Marine Estate Management Authority

HAWKESBURY SHELF MARINE BIOREGION ASSESSMENT

Summary of Hawkesbury Shelf community and stakeholder engagement

Background

The NSW Marine Estate Management Authority (the Authority) was established by the NSW Government in 2013 to advise on policies, priorities and directions for the NSW marine estate.

The NSW marine estate includes marine waters, estuaries and the coast. It extends seaward out to three nautical miles and from the Queensland border in the north to the Victorian border in the south. The full definition and map can be found at www.marine.nsw.gov.au.

Contributors

The Authority acknowledges the key contributions of officers from the following in preparing this report:

- NSW Department of Primary Industries
- Office of Environment and Heritage
- Transport for NSW
- Department of Planning and Environment
- Marine Estate Expert Knowledge Panel

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Hawkesbury Shelf marine bioregion assessment – Summary of Hawkesbury community and stakeholder engagment

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More information

This paper and more information about the Hawkesbury Shef marine bioregion assessment are available at **www.marine.nsw.gov.au**.

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Table of Contents

1 Introduction

The Marine Estate Management Authority (the Authority) is undertaking the Hawkesbury Shelf Marine Bioregion Assessment (the Assessment) to develop options to enhance marine biodiversity conservation in the bioreigon balanced with multiple uses, including boating, fishing, shipping, picnicking, swimming, diving, education and research.

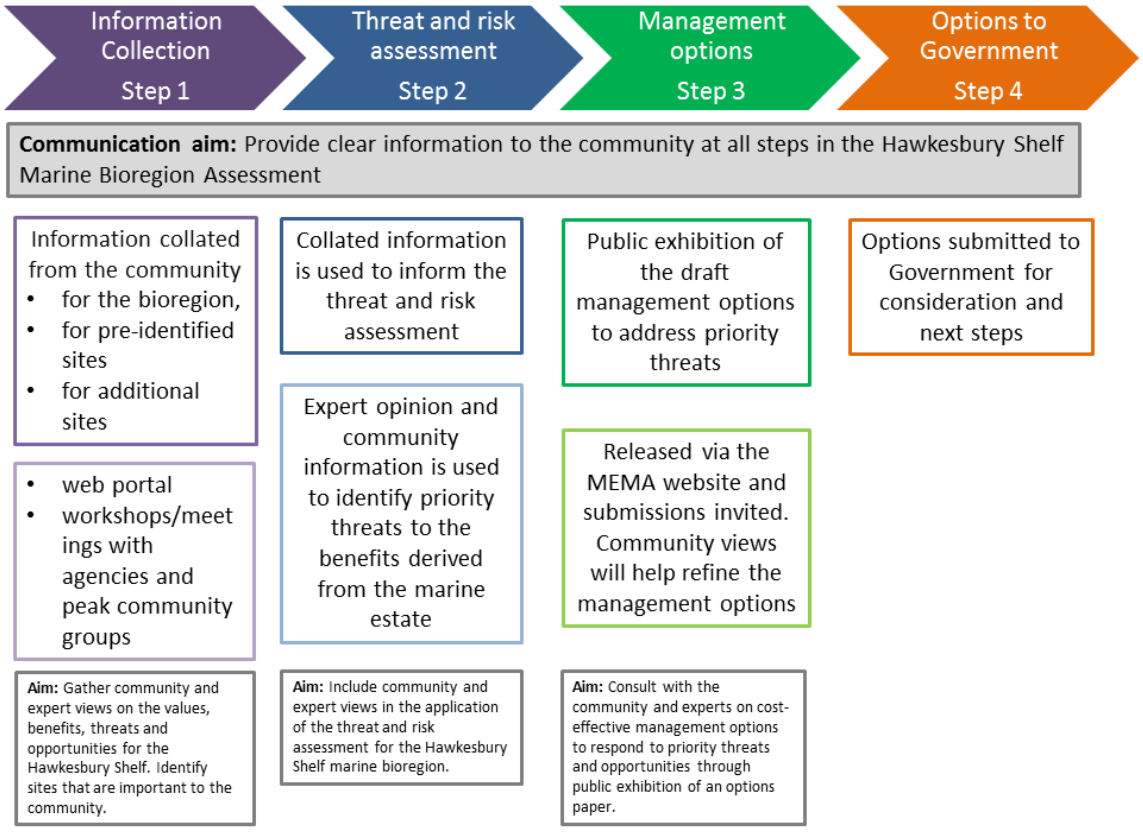
An essential component of the Authority's approach to the management of the NSW marine estate is engagement with stakeholders and the community to canvass their views about the values and benefits of the marine estate, the threats to those values and the ways in which those threats might be better managed. The Assessment has incorporated systematic stakeholder and community engagement into its framework.

The purpose of community engagement is to:

- capture stakeholder and community views at progressive steps in the process to ensure the management decisions for the Hawkesbury Shelf marine bioregion reflect the community values and benefits
- encourage community ownership of the outcomes.

The steps in the project, the corresponding engagement opportunities, the aim of each engagement step and the overall communication aim are summarised in Figure 1.

Figure 1. Community engagement steps



Engagement has been undertaken in accordance with the overarching MEMA engagement principles identified in MEMA's *Community and Stakeholder Engagement Strategy* (2014)[1]. This includes:

- *Early Involvement* through provision of the web portal, meetings and workshops in Step 1.
- *Communication* and *Accessibility* by providing clear, accurate and easy to understand material consistently at each step via newsletters and via the website.
- *Transparency* by informing the community about how their views have been considered in the steps so far, via newsletters.
- *Evaluation* of each of the community engagement techniques implemented to allow improvements to be made for future engagement.

An essential step to achieve the Authority's engagement principle of *Transparency* is to provide the community with reasons for decisions and to include how community views have been taken into account. While some of this information has been provided in newsletters, the complete suite of information will be provided in a discussion paper and associated background documents to be made available to the general public.

1.1 Stakeholders

The stakeholders for this project include government agencies, peak industry groups and the entire NSW community.

The level of engagement for different stakeholders varies. For example, those who have responsibilities for managing the marine estate and special interest groups with a direct interest in the marine estate have been engaged through workshops and one-on-one meetings whilst the rest of the community have been engaged through community surveys.

1.2 Aim and outline of this report

The aim of this report is to outline the engagement methods used in Steps 1 and 2 of the Assessment and report on the outcomes.

Sections 2 and 3 provide the findings from the statewide Marine Estate Community Survey and the NSW Coastal Councils' survey that are relevant for the Hawkesbury Shelf Marine Bioregion.

The remaining information in this report outlines the engagement techniques and outcomes that have been undertaken specifically for the Assessment including:

- Communications distributed to key stakeholders and the community, including culturally and linguistically diverse groups (Section 4).
- Workshops held in the Hawkesbury bioregion for key stakeholders (Section 5).
- Submissions received from a variety of stakeholders (Section 6.1).
- Meetings with local councils on pre-identified sites within their local government areas (Section 6.2).
- An interactive web portal for stakeholders and the community to gather information on benefits, threats and opportunities for the bioregion, pre-identified sites and additional sites (Section 6.3).

- Targeted engagement with the Aboriginal community in the bioregion in recognition of their special and long-standing connection with the natural environments of Australia (Section 7).

2 Marine Estate Community Survey (Sweeney Research 2014)

In 2014, MEMA commissioned social science research (termed the 'Marine Estate Community Survey') to understand the views of the community about the NSW marine estate. The survey was conducted by a market research company, Sweeney Research, and included qualitative and quantitative components.

The qualitative component involved two elements:

- 36 in-depth interviews with a cross-section of marine estate interest/user groups (Table 1) including five Aboriginal coastal community representatives
- Seven regional focus groups with a representative sample of the local community to elicit views on the values and benefits of the NSW marine estate, threats to those benefits and future opportunities for its management

The results of the interviews and focus groups were used to inform the development of two questionnaires used in the subsequent quantitative survey.

The quantitative component involved surveying a representative statewide sample of over 1,000 NSW residents (via an online survey) and over 700 coastal residents and visitors (via field intercept surveys at seven coastal locations) to understand the values and benefits they derive from the NSW marine estate, their perceived threats to those benefits and opportunities for improving its management. The full qualitative and quantitative findings for the survey are available at http://www.marine.nsw.gov.au/key-initiatives/marine-estate-community-survey.

A summary is provided below along with findings that are particularly relevant to the Hawkesbury Shelf marine bioregion.

Table 1. Marine estate interest/user groups interviewed for the qualitative survey

Stakeholder Type	Location						TOTAL
	Sydney	Newcastle	Coffs Harbour	Lismore	Batemans Bay	Eden	
Peak Body Groups (peak recreational fishing groups, peak recreational boating groups, bait shops, scuba divers)	• Underwater Skin Divers and Fishermen's Association • Aust. National Sports Fishing Association • Aust. Fishing Trade Association • Surfing NSW • Yachting NSW • Boat Owners Association • Keep Australia Fishing • Surf Lifesaving NSW	-	• EcoFishers • Scuba Diving Business	-	• Narooma Port Committee	-	11
Local Councils (local council representatives, ethnic community council)	• Ethnic Communities Council NSW	• Local council	-	• Local council (Tweed Heads)	-	-	3
Chambers of Commerce (representatives of local businesses)	-	• Chamber of commerce	-	-	• Chamber of commerce	-	2
Fishing/Boating Industry (commercial fishing, local fishing businesses, boating industry)	• Sydney Fish Market • Boating Industry Association	-	• Professional Fisherman's Association	-	• South Coast Fishermens United Group** • Port Kembla Port Corporation	-	5
Other Industry Bodies (coastal developers, NSW farmers, tourism industry, aqua culture industry)	-	• NSW Farmers Oyster Committee	-	• Lord Howe Island Tourism Association	• Local oyster famer • South Coast Regional Tourism Organisation	• Local oyster farmer	5
Indigenous Community (members of the Indigenous community, elders, Aboriginal land council)	• Aboriginal Land Council	-	-	• Community Elder • Aboriginal Community Centre	• Community Elder • Aboriginal Community Centre	-	5
Conservation/Science (marine science community, conservation groups)	• National Parks Association • Marine Science Association • NSW Nature Conservation Council	-	• North Coast Environmental Council (Port Macquarie)	-	-	• Marine Education Centre	5
TOTAL	15	3	4	4	8	2	36

Source: (Sweeney and Research 2014).

2.1 Qualitative Findings

2.1.1 Statewide

The key values identified from the qualitative component of the survey (Table 2) underpin peoples' behaviours, perceptions and attitudes towards the NSW marine estate. There was considerable interrelatedness between the identified environmental, economic and social values (Figure 2). One value stood out, however, and is considered to be the central value of the NSW marine estate: **the ongoing health of the marine estate**. Without this the other, values could disappear or decline significantly either in the short or long term.

Table 2. Summary of qualitative research findings on key values of the NSW marine estate

Identity	• **Uniqueness…** The marine estate is home to a diverse range of endemic flora and fauna. • **Continuing health of the marine estate…**The NSW community expresses a need to protect the marine estate from degradation and unsustainable use. • **Access…**The NSW community need up-to-date and reliable infrastructure access to the marine estate as well as safe access to marine areas. • **A part of our heritage and culture…**The marine estate is considered an intrinsic part of NSW and Australian identity. Many people (including the Aboriginal community) report a strong, sentimental attachment to this space.
Enabler	• **Enabling connection…**The estate offers a critical way for members of the community to spend time with loved ones and to strengthen relationships as well as feeling a part of the community. • **Value as an escape…**The estate provides the NSW community with an opportunity to get away from their everyday lives and relax. • **Offering choice…**Many enjoy and value the range of different activities and uses the marine estate offers them.
Provider	• **A gateway to Australia…** It provides an important link to other Australian and International markets for trade and tourism. • **Support for local and state economies…** It is also seen as providing substantial benefits to the NSW economy. • **Source of food and industry…** a key economic benefit of the marine estate was the variety of seafood that could be caught and eaten. • **Facilities in place to help access the marine estate…** it is imperative that the community feel they have access to the public resources available from the estate.
The Great Outdoors	• **Enjoyment in just knowing it is there…** The intrinsic value of the marine estate is very powerful. One of the most popular benefits is that people enjoy its natural beauty, even if they can't visit it regularly. • **A celebration of biodiversity…** The NSW community enjoys knowing that the marine estate is home to a wide range of marine life. This also has significant cultural implications for the NSW community as a whole. • **A source of scientific discovery…** Being able to use the marine estate to improve scientific knowledge and as a source of education about marine life is vital for the NSW community. • **Safety…** Regulations and usage bodies (e.g. surf lifesavers) are necessary to ensure that the community can engage safely with the estate.

Source: Adapted from Sweeney Research (2014).

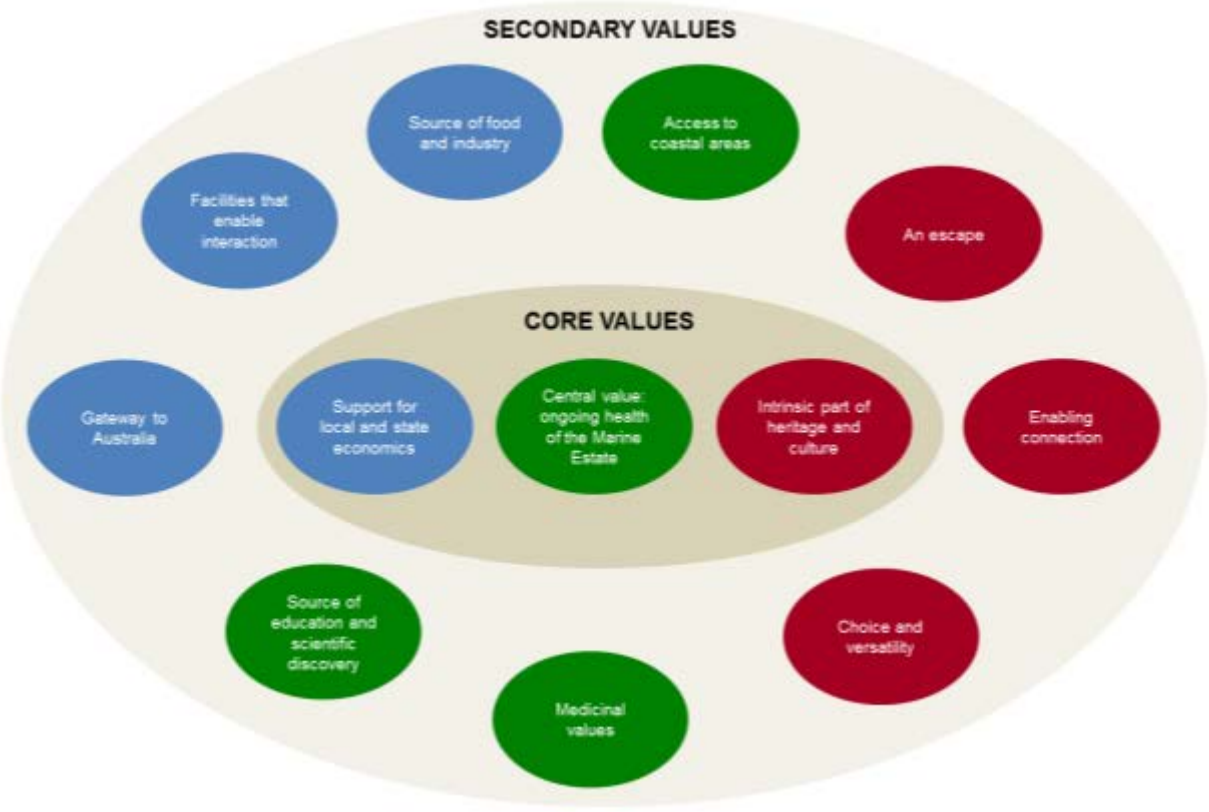


Figure 2 The interrelatedness of the core and secondary environmental (green), economic (blue) and social values (red) identified during the qualitative component of the statewide survey. Source: Sweeney Research (2014).

2.1.2 Hawkesbury Shelf marine bioregion findings

The qualitative findings from the survey were also analysed at a coastal Local Land Services (LLS) region level. The Greater Sydney and Hunter LLS regions largely encompass the Hawkesbury Shelf marine bioregion and a summary of the key findings for these regions is given below:

Hunter LLS Region Perceptions

- People here exhibit a strong desire to preserve and protect the character of the area and express a desire to keep tourist numbers contained, and to protect the diversity of industries within the region, including the port of Newcastle
- People here consider restrictions in relation to interactions with the marine estate, particularly in relation to recreational fishing, can feel inconsistent and excessive
- There is perceived to be inadequate policing at camping sites and other recreational areas, for littering in particular.

Greater Sydney LLS Region Perceptions

- Sydney is considered synonymous with the coast and the harbour in particular and for many interviewed Sydneysiders, the marine estate is most frequently associated with the beach

- Crowding issues, the cost of parking and transport and traffic can detract from the community's enjoyment of the marine estate in Greater Sydney
- Sydney residents are interested in being involved in the management of the marine estate and feel the Government should ask for their input in developing future plans
- Education and information sharing are important for the future management of the marine estate. It is believed that education from an early age could ensure safe behaviours and minimal impact from future interactions with the marine estate and also foster an appreciation and respect for the marine estate and marine life within it.

2.2 Quantitative Findings

This section provides a summary of the quantitative findings from the Survey for the statewide view and the Hawkesbury Shelf marine bioregion. Findings for the Hawkesbury Shelf marine bioregion are drawn from two sources in the statewide survey:

- the Hunter, Sydney and Illawarra regional results from the online survey
- the Newcastle, Hawkesbury/Pittwater and Circular Quay (Sydney) results from the field intercept surveys.

The findings are categorised into:

- environmental benefits and threats
- economic benefits and threats
- social benefits and threats

2.2.1 Environmental benefits

Clean waters that support a variety of habitats and marine life was identified as the highest priority environmental benefit by the NSW general population (72%), followed by the abundance of marine life (42%) and uniqueness of marine life (38%). Coastal residents and visitors reported the same top three benefits, but noted the uniqueness of marine life as their second preference (22 and 31% respectively) followed by the abundance of marine life (14 and 16% respectively).

The online survey results from the Hunter and Sydney regions mirrored the statewide survey priorities, but the Illawarra region favoured the unique biodiversity of the marine estate (44%) over the abundance of marine life (33%). Coastal residents and visitors in the Hawkesbury bioregion reported clean waters that support a variety of marine life as the greatest environmental benefit, followed by the unique biodiversity of the marine estate. Sydney residents and visitors, Newcastle residents and Hawkesbury/Pittwater visitors identified abundance of marine life as their third benefit, while Newcastle visitors nominated observation and interaction with a variety of marine life as their third highest benefit.

2.2.2 Environmental threats

The three greatest environmental threats to the marine estate perceived by the NSW general population were forms of water pollution:

- littering/dumping of rubbish/marine debris (47%)
- oil and chemical spills (34%)
- water pollution from sediment or run-off (29%)

The same priorities were observed for coastal residents, but coastal visitors perceived water pollution from sediment or run-off to be the second most important threat, with oil and chemical spills third.

In the Hawkesbury bioregion, the Sydney result was identical but surveys in the Hunter and Illawarra regions reported water pollution from sediment or run-off as their second priority (40 and 31% respectively) and oil and chemical spills third (37 and 25% respectively). Coastal residents and visitors surveyed for the Newcastle and Hawkesbury/Pittwater areas mirrored the statewide priority threats.

Sydney coastal residents differed in their priorities to Sydney coastal visitors. Residents noted oil and chemical spills (25%) as their second highest priority, followed by loss of coastal habitats (21%). Sydney visitors noted water pollution from sediment and runoff (28%) as their second highest priority, followed by the loss of coastal habitats (24%).

2.2.3 Economic benefits

The NSW marine estate represents a substantial economic resource to the NSW community (see also Vanderkooi 2015), as well as a key source of food for some including Aboriginal people. Fifty-eight percent of the NSW general population surveyed identified that income generated from the NSW marine estate was their most important economic benefit derived from the estate (Table 3), even though less than 3% of people surveyed actually derive their income directly from it. They also particularly noted that the marine estate is home to iconic images of Australia which promote tourism (54% of those surveyed) and valued the variety of seafood to catch and eat (34%).

Coastal residents (39%) and visitors (40%) placed the NSW marine estate's iconic images of Australia which promote tourism as their highest priority economic benefit. Their second highest priority was the marine estate as a source of income for local communities followed by the variety of seafood to catch and eat.

At the regional scale Hunter (68%) and Illawarra (55%) people also identified the marine estate as a source of income as their highest priority, but the Sydney region identified the iconic images of Australia promoting tourism as being of equal priority to this (54% for both) (Table 3).

