identification, risk analysis and risk evaluation.

**Social** - of or relating to the life and relations of people in a community.

**Social benefits** – the social and relational benefits the community derives from the marine estate.

**Stakeholder** – a person, organisation (including agencies) that can affect, be affected by, or perceive themselves to be affected by a decision or activity.



**Threat** - a broad activity, event or process that poses a potential level of risk to community wellbeing. Threats often affect multiple benefits and each benefit is invariably affected by multiple threats. Threats have also been called 'risk sources' in some publications.

**Value** – see 'community value'.