Table 3. Top economic benefits derived from the NSW marine estate statewide and for the Hunter, Sydney and Illawarra regions (NSW general population online survey).

	Statewide TOTAL	Sydney region	Hunter	Illawarra
n=number of people surveyed	Total = 1003	568 (57%)	150 (15%)	52 (5%)
Provides a source of income for residents	58	54	68	55
Home to iconic images of Australia which promote tourism	54	54	57	54
Provides a variety of seafood to catch and eat	34	34	33	38
Provides a trade route for goods around Australia and the world	27	30	18	29

All values shown in percentages. Weighted data. Source: Sweeney Research (2014)

The result differed for the coastal residents and visitors surveyed in the Hawkesbury bioregion who noted an even stronger preference for the NSW marine estate's iconic images of Australia promoting tourism than the rest of the State (residents 45-54%; coastal visitors 43-50%), followed by the marine estate providing a source of income (residents 25-29%; visitors 23-32%).

The marine estate is seen both statewide and at a bioregional scale as a tourism drawcard and not necessarily as a natural resource for extraction. The majority considered that the economic benefits of the marine estate come primarily from the iconic images of Australia which promote tourism (Table 3). This finding was amplified amongst the Aboriginal community, with tourism being a key way for cultural values and traditions to be perpetuated. Further, the results generally indicate that the public perceive tourism as being positive socially, environmentally and economically, with relatively few drawbacks.

2.2.4 Economic threats

Given the focus on the tourism benefits of the NSW marine estate, threats to tourism are seen as a priority. Water pollution affecting the viability of tourism and the loss of natural areas reserved for tourism are seen as the greatest economic threats to the marine estate by the NSW general population. These threats, coupled with the increasing costs to access and use the NSW marine estate, are seen as having the potential to cause major damage to the tourism industry in NSW (Table 4).

Table 4 . Top economic threats to the NSW marine estate statewide and for the Hunter, Sydney and Illawarra regions (NSW general population online survey).

	NSW TOTAL	Sydney region	Hunter	Illawarra
n=number of people surveyed	Total = 1003	568 (57%)	150 (15%)	52 (5%)
Water pollution affecting local businesses/tourism	62	63	69	56
Loss of natural areas reserved for nature tourism	51	52	53	64
Increasing costs to access and use the Marine Estate	42	43	47	42
Increasing costs and regulation of local businesses	30	27	35	33
Declining levels of coastal and marine-based tourism	21	22	24	17

All values shown in percentages. Weighted data. Source: Sweeney Research (2014)

Similar preferences were reported for coastal visitors, but coastal residents identified loss of natural areas reserved for tourism as their highest threat (47%), followed by water pollution affecting local businesses and tourism (44%) and then increasing costs and regulation of local businesses (20%). However, analysis of perceived social threats (see below) indicates that all three groups are cautious that tourism should not cause over-crowding in popular tourist destinations. Overcrowding can have a negative impact on people's enjoyment of the marine estate as well as impacting on the environment.

Similar results were reported for the Hawkesbury bioregion, with the online people surveyed in the Hunter (69%) and Sydney (63%) regions clearly noting water pollution affecting local businesses and tourism as their highest priority. People surveyed in the Hunter (53%) and in Sydney (52%) noting a loss of natural areas reserved for nature tourism as their second highest priority (Table 4). Online people surveyed in the Illawarra (64%) and coastal

residents (57-60%) and visitors (46-64%) surveyed in the Hawkesbury Shelf marine bioregion, however, noted loss of natural areas reserved for tourism as their highest priority, then concerns for water pollution affecting businesses and tourism.

All three groups across the Hawkesbury Shelf marine bioregion were concerned with what they perceived as the increasing costs of accessing and using the marine estate (third highest concern) and regulation of local businesses (fourth highest concern).

2.2.5 Social benefits

The NSW marine estate holds great intrinsic value for the NSW community as a central part of Australia's heritage and culture. The most important social benefit identified by the NSW general population (48%) was the enjoyment people get from knowing its natural beauty is there, even if they cannot visit it regularly. Other key benefits identified included the marine estate being recognised as providing a safe space to spend quality time and socialise with friends and family (30%) and providing an opportunity to live a healthy and active lifestyle (27%) (Table 5).

The results differed for NSW coastal residents who identified the uniqueness and value of the NSW marine estate which can be passed onto future generations as their highest priority (26%). This was followed by providing a safe space to spend time with friends and family (21%) and its intrinsic values (18%). Coastal visitors identified the intrinsic value of the NSW marine estate as their highest social benefit (26%) followed by the uniqueness and values that can be passed onto future generations (22%).

The qualitative survey results found that these social benefits are amplified in coastal Aboriginal communities with many of the core traditions that underpin their culture being fundamentally linked to the estate.

Table 5. Top social benefits derived from the NSW marine estate statewide and for the Hunter, Sydney and Illawarra regions (NSW general population online survey).

	NSW TOTAL	Sydney region	Hunter	Illawarra
n=number of people surveyed	Total = 1003	568 (57%)	150 (15%)	52 (5%)
People enjoy its natural beauty, even if they can't visit it regularly	48	49	47	43
Provides a safe space to spend time with family and socialise with friends	30	30	29	30
Can help people achieve an active, healthy lifestyle	27	26	33	34
Its uniqueness and values can be passed on to future generations	27	25	31	25
A source of scientific discoveries	19	19	22	18

All values shown in percentages. Weighted data. Source: Sweeney Research (2014)

The statewide results were mirrored for the Sydney region. The Hunter and Illawarra online survey participants ranked the intrinsic value of the NSW marine estate as their highest priority, followed by helping people to achieve a healthy and active lifestyle as their second highest preference (33% and 34% respectively) (Table 5). The Illawarra region ranked the NSW marine estate providing a safe space to spend time with family and friends as their

third highest preference (30%), while the Hunter region ranked the NSW marine estate's uniqueness and value for future generations as their third highest priority (31%) (Table 5).

Sydney and Hawkesbury/Pittwater coastal residents' preferences aligned with the statewide findings. Newcastle coastal residents had the same first and third priorities as the statewide coastal residents (the uniqueness and values of the marine estate that can be passed onto future generations as the highest preference (23-29%) and its intrinsic values as their third preference (14-20%)). However, they ranked the NSW marine estate helping people to achieve an active, healthy lifestyle as their second preference (26%).

2.2.6 Social threats

Anti-social behaviour is seen as the main threat to the social benefits of the NSW marine estate by the NSW general population (58%) (Table 6). Fifty-five percent of the NSW general population considers the potential loss of appeal due to pollution/littering as the second highest social threat. Following this, overcrowding, danger to swimmers from recreational activities such as boating and jet skiers and a lack of public access were also recognised as potential social threats that may impact on their desire to use the marine estate. Community members were likely to feel that visitors have a strong negative impact in terms of littering, pollution and anti-social behavior (Table 6).

Table 6. Top social threats to the NSW marine estate statewide and for the Hunter, Sydney and Illawarra regions (NSW general population online survey).

	NSW TOTAL	Sydney region	Hunter	Illawarra
n=number of people surveyed	Total = 1003	568 (57%)	150 (15%)	52 (5%)
Anti-social behaviour affecting my safety and enjoyment	58	55	67	58
Loss of appeal due to water pollution, litter	55	57	66	58
Loss of appeal due to overcrowding	31	30	32	42
Danger to swimmers from jet skiers, boats, water skiers, etc.	31	30	30	35
Lack of public access to areas of the Marine Estate	29	31	26	20

All values shown in percentages. Weighted data. Source: Sweeney Research (2014)

The priorities for statewide coastal residents and visitors differed to the online survey results. They ranked the following as their highest priorities:

1. Loss of appeal due to water pollution and litter (residents and visitors 47% each)
2. Anti-social behavior affecting personal safety and enjoyment (residents 46% and visitors 43%)
3. Lack of public access to the marine estate (residents 23% and visitors 24%)

The Hunter, Sydney and Illawarra regions generally mirrored the statewide online survey result in terms of priority social threats (Table 6). The Hunter region was strongest on anti-social behavior within the bioregion (67%), with Sydney and Illawarra results similar to statewide. The Sydney region ranked the loss of appeal due to water pollution and litter as

their main threat, closely followed by anti-social behavior (55%). The Illawarra region ranked these two equally as their main threats (Table 6).

Coastal residents and visitors in the bioregion mirrored the two highest priorities of the statewide coastal residents and visitor priorities (i.e. loss of appeal due to water pollution and litter, followed by anti-social behavior affecting personal safety and enjoyment). However Newcastle residents noted concerns with danger to swimmers from watercraft (24%) as their third priority, followed by not enough restrictions on commercial fishing (23%). Hawkesbury/Pittwater residents identified not enough restrictions on commercial fishing as their third priority (21%) followed by loss of appeal due to overcrowding (20%). Sydney residents identified not enough restrictions on commercial fishing (20%) followed by danger to swimmers from watercraft (18%).

Coastal visitors in Newcastle identified a lack of public access as their third highest priority (26%) followed by danger to swimmers from watercraft (22%). Hawkesbury/Pittwater visitors identified danger to swimmers from watercraft (26%) as their third highest priority followed by lack of public access (18%). Finally Sydney visitors identified loss of appeal due to overcrowding as their third preference (26%) followed by danger to swimmers from watercraft (22%).

Table 7 summarises the overall prioritised benefits and threats for the NSW marine estate identified from the quantitative component of the survey for the Hawkesbury bioregion. Percentages have been removed and replaced with numerical ordering and colours to highlight the three main preferences identified for each region/location from the online and field intercept surveys conducted.

Table 7. Summary of the priority benefits and threats for the Hawkesbury Shelf marine bioregion identified from the Marine Estate Community Survey.

Numbers 1-10 indicate the priorities, with 1 (yellow) being the top priority, 2 (pink) the second, 3 (green) the third and others (no colour) being lower priorities in numerical order.

Benefits		Online survey			Intercept surveys					
					Newcastle		Hawkesbury/ Pittwater		Circular Quay, Sydney	
		Hunter	Sydney region	Illawarra	Residents	Visitors	Residents	Visitors	Residents	Visitors
Economic	• Provides a source of income for local residents	1	1	1	2	2	2	2	2	2
	• Home to iconic images of Australia which promotes tourism	2	1	2	1	1	1	1	1	1
	• Provides a variety of seafood to catch and eat	3	2	3	4	4	3	3	4	3
	• Provides a trade route for goods around Australia and the world	4	3	4	3	3	4	4	3	4
Social	• People enjoy its natural beauty, even if they can't visit it	1	1	1	3	3	3	1	3	1

	regularly • Has a uniqueness which can be passed on to future generations									
	• Provides a safe space to spend time with family and friends	4	2	3	5	6	2	3	2	3
	• Can help people achieve an active, healthy lifestyle	2	3	2	2	1	4	2	4	5
	• Its uniqueness and values can be passed on to future generations	3	4	4	1	2	1	2	1	2
Environmental	• Clean waters that support a variety of habitats and marine life	1	1	1	1	1	1	1	1	1
	• Abundance of marine life	2	2	3	3	4	4	3	3	4
	• Contains unique biodiversity that cannot be found anywhere else in the world	3	3	2	2	2	2	2	2	2

	• A way to observe and interact with a variety of marine life	4	4	4	4	3	3	4	4	3
Threats										
Economic	• Water pollution affecting local business/tourism	1	1	2	2	1	2	2	2	2
	• Loss of natural areas reserved for tourism	2	2	1	1	1	1	1	1	1
	• Increasing costs to access and use the marine estate	3	3	3	4	2	3	3	3	3
	• Increasing costs and regulation of local businesses	4	4	4	3	3	3	4	4	6
Social	• Anti-social behaviour affecting safety and enjoyment	1	2	1	2	2	1	1	2	2
	• Loss of appeal due to water pollution/littering	2	1	1	1	1	2	2	1	1
	• Loss of appeal due to overcrowding	3	3	2	6	7	4	5	4	3
	• Danger to swimmers	4	3	3	3	4	5	3	5	4

	from watercraft									
	• Lack of public access	5	4	4	5	3	6	4	3	5
	• Not enough restrictions on commercial fishing	6	5	5	4	6	3	6	7	6
Environmental	• Littering/dumping of rubbish/marine debris	1	1	1	1	1	1	1	1	1
	• Oil and chemical spills	3	2	3	2	2	2	5	2	2
	• Water pollution from sediment or run-off	2	3	2	3	3	2	2	6	3
	• Mining of oil and gas	6	4	8	5	4	4	7	10	7
	• Climate change/global warming/natural disasters	5	5	7	5	5	3	4	4	5
	• Overfishing	8	8	9	4	10	6	8	9	4
	• Loss of coastal habitats	10	9	11	7	6	4	3	3	9

Source: Adapted from Sweeney Research (2014).

3 NSW Coastal councils survey

In 2014 NSW Coastal councils were asked to participate in a survey to determine:

- current plans and programs relevant to the marine estate
- surveys and monitoring relevant to the marine estate
- the five main challenges facing the marine estate in their local government areas
- how councils and their key stakeholders would like to be engaged in marine estate projects.

The information provided by the coastal councils within the Hawkesbury Shelf marine bioregion was taken into account in assessing the threats and developing the suggested management initiatives for the bioregion. Their responses are detailed in Appendix 1.

4 Ongoing communication with stakeholders and the community

To ensure the Authority was providing clear information to the community at all steps in the Assessment, the marine estate website was regularly updated and regular newsletters on the Assessment distributed.

The Authority's website (www.marine.nsw.gov.au) is the primary communication tool to keep stakeholders and the community informed on the progress of the Assessment. A stakeholder database is maintained for the Assessment which includes state and local government, non-government organisations, peak groups, universities, and private individuals. Private individuals have requested to be kept informed about marine estate projects through the Community Survey, or about the Hawkesbury assessment through the web portal or the 'contact us' marine estate email address.

Newsletters have been emailed directly to these contacts at each step in the project and all recipients are encouraged to pass the newsletter on to their contacts. These newsletters are also available on the marine estate website.

Newsletters that have been sent out for each step in the project so far:

- Newsletter No. 1 coincided with Step 1 Information Collection: This newsletter introduced the project, outlined the four steps and how the community would be engaged, and gave advanced notice of the imminent release of the web portal. This newsletter was emailed to over 500 email addresses.
- Newsletter No. 2 coincided with Step 2 Threat and Risk Assessment. This newsletter included information on the web portal and workshops and how this data would be used. It also included an outline of the threat and risk assessment process. This newsletter was emailed to approx.1,000 email addresses. The majority of the additional email addresses since Newsletter No. 1 were sourced from web portal responses with over 600 people nominating to be kept updated about the project.
- Newsletter No. 3 coincided with Step 3, the development of Management Options. This newsletter included information on the web portal results, the TARA, development of management initiatives and upcoming engagement opportunities in 2016. This newsletter was emailed to approx. 1,000 email addresses.

Culturally and Linguistically Diverse (CALD) communities have received each newsletter via Multicultural NSW Emaillink which reaches approximately 5000 multicultural contacts including community organisations, individuals and multicultural media.

5 Stakeholder workshops

Stakeholder workshops were undertaken for Step 1 in June 2015 and were aimed at:

- NSW Government agencies and local councils that have direct management responsibilities for the coast and estuaries relating to the activities being assessed
- other government agencies (i.e. without direct management responsibilities in the marine estate)
- peak groups.

Workshops were held with the following objectives:

1. To inform stakeholders about:
    - the Marine Estate Management Authority
    - the Hawkesbury Shelf Marine Bioregion assessment
    - how stakeholders can contribute to the assessment apart from the workshops
    - how their input would be used
    - the next steps and subsequent engagement opportunities.
2. To gather stakeholder views on benefits, threats and management options for the bioregion.
3. To increase our understanding of the range of stakeholder perspectives in the bioregion.
4. To foster a sense of shared responsibility for management.

Information was provided to the attendees and feedback elicited from them during four structured sessions. At the beginning of the workshops, information was provided about the Marine Estate Management Authority, the Marine Estate Community Survey, the Hawkesbury Shelf marine bioregion assessment including an outline of the threat and risk assessment framework, and how the information collected from stakeholders would be used in the process.

In the first session participants were asked to list all the social, economic and environmental values and benefits they derive from the Hawkesbury Shelf marine bioregion. These benefits were then sorted into categories under the broader groupings of social, economic and environmental benefits.

In the second session participants were asked to list threats to these benefit categories. In this way a direct link between the benefit category and threats that affect that benefit category could be illustrated. Each participant listed threats to social, economic and environment.

Individual participants were asked to identify (vote for) what they considered were the highest priority threats in relation to the benefit category. The overall top threats according to the whole group were then listed and actions to reduce these threats were identified.

Information collected across the four workshops was amalgamated into three lists:

- **Benefits and values**: These were then compared with the lists of benefits and values derived from the statewide Community Survey and any additional benefits

included in the master list used to inform the Hawkesbury Shelf threat and risk assessment (Step 2 of the project).

- **Benefits versus threats**: The workshops identified threats to specific benefits and this information was used to inform the threat and risk assessment (Step 2 of the project).
- **Management actions**: This list was used to assist in developing the management options for priority threats (Step 3 of the project).

A total of 65 people attended the four workshops across three locations, representing 40 organisations including state government agencies, local councils, peak groups and universities. Peak groups included boating, fishing, diving and conservation groups, for example the Boating Industry Association, Boat Owners Association, Wilderness Society NSW, Nature Conservation Council of NSW, Dive Industry Association of Australia, Australian National Sportsfishing Association, Underwater Skindivers & Fishermen's Association, Commercial Fishermen's Co-operative Limited, Professional Fishermen's Association, Australian Marine Sciences Association and Oceanwatch Australia.

The majority of the benefits identified through the workshops had been previously identified through the Marine Estate Community Survey (see Section 2). Additional benefits noted are:

Economic: Health (medicinal/pharmaceutical), jobs, property values, research, carbon sink, access, marinas/boating under commercial activities, export including seafood export, ecosystems supporting life.

Social: Health (medicinal/pharmaceutical), sightseeing, walking, safety, seafood, photography, waste disposal, jobs. Sightseeing was one of the top activities listed for the Community Survey, as was walking.

Environmental – estuarine: Artificial habitats, phytoplankton, ecosystem services, beaches, creek lines, balanced ecosystems, carbon sink.

Environmental – marine: Buffer/resilience to climate change, microbial communities, deepwater canyons and mountains, ecosystem services, phytoplankton, kelp forests, sponge gardens, archaeological remnants, dunes, carbon sink, and marine flora.

5.1 Benefits versus threats

Participants were asked to identify their priority threats in relation to specific benefits. Tables 8 – 10 below identify the priority threats to benefits for each of the three groups: economic, social and environmental.

Table 8. Top threats to economic benefits identified at stakeholder workshops.

Economic benefits	Threats to economic benefits	Percentage of total (625)	Percentage of economic (173)
Recreational activities	habitat loss	1.28	4.62
Commercial fishing and aquaculture	depletion of fish stocks	1.12	4.05
Recreational fishing	pollution/ water quality - can't eat catch	1.12	4.05
Recreational fishing	poor access	1.12	4.05
Tourism	habitat destruction	0.96	3.47
Commercial fishing and aquaculture	habitat loss	0.96	3.47
Recreational fishing	habitat degradation	0.96	3.47
Recreational fishing	habitat loss/modification	0.96	3.47

The top threat to any economic benefit (4.6% of votes) was to recreational activities in the form of 'habitat loss' (Table 8). The key threats identified to recreational fishing as an economic benefit were 'pollution' and 'poor access', followed by 'habitat degradation' and 'habitat loss/modification'. The key threats identified to commercial fishing and aquaculture as an economic benefit were 'depletion of fish stocks', 'habitat loss' and 'unsustainable practices'. The key threat to tourism was identified as 'habitat destruction'.

Across the economic grouping, habitat loss/degradation featured repeatedly (Table 8). It was attributed as a threat to recreational activities generally, tourism, recreational fishing and commercial fishing. Poor water quality, depletion of fish stocks, poor access and unsustainable fishing practices were also considered important.

Table 9. Top threats to social benefits identified at stakeholder workshops.

Social Benefits	Threats to social benefits	Percentage of total (625)	Percentage of social (227)
Education, research	lack of education on major threats	1.44	3.96
Overarching	lack of cohesive governance - fragmented policy framework	1.44	3.96
Education, research	funding, resourcing	1.28	3.52
Above water/on water recreational activities	water pollution - oil spills, stormwater, sewage	1.28	3.52
Health and well being	ecosystem failure	0.96	2.64
Recreational in-water	habitat loss	0.96	2.64

The top threat identified for any social benefit category was for education and research (4%), and the threat was 'lack of education on major threats' (Table 9). 'Funding and resourcing' was also considered a major threat to education and research. The key threats identified to recreation as a social benefit (on-water, in-water, shoreline or more generally) were 'water pollution', 'habitat loss' and 'overfishing/overharvesting'. 'Ecosystem failure' was considered a significant threat to the benefit described as 'health and well-being'. Key threats to cultural values were 'pollution' and loss of 'culture/knowledge'. Replacing natural habitats with artificial ones was considered a threat to aesthetic quality.

At one workshop the attendees decided to list 'overarching benefits' and two threats to these were considered to be significant: 'lack of cohesive governance – fragmented policy framework' and 'climate change'. Across the social grouping, poor water quality/pollution featured repeatedly (Table 9). It was attributed as a threat to above water, in-water and shoreline recreation, and to cultural benefits.

Table 10. Top threats to environmental benefits identified at stakeholder workshops.

Environmental Benefits	Threats to environmental benefits	Percentage of total (625)	Percentage of environmental (225)
Ecosystem services	loss of biodiversity	1.92	5.33
Biodiversity/threatened species	overfishing/over harvesting	1.6	4.44
Biodiversity/ habitat biodiversity	habitat loss/modification	1.6	4.44
Water quality	Pollution: stormwater runoff - toxic, nutrients, sediments, litter	1.6	4.44
All habitats	Lack of resources to manage	1.44	4.00
Biodiversity/threatened species	pollution (nutrient, sediment, toxic, noise)	1.28	3.56
Intrinsic value	lack of knowledge, awareness of value	1.12	3.11
Beaches and things that live there	coastal development - hardening - seawalls, dune building	0.96	2.67
Intermittently Closing and Opening Lakes and Lagoons (ICOLLs)	catchment development and runoff pollution	0.96	2.67
Intertidal reefs, offshore reefs, canyons. And the biota that live on them	overfishing	0.96	2.67
Threatened species/Protected species	fishing (line and spear and commercial)	0.96	2.67

The top threat identified to any environmental benefit category was for ecosystem services (5.3%) and was attributed to ‘loss of biodiversity’ (Table 10). The key threats identified to biodiversity/threatened species and threatened/protected species were ‘overfishing/overharvesting’, ‘habitat loss/modification’, pollution, fishing, shark nets and traditional knowledge. All habitats were considered threatened by ‘lack of resources to adequately manage them’. Pollution was identified as threatening the benefits of good water quality, biodiversity/threatened species and Intermittently Closing and Opening Lakes and Lagoons (ICOLLs). ‘Loss of biodiversity’ and ‘habitat loss/modification’ were considered to threaten ecosystem services and biodiversity/habitat.

Overfishing/overharvesting and fishing itself were considered by many to threaten biodiversity/threatened species, reefs and canyons, and threatened/protected species. Coastal development, catchment development and foreshore development threaten beaches, ICOLLs, estuaries and headlands.

5.2 Management options

In summary, the key threats identified were: water pollution; habitat destruction/degradation; loss of biodiversity and species loss; overfishing, depleted fish stocks and fishing; lack of access; lack of management resources; lack of education and knowledge; poor planning/strategy; foreshore development; and lack of cohesive government. The actions identified to address some of the top threats are listed in Table 11.

Table 11. Actions identified for the top threats

Threats	Suggested actions
Water pollution	• water sensitive urban design, stormwater controls, incentives for improved stormwater infrastructure • development controls, include runoff controls at the planning stage • extend the sewerfix program and improve sewerage infrastructure • education • catchment action plans • re-vegetate • increase compliance • plastic and litter control including microplastics • industrial and agricultural effluent controls.
Habitat destruction and degradation	• habitat enhancement and rehabilitation and funding • government commitment and regulatory controls • education and stewardship programs • increase regulation and compliance • uniformity of regulations • identify key assets • develop management strategies • remove commercial high impact practices • better management of invasive species • spatial management of habitat (eg marine reserves) especially nursery habitat • integrated catchment management • better science and research funding • partnerships with government, universities and community • stormwater management • appropriate beach management • traditional sea management • reduce carbon emissions • improve recycling policy • regulation of microplastics • biodegradable fishing line • improve amenities eg waste disposal at boat ramps.
Loss of biodiversity and species loss	• baseline monitoring/research • direct management intervention • improve stormwater/sewage infrastructure • improve protection • manage emerging industries eg mining • cohesive government policy • funding; education • communication of research • alternative solutions to shark nets and their removal adjacent to protected areas.
Overfishing, depleted fish stocks and fishing	• improve compliance and resourcing • education including multilingual • better science – what's being taken • identify research priorities • bag and size limits • aquaculture development • restocking • cap effort

	• marine reserves including no fishing areas • include recreational and indigenous catch in allowable quotas • monitor recreational and indigenous catch • community rangers • technical development (e.g. biodegradable fishing tackle) • promote sustainable local Australian fish stocks • rehabilitate fish habitat • get rid of super trawler and shark nets • reduce bycatch by better targeting and industry adjustment package.
Actions commonly identified to address other threats	• better education and communication • recognise and develop consistent approach to climate change • development controls • increase research; funding • long-term and holistic plans • infrastructure funding • evidence-based decision making.

5.3 Conclusions

The workshops were well received and participants appreciated having the project clearly explained to them and the opportunity to contribute to the process. These workshops provided 'qualitative' results as participants were deliberately selected rather than being chosen at random. The Marine Estate Community Survey produced both qualitative and quantitative results (see Section 2) but a general comparison of the two information collection methodologies is useful. Some findings were similar but other findings had a slight variation on a similar theme as summarised below:

- pollution, habitat loss/modification, and overfishing emerged as common themes across both exercises.
- for recreational fishing as an economic benefit, 'poor access' was identified as a threat in the workshops whereas the Community Survey identified something slightly different – 'increasing cost of access'.
- climate change was considered an overarching threat to social benefits in the workshops while the Community Survey identified climate change only as an environmental threat.
- unsustainable commercial fishing and aquaculture practices were identified as a threat to economic benefits in the workshops whereas the Community Survey identified 'not enough restrictions on commercial fishing' as a social threat.
- shark nets were identified as a threat to threatened/protected species in the workshops, particularly the two held in Sydney, but conversely danger to water users from sharks was identified as a threat to social benefits in the Community Survey.
- coastal development, catchment development and foreshore development were separately identified as key threats to environmental benefits in the workshops. Conversely, 'too many restrictions on coastal property development' was considered a threat to economic benefits in the Community Survey.

Priority threats that emerged from the workshops but were not identified in the Community Survey were:

- lack of funding/resources to manage and educate

- lack of knowledge, awareness of value and the major threats
- lack of education on major threats
- lack of cohesive governance – fragmented policy framework
- loss of culture/knowledge

These types of threats relate more closely to the strategic management of the marine estate. This is probably a reflection of the workshop participants who were primarily natural resource managers and peak user groups who are likely to have a broader understanding of management issues.

The recommended actions to address the threats were comprehensive and major strategic themes repeatedly emerged:

- stormwater, run-off and sewage management
- improved compliance, education, research and monitoring and funding for these
- better planning including catchment planning
- long-term holistic and consistent government policies and management plans
- habitat rehabilitation
- improved fisheries management in terms of areas and catch quota
- incentive schemes
- developing partnerships.

The findings from the workshops were considered within the expert led threat and risk assessment process and in the development of management options identified in the discussion paper. All stakeholders will have further opportunities to provide input into the process as the project proceeds.

6 Submissions, local council meetings and web portal

The information from submissions, local council meetings and the web portal were analysed together: for the bioregion, for pre-identified sites, and for any proposed additional sites. The results and conclusions are summarised in Section 6.3 with further details provided in the Appendices 3 and 4.

6.1 Submissions

Submissions were received from organisations and the general public via the ‘contact us’ email address established for the marine estate reforms and/or via Ministers’ offices. Information was extracted from the submissions on the benefits, threats, and opportunities for the bioregion, the pre-identified sites and for any additional sites nominated within the submission.

A total of 2373 submissions were received via the ‘contact us’ email address. However this figure primarily consisted of 2316 form letters received as part of a Nature Conservation campaign ‘Sydney needs a marine park’. In addition, 44 emails were received from a Wilderness Society campaign to ‘Keep the Sydney marine park promise’. In all, there were 15 different submissions from the 2373 total submissions.

6.2 Local council meetings

Individual meetings were held with local councils that have one or more of the pre-identified sites within their local government area. Pre-identified sites include the 10 existing aquatic reserves in the bioregion and 5 other sites previously suggested by the community for increased protection.

The 15 pre-identified sites are:

- Barrenjoey Head (existing aquatic reserve)
- Boat Harbour (existing aquatic reserve)
- Bouddi National Park Marine Extension (existing)
- Bronte-Coogee (existing aquatic reserve)
- Cabbage Tree Bay (existing aquatic reserve)
- Cape Banks (existing aquatic reserve)
- Chowder Bay
- Long Reef (existing aquatic reserve)
- Magic Point, Malabar
- Narrabeen Head (existing aquatic reserve)
- North Harbour (existing aquatic reserve)
- North Harbour extension – Manly Wharf and Cove
- Shiprock (existing Aquatic Reserve)
- Towra (existing Aquatic Reserve)
- Wybung Head.

The purpose of these meetings was to:

- seek information on the pre-identified sites including benefits, threats and opportunities to reduce the threats at these sites,
- ask councils if they wanted to nominate any additional sites within their local government area to be considered for further assessment.

Information was gathered from face-to-face meetings with eight local councils: Wyong Shire Council, Gosford City Council, Pittwater Council, Warringah Council, Manly Council, Randwick City Council, Waverley Council, and Sutherland Shire Council. Councils were provided a list of questions to research prior to the meeting and/or discuss at the meeting. Mosman Council provided a written-response to the questions.

6.3 Web portal

A web portal was developed to capture information from the general community as well as key stakeholders on the values and benefits they derive from the Hawkesbury Shelf marine bioregion, their perception of threats to these benefits, and opportunities to reduce these threats and/or enhance marine biodiversity conservation. An interactive mapping system was specifically developed to capture spatial information about key sites within the bioregion that the community wanted considered within the Assessment.

Spatial information related to:

- the 15 pre-identified sites – the community could comment on these sites already embedded in the web portal.
- additional sites – the community could input sites that they considered to be important.

6.3.1 Communications for the web portal

The web portal for the Hawkesbury Shelf marine bioregion was announced via ministerial media release on 25 June 2015.

The announcement of the web portal was also communicated through additional media:

- **Websites** – including the Marine Estate website, the Authority's agencies' websites, and the NSW Government *Have your Say* website.
- **Emails** to the Authority's stakeholder list including state and local government agencies, peak stakeholders and members of the general public who had requested to receive updates.
- **Social media**
    - **Facebook** – including National Parks and Wildlife Service, Department of Planning, Recreational Fishing Alliance
    - **Twitter** – including Department of Primary Industries, Office of Environment and Heritage, Department of Planning
    - **LinkedIn** – Department of Planning
    - **Instagram** – Office of Environment and Heritage.
- **Newsletters** – including the newsletter for the Hawkesbury Shelf marine bioregion assessment, Newscast (DPI).
- **News articles** were taken up by ABC News, Fishing World, Illawarra Mercury, Nature Conservation Council News, Professional Fisherman's Association (PFA), and Newcastle Herald.
- **Flyer distribution via** the Sydney International Boat Show, Microplastics Conference, and Fisheries Education Officers.

6.3.2 Methods

The web portal consisted of an interactive map linked with survey questions and was available on the NSW Marine Estate website www.marine.nsw.gov.au. Hardcopies of the survey questions were available at Fisheries Offices for those without access to a computer. The web portal was open for a two-month period from 25 June to 28 August 2015.

The web portal collected qualitative data through a mapping platform developed by the company Community Remarks. The mapping platform focused users on the Hawkesbury Shelf marine bioregion with a visual boundary around the area, and a data layer illustrating the pre-identified sites and a data layer illustrating the aquatic reserves in the bioregion.

Users were asked to comment on:

- any of the 15 pre-identified sites
- any additional sites they thought were important
- the Hawkesbury Shelf marine bioregion generally

Once the user decided how they would like to comment, they were provided with a 10-question survey. Users were asked the following questions about benefits, threats and opportunities for each option (full survey in Appendix 2):

- **What is important about this site to you? (i.e. how do you use it? what benefits do you gain from it?).**
    - Users were asked to tick all the benefits that related to them from a drop down list of benefits. This list was based on the results from the statewide Marine Estate Community Survey. An 'other' option was provided if the user wanted to add any additional benefits (Table 12).
- **What do you perceive are the threats to your use or benefit at this site?**
    - Users were asked to tick all the perceived threats that related to their benefits from a drop down list of threats provided. This list was based on the results

from the statewide Marine Estate Community Survey. An 'other' option was provided if the user wanted to add any additional threats (Table 12).

- **List some of the opportunities that could reduce the threats you have identified, to improve your experience at this site or enhance marine biodiversity conservation at this site.** This was an open-ended question where users could write as much as they liked.

Table 12. Benefits and potentially threatening activities listed in the survey

Benefits	Potential Threats
• Recreational fishing • Boating • Surfing, swimming • Scuba diving, snorkeling • Traditional use & knowledge • Education • Health & wellbeing • Intrinsic values • Urban, industrial & agricultural development • Shipping and ports • Tourism • Commercial fishing • Aquaculture • 'Other'	• Shipping • Foreshore development • Commercial fishing • Charter fishing • Recreational fishing • Cultural fishing • Charter activities • Aquaculture • Research and education • Recreation and tourism • Dredging • Mining and extractive industries • Agriculture • Stormwater discharge • Pollution • Coastal floodplain development and use • Industrial activities • Climate Change • Extreme weather events • I do not perceive any threats • 'Other'

The feedback about benefits was collated and any additional benefits listed in 'other' were summarised. Similarly, feedback about threats was collated and any additional threats listed in 'other' were summarised.

The opportunities were reviewed overall and categories of management themes and methods were identified. Then each 'opportunities' response was read and the components allocated to a management theme and/or method for collation under these categories (Table 13). Where the comments applied to more than one theme or method, they were duplicated so that the discussion for each theme or method was complete – for example, recreational fishing compliance is considered under the theme 'Fisheries and aquaculture management' and it is also considered under the method 'Regulation and compliance'.

Table 13. Categories for the opportunities identified in web portal responses

Management themes	Management methods
Biodiversity conservation, including: • marine protected areas • habitat management and enhancement/rehabilitation • threatened species	Partnerships/Whole of Government
Water quality and litter management	Regulation and compliance
Shipping and boating	Engagement, includes • education • communications • volunteer/stewardship opportunities
Fisheries and aquaculture management	Planning
Cultural heritage management	Research
Tourism	Funding
Climate change	

Users were also asked to identify particular coastal features that they use at a site, how many days they visited these sites, their postcode (required), their name and their email address if they wanted to receive updates on the project. They were also asked to rate how they liked/disliked using the mapping platform to allow staff to evaluate the success of this method for possible future use.

The entries in the web portal were then grouped into the three categories based on the types of comments that were made: bioregion, additional sites, and pre-identified sites.

In addition, the information from submissions and local council meetings was analysed with the web portal information: for the bioregion, for pre-identified sites, and for any proposed additional sites. The results and conclusions in the following Sections 6.3.3 and 6.3.4 also relate to all three sources of information, with the amalgamated information for pre-identified and additional sites provided in Appendices 3 and 4.

6.3.3 Results

There were a total of 1551 entries received through the web portal including 1162 general comments on the bioregion, 261 comments on additional sites and 128 comments on pre-identified sites. No hard copy surveys were received for the web portal.

The information from submissions, local council meetings and the web portal were analysed together for the bioregion, for pre-identified sites and for any proposed additional sites. This data is qualitative and not quantitative data, as the data were not randomly collected and therefore the views are not representative of the whole community. Therefore the number of respondents who had a particular view versus an opposing view has not been counted; instead the variety of comments has been recorded and considered.

Bioregion

Bioregion benefits

All of the benefits in the drop-down list were selected at the bioregion scale (see Table 12). The information provided through the web portal, submissions and local council meetings also identified 'other' reasons why the bioregion is important. These were:

- shark aggregation sites
- important habitats such as: mangroves, rocky reefs, seagrass beds, kelp beds, sponge gardens, fish nursery and breeding sites for wildlife
- wrecks and historic underwater sites
- safe areas to swim and paddle
- birdwatching and enjoying the wildflowers in bloom
- preservation for future generations
- photography
- aesthetics such as: watching the storms and the colours of the ocean
- south head lighthouse
- cliffs and caves
- tidal rivers
- walking and hiking tracks
- spearfishing
- socialising with family and friends
- cultural diversity.

Bioregion threats

All of the threats in the drop-down list were selected at the bioregion scale (see Table 12). The information provided through the web portal, submissions and local council meetings also identified 'other' threats to the benefits of the region. These include:

- coastal erosion
- lack of knowledge about rules and regulations
- increased population and over crowding
- super trawlers, large scale commercial fishing
- lack of a marine park, inadequate protection
- shark netting affecting non-target species
- pets attacking wildlife
- government red tape
- underwater noise pollution
- biosecurity, invasive species, weed encroachment
- lack of Aboriginal input into decision making processes
- discharge from boats
- collecting
- further restrictions on recreational fishing and spearfishing
- increased water traffic
- TV and news media promoting biased, illogical or fabricated evidence
- lack of enforcement
- campaigns by conservation groups

- lack of funding
- recreational scuba diving
- spearfishing
- jetskis.

Bioregion opportunities

There were over 1000 entries about opportunities for the bioregion. The suggestions are summarised below under the management themes and methods noted in Table 13.

Management themes

Water quality and litter management

Water quality and litter management had the largest variety of comments and these were related to regulation and compliance, engagement, onground works, monitoring, cumulative impacts, education and adequate funding.

Generally there were calls for the better management of the sources contributing to water pollution and litter. The sources mentioned were: stormwater runoff, contaminated sites, sewage overflows, agricultural runoff, and golf courses.

Suggested measures to improve water quality include:

- legislation to ban microbeads
- discourage the use of synthetic fertilisers on catchment foreshores
- integrated catchment management
- engagement with golf courses
- nutrient runoff education and enforcement programs for agriculture
- assist farmers with agricultural runoff and erosion
- sewage and stormwater discharge further out to sea rather than near popular beaches
- tertiary treated sewage discharge, disinfection and nutrient-stripping
- re-use of sewage in agriculture and/or energy generation.
- backup generators for sewerage treatment plants
- control ballast discharge from ships
- more sewage pump-out facilities for boats
- don’t allow industry where run off can damage the environment particularly toxic chemicals/oils used on boats and boat cleaning
- capture and treat industrial waste
- better control of mine tailings and outfalls
- prevent polluting businesses setting up near waterways eg petrol stations.
- water sensitive urban design initiatives such as stormwater harvesting and re-use, stormwater treatment eg rain gardens, more street trees, at-source control rather than end-of-pipe
- better stormwater quality improvement devices that lead to beaches and coastal outlets
- less coastal floodplain development to limit damaging flow velocities
- better management of dog waste eg providing more bins and bags
- ensure aquaculture doesn’t add to pollutant loads
- minimise extractive activities

- bring back Lake Illawarra Management Authority
- pollution monitors with automatic shut off for stormwater if pollutants register above warning levels.

Specific litter control measures included:

- legislation to ban non-biodegradable plastic bags
- container deposit legislation
- better recycling to keep plastics from entering waterways
- better litter collection services around waterways
- more garbage bins at picnic areas, boat ramps etc including for fishing line
- mandate the use of biodegradable fishing line
- litter collection devices on stormwater outlets
- plastic-free zones
- clean up days twice a year on land and in water, involve snorkelers and fishers
- local clean up days monthly or quarterly in all coastal areas
- engage fishing, spearfishing and scuba clubs in removal of lead from sinkers and reuse
- education on using re-useable items rather than single-use items eg coffee cups, straws etc
- wider education about stormwater and litter
- education on the effects of pollution on marine organisms particularly fishing line and plastics
- education to reduce littering from boats
- tougher penalties for littering
- maritime patrols to fine people littering from boats
- more areas where there is no fishing to help reduce litter.

Specific marine protected area comments included:

- bans on dredging, mining, trawling, and shipping within defined distances of protected areas.
- establish a marine park that allows for control of residential, agricultural and industrial runoff.

Comments included introducing much greater controls on pollution entering into waterways, better resourcing and strengthening of enforcement, and heavily policing and fining of polluters including on-the-spot fines.

Research is encouraged on the impact of marinas and recreational boating on water quality and also on the runoff from agricultural areas. It was suggested that there should be monitoring of runoff from industrial sites, agriculture, stormwater and mining sites.

Cultural Heritage Management

A variety of comments were submitted regarding Indigenous heritage and cultural use including:

- Ensure that traditional use and knowledge is taken into account in all proceedings regarding waterways.
- Work with Indigenous people to implement land management practices and protect biodiversity

- Emphasise cultural activities and traditions.
- Respect the Indigenous historical and contemporary use of the area
- Raise the awareness of the broader public of the connection of coastal Aboriginal people to sea country – a communication strategy is required and the information included in any marine estate publications.
- A review of the MEMA structure to ensure adequate Aboriginal representation in decision-making processes.
- For the Hawkesbury Shelf marine bioregion an Aboriginal advisory group should be established to advise on any management options proposed for the region.

Education on traditional use and heritage was suggested, including site-based signage and the creation of cultural works that express the significance of the bioregion and encourage respect for the area.

Another comment requested a revision of our cultural story from the growth model to include values like reciprocity, connection, cooperation, the sacred nature and importance of more than the human world.

Biodiversity Conservation

Marine Protected Areas

A large variety of responses were received regarding people's thoughts on protected areas. Sanctuary zones are used in the context of banning any type of extractive use, i.e. 'no-take zones'. Responses were:

- a marine park with sanctuary zones for the whole bioregion
- a marine park with sanctuary zones or exclusion zones
- multiple-use marine parks
- a network of marine parks and/or sanctuary zones
- a Sydney marine park with sanctuary zones
- a Sydney Harbour marine park with sanctuary zones
- sanctuary zones around identified breeding areas and shark nursery areas
- a comprehensive, adequate and representative (CAR) multiple-use marine park
- CAR sanctuary zones covering 20-30% of the bioregion and representing all habitat types
- a series of marine parks with sanctuary zones in enclosed waters and offshore,
- more no-take zones,
- large zones banning fishing.
- maintaining existing intertidal protected areas and aquatic reserves.
- sensibly placed sanctuary zones.
- small and accessible sanctuary zones.
- to have the same protection as a National Park.
- inclusion of protected intertidal feeding zones for migratory wading birds
- marine protected areas adjacent to existing land protected areas.

Other site-specific marine parks and sanctuary zones were requested – these have been included in the sections on pre-identified sites and additional sites.

Some comments advocating for marine parks did not specifically include the terms ‘sanctuary zone’ or ‘no take’. Some respondents simply wanted more marine protected areas.

Levels of protection ranged from some fishing allowed, to no-take at all or ‘fishing free zones’ to areas where no human activity can adversely affect marine life.

Other calls for marine protected areas included banning commercial fishing and/or recreational fishing and/or spearfishing and/or collecting. Some comments were:

- Ban spearfishing around headlands and people collecting from rock platforms for all of Sydney.
- Ban commercial fishing within 10 miles of the Sydney shoreline.
- Ban scuba diving in environmentally sensitive locations.
- Protect seagrass beds and conserve areas for recreation (recreational zones).

Respondents wanted better policing and enforcement of marine parks and particularly sanctuary zones. Issues that were recommended to be specifically addressed for protected areas include:

- develop comprehensive management plans.
- develop integrated catchment and ocean management plans
- develop marine park guidelines
- minimise terrestrial and marine-based threats
- implement runoff controls
- develop terrestrial development covenants
- minimise extractive activity
- ensure ecological sustainable development
- restrict adjacent foreshore development
- rigorous assessment for all onshore development and coastal activities.
- protect from development and industry activities
- report catch
- closely monitor fishing
- recreational fishing allowed with strict bag limits.
- no fishing, boating, shipping or dredging
- restrict boat mooring
- some areas should also ban boats.
- educate users of the rules and regulations.
- encourage passive use activities for sanctuary zones eg swimming, diving, snorkeling, kayaking etc
- introduce onsite compliance officers
- develop associated jobs and industry.
- other States use the terms: Green zone or Fish Life Rehabilitation zone instead of ‘no-take’
- apply NEOLI principles – no take, enforced, old, large, and isolated.

Protected areas were seen as important to attract tourism to the bioregion and particularly ecotourism.

It was noted that the establishment of protected areas should be adequately resourced.

Habitat Management and Enhancement/Rehabilitation

There were comments to improve protection and conservation measures generally, including strong environmental legislation with community appeal rights to protect biodiversity and natural coastal landscapes.

There was a call to integrate catchment and ocean management plans.

A variety of comments recommended the protection of seagrasses, mangroves, wetlands, flood plains, estuaries, natural coastal areas, and land on high points for views.

There were a range of comments to improve the protection and management of the foreshore. These included:

- Remediate/revegetate degraded coastal and estuarine environments for ecological, cultural heritage and tourism values.
- Replace invasive and exotic plants with indigenous vegetation.
- Provide vegetated riparian buffer areas between the water and foreshore development.
- Limit jetties.
- Prohibit damaging onshore and near shore activities such as canal estates.
- Instigate terrestrial development covenants.
- Plant mangroves and fine people large amounts for removal.
- Better protect remaining bushland on the foreshore, prevent clearing and encroachment.
- Restore shorelines to protect them from erosion from boat wake.

There were a number of comments to stop the clearing of vegetation generally and particularly cutting down trees that line the foreshore. Specifically there was a call to repeal recent changes to the law allowing an escalation of tree removal.

In-water recommendations included:

- Seagrasses should be protected by using environmentally friendly moorings and limiting the number of moorings.
- Encouraging habitat enhancement projects around artificial structures such as seawalls, pontoons and jetties.
- Banning recreational scuba diving in environmentally sensitive areas.
- Implementing a program to reduce invasive weeds.
- Encouraging dive schools to commit to reducing the total number of divers per group.

There was an expectation for greater regulation and independent environmental assessment of industry, mining, foreshore development, agriculture and recreational activities. There were calls to minimise destructive activities including extractive activities, non-environmentally aware farming and development, and particularly in areas of high biodiversity.

It was recommended that passive recreational activities should be encouraged in the surrounding National Parks and reserves.

It was highlighted that research on rehabilitation of the marine environments should be funded.

Specific area comments included:

- Increased government contribution to dune conservation on all Newcastle beaches.

- Installing fish ladders between the saltwater and freshwater sections of the Hacking and Woronora Rivers.
- Removing feral rusa deer from the Port Hacking estuary as they are causing the collapse of creek banks.
- A major program to restore health and marine biodiversity in Sydney Harbour.

There was a call to enhance non-extractive uses that generate jobs and income.

There was a suggestion to base management on productivity/sustainability research, principles and practices.

Threatened Species

A number of ideas were submitted to protect threatened and/or rare marine life.

Shark nets were discussed repeatedly in terms of removing them to protect marine biodiversity. Other technologies and ideas to protect swimmers were advocated including eco-barriers, sonar and education. Comments included developing new technologies to deter sharks from popular beaches.

Ideas to protected sensitive species and sensitive areas, such as bird nesting sites included:

- Limiting coastal development
- Pet free areas
- Ban long-line fishing and other fishing practices that ensnare non-target species such as turtles, rays, dolphins and whales.
- Strong legislation
- Scuba diving at grey nurse shark sites should only be undertaken by experienced divers (min 1000 dives) and at night.
- Grey nurse shark aggregation sites should have the same protection as in Queensland and Commonwealth waters.

Fisheries and Aquaculture Management

There were a variety of comments on fisheries management particularly for improved regulation and control of commercial and recreational fishing and allowing for stocks to recover. There was a call for stronger environmental and nature conservation obligations in management and to only allow fishing, if scientific studies show that it will not impact on ecosystems. A suggestion was made to collaborate with fishers to set guidelines and best practice to manage fish stocks sustainably.

There was a variety of comments to reduce or stop different types of fishing activities.

- Commercial fishing should be reduced or stopped in the following areas or by the following methods:
    - within 10 miles of the Sydney shoreline
    - in estuaries
    - directly off beaches as it attracts sharks
    - reduce quotas for inshore reefs
    - off the Royal National Park
    - rock lobster and abalone off Sydney
    - long-line fishing
    - supertrawlers
    - long-liners, gill nets in the Hawkesbury estuary.
    - trawlers, particularly from the Hawkesbury River.

- Reduce or stop the following:
    - recreational fishing from certain areas
    - charter fishing
    - spearfishing including spearfishing around headlands
    - net fishing
    - collecting from rock platforms
    - cultural fishing
    - fishing practices that endanger breeding stocks
    - shark fishing
    - shark netting on beaches throughout this area
    - fishing around known shark nurseries.

There were a variety of responses about the litter and marine debris caused by recreational fishers to the point where there were calls to ban recreational fishing completely or at least in certain areas solely due to the amount of fishing debris. Responses included the need for education of recreational fishers to prevent this type of pollution, incorporating information on how it affects marine life. Further ideas were mandating biodegradable fishing line, and implementing community cleanups with fishers including removing and recycling lead sinkers.

Comments around the management of recreational fisheries included:

- More education on fishing rules, particularly bag and size limits, including for culturally and linguistically diverse groups.
- More artificial reefs and fish aggregating devices (FADs)
- Reporting of recreational catch
- A marine sanctuary that allows recreational fishing with strict bag limits
- Buy back of commercial fishing licences
- Introduce maximum, instead of minimum size limits
- Reduce bag limits and/or increase size limits, with the ability to fish in 100% of the area
- Reduce bag limits on some resident species eg red morwong
- Areas nominated for recreational fishing haven
- Recreational catch prioritised over commercial take, possibly through quota buy-out.
- Recreational catch should not be restricted for conservation reasons unless they are clear and demonstrable.
- Allow recreational take of sea urchins, molluscs, abalone and lobster below the low tide mark (i.e. capture by hand, snorkeling) in reserves.
- Fishing community to help with research via an app.

Suggested regulatory controls included:

- integration of the fishing and boating licence
- better enforcement of illegal fishing and collecting
- better monitoring of fishers and penalties where necessary
- fishing licence test on protected species and bag limits
- adequate funding for enforcement
- quick response enforcement staff
- coordinated approach between Fisheries, Maritime, Rescue and Police to check licences, bag limits and safety gear.
- high tech solution for catching illegal fishers

- statistics on who has been checked and fines issued
- compliance at boat ramps, including boat ramp volunteers helping with education.

One specific comment was that the fishery in the Hawkesbury bioregion stands out in Australia as having more public stakeholders with a recreational interest than any other. Protect it first then ensure its sustainable use.

Specific to aquaculture:

- Ensure aquaculture doesn't add to pollutant loads.

Climate Change

A variety of comments were submitted on climate change ranging from a general call for the government to act on climate change to some general and specific adaptation measures including:

- adjust coastal living to prepare for climate change
- stronger emissions targets
- ban imports from countries who are increasing CO_2 emissions
- rollout of clean, renewable energy across the state including removal of legislative obstacles. Transition to 100% renewable energy by 2050
- planning laws that allow for climate change and associated extreme weather events
- review fossil fuel use and coal mine approval process to consider effect on climate change
- implement carbon-offset tourism
- abandon all CSG exploration and mining
- fund research on how climate change will affect the rehabilitation of marine environments.

Tourism

Promoting tourism was a common response as the tourist dollar is viewed as good for the economy and environmental protection was considered important to encourage tourism. Particularly ecotourism or 'low-impact' tourism in association with a marine park was emphasised to encourage sustainable use of the area.

There was interest in making a Sydney region marine park a world-class ecotourism destination with a call to promote dive tourism for sanctuary zones.

Along the same thinking of ecotourism, suggestions were made to have carbon-offset tourism and to provide nature-based education for tourists including ecological awareness.

While some respondents wanted to encourage tourism they also wanted to limit tourist operators.

Shipping and boating

Respondents commented on the number of tankers travelling the coast and that heavy shipping activities should be kept at a safe distance and out of any proposed Sydney Marine Park sanctuary zone. There was also a request to reduce shipping in Sydney Harbour and move the Navy out of the harbour. There was a call to control ballast discharge.

A suggestion was made to prepare and test emergency management plans for predictable catastrophes such as a shipping disaster and major oil spill during an East Coast Low with simultaneous record-breaking floods.

Concerns were raised about the amount of boating, its impacts on water quality and noise levels. Ideas to mitigate these concerns included:

- greater monitoring of boating users and penalties issued, including fines for littering
- integrate the boating and fishing licence so that both could be checked at the same time
- provide more off-water storage
- remove moorings where private boats are unused for the majority of the year
- limit boat moorings in a Sydney marine park and restrict anchoring in sanctuary zones such as Cabbage Tree Bay
- implement zones without marine craft
- ban jet skis in Botany Bay
- more boating infrastructure to improve boating access
- promote passive boating such as kayaking
- regulate noise levels.

There were comments about limiting the number of marinas, jetties and moorings. Research was requested on the impact of marinas and recreational boating on water quality.

Generally there needs to be stronger environmental/nature conservation obligations in ongoing management regimes for all commerce and recreational activities.

There were recommendations to:

- restore shorelines eroded by boat wake
- police environmental damage by boats
- provide education via seminars at boat clubs etc on the damage to seagrasses from bad mooring practices and how to prevent on-water pollution.

Management methods

Regulation and compliance

Increased compliance was a common theme with the following ideas:

- Fisheries Officers, Police and Maritime all checking for fishing licences, bag and size limits and safety gear.
- Rangers employed to patrol, investigate and fine breaches of guidelines.
- Integrate the fishing and boating licence.
- Obtaining a fishing licence requires knowledge of bag and size limits.
- Close monitoring/better policing of usage, particularly marine reserves, and consistency in fines.
- Better statistics on who has been checked and what fines have been issued.
- Increased presence at boat ramps and popular fishing spots. Officers could be stationed at boat ramps and provide information and check safety gear in the morning and then check bag limits in the afternoon.
- Stronger penalties generally and particularly for sanctuary zones.
- Remote monitoring of sites/high tech solution such as some type of app.
- Patrolling of rock shelves.
- Hotlines for reporting incidences.
- Availability of fast enforcement staff.

- More policing of jetski activity.
- On-site patrol officers for marine parks.

It was noted that well-marked sanctuary zones are required.

Suggestions were made that better resourcing of enforcement and education capacity of Fisheries and Conservation agencies was required.

With regard to water quality it was noted that:

- effective oversight and powers of the EPA are required
- on-the-spot fines for water polluters and tighter controls on permits to pollute
- maritime patrols of the harbor and ocean for littering from boats and issuing fines.

Suggestions were made regarding environmental assessment and environmental damage. There should be greater regulation and independent environmental assessment of industrial, mining, foreshore development, agricultural and recreational activities. There should also be effective policing of marine environmental damage caused by boats and private building encroachments.

A comment was made to restrict developers on local councils.

There should be more citizen and community volunteers used as rangers.

Planning

There were a variety of suggestions regarding the need for the better regulation and control of residential and commercial development generally, including the need for ecologically sustainable development and placing a value on the ecological services supplied by the environmental assets. Specific areas for better control or excluding development entirely were:

- foreshores
- coastal areas
- sensitive areas such as mangroves, areas where fish and birds breed
- high risk areas (stability, flooding, erosion)
- close to marine reserves or sanctuary zones
- floodplains, wetlands, estuaries
- land on high points to preserve aesthetics
- near creeks, tributaries and catchments
- exclusion zones of 200 m above high tide so that the foreshore is available to all
- passive use open space areas.

More rigorous development control plans are needed from local councils for foreshore areas. Alternatively a suggestion was made to remove coastal planning from local government due to possible influences by developers etc or remove developers from local councils. There should be unified planning agencies, a simplified process and better collaboration of government agencies, industries and the community.

Comments included the need for planning to incorporate catchment management and consider cumulative impacts and not just consider one industry or development at a time.

Proposals for managing coastal/foreshore development included:

- Community approved with clear guidelines for the water-land interface.
- Consideration of coastal hazards and planning for climate change, particularly considering sea level rise, extreme weather events, and storm surges.

- Maintain public access and declare ‘Public Zone Rights’ for privatised and public areas to allow for walking trails and consideration of ‘traditional through ways’.
- Implement terrestrial development covenants to protect biodiversity.
- Limit high density development on the coast.
- Better public access.
- Cease private control of waterfront land and only allow new structures for public use.
- Government purchase of beachfront properties for sale and creation of national waterfront parks.
- Good public transport to access coastal areas.
- Prohibit all damaging onshore or near-shore activities eg canal estates
- Limit jetties and moorings.
- Low environmental impact development (smart architecture, renewable energy, slow food).

Some responses called for on or offshore mining to be banned in this region, particularly coal seam gas mining. This included not allowing exploration for mining and cancelling the existing offshore petroleum exploration licence across the area.

Respondents want industrial activity closely controlled, restricted to certain areas, restricted to non-damaging industries, or completely banned.

Engagement

Includes education, communication and volunteer/stewardship opportunities

There was a variety of engagement opportunities discussed. Education programs were a common theme and ideas put forward include:

- the impacts and prevention of pollution, marine debris and nutrient runoff
- why we need clean stormwater and how the pollution gets carried to our waterways
- benefits of reusable items versus single-use
- benefits of foreshores
- recreational fishing debris
- protected species, bag and size limits and the taking and collecting of species
- the impacts of recreational activities
- good mooring practices
- long-term coastal changes
- what people can do to reduce their impact on the environment
- Sea Country
- Benefits of marine parks and the scientific evidence for marine parks.

Promote the educational, cultural, social, ecological and historical values and benefits of the area, particularly to increase people’s appreciation, tourism and research.

Recommended channels for education included schools, universities, business, recreational industries, councils, National Parks and Wildlife Service and the community.

Other methods of engagement that were proposed:

- improve signage, multilingual signage
- provide councils with the GIS layers of spatial closures
- community information and consultation sessions
- support for environment centres
- greater emphasis on citizen science to gather data to improve the marine sanctuary management and conservation processes

- develop an education/communications strategy to support community engagement and understanding
- community cleanup days and marine debris surveys
- newsletters
- seminars
- factsheets
- community programs to breed certain species and re-introduce them to the wild
- educate and influence government
- employ additional staff to be interpretative officers and caretakers
- increase enforcement and education capacity of Fisheries and Conservation agencies.

Some specific suggestions included:

- A concerted effort is required to raise the awareness of the broader public to the special circumstances of coastal Aboriginal people and their connection to sea country. This should be recognised within any communication strategy and any publications produced for the marine estate.
- Have volunteers assist at boat ramps to answer questions on boating in general, provide advice on things like launching and retrieving boats, waterway rules, fishing limits, etc.
- Seek links with contemporary artists to work with researchers, educators and Indigenous knowledge holders to create cultural works that express the significance of the Hawkesbury Shelf Marine Bioregion in enhancing the aesthetic social and ecological health and well-being of those who live and visit.

Research

There were a variety of comments on research including suggestions to collect baseline information before making decisions and ongoing/long-term monitoring to assess changes in condition. The responses identified the need for more research to be conducted.

Suggested research topics were:

- impacts of marinas and recreational boating on water quality
- continuously monitor water quality/pollution
- monitor recreational fishers.
- monitor usage and activities in the region
- develop new technologies to deter sharks from popular beaches
- undertake shark tagging for Sydney
- rehabilitation of marine environments and alternatives to certain practices/activities, particularly with consideration to climate change
- human impacts
- map all sensitive habitat areas
- determine the value of the ecological services of the environmental assets
- research programs for marine parks
- whale migration paths.

Citizen science was also suggested including:

- Engaging the fishing community via a website or app to report information.

- Gathering data to improve marine sanctuary management.

Adequate funding was highlighted as well as actually promoting scientific research outcomes. An innovative idea to promote research outcomes was to link contemporary artists to work with researchers, educators and Indigenous knowledge holders to create cultural works that express the importance of the bioregion.

There was a comment that there should be compulsory employment of marine scientists and ecologists on all local councils.

There was a suggestion to base management on productivity/sustainability research, principles and practices.

Partnerships/Whole of Government

There was interest to encourage better integration and communication amongst the various government and private stakeholders. Specifically there were requests for better integration with all coastal councils, Department of Planning and big industry and shipping, to mitigate the impact of coastal and foreshore development and commercial activities on the marine and coastal environment.

There were a few suggestions about increasing engagement with the Aboriginal community including:

- A review of the MEMA structure for adequate Aboriginal representation in decision-making processes is required to identify and address any gaps.
- At the Hawkesbury Shelf marine bioregion level an Aboriginal advisory group should be established to advise on any management regimes proposed for the region.
- Working with Indigenous people to implement land management practice, reduce development and protect biodiversity.

There was a specific request to increase the state government contribution to dune conservation at all Newcastle beaches.

Funding

Comments about funding were generally about committing adequate funds and resources to whatever management options are to be selected. Particularly adequate funding was noted for the management of marine protected areas including the prevention of illegal fishing, and more generally for enforcement and education.

A specific request for increased government funds was noted for dune conservation at all Newcastle beaches.

Pre-identified sites

Through the web portal, the community was asked to comment on the benefits, threats and management opportunities at these sites. A detailed table which lists the benefits, threats and management opportunities for each individual site is located in Appendix 3.

Pre-identified sites – benefits

A variety of combinations of benefits were identified for each site. These are listed for each site in Appendix 3. Some of the ‘other’ benefits associated with these sites were:

- spearfishing, baitfishing
- whale watching, observing wildlife
- migratory birds and bird watching
- oceanic watching and sightseeing

- hiking, kayaking, picnicking
- discovery activities, school excursions, educational walks
- biodiversity, threatened species, variety of underwater habitats
- different people all engaging and interacting with area
- breeding and feeding sites
- national parks
- local economies
- off leash dog areas, improved access.

Pre-identified sites – threats

A variety of combinations of threats were identified for each site. These are listed for each site in Appendix 3. Some of the 'other' threats associated with these sites were:

- rock fishing safety, spearfishing
- moorings, anchoring, wake issues
- vessel cleaning
- anti-social behavior, user conflict, volume of users
- overfishing
- illegal collecting, lack of compliance
- inadequate/no signage, lack of knowledge by users
- dogs disturbing wildlife
- weeds
- 4WDs.

Pre-identified sites – opportunities

The opportunities for each site were categorised into management themes and/or methods.

The management themes for the pre-identified sites included:

- Biodiversity conservation
    - Marine protected areas
    - Habitat management and enhancement/rehabilitation
    - Threatened species
- Fisheries and aquaculture management
- Tourism
- Shipping and boating
- Water quality and litter management
- Climate change
- Cultural heritage management

The suggested methods for management in the pre-identified sites included:

- Engagement
    - Education
    - Volunteer/Stewardship opportunities
    - Communications
- Planning
- Funding
- Research

- Regulation and compliance.

Background information about the 15 pre-identified sites has been compiled separately – *Review of 15 pre-identified sites* (MEMA, 2015c).

Additional sites

Along with the pre-identified sites, the community was asked to nominate additional sites for consideration during the assessment.

All of the entries for additional sites were mapped and grouped based on proximity and ecosystem features. Through this process 44 additional sites were proposed for some level of protection and 1 for water quality improvement (see Figure 3 on the following page).

The benefits, threats and management opportunities were summarised for each of the 44 proposed additional sites for protection and the 1 site for water quality improvement. A detailed table about each individual site is located in Appendix 4.

The 44 sites represent a range of requests for protection including:

- sanctuary zone or no-take zone,
- marine park but didn't specify sanctuary zone,
- some types of fishing banned eg commercial fishing or spearfishing,
- the word 'protection' was used in the response but didn't specify the type of protection.

Figure 3. Map of the 44 additional sites proposed for protection based on the responses from submissions, local council meetings and web portal entries.

Additional sites – benefits

A variety of combinations of benefits were identified for each site. These are listed for each site in Appendix 4. Some of the 'other' benefits associated with these sites were:

- spearfishing
- high biodiversity
- accessibility
- important habitats, such as seagrasses, mangroves, saltmarsh, including those on the Register of National Estate
- endangered, threatened or vulnerable species
- canoeing
- bird watching
- walking
- volunteering
- shipwrecks.

Additional sites – threats

A variety of combinations of threats were identified for each site. These are listed for each site in Appendix 4. Some of the 'other' threats associated with these sites were:

- lack of knowledge about the area and rules
- dogs on beaches and rock platforms
- user conflict
- collecting, spearfishing
- introduced and invasive species
- overfishing
- moorings and anchor damage
- increasing population
- poor regulation.

Additional sites – opportunities

The opportunities for each additional site were categorised into management themes and/or methods.

The management themes for the additional sites included:

- Biodiversity conservation
    - Marine protected areas
    - Habitat management and enhancement/rehabilitation
    - Threatened species
- Fisheries and aquaculture management
- Water quality and litter management
- Shipping and boating
- Tourism.

The suggested methods for management in the additional sites included:

- Engagement
    - Education
    - Communications

- Research
- Regulation and compliance
- Partnerships/Whole of Government
- Planning
- Funding.

Further analysis of the additional sites will be undertaken as part further work required on the suggested spatial management initiative.

Web portal evaluation

Of the 1551 entries to the web portal, 965 (62%) entries answered the evaluation question: *How do you like using this interactive map?* Please note that the findings are based on the number of entries and not number of respondents as one person could complete multiple entries.

Of the 965 entries (see Figure 4), the majority indicated that people either 'liked it' (382) or were 'neutral' (425) about the interactive map. Each end of the spectrum were almost equal with 48 entries indicating they 'strongly liked' and 40 entries indicating they 'strongly disliked' the interactive map. There were 70 entries that 'disliked' using the interactive map.

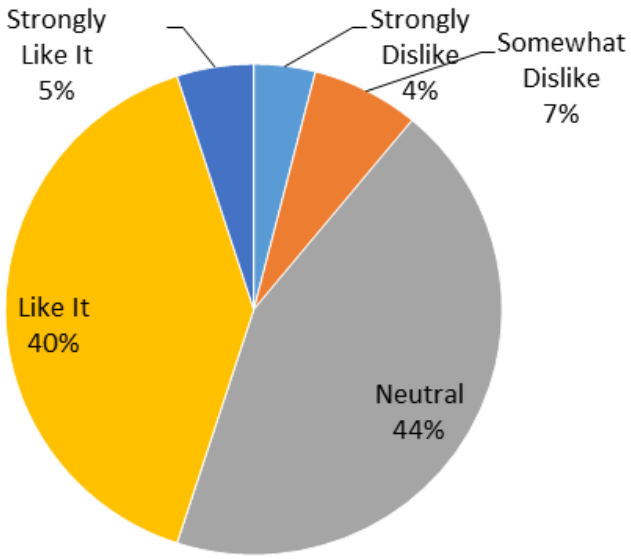


Figure 4 How people liked using the interactive map in the web portal. Percentages based on 965 entries that answered the question.

The mapping facility was invaluable from an assessment point of view, as it allowed staff to pinpoint the sites that respondents were referring to rather than people nominating names for sites that could be incorrect, misspelt or cause confusion by different sites having the same name.

For future consideration there should be a simpler survey design and interactive layout to allow a better response time for the software but also to keep it simple for the end-user.

6.3.4 Conclusions

A large volume of information was collected through the web portal providing a variety of ideas and perspectives from those who accessed this innovative information-collection tool.

The lists of benefits and threats across the bioregion were similar to those for the broader marine estate as identified through the Marine Estate Community Survey. The majority of respondents to the web portal used the provided drop down lists and didn't actually write their own comments in the 'other' box. However, some respondents wanted to be more specific or make their response more personal to them and the 'other' box in the benefits list and the threats list allowed them to satisfy this need to say something specific.

Some respondents noted that 'biodiversity' was not offered in the drop down list of benefits so they added biodiversity and/or specific types of biodiversity or habitats that they received benefits from eg mangroves, seagrass, kelp beds. 'Intrinsic values' was provided in the drop down list instead of biodiversity but some respondents either didn't understand the meaning or didn't relate to this term.

Priority threats that related to the strategic management of the bioregion were identified in the workshops, but not in the Community Survey. Some of these threats also emerged from the web portal: lack of funding/resources; lack of knowledge/education; lack of Aboriginal input. In addition, the web portal responses noted lack of enforcement and too much government red tape.

Underwater noise pollution as a threat to biodiversity was a threat that hasn't emerged previously. Also interesting to note was the perception that campaigns by certain groups or presentation of biased or incorrect information in the media are threats to the benefits that some people derive from the bioregion.

The opportunities proposed were largely similar to ideas collected via the workshops with some innovative suggestions such as:

- mandate biodegradable fishing line
- introduce development covenants to protect marine biodiversity
- a fishing licence test for bag and size limits
- integrate the boating and fishing licence so it is easier to check
- volunteers at boat ramps providing information to boaters and fishers.
- exclusion zones of 200 m above high tide so that the foreshore is available to all
- maintain public access and declare 'Public Zone Rights' for privatised and public areas to allow for walking trails and consideration of 'traditional through ways'.
- inclusion of protected intertidal feeding zones for migratory wading birds
- legislation to ban microbeads
- legislation to ban non-biodegradable plastic bags
- implement carbon-offset tourism

The management themes with the most variety of comments on opportunities proposed for the bioregion were:

- Water quality and litter management
- Biodiversity conservation – marine protected areas
- Biodiversity conservation – habitat management and enhancement/rehabilitation
- Fisheries management

The management methods with the most variety of comments were:

- Engagement – which includes education, communication and volunteering/stewardship opportunities
- Regulation and compliance
- Planning

The benefit, threat and opportunity information for site-based responses was more specific and will be useful where site-based threats are significant and site-based management solutions are proposed.

7 Aboriginal cultural values

7.1 Statewide analysis

The Authority has acknowledged the need to have a deeper understanding of how Aboriginal people's connections can best be addressed in future planning and management of the NSW marine estate. In 2015, the NSW Department of Primary Industries commissioned a literature review to identify the values and benefits of the NSW marine estate to Aboriginal people and to identify existing and potential threats to those benefits. The review was conducted by Dr Sue Feary, a Conservation and Heritage Planning and Management consultant. The key project objectives were to:

- Collate and aggregate background information on Aboriginal values of the marine estate at a statewide level and on current uses of the marine estate by Aboriginal people.
- Provide descriptions of Aboriginal cultural heritage.
- Provide descriptions of contemporary cultural heritage values and benefits.
- Identify major gaps in knowledge concerning Aboriginal values/benefits and uses within the NSW marine estate.
- Develop a comprehensive list of threats to Aboriginal cultural heritage values and uses.
- Prepare a draft report for review by the Authority and prepare a final report addressing feedback on the draft report.

Dr Feary's final report was completed in September 2015. It reviewed heritage databases and the published literature to provide a comprehensive statewide synthesis. The report notes that: "the benefits Aboriginal people derive from the marine estate are multi-layered and nuanced. In the first instance, they cannot easily be divided into the categories of social, economic and environmental because Aboriginal society today, as in the past, does not make these distinctions, having a more holistic and integrated worldview instead". Instead Feary (2015) proposes five main categories of benefits of the NSW marine estate to Aboriginal people – environmental, heritage/cultural, social, economic and aspirational. Further details about these are contained in Feary (2015) which forms one of the companion documents to this report.

A consistent theme identified by Feary (2015) is that Aboriginal people consider that "a healthy and functioning environment with sufficient and healthy resources is critical for human wellbeing, including spiritual wellbeing – nature and culture are inseparable and healthy Country means healthy people." This fundamental value, it is argued, underpins the four other categories of benefits discussed in that report.

Feary (2015) documents many thousands of archaeological sites on lands adjacent to the NSW marine estate and on offshore islands. These are testament to traditional Aboriginal heritage and cultural use. There are 6565 sites listed for the Hawkesbury bioregion and these have been mapped to provide a picture of historical use (Figure 5). There are a large number of documented sites associated with the major estuaries and Feary (2015) notes

that this is a reflection of fishing practices and cultural traditions, many of which are continued today in the same location and often with similar technology.

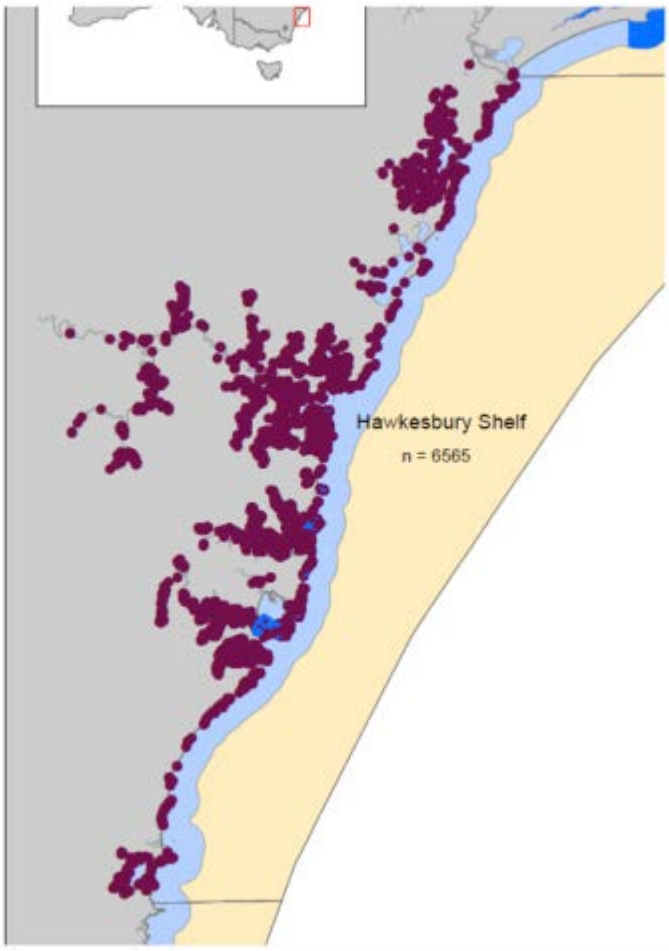


Figure 5 Distribution of documented Aboriginal archaeological sites in the Hawkesbury bioregion. Source: adapted from Feary 2015.

7.2 Hawkesbury bioregion analysis

The fundamental value identified by Feary (2015) is likely to also be a cornerstone of the way Aboriginal people feel about the marine estate within the Hawkesbury bioregion. To more fully understand both the historical and contemporary benefits that the marine estate provides to Aboriginal people in the bioregion and the threats to those benefits, an additional bioregion focused information collection exercise was commissioned by the Office of Environment and Heritage. Rather than using databases and published material as the basis for this additional assessment, the second Aboriginal project focuses on face-to-face meetings with key Aboriginal stakeholder groups (e.g. Land Councils and Native Title proponents) as well as traditional owners. This approach aims to complement the Feary (2015) literature review and provide a sound basis for ongoing engagement with Aboriginal people in the Hawkesbury bioregion about ways to better manage the region's marine environmental assets.

This project is being undertaken by the consulting company Cox Inall Ridgeway and involves running two series of Aboriginal workshops in the Hawkesbury bioregion. An initial set of three workshops was held in July 2015, and the information collated from those is summarised in a preliminary report (Appendix 5). A number of key issues were raised

through the workshops including: balancing traditional and contemporary resource use, the use and protection of culturally sensitive information, restrictions on traditional cultural use, balancing of indigenous and non-indigenous resource use and pollution and other threats to the environment. A more comprehensive report will be prepared following a second series of workshops to be held in the first half of 2016.

8 References

Feary, S., 2015. Sea countries of New South Wales: a benefits and threats analysis of Aboriginal people's connections with the marine estate. Final report to the NSW Marine Estate Management Authority, Vincentia.

Sweeney Research 2014. Marine Estate Community Survey Final Report. Final report to the NSW Marine Estate Management Authority. www.marine.nsw.gov.au/__data/assets/pdf_file/0006/531519/marine-estate-community-survey-report-minus-appendices.pdf

Appendices

Appendix A:

NSW Coastal Councils survey – responses from councils within the Hawkesbury Shelf marine bioregion

Appendix B:

Web portal survey questions

Appendix C:

Pre-identified sites – benefits, threats and management opportunities

Appendix D:

Additional sites – benefits, threats and management opportunities

Appendix E:

Cox Inall Ridgeway 2015 Hawkesbury Shelf Marine Bioregion Assessment: Step 1 Outcomes of Aboriginal engagement

Appendix A: NSW Coastal Councils survey – responses from councils within the Hawkesbury Shelf marine bioregion

Table 1. Hawkesbury bioregion councils survey responses

Council/Address/Phone/Email/Contact	Current Plans and Programs relevant to the marine estate	Surveys and monitoring relevant to the marine estate	Five main challenges facing the marine estate in the LGA
City of Botany Bay			
	The Botany Bay LEP 2013 (BBLEP 2013) can be found at: http://www.botanybay.nsw.gov.au/en/component/content/article/15-council-services/city-planning/350-botany-bay-local-environmental-plan-2013 The LEP includes provisions on stormwater management, riparian land and watercourses and wetlands. The SEPP can be found at http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+228+2013+cd+0+N Council's Botany Bay Development Control Plan 2013 can be found at: http://www.botanybay.nsw.gov.au/en/component/content/article/15-council-services/city-planning/477-botany-bay-development-control-plan-2013 The DCP does not really address marine estate – only includes provisions for stormwater management and wetlands within the Botany Bay LGA zoned under the BBLEP 2013 The foreshore of Botany Bay within our LGA is zoned under State Environmental Planning Policy (Three Ports) 2013. You should check with Ports NSW and Sydney Ports to find out about their strategies/policies and plans relating to marine management Also contact Sydney Coastal Council's Group which is a voluntary Regional Organisation of Councils (ROC) representing 15 Sydney coastal councils (www.sydneycoastalcouncils.com.au	**Research:** please refer to attached document – State of the Environment Report 2012 which provides information on what Council is doing in terms of the environment. **Monitoring – Beachwatch –** Water quality monitoring along Foreshore Beach is carried out to ensure the waters are safe for swimming. During heavy rain events the waters are often unsuitable for swimming for periods due to sewer overflows. Information and monitoring results can be found at **http://www.environment.nsw.gov.au/beach/** **Botany Bay & Catchment Water Quality Improvement Program** refer to the following link http://www.sydney.cma.nsw.gov.au/bbcci/	Development - In Botany Bay you have the seaport and the airport, both State and Federally significant. Also development to meet the State's housing and employment targets Recreational uses along the foreshore
City of Canada Bay			
	Parramatta River Estuary Coastal Zone Management Plan (Cardno for the Parramatta River Catchment Group.) Parramatta River Estuary Process Study (AECOM for the Parramatta River Estuary Committee) Canada Bay Mangrove Management Plan Lower Parramatta River Stormwater Management Plan Homebush Bay Catchment Stormwater Management Plan	Bayview Park Beach sand movement	• Sea Level Rise • Maintenance of infrastructure in the face of sea level rise • Litter pollution and sedimentation • Over regulation, multiple layers of regulation, overly complex regulation • Cost transfer
City of Newcastle			
	Coast and Estuary documents http://www.newcastle.nsw.gov.au/environment/coast_and_estuary		One of the main challenges is the division of responsibility between agencies. For example we have a regular build up of litter in Throsby Creek (estuary), however organising a clean up is a challenge because of the number of agencies involved (Council, Hunter Water Corporation, RMS, Crown Lands). Council would like to know if there are any activities that we are not currently undertaking, that we should be, to improve the marine estate?

City of Sydney			
	The primary planning controls are Sydney LEP 2012 and Sydney DCP 2012. A few other environmental planning instruments apply along the foreshores. It's best described in the planning controls map below. Map showing the application of plans: http://www.cityofsydney.nsw.gov.au/development/planning-controls/planning-controls-map Local environmental plans: http://www.cityofsydney.nsw.gov.au/development/planning-controls/local-environmental-plans Development control plans: http://www.cityofsydney.nsw.gov.au/development/planning-controls/development-control-plans Sydney DCP 2012 includes water sensitive urban design criteria including stormwater quality reductions in pollutants and nutrients for new developments The Sydney Harbour Water Quality Improvement Plan project is being led by the Greater Sydney Local Land Services. It involves partnership support from the 28 local councils including City Of Sydney, whose catchments drain to Sydney Harbour The Decentralised Water Master Plan includes a target to reduce pollutants by 50% and nutrients by 15% entering our waterways (including Sydney Harbour) through stormwater run-off. http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0005/122873/Final-Decentralised-Water-Master-Plan.pdf Glebe Foreshore capital upgrade works: http://www.cityofsydney.nsw.gov.au/vision/better-infrastructure/parks-and-playgrounds/glebe-foreshore The Urban Ecology Strategic Action Plan identifies the Glebe Foreshore Walk as a priority site for implementing works. Works include establishing a continuous habitat corridor, including the potential to extend the corridor into Pyrmont with further investigation. http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0011/198821/2014-109885-Plan-Urban-Ecology-Strategic-Action-Plan_FINAL-_adopted.pdf We have works lists in the three development contributions plans that apply to the City. The application of the plans and the plans are on this page (after the affordable housing information): http://www.cityofsydney.nsw.gov.au/development/planning-controls/affordable-housing-and-development-contributions	• Sydney Harbour Water Quality Improvement Plan • Sydney Coastal Councils Group Salty Communities Grant • University of Sydney's project: Engineering seawalls using flowerpots to increase biodiversity. The project involves creating artificial rock pools along the seawalls and monitoring over 12 months. The research work will be completed by the end of this year. • Microbat research – Not currently involved, preliminary discussions only. Researchers are approaching Councils in the harbour and various catchment management authorities to discuss monitoring the harbour for microbat activity due to a recent and unusual find in North Sydney. Presence/absence surveys will assist Councils in understanding how to manage areas that provide potential habitat for threatened/vulnerable species.	

Georges River Combined Councils Committee (GRCCC)			
	The Georges River Coastal Zone Management Plan for the Georges River estuary. This plan dated July 2013 sets the vision and direction for estuary management and planning over the next 5-10 years Background to the plan: http://www.georgesriver.org.au/Estuary-Management-Plan.html **GRCCC Community River Health Monitoring Program** The GRCCC Program is the first to assess the health of the Georges River on a regional scale, and will identify priority areas for future conservation works. The monitoring is focused on freshwater and estuarine environments in the Georges River catchment from the headwaters near Appin down to Botany Bay. Throughout the catchment WATER QUALITY, RIPARIAN VEGETATION and MACROINVERTEBRATES are monitored to provide us with a 'snap-shot' of catchment health. Monitoring water quality allows us to understand how chemical pollutants, agricultural, industrial and urban runoff affects the structure and function of freshwater and estuarine ecosystems. Many organisms are sensitive to changes in water quality and populations of these organisms will become stressed if changes to water quality occur, often leading to reduced numbers or local extinctions. ***Report Card 2012-13*** http://www.georgesriver.org.au/IgnitionSuite/uploads/docs/georges%20river%202013%20report%20card.pdf **GRCCC Riverkeeper Program** The Riverkeeper Program enables catchment-scale cleanup and bush regeneration. The significant clean up and restoration results for the year e.g. 70 tonnes of rubbish removed are achieved through the GRCCCs partnership with Corrective Services NSW by using work teams comprised of individuals on Intensive Correction Orders who are required to carry out community service. The Riverkeeper Program also works regularly with teams from organisations such as Scouts NSW, State Emergency Services, school groups and other community volunteer groups to perform bush regeneration and rubbish collection. ***Report Card 2012-13*** http://www.georgesriver.org.au/IgnitionSuite/uploads/docs/RK%20REPORT%20CARD%202012.13.lowres[1].pdf	The GRCCC Community River Health Monitoring Program assesses the health of the Georges River on a regional scale, focused on freshwater and estuarine environments in the Georges River catchment from the headwaters near Appin down to Botany Bay. Throughout the catchment WATER QUALITY, RIPARIAN VEGETATION and MACROINVERTEBRATES are monitored to provide us with an assessment of catchment ecological condition. • The data collected contributes to research on catchment imperviousness. • The data was also requested by the Moorebank Intermodal Terminal and also for a study funded by the GS LLS with the support of data from both Fairfield City Council and Canterbury City Council for a Hedonic study that is research being undertaken by Charles Sturt University on the economic values placed on the catchment.	Impacts of Climate Change: sea level rise and impacts on estuarine wetlands e.g salt marsh and their ability to retreat changes to temperature and rainfall & impacts on biodiversity and habitat Community attitudes towards foreshore and shoreline management Land Use and urban development pressure and associated stormwater and nutrient and sediment loads that negatively impact water quality Rubbish sources and accumulation including micro rubbish that affects both estuarine and marine environments and impacts on birds and other marine species River bank erosion and sedimentation Urban runoff, polluting industries (industrial effluent) that impact on estuary water quality and wet weather and dry weather sewage overflows
Gosford City Council			
	Gosford Local Environment Plan 2014 Gosford Development Control Plan (DCP) 2013 Chapter 3.10 - Environmental Controls for Development in the E4 Zone Chapter 6.2 Coastal Frontage Chapter 6.3 Erosion & Sedimentation Control Chapter 6.5 Onsite Effluent Disposal Chapter 6.6 Preservation of Trees or Vegetation Chapter 6.7 Water Cycle Management Chapter 7.2 Waste Management Coastal Zone Management Plan for Brisbane Water Estuary 2012 Brisbane Water Estuary Management Study 2010 Brisbane Water Estuary Processes Study 2009 Lower Hawkesbury Estuary Management Plan 2009 http://www.gosford.nsw.gov.au/environment-and-waste/environmental-management-and-planning/estuaries/estuary-management-planning Pearl Beach Lagoon Coastal Zone Management Plan 2014 (Draft to soon be publically exhibited) Coastal Zone Management Plan for Gosford Lagoons 2014 (Draft to soon be publically exhibited) Coastal Lagoons Management Study 2014 (Draft to soon be endorsed by Council) Coastal Lagoons Processes Study 2010 Coastal Lagoons Management Plan 1995 currently being updated) (http://www.gosford.nsw.gov.au/environment-and-waste/environmental-management-and-planning/coastal-lagoons/coastal-lagoons-management-planning Council is also developing a Coastal Zone Management Plan for Gosford's Beaches (Broken Bay and Open Coast). Council is currently reviewing a preliminary draft Coastal Management Study	Council undertakes a cast array of research and monitoring much of which is documented in the Estuary and Lagoon Processes Studies identified above. In addition, Council ran the EcoResearch Grant Program between 2002 and 2013. The program did not run in 2014. EACH YEAR Council offered grant funding to tertiary students or suitably qualified individual/s and companies towards environmental research projects relevant to the Gosford City LGA. A range of project ideas were advertised through merit-based assessment from which Council could benefit from research, and could take the form of final year projects, honours, Masters or PhD. Proposals addressing these areas are preferred, but any proposal in the area of ecological sustainability were be considered. Many related to the marine ecosystems of Gosford. More than 30 individual projects were funded through the program	1. Securing funding to undertake research and planning as well as to support the implementation projects within the NSW Marine Estate; 2. Improve societies understanding of pressures on the NSW Marine Estate (i.e. catchment inputs, utilisation etc); 3. Understanding and responding to the impacts of climate change on the health and amenity of the NSW Marine Estate (and establishing a planning framework that is considerate of these impacts); 4. Integration and coordination of research and management across government (currently too much duplication and/or isolated activity which is inefficient use of limited (time and financial resources); 5. Creation of representative systems of habitat protection through Marine Reserves to ensure all key habitat types are adequately represented.

	for all beaches between Patonga and Forresters Councils expenditure relating to the marine estate is allocated to projects stemming from the strategic planning processes identified above.		
Hawkesbury City Council			
	Coastal Zone Management Plan(Draft) Upgrades to public boat ramps Construction of new jetty at Windsor boat ramp	Proposed research project into erosion processes in Upper Hawkesbury within next 5 years	Managing access/lack of public access Managing multiple use Reducing/mitigating erosive forces from wake of boats Foreshore development/land clearing Loss of instream habitat.
Lake Macquarie Council			
	Coastal Zone Management Plan: Coastline Part A Estuary Part B Swansea Channel Part C Coastal resilience study Ecological assemblages of sandy beaches Coastal Adaptation Plans Lake Macquarie City Council Sea Level Rise Policy LEP Master Plans (see A., B & C)	Research: Intertidal/Estuary – ecological response model Monitoring: Community monitoring / water quality monitoring	Compliance Habitat protection Species protection Managing Public perception Resourcing
Manly Council			
	Landuse Planning instruments including Manly Local Environmental Plan 2013 and Development Control Plan 2013 http://www.manly.nsw.gov.au/planning-and-development/lep-dcp-policies/ Coastal and/or Estuary Management Plans for Cabbage Tree Bay Clontarf/Bantry Bay Forty Baskets Little Manly Cove Manly Cove Manly Lagoon Manly Ocean Beach North Harbour CMP http://www.manly.nsw.gov.au/environment/marine-and-coastal/ Aquatic Reserves, designated for North harbour in 1982 and Cabbage Tree Bay in 2002, the latter being a 'No-take' Aquatic Reserve, under the Fisheries Management Act 1994. World Surfing Reserve, declared for Manly and Freshwater beaches in 2012, to recognise the surfing significance and long close links between surfers and the surf and to assist in the long term preservation of the site for current and future surfers Special Purpose Advisory Committee of Council, entitled harbour foreshores and coastline management advisory committee, comprising community, state agency and Council representatives which provides oversight of coastal programs and coastal issues, including stewardship of the marine estate. Friends of Cabbage Tree Bay volunteer Group, established in partnership with Manly Council to ensure ongoing community engagement in the stewardship of Cabbage Tree Bay. Current project revising Manly Ocean Beach Coastline Management Plan and developing a coastal Zone Management Plan, under the Coastal Protection Act 1979 which will include Cabbage Tree Bay and an Emergency Action Sub-Plan to guide temporary coastal protection works. Manly Ocean Beach seawall and promenade, extending from Queenscliff to south Steyne for a distance of 1.8 kilometres; various stairways provide access to the beach along the length of the promenade. Marine Parade sea wall and promenade, extending from Manly Beach to Shelley Beach for a distance of 650 metres; various public walkways provide access from local streets and stairways provide access to Fairy Bower rocky shore and tidal pool. Various seawalls around the harbour foreshores, including Little Manly, Manly Cove, Fairlight, North Harbour and Clontarf that protect the foreshore from erosion and incorporate beach access and swimming areas. Dive club licensing system and divers corralling area at Shelley Beach Tidal pools at Fairy Bower, Little Manly, Manly Cove, Fairlight, Forty Baskets, Clontarf and Seaforth. Public jetties and pontoons at Seaforth	Research report entitled 'Identification of Coastal Hazard Risk Areas to Projected Sea Level Rise for the Manly Local Government Area' Research report entitled 'Manly LGA Seawall Risk Assessment and Plan for Priority Upgrade/Replacement' Current project entitled 'Estuary Hazards Study for Clontarf/Bantry Bay' that will identify key risks and management options for coastal hazards, including coastal erosion and coastal inundation; to be completed by January 2015 Current project entitled, 'Estuary Health Assessment for Clontarf/Bantry Bay' that includes water quality monitoring of estuary condition indicators, principally chlorophyll, turbidity and seagrass extent, to be completed by July 2015.	Reducing the ongoing impacts of urbanisation on the marine estate, including stormwater and sewage effluent and the impacts of litter, particularly plastics. Achieving the right balance of active and passive use of the marine estate Minimising the detrimental impacts of active uses on the marine estate, including fishing and boating Ensuring compliance with regulations and management plans for the marine estate Adequate resourcing for monitoring the condition of the marine estate and the impacts of uses.

	Manly Scenic Walkway and numerous access points to the harbour and ocean foreshores Surf club facilities and lifeguard patrols at Queenscliff, North Steyne and South Steyne beaches.		
Mosman Council			
	Local Environment Plan or Development Control Plan. http://www.mosman.nsw.gov.au/planning/controls/LEP http://www.mosman.nsw.gov.au/planning/controls/DCP Marine Asset Management Plan – Attached Coastal Zone Management Plan (CZMP) – Under development Community infrastructure programs to support access to the marine estate. http://www.mosman.nsw.gov.au/council/plans/MOSPLAN	Aquatic Biodiversity Study, February 2008 Marine Structures Condition Assessment: Every 2-3 years, last completed in 2012. Proactive measure to plan capital / renewal works Water quality monitoring before and after installation of Stormwater Quality Improvement Devices completed. Not involved in on-going monitoring but we take note of data provided as part of: http://www.environment.nsw.gov.au/beach/index.htm	The assessment/determination of Climate Change scenarios: In the absence of a National/State direction regarding sea level rise, Council is struggling to determine sea level rise benchmarks for planning and assessment purposes. Addressing the issues of beach erosion of popular public beaches. Boating and recreational infrastructure management and upgrade funding deficiencies. Research and monitoring of aquatic biodiversity. Future management strategies of the coastal area with development pressure
North Sydney Council			
	http://www.northsydney.nsw.gov.au/Building_Development http://www.northsydney.nsw.gov.au/Council_Meetings/Policies_Plans http://www.northsydney.nsw.gov.au/Waste_Environment/Bushland_Wildlife/Biodiversity/2010_Natural_Area_Survey	Surveys 2013/14 Bird & Micro-bat surveys; 2010 Natural Area Survey; 2013 Water Quality Monitoring Report (collated historical records and analysis); ongoing Wildlife Watch community fauna monitoring; Bushland Reserve Rehabilitation Program Annual Reports (2000 to current)	• Increased development leading to more polluted (nutrients, litter, sediment) runoff entering the marine environment • Sea level rise leading to foreshore erosion, damage to foreshore infrastructure and loss of intertidal vegetation communities (coastal saltmarsh, swamp oak floodplain forest etc) • Ability of Council's stormwater & GPT infrastructure to cope with higher pollutant loads and more intense storm events predicted under climate change • Cost to ameliorate above impacts
Pittwater Council			
	Pittwater Summary Pittwater comprises 25% of the Sydney coastline with nine coastal beaches and the Pittwater waterway with its ten foreshore beaches as large as Sydney Harbour north of the Harbour Bridge. Barrenjoey Head Aquatic Reserve and Narrabeen Head Aquatic Reserve are both located in the Pittwater Council area and host a range of local recreation, education and tourism activities. Indicators of the value of Pittwater's component of the NSW Marine Estate can be evidenced by the 14,000 annual visitors to Pittwater Council's Coastal Environment Centre and 53,671 volunteer hours undertaken each year by Surf Life Saving Northern Beaches. Pittwater Council's Beach & Coastal Management Strategy aims to ensure that the "iconic status of Pittwater's beaches and coast is valued, protected and a continued source of inspiration".	Pittwater undertook an 'LGA Bird Survey in 2006-2007' to establish a baseline of species found in the Local Government Area (LGA). The survey found that the Pittwater LGA reserves are effectively small fragments of once extensive natural bushland, heath and wetlands. The findings reflected those of broader studies of the gradual creep of exotic plants and animals on natural bushland and the reduction of habitat from the impacts of urbanisation. In addition to disturbance from watercraft, dogs, fisherman and yabbie pumpers, changes to hydrology of Careel Bay as a result of dredging and alterations of Careel Creek and was found to impact the decline of migratory wading bird populations. The alterations to rainwater run-off in Pittwater were found to prolificate the encroachment by Grey Mangroves (*Avicennia marina*) onto mudflats and sea grass (*Zostera*	• Sea level rise and associated coastal asset management. • Urbanisation leading to greater exposure to hazards and decline in coastal ecosystems including fragmentation of biodiversity corridors. • Increased extreme coastal storm events and associated coastal erosion and loss of

	The *Pittwater Local Environmental Plan 2014* (LEP), defines land within 100m of an aquatic reserve that is listed under the NSW *Fisheries Management Act 1994* as 'environmentally sensitive area for exempt or complying development. The LEP requires development within the coastal zone to implement the principles listed in the NSW Coastal Policy and specifies the protection and preservation of the marine environment. The LEP details that development within the foreshore area be limited and outlines the limited development purposes where consent may be granted. Additionally, climate change is to be considered in regards to foreshore development applications and in particular in relation to: 1) sea level rise, 2) coastal erosion and recession and 3) change of flooding patterns. The LEP requires risks to the community in areas subject to climate change environmental hazards to be minimised. The Pittwater 21 Development Control Plan 2014 (DCP) includes Hazard Controls that relate to landslip, bushfire, coastline (beach), coastline (bluff), estuarine and flood. All development on land where the Coastline (Beach) Hazard Control applies must comply with the requirements of the *Coastline Risk Management Policy for Development in Pittwater*. The control requires that the proposed development must not adversely affect or be adversely affected by coastal processes and requires a whole of life assessment. Additionally, the control requires that the development must not increase the level of risk for any people, assets and infrastructure in the vicinity due to coastal processes. The Estuarine Hazard Control requires the application of the Estuarine Planning Level with the exception to jetties, bridging ramps or pontoons located on the seaward side of the foreshore edge. For further information refer to the *Estuarine Risk Management Policy for Development in Pittwater*. The Flood Hazard Control requires the application of the *Flood Risk Management Policy for Development in Pittwater.* The DCP includes a Climate Change (Sea Level Rise and Increased Rainfall Volume) control which only applies where 'intensification of development' is proposed. The DCP has a provision for adequate buffers from land (foreshore building line), sea (50m to seagrass beds or saltmarsh and 30m to mangroves) and features (10m to wetlands or 10m to other endangered ecological communities as per the *Threatened Species Conservation Act 1995*). Website Reference: Pittwater Local Environment Plan 2014 gazetted 30 May 2014 - http://www.legislation.nsw.gov.au/maintop/epub Pittwater DCP - http://www.pittwater.nsw.gov.au/building__and__development/controls__and__policies/development_control_plans Coast and estuary management Pittwater Council has a Climate Change Policy (No. 176) that recognises that the Pittwater LGA will incur more severe coastal erosion and coastal inundation as a result of more powerful storm surges combined with a rising sea level. Management of coastal hazards, both present and exacerbated by climate change impacts, include: beach erosion, shoreline recession, coastal inundation (including estuaries), coastal lake or watercourse entrance instability and estuary erosion caused by tidal waters. Pittwater Council has a Risk Management Policy for Coastal Public Buildings and Assets in Pittwater Policy (No. 186). The policy that states a preference for soft engineering structures such as geotextile containers, in favour of hard engineering structure, such as sea walls, for the purpose of coastal protection works from coastal erosion. The Pittwater Estuary Management Plan (2010) was produced following the Pittwater Estuary Study (2006) and covers the management of: • Water quality • Sedimentation and erosion	*capricorni*) resulting in the reduction of biodiversity and foraging opportunities for migratory wader populations. The Pittwater Waterbird Habitat Survey and Mapping was undertaken in 2012 by the Australian Wetlands and Rivers Centre (AWRC) based at UNSW in order to determine the impacts of climate change on Pittwater's population of migratory waterbirds. Locally occurring and migratory waterbirds are part of the Pittwater estuary ecosystem which is also one of the few remaining habitats in the Sydney region of the endangered Bush Stone-curlew (*Burhinus grallarius*). Surveys were undertaken of waterbird species presence, habitats, behaviours and disturbance. The survey found that most of the present habitat including foraging areas is subject to inundation to a sea level rise of 0.9 metres by 2100 (Appendix 4). Website References: LGA Bird Survey in 2006-2007 – http://portal.pittwater.nsw.gov.au/Temp/ViewedDocs/10E_003913C2.001.pdf Pittwater Waterbird Habitat Survey and Mapping – http://www.pittwater.nsw.gov.au/environment/animals_and_plants/native_animals/waterbirds Pittwater Council is undertaking a number of studies: • The NSW Coastal Planning Guideline: Adapting to Sea Level Rise (2010) included six sea level rise coastal planning principles. The first sea level rise planning principle listed is to "Assess & evaluate coastal risks taking into account the sea level rise planning benchmarks". Pittwater Council has undertaken a number of research studies to assess and evaluate climate change impacts from sea level rise. The *Pittwater Council Climate Change Risk Assessment (2012)* undertakes a risk assessment of the projected climate change scenarios including sea level rise. • The *Pittwater Foreshore Floodplain – Mapping of Sea Level Rise Impacts* study has been undertaken in order to update the Foreshore Planning Line. A draft report was displayed for community exhibition in 2011. The study is pending the announcement of the Coastal Reforms Stage 2 before the draft study can be finalised. • *Pittwater Beaches Coastline Hazard Definition and Climate Change Vulnerability Study* being undertaken by Worley Parsons - some funding contribution received by Office of Environment and Heritage (OEH) under the Coastal Management Program. The study is being undertaken to inform the Pittwater Coastal Zone Management Plan. The 'Coastline Hazard Definition and Climate Change Vulnerability Study' assess the vulnerability of existing private/public assets and infrastructure within the Study Area to climate change induced sea level rise by comparing the potential effects of the present (2010) erosion hazard line and inundation levels with those likely for the 2050 and 2100 planning periods incorporating sea level rise projections and taking into account wave setup and wave run-up influences. This study is pending the announcement of the Coastal Reforms Stage 2 before the draft study can be finalised. • Pittwater Council has additionally undertaken a number of discrete studies on coastal erosion, particularly in relation to the NSW Government identified coastal erosion 'hot spots' located at Bilgola and Mona Vale. • *Pittwater Estuary Coastal Zone Management Plan* – some funding contribution received by OEH under the 2012-13 Estuary Management Program to revise the Pittwater Estuary Management Plan (2010).	coastal vegetation ultimately culminating in coastal regression. • Increased extreme rainfall and coastal storms leading to pollution of catchments, estuaries and adjacent marine environments. • Sea level rise impacts on ecosystem habitat including salinization of estuaries, wetlands and ground water

	• Ecology • Waterway usage • Foreshore usage • Heritage • Future development • Climate change. The Pittwater Estuary Management Plan includes a map for each of the key estuary management plans including mapping the estuarine ecological communities in Pittwater (Appendix 1). It should be noted that in relation to Pittwater Council mapping, more up to date data sets may be held by other agencies, for example the NSW Department of Primary Industries for seagrass distribution. Pittwater Council has 103 bushland reserves totalling 330 hectares in size, many of which are located along coastal headlands (Appendix 2). Each reserve has a Plan of Management which includes flora and fauna species lists, topographical and soils information, walking tracks, heritage values, management strategies and any other points of interest. Pittwater Council runs a bush regeneration program in 92 of its reserves across approximately 150 hectares. This program manages the removal of invasive species and planting of endemic species in coastal areas order to achieve regeneration of native habitat and dune stabilisation Pittwater Council has two management plans that relate to biodiversity: 1) Native Fauna Management Plan (2011); and 2) Native Vegetation Management Plan (2012). 1) The Native Fauna Management Plan covers Wildlife Corridors, Fragmentation and Edge Effects. Endangered ecological communities outlined include: coastal saltmarsh, swamp sclerophyll forest on coastal floodplains and Themeda Grassland on sea cliffs and coastal headlands. Lion Island in Pittwater estuary hosts the largest southern population of Little Fairy Penguins (*Eudyptula minor*). The endangered population are often sighted swimming in small numbers around Pittwater and should be provided protection as an important value to the NSW Marine Estate. The Native Fauna Management Plan highlights the key threatening processes to marine fauna as: - Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments. - Death or injury to marine species following capture in shark control programs on ocean beaches. - Alteration to the natural flow regimes of rivers, streams, floodplains and wetlands. - Anthropogenic climate change. Current management issues relating to marine fauna are outlined in the Native Fauna Management Plan as: - Rehabilitation of sick, injured and orphan wildlife - Disturbance at nesting, roosting and feeding sites - Depletion of intertidal invertebrate populations. The Native Fauna Management Plan acknowledges the issues of mangrove encroachments in Careel Bay as a result of the modification to Careel Creek and alterations to rainwater run-off in Pittwater from urbanisation, however discourages their removal given their threat across the broader Sydney region. The Mangrove Gerygone has been found to intersperse the Grey Mangrove which has been found to play a critical role in the health of the adjacent saltmarshes that support a population of the threatened Bush Stone-curlew. Additionally, mangroves play a role as a buffer between land and estuarine habitats which is essential to drawing Grey-tailed Tattler and Whimbrel species into the area. 2) The Native Vegetation Management Plan outlines key management issues in Pittwater with the following that relate to the NSW Marine Estate: Hydrological regimes - Weed incursion associated with stormwater and erosion	• *Pittwater Beaches Coastal Zone Management Plan* – some funding contribution received by OEH under the 2012-13 Coastal Management Program. The preparation of the plan is pending the finalisation of the *Pittwater Beaches Coastline Hazard Definition and Climate Change Vulnerability Study*. • Avalon to Palm Beach Floodplain Risk Management Study and Plan. This study is currently open for community consultation with residents able to complete the online survey and expressions of interest sought to form a Community Working Group. • McCarrs Creek, Mona Vale and Bayview Flood Study – tender closed 10 July 2014 and selection process underway. • A report was undertaken by Catchment Simulation Solutions in 2013 that addressed *Defining the Creek Systems of the Pittwater Estuary Catchment (Stage 1).* <u>Website References:</u> Pittwater Council Climate Change Risk Assessment – http://www.pittwater.nsw.gov.au/environment/climate_change Pittwater Foreshore Floodplain – Mapping of Sea Level Rise Impacts draft report – http://www.pittwater.nsw.gov.au/council/documents_on_ex/respository/the_project_explained Coastal erosion 'hot spots' – http://www.environment.nsw.gov.au/coasts/coasthotspots.htm Avalon to Palm Beach Floodplain Risk Management Study and Plan – http://www.pittwater.nsw.gov.au/environment/natural_hazards/flooding/where_does_it_flood/careel_creek T06/14 – McCarrs Creek, Mona Vale & Bayview Flood Study Review – http://www.pittwater.nsw.gov.au/council/tenders_and_quotations/tenders_closed/t0614 Water quality surveys are being undertaken in the local government jurisdiction by Streamwatch which is a community water quality monitoring program. Streamwatch groups monitor two locations in particular: McCarrs Creek and at the waterfall location at the junction of the Irrawong and Garden St sites. <u>Website References:</u> Streamwatch - http://australianmuseum.net.au/streamwatch	

	- Pollution controls associated with construction Urban Interface Management - Management of the urban interface - Edge effects and barriers - Horticultural introduction of opportunistic weed species - Inappropriate plant species selection for regeneration and landscaping Management of Public Access - Vegetation damage due to inappropriate access Coastal Zone Management - Foredune trampling - Loss of vegetation, erosion of coastal clifflines and foreshores (e.g. due to climate change and increased wave action through boat activities) Biodiversity Loss Anthropogenic Climate Change. Website References: Climate Change Policy (No 176) – http://portal.pittwater.nsw.gov.au/Temp/ViewedDocs/1C9_003B741B.00A.pdf Risk Management Policy for Coastal Public Buildings and Assets in Pittwater (No 186) – http://portal.pittwater.nsw.gov.au/Temp/ViewedDocs/05A_0038C35E.010.pdf Pittwater Estuary Management Plan – http://www.pittwater.nsw.gov.au/environment/water/estuaries/pittwater_estuary_management_plan Native Fauna Management Plan – http://www.pittwater.nsw.gov.au/environment/animals_and_plants/native_fauna_management_plan Native Vegetation Management Plan – http://www.pittwater.nsw.gov.au/environment/animals_and_plants/native_vegetation_management_plan ***Coastal and estuary tourism promotion*** Pittwater Council's 'Pittwater 2025: Our Community Strategic Plan' incorporates coastal and estuary tourism into: • Recreational Management Strategy – A diverse range of accessible recreational opportunities for a broad range of ages, abilities and interests – inspired by bush, beach and water. • Economic Development Strategy – A strong local economy that supports the development of local businesses and contributes to additional sub-regional opportunities. Pittwater Council's 'Pittwater Economic Development Plan 2012-2016' seeks to "support and leverage unique competitive advantage of the Pittwater Marine Cluster, professional services, health and well-being and the creative industries business sectors. Pittwater Council contributed to the 'Tourism 2020: Sydney Tourism Employment Plan' and as part of the 'Pittwater Economic Development Plan 2012 - 2016, an analysis will be undertaken in 2015 of the local Pittwater tourism sector encompassing potential opportunities, challenges, infrastructure and marketing. The focus would be on the distinctiveness of Pittwater as a destination and would look at opportunities for taking advantage of trends towards short-break stays. The work would need to be undertaken collaboratively with the business community and State and Federal Governments because whilst local tourism is an important driver of employment growth and economic development, it has impacts on communities and the environment that need to be managed. Website References Pittwater 2025: Our Community Strategic Plan – http://www.pittwater.nsw.gov.au/council/Strategic_Framework Pittwater Economic Development Plan 2012 – 2016 – http://www.pittwater.nsw.gov.au/business/economic_development_plan/discussionpapers Sydney 2020: Sydney Tourism Employment Plan – http://www.business.nsw.gov.au/doing-business-in-nsw/industry-action-plans/visitor-economy/sydney-tourism-employment-plan Pittwater Council's *Surf Life Saving Movement Policy* (No 52) objective is to support the development and maintenance of a voluntary Surf Life Saving		

	Service and junior training and development program in Pittwater". There are 8 council owned and 2 privately owned surf life saving clubs located along Pittwater's foreshore. The NSW Sydney Northern Beaches Surf Life Saving was formed in 1960 and lifesavers have played an active role in the Pittwater coastal and marine environments since the early 1900s, providing water safety and more recently have been involved in the Coastal Ambassadors Program run by the Pittwater Council CEC. Pittwater Council's multi-award winning Coastal Environment Centre (CEC) provides community environmental education and capacity building with a focus on local biodiversity and ecosystems, coastal management, sustainability and climate change. In 2012, there were over 19,000 program participants. Pittwater has a range of boating facilities to support recreational, commuter and commercial uses. Boat storage is catered for both dinghies and larger boats such as outrigger canoes and dragon boats. Boat tie-up facilities exist at wharves, moorings and boat ramps with wharf access designed for recreational, commuter and commercial purposes. There are 3641 moorings in Pittwater (Appendix 3), with NSW Maritime collecting over $2 million each year from boat registrations and mooring fees. There are also a number of boating clubs in the area: the Royal Motor Yacht Club and various sailing clubs (Palm Beach, Bayview and Avalon). There are Plans of Management for each of Pittwater Council's reserves and recreation areas that determine the management of community land, for example, where a boating facility may be installed. Each of Pittwater's nine ocean beaches and public wharves has a plan of management and the redevelopment of the Avalon Surf Life Saving Club required a Coastal Protection Works Management Plan. Pittwater Council's Sydney Lakeside Holiday Park provides affordable accommodation for tourists visiting its beaches and marine environment. Pittwater Council has a number of Community Centres (located at Avalon, Newport, Scotland Island, Mona Vale, Warriewood, North Narrabeen and Elanora Heights), which allow for multipurpose use, including available infrastructure for community interest groups. Website References: Surf Life Saving Movement Policy (No 52) – http://portal.pittwater.nsw.gov.au/Temp/ViewedDocs/05A_0038C35E.010.pdf CEC & Coastal Ambassadors Program – http://www.pittwater.nsw.gov.au/cec/News_and_Events/coastal_ambassadors_program Recreational Plans of Management - http://www.pittwater.nsw.gov.au/recreation/parks_and_reserves/recreational_plans_of_management Sydney Lakeside Holiday Park – http://sydneylakeside.com.au/ Community Centres, Halls, Clubs and Activities - http://www.pittwater.nsw.gov.au/recreation/centres,_halls,_clubs_and_activities		
Randwick Council			
	Randwick's 2012 Local Environment Plan Randwick's 2013 Development Control Council's Annual Coastal Activities Program Council's Coastal Walk which follows the coastline from Clovelly Beach to Maroubra Beach and will eventually run all the way to Botany Bay These initiatives are supported via Randwick's City Plan (20 year plan) Key issues Commitments to managing water quality at beaches, Maintaining our local native species of aquatic and terrestrial flora and fauna. These initiatives are implemented via Council's 4 year delivery plan Operational Plan	Blue Groper Monitoring in Bronte Coogee Aquatic Reserve. This research was undertaken by in conjunction with NSW Department of Environment and Climate Change Gordon's Bay scuba diving club from time to time monitors species within the aquatic reserve	Residents and visitor knowledge, awareness and understanding of restrictions on where and what can and can't be taken. Conflict between different user groups including spear fishers and snorkellers and line fishers and swimmers. Appropriate management and conservation of aquatic reserves and intertidal protection areas. Effective regulation regarding fishing and activities being undertaken in protected areas i.e. Council's ability (limited legal powers and resource

			restrictions) to meet these community and visitor expectations regarding regulation enforcement. Communication with and education of visitors coming to the Randwick area with regard to the above marine management issues.
Rockdale City Council			
	ESL mapping in Council's LEP which incorporates coastal wetland vegetation communities http://rccweb.rockdale.nsw.gov.au/EPlanning/Pages/xc.Plan/Default.aspx Georges River Estuary Coastal Zone Management Plan http://www.georgesriver.org.au/Estuary-Management-Plan.html Biodiversity Strategy http://www.rockdale.nsw.gov.au/Pages/pdf/AboutCouncil/Biodiversity-Strategy.pdf Aquatic Weed Management Strategy – incorporates weed management guidelines for Council's coastal wetland areas Various Plan of Managements – particularly Cook Park http://www.rockdale.nsw.gov.au/pages/pdf/CookParkPoM2010.pdf On ground restoration programs to protect coastal wetlands and dunal vegetation and formalise access areas. Community Education Programs	Bird Survey at a Coastal wetland, water quality monitoring program	Coastal Hazards – current and future Impacts of usage Stormwater pollution Impacts of future development State and Federal leadership, resources and funding
City of Ryde			
	The Ryde Local Environment Plan (LEP) 2010 can be viewed at: http://www.ryde.nsw.gov.au/Development/Planning+Controls/Local+Environmental+Plan/Local+Environmental+Plan+(LEP) The Parramatta River Estuary Coastal Zone Management Plan (CZMP) http://www.ryde.nsw.gov.au/_Documents/Mtg-Works2013/wc1213_200813a_att1.pdf The Lane Cove Rive Coastal Zone Management Plan (CZMP) http://www.ryde.nsw.gov.au/Council/Have+Your+Say/Lane+Cove+River+Coastal+Zone+Management+Plan The Sydney Harbour Water Quality Improvement Plan (in progress, see LLS) (Former) SMCMA Catchment Action Plan The CoR Community Strategic Plan and 4 Year Delivery Plan can be viewed at: http://www.ryde.nsw.gov.au/Council/Forms+Policies+Plans+Publications The Water Quality Monitoring Strategy (see: http://www.ryde.nsw.gov.au/Environment/Water+Quality+and+Pollution/Water+Quality+Monitoring+Strategy) The Water Quality Monitoring Strategic Overview Riparian Protection and Rehabilitation Management Plan (2013) A study was conducted in the process of the Ryde River Walk project (http://www.ryde.nsw.gov.au/Council/Works+in+Progress/Ryde+River+Walk) Contact Nicola Booth for details of this study and other plans and policies in the Natural Areas and Open Space section that may relate to community access etc. A draft Water Sensitive Urban Design (WSUD) DCP may also be of relevance. Please contact Charles Mahfoud for policies relevant to stormwater infrastructure management.	Riparian Zones were surveyed and assessed for the Riparian Protection and Rehabilitation Management Plan (2013). Surveys were also included in the CZMPs. The WQMSO surveyed potential WSUD sites There were significant research components to the Water Quality Monitoring Strategic Overview and Riparian projects as well as the SHWQIP and the CZMPs The reports for our water quality monitoring program can be viewed at: http://www.ryde.nsw.gov.au/Environment/Water+Quality+and+Pollution/Water+Quality+Monitoring+Strategy	Please refer to the recommendations in the strategies and plans mentioned above. Our water quality monitoring reports indicate that Ryde's urban waterways are highly degraded and pose a series of management challenges to maintain water quality with on-going issues re. nutrients (ammonia and phosphorous) , sewer overflows, some heavy metals, low levels of biodiversity and sensitive macro-invertebrates (as indicated by low EPT taxa in sampling) and concerns regarding dissolved oxygen levels. Challenges also include community education and awareness of catchment and stormwater impacts, adequate GPTs and bio-retention systems to help mitigate impacts in an urban environment with a large percentage of impervious surfaces in each catchment and maintaining riparian buffer zones and aquatic habitats. Some of the results indicate that some water-ways may be unsafe for secondary contact based recreational uses (ANZECC guidelines) at times. The primary river systems that border the LGA, (Parramatta and Lane Cove) are influenced by the land uses of a number of LGAs and a range of activity with the Ryde LGA, beyond the activities of Council as an organisation, posing a complex management challenge of protecting and managing a resource subject to the influence of multiple jurisdictions and stakeholders
Shellharbour City Council			
	Shellharbour LEP 2013:	Council are not currently undertaking any Surveys, Research or	Increased pressure associated with

	http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+141+2013+cd+0+N. Shellharbour LEP 2000 (for deferred areas from SLEP 2013): http://www.legislation.nsw.gov.au/fullhtml/inforce/epi+230+2000+FIRST+0+N. Shellharbour Development Control Plan: http://www.shellharbour.nsw.gov.au/filedata/pdf/ShellharbourDCP.pdf Plans of Management for coastal Community Land Other Programs and Management Policies	Monitoring	providing access to foreshore areas - with a continued increase in popularity resulting from infrastructure and amenity improvements in key foreshore areas, an emerging pressure for coastal areas is increased public access. Although suitable access is currently provided to popular recreational areas, greater consideration will be required to ensure that suitable and equitable access is maintained and that passive recreational activities do not exacerbate existing pressures. This pressure will continue to be enhanced with urban expansion and renewal across the Shellharbour and Wollongong LGAs. Increased pressure to areas of regional environmental and cultural significance such as Bass Point. Bass Point Reserve has some of the best remaining coastal vegetation in the Illawarra, supporting endangered ecological communities, threatened or regionally significant species and their habitats. The reserve has significant Aboriginal and European heritage sites, significant marine habitats, including Bushrangers Bay Aquatic Reserve. Additional pressures on these key areas/resources will be linked to projects such as the Shell Cove Marina and expansion of adjoining precincts, which will result in an increased challenge to establish a sustainable balance across conservation, tourism and recreation. Future economic, infrastructure, community and environmental risks associated with projected climate change impacts. The creation of a brand new Marina at Shellcove will present new challengers to Council as we try to build, market and manage a substantial coastal asset. Killalea State Park is within the Shellharbour LGA and a new Draft Management Plan is currently being considered by the NSW DPI. The outcomes of this Management Plan may substantially impact on access and management of the coastal marine estate within the Park.
Sutherland Shire Council			
	(iii) Community infrastructure programs to support access to the marine estate. http://www.sutherlandshire.nsw.gov.au/Building_Development/Works_and_Projects/Projects/Marine_Esplanade_Walkway_Cronulla http://www.sutherlandshire.nsw.gov.au/Building_Development/Works_and_Projects/Projects/Old_Ferry_Road_Footpath	Georges River Combined Councils and Sydney Coastal Councils Group would have some info on surveys done in relations to coast/estuary/river. Sydney Coastal Councils group are probably the best to provide information on the latest research in Sydney Council's water quality monitoring program (link below) aims to inform our stormwater construction and maintenance program and will continue indefinitely http://www.sutherlandshire.nsw.gov.au/Environment/Waterways/Water_Quality_Monitoring (raw data is available but not online) Georges River Combined Councils also conduct monitoring:	Varied ownership and clarity as to who is responsible for what RMS/Council/Department of Lands/ National Parks/Fisheries etc Perceived ownership/responsibility from the community's point of view Lack of knowledge within the community of what they do in the catchment affecting the waterways, beaches and estuaries Not enough compliance for impacts on

		http://www.georgesriver.org.au/River-Health-Monitoring-Program.html	the waterways, often due to jurisdictional issues or lack of support from land owners or legislators for Council compliance staff Unclear reporting mechanisms for the community. They are the eyes on the ground and yet if they come up against everyone telling them it's not their job they stop reporting and nothing gets fixed
Warringah Council			
	Warringah LEP 2011 : http://www.warringah.nsw.gov.au/planning-and-development/development-plans/warringah-lep-2011 Warringah DCP 2011 : http://www.warringah.nsw.gov.au/planning-and-development/development-plans/dcp-2011 Warringah Draft Coastal Zone Management Plan (CZMP, 2014) : http://yoursaywarringah.com.au/czmp-narrabeen-beach Coastal Lands Plan of Management : http://www.warringah.nsw.gov.au/planning-and-development/development-plans/coastal-lands-plan-management Draft CZMP – as above Lagoon Entrance Management Operational Management System – internal guidelines for entrance openings. Coastal Lands Plan of Management – as above Long Reef Headland Long Reef Wildlife Protection Area and Aquatic Reserve: http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/wildlife-refuges/printversionfinallongreefbooklet22april08web.pdf Griffith Park POM : http://www.warringah.nsw.gov.au/sites/default/files/test-gab/griffithparkpomadopted.pdf Narrabeen Lagoon Estuary Management Plan http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/narrabeen-lagoon/narrabeenlagoonempfinal.pdf Draft Plan of Managament : http://www.lpma.nsw.gov.au/about_crown_land/publications/exhibition_and_information/2011/plans_of_management/?a=151783 Dee Why Lagoon Estuary Management Plan : http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/dee-why-lagoon/dee-why-lagoon-estuary-management-plan-2004.pdf Wildlife Refuge Plan of Management http://www.warringah.nsw.gov.au/planning-and-development/development-plans/dee-why-lagoon-wildlife-refuge-plan-management Curl Curl Lagoon Estuary Management Plan : http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/curl-curl-lagoon/2010-211492-curl-curl-lagoon-estuary-management-plan-2000_0.pdf Manly Lagoon	Community Surveys- Some 600 residents are interviewed in May-June each year to measure importance and satisfaction with Council services and perceptions of community safety and connectedness. The findings are compared to previous survey results and external local government benchmarks. This research informs Council's ongoing operational and strategic planning processes. Environmental Perception Survey – Undertaken every three years to gage the community's perceptions on the environment. A consistent result that our community values our coast as the most important natural asset in the LGA. CZMP – Identifies assessment of coastal erosion risk and long term management for these properties along Collaroy-Narrabeen and Fisherman's Beach. Bathymetric Surveys of all four coastal lagoons. Seagrass surveys and maps for all lagoons. Vegetation surveys and maps of all lagoons including saltmarsh, fringing wetlands and seagrass Fish Migration and Entrance Connectivity Surveys (UNSW Didson project) (Manly and Narrabeen, progressing with Dee Why and Curl Curl. Geotechincal Monitoring of Coastal Headlands – risk to life and property Beach width Surveys along the Narrabeen-Collaroy coastline as well as informal beach width and assessments following storms and heavy seas. Ecological condition investigations on all lagoons using phytoplankton abundance and species composition, fish diversity and abundance, microbial water quality Warringah Estuary Condition Assessment – Annual MER program (developed from the NSW OEH Estuary monitoring protocols) http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/lagoons/lagoonreportcard2013dft.pdf	Population increase and its associated pressure on beach and natural assets via competing recreational needs (beachgoers, boating, whale watching, surfing, fishing, SUPs, nippers). Impacts of urban development on the marine environment. Impacts of increased stormwater derived pollutants associated with urbanisation of the catchment and the increase in impervious surfaces. Access related to private property ownership on foreshores. Community awareness and appreciation of the marine estate including the collection of intertidal marine life and off leash dog walking

	Estuary Management Plan : http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/manly-lagoon/manly-lagoon-estuary-management-plan-1998.pdf Integrated Catchment Management Strategy: http://www.warringah.nsw.gov.au/sites/default/files/documents/general-information/manly-lagoon/manly-lagoon-integrated-catchment-management-strategy-icms-final-report-2004.pdf Boat Ramp at Middle Creek - http://www.warringah.nsw.gov.au/play/middle-creek-reserve Boat ramp at Jamieson Park in Narrabeen Lagoon http://www.warringah.nsw.gov.au/play/jamieson-park Boat Ramp at Fisherman Beach – Long Reef http://www.warringah.nsw.gov.au/play/long-reef-reserve Extensions of Surf Life Saving Clubs – South Curl Curl, North Narrabeen and Narrabeen Surf Lifesaving clubs are undergoing extensions to increase capacity and facilities. Other Warringah Programs – Community Education Centres and Engagement Programs Hilltop to Headland – Annual education program designed to foster sustainable behaviour for the betterment of the environment through engagement. The program oscillates its focus from year to year between terrestrial and marine issues. FishCare – Managed through the FishCare room at Fishermans Beach, Collaroy, the asset and staff provides information and guided walks for the community through a community volunteer program. Dune Care – Warringah Council has been supporting National Tree Day through the restoration of the sand dune system at Dee Why Beach. Rock Core – a community engagement program with the youth. Volunteers who spend the day restoring a dune system receive a free ticket to a rock concert. Brewarrina Bush Care Site – This program is part of Council's sister city towns program between Brewarrina and Warringah. Local youth are provided the opportunity to participate in restoring a littoral rainforest on the northern side of Long Reef headland. This project won the Young Legends Award in 2013. Neighbouring Councils Coastal Environment Centre (CEC) – managed by Pittwater Council and located on the shore of Narrabeen Lagoon in the Pittwater LGA, the facility is a community education centre providing school holiday activities for the local community and high school activities to schools within the Sydney region. Manly Environment Centre – Managed and supported by Manly Council, the facility operates as a resource and information drop in centre for the community and visitors to the area. The facility provides a range of reading material on all aspects of environment and sustainability. It is a hub for marine and coastal protection and conservation in the area. Strong advocate for Cabbage Tree Bay Aquatic Reserve - Shelly Beach and the penguin colonies in Manly Cove.		
Willoughby City Council			
	WLEP2012 WDCP Lane Cove River Coastal Zone Management Plan Lane Cove River Estuary Assessing Public Health Needs for Recreational Users	Community survey of the health of foreshore area (Wildlife Watch Biodiversity) ongoing project Sugarloaf Bay Marine Sediments research study undertaken by Sydney University – Gavin Burch Council has always conducted some form of water quality monitoring of its creeks that flow into Middle Harbour and the Lane Cove River.	Land use planning increase in urban densities, stormwater runoff increased flows, sewer overflows etc. Foreshore access to the community. Existing foreshore areas long term leases to private property owners, ongoing management of these areas

	Lane Cove Estuary Saltmarsh Site Assessments NSW Maritime Infrastructure Grants 'Better Boating'. Tunks Park improved boat ramp access, Lane Cove River Rotary Athletics Field – Pontoon kayak access Castle Cove – Potential for pontoon type structure for boats to use to pick up drop off passengers	In 2009 a water quality monitoring program was instigated which is continuing at present. The monitoring program monitors 6 creeks at 10 locations on a quarterly basis with some wet weather monitoring. The water is monitored for biological and physical/chemical parameters, with macroinvertebrate sampling undertaken in Spring and Autumn. The results of the water quality monitoring program are used to: Protect the terrestrial and marine environments from the effects of land based pollution. Assess current and future conditions of the waterways. Standardise baseline water quality monitoring for biological, physical/chemical indicators. Inform policy procedures and management practices to minimise the current and future effects of land usage on water quality. Ensure that: Public health is not adversely affected by water quality, Ecosystem health is not adversely affected by water quality, Aesthetic values of ecosystems are maintained and improved, Fish kills and algal blooms are minimised with the aim of eliminating them, Cultural and spiritual values are maintained, and Introduced sediment and suspended solids are minimised. It is thought that this type of monitoring will continue to be undertaken for the next 10 years. Results and further information can be obtained by contacting the nominated officer listed above	etc. Continuity of foreshore areas maintenance and access of private sea walls etc. Impacts of boating recreational uses. Protection and monitoring of saltmarsh/sea grass areas impact of sea level rise.
Wollongong City Council			
	Wollongong Local Environmental Plan (2009) Wollongong City Council Development Control Plan (2009) http://www.wollongong.nsw.gov.au/development/regulations/Pages/default.aspx Estuary Management Plan for Fairy, Towradgi, Hewitts and Tramway Creeks Estuary Management Plan for Several Wollongong Creeks and Lagoons http://www.wollongong.nsw.gov.au/services/sustainability/Pages/estuarycoastalmanagement.aspx#est Wollongong City Council Coastal Zone Study 2010 Wollongong City Council Coastal Zone Management Study and Plan (2012) Wollongong Dune Management Strategy for the Patrolled Swimming Areas of 17 Beaches (2014) http://www.wollongong.nsw.gov.au/development/coastalzonestudy/Pages/default.aspx Various Plans of Management for Community Land http://www.wollongong.nsw.gov.au/development/communityland/Pages/default.aspx	Beach vegetation surveys – ongoing; to study changes in dune vegetation along the coastline and their impact on other beach values. Collaboration in various University of Wollongong student research projects in coastal management – ongoing; to improve the understanding of coastal processes for better management of Wollongong's coastal areas Water quality monitoring at Lake Illawarra – ongoing; for estuary health management	Timely completion of the NSW Coastal Reform process that was announced by the NSW Government in September 2012. Balancing the public interest against private interests in managing coastal values, such as, conflicting views about vegetating coastal areas and its impact on aesthetics, lines of sight, coastal protection, etc. Increasing community expectation of enhancement and improvement of the coastal zone, and limited Council capacity to deliver. Resourcing and management challenges associated with water bodies (such as Lake Illawarra) that span two or more council areas. The myriad number of legislative and policy instruments that councils need to consider in managing the coastal zone, and the apparent lack of coordination between the government agencies responsible for them.
Woollahra Municipal Council			
	On 11 August Council resolved to proceed with the Draft LEP, subject to a number of amendments. A copy of the report and minutes are available on Council's website. The next step is to submit the Draft LEP to the NSW Department of Planning and Environment for consideration and approval by the Minister for Planning and Environment. http://www.woollahra.nsw.gov.au/yourplan Current LEP is available here http://www.woollahra.nsw.gov.au/building_and_development/development_rules Woollahra 2025 – Our Community, Our Place, Our Plan. Available here	Surveys and Research have been and will continue to be undertaken to inform the Woollahra Coastal Zone Management Plan, including: • Seagrass survey – mapping and condition assessment • Geotechnical assessments • Foreshore Condition Assessment • Recreational usage and infrastructure assessment Water quality monitoring activities have been conducted in the past. Future water quality monitoring program is being considered	Management of stormwater loads and quality entering the harbour – conservation of water quality and estuarine/aquatic habitats Management of commercial recreational operations along foreshores (eg. scuba diving, paddle-boarding, kayaking etc). Management of the interaction between marine life (e.g. sting rays) and the general public/ companion animals.

	http://www.woollahra.nsw.gov.au/council/council_structure/integrated_planning_and_reporting/woollahra_2025 Woollahra Environmental Sustainability Action Plan. Available here http://www.woollahra.nsw.gov.au/environment/environmental_projects/environmental_sustainability_action_plan Coastal Zone Management Plan – Stage 1 complete. Preparations for Stage 2 in progress. Dinghy Storage Policy. Available Here http://www.woollahra.nsw.gov.au/recreation/boating_facilities/water_craft_storage Plans of Management for Council's Parks and Reserves available here http://www.woollahra.nsw.gov.au/recreation/parks,_reserves_and_playgrounds/open_space_plans,_policies_and_procedures/plans_of_management_-_parks_and_reserves Water Management Plan 2009-2012 Recreational Needs Assessment and Strategy (2006). Available here http://www.woollahra.nsw.gov.au/council/forms_and_publications/publications/search_publications_by_category?root_node_selection=65320&page_asset_listing_65049_submit_button=Submit Flood Study Reports and research. RUSHCUTTERS BAY http://www.woollahra.nsw.gov.au/environment/sustainable_woollahra/what_we_are_doing/water_efficiency/floodplain_management/rushcutters_bay_catchment_flood_study DOUBLE BAY http://www.woollahra.nsw.gov.au/environment/sustainable_woollahra/what_we_are_doing/water_efficiency/floodplain_management/double_bay_catchment_flood_study ROSE BAY http://www.woollahra.nsw.gov.au/environment/sustainable_woollahra/what_we_are_doing/water_efficiency/floodplain_management/rose_bay_catchment_flood_study WATSONS BAY http://www.woollahra.nsw.gov.au/environment/sustainable_woollahra/what_we_are_doing/water_efficiency/floodplain_management/watsons_bay_catchment_flood_study Woollahra Biodiversity Conservation Strategy is currently being developed The Coastal Zone Management Plan will address recreation, community infrastructure and access to the marine estate		

Table 2. Hawkesbury Bioregion councils community engagement suggestions

Council Name	Community engagement suggestions
City of Botany Bay	Website and emails, maybe workshops http://www.sydney.cma.nsw.gov.au/bbcci/
City of Canada Bay	Councillor workshops
	Council officer workshops
City of Newcastle	Nil response
City of Sydney	Sydney Coastal Councils Group - Partnership Member Councils: Ashfield Council, Auburn City Council, Bankstown City Council, Blacktown City Council, Burwood Council, City of Canada Bay Council, Council of the City of Sydney, The Hills Shire Council, Holroyd City Council, The Council of the Shire of Hornsby, Hunters Hill Council, Ku-Ring-Gai Council, Lane Cove Municipal Council, Leichhardt Municipal Council, Manly Council, Mosman Municipal Council, North Sydney Council, Parramatta City Council, Ryde City Council, Strathfield Municipal Council, Warringa Council, Waverly Council, Willoughby City Council and Woollahra Municipal Council and Greater Sydney Local Land Services
Georges River Combined Councils Committee (GRCCC)	Meetings and workshops

Summary of Hawkesbury community and stakeholder engagement

Gosford City Council	Regional workshops (i.e. Central Coast/Hunter), email, surveys (i.e. via survey monkey), presentations to relevant coastal committees (i.e. we have the Catchments & Coast Committee as well as the Lower Hawkesbury Estuary Management Committee.
Great Lakes Council	Two committees cover the GLC LGA Coastal Zone. These committees are made up of key agency, and local government staff as well as community, industry and Councillor representatives:
	·Wallis and Smiths Lake Coast and Estuary Committee meets quarterly (next meeting, 27 August 2014)
	·Port Stephens/Myall Lakes Estuary and Coastal Zone Management Committee meets quarterly (next meeting, TBC August 2014)
	Local volunteer groups such as bushcare, landcare and Great Lakes Underwater Group would also be useful stakeholder groups.
	The Marine Discovery Series of workshops has developed a contact list of interested stakeholders which could be a useful resource.
Hawkesbury City Council	Direct contact, community forum
Lake Macquarie City Council	Lake Macquarie City Council is able to host a regional coastal councils forum where these issues can be discussed.
Manly Council	Stakeholder and community forums Direct correspondence with key stakeholder groups Web-based information updates on progress of the Strategy and regular opportunities for stakeholder and community feedback Community supported compliance and monitoring programs
Mosman Council	Arrange briefing meetings with Council;
	Communicate each stage of the development of the strategy to Council.
	Council will then communicate with the relevant parties. Community will be engaged during the preparation of the CZMP once Council determined the way forward with Sea Level rise scenarios.
North Sydney Council	Social media (Council's Facebook page & Community engagement online panels); NSC Precinct Committees; NSC Environmental Services Reference Group; NSC Green Events email-group; Bushcare volunteers etc
Pittwater Council	Pittwater Council would like to be kept informed of any proposed rezoning of the present NSW Marine Parks network and specifically be kept informed of any amendments that may impact on the Barrenjoey Head Aquatic and Narrabeen Head Aquatic Reserves.
Randwick Council	Survey of community opinion on issues in hard copy and online, which Council could promote
	Targeted engagement with key stakeholders and user groups in Randwick i.e. diving groups, fishers, fishcare volunteers
	Public discussion sessions for residents held within the Randwick LGA (Council could consider hosting)
	Notice in local paper i.e. the southern courier advertising exhibition of draft strategy for comment.
Rockdale City Council	Workshops, surveys online
City of Ryde	Key internal stakeholders could provide input at consultation workshops etc. Please discuss any community engagement issues with our public relations staff.
Shellharbour City Council	Council would like to be included in any engagement that may occur. In this regard the opportunity to participate in workshops/meetings, comment on documents, and facilitation of community/stakeholder consultation would be appreciated.
Sutherland Shire Council	Online surveys (survey monkey?), maybe target recreational groups who use the water as they see much more than the average person or even Council staff.
	Workshops are great but people are time poor
	Maybe Council could host surveys on each of their webpages and it would go out to a lot of the community
Warringah Council	focus groups, community meetings, drop in sessions, social media (eg Council's website, facebook and twitter accounts, YourSay Warringah, print media eg The Manly Daily
	Key Stakeholder Groups include, but are not limited to: • Fishing groups (eg. Warringah Anglers Club http://www.warringahanglers.com.au/) • Ecodivers – http://www.ecodivers.org.au • Northside Birders - northside-birders@googlegroups.com • Manly Lagoon Catchment Coordinating Committee • ECOS Strategic Reference Group • Curl Curl Lagoon Friends • Friends of Dee Why Lagoon • Curl Curl and Dee Why Lagoon Community Committee • Friends of Narrabeen Lagoon • Narrabeen Lagoon Floodplain Risk Management Working Group • Northern Beaches Surf Rider Foundation • North Narrabeen Coalition • All surf clubs (9 in total) • Warringah Council Coastal Committee • Reefcare & Fishcare Volunteers • All relevant Boardriders clubs (Freshwater Longboards, Freshwater Boardriders Inc. Long reef Board Riders Club, North Narrabeen Board Riders etc)
Willoughby City Council	Council website 'Have Your Say', media release eg North Shore Times, presentation
Wollongong City Council	1. The Authority needs to establish how this strategy relates to the coastal management framework currently being overseen by the NSW Office of Environment and Heritage, as there is a lot of local interest in this aspect of coastal management, especially the management of risks associated with sea level rise.
	2. There should be adequate notification of the preparation of this strategy and its objectives to local groups with significant interest in the coastal zone, such as surf clubs, yacht and boating clubs, coastal residents, coastal councils.

	3. There should be ample time allocated for inspection and review of all draft and interim documents leading up to finalisation of the strategy.
Woollahra Municipal Council	Council is willing to assist in the community engagement process through attendance at workshops, responding to specific queries etc.

Appendix B: Web portal survey questions

Form for Pre-identified / Additional site:

Q1: What is important about this site to you? (i.e. how do you use it/what benefits do you gain from it). Please tick all that apply.

- o Recreational fishing
- o Boating
- o Surfing / Swimming
- o SCUBA diving / Snorkelling
- o Traditional use & knowledge
- o Education
- o Research
- o Health & wellbeing
- o Intrinsic values
- o Urban, industrial & agricultural development
- o Shipping & ports
- o Tourism
- o Commercial fishing
- o Aquaculture
- o Other Open ended…..

Q2: Which of the following features do you use at this site (please tick all that apply):

- o An ocean beach
- o An estuary (includes enclosed bays, harbours, lagoons and coastal lakes)
- o An offshore reef
- o A headland
- o Open coastal waters

Q3: In the past 12 months, how many days did you visit these places?

- o 300-365 days (nearly every day of the year)
- o 100-300 days (about one third to one half of the days of the year)
- o 50-99 days (most weekends or once a week)
- o 10-50 days (once a month or on holidays)
- o <10 days

Q4: What do you perceive are the threats to your use or benefit of the coastal environment at this site? Please tick all that apply.

- o Shipping
- o Foreshore development
- o Commercial fishing
- o Charter fishing

- o Recreational fishing
- o Cultural fishing
- o Charter activities
- o Aquaculture
- o Research and education
- o Recreation and tourism
- o Dredging
- o Mining and extractive industries
- o Agriculture
- o Stormwater discharge
- o Coastal floodplain development and use
- o Industrial activities
- o Climate change
- o Extreme weather events
- o I do not perceive any threats
- o Other Open ended.....

Q5: List some opportunities that could reduce the threats you listed above to improve your experience at this site/ Hawkesbury bioregion and/or enhance marine biodiversity conservation at this site.

Open ended.....

Q6: How did you like using this interactive map?

Dislike Like

1 2 3 4

Comment: Open ended.....

About you

Q7: What is your postcode?*

Open ended.....

Q8: If you would like to be kept informed about this project please let us know your email address.

Name: Open ended.....

Email: Open ended.....

Privacy information

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Form for General Comments:

Q1: How is the Hawkesbury bioregion important to you? (i.e. how do you use it/what benefits do you gain from it). Please tick all that apply.

- o Recreational fishing
- o Boating
- o Surfing / Swimming
- o SCUBA diving / Snorkelling
- o Traditional use & knowledge
- o Education
- o Research
- o Health & wellbeing
- o Intrinsic values
- o Urban, industrial & agricultural development
- o Shipping & ports
- o Tourism
- o Commercial fishing
- o Aquaculture
- o Other Open ended.....

Q2: Which of the following features do you use in the Hawkesbury bioregion (please tick all that apply):

- o An ocean beach
- o An estuary (includes enclosed bays, harbours, lagoons and coastal lakes)
- o An offshore reef
- o A headland
- o Open coastal waters

Q3: In the past 12 months, how many days did you visit these places?

- o 300-365 days (nearly every day of the year)
- o 100-300 days (about one third to one half of the days of the year)
- o 50-99 days (most weekends or once a week)
- o 10-50 days (once a month or on holidays)
- o <10 days

Q4: What do you perceive are the threats to your use / benefit of the coastal environment in the Hawkesbury bioregion? Please tick all that apply.

- o Shipping
- o Foreshore development
- o Commercial fishing
- o Charter fishing
- o Recreational fishing
- o Cultural fishing
- o Charter activities

- o Aquaculture
- o Research and education
- o Recreation and tourism
- o Dredging
- o Mining and extractive industries
- o Agriculture
- o Stormwater discharge
- o Coastal floodplain development and use
- o Industrial activities
- o Climate change
- o Extreme weather events
- o I do not perceive any threats
- o Other Open ended.....

Q5: List some opportunities that could reduce the threats you listed above to improve your experience within the Hawkesbury bioregion and/or enhance marine biodiversity conservation at this site.

Open ended.....

Q6: How did you like using this interactive map?

Dislike Like

1 2 3 4

Comment: Open ended.....

About you

Q7: What is your postcode?*

Open ended.....

Q8: If you would like to be kept informed about this project please let us know your email address.

Name: Open ended.....

Email: Open ended.....

Privacy information

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Appendix C: Pre-identified sites – benefits, threats and management opportunities

Benefits, threats and management opportunities from entries to the web portal, submissions to MEMA's 'contact us' email, and meetings with local councils

Pre-identified Sites – Ten existing aquatic reserves (blue text) and the remaining pre-identified sites (black text)

*Opportunities summary:

- Sanctuary zone or extend sanctuary zone – this is noted when the entry for management options included the words 'sanctuary' or 'no-take' or 'no fishing'.
- Protection – this is noted when the entry included a request for some form of protection eg marine park, the word 'protection', or removal of commercial fishing/spearfishing etc.
- Other – this is noted when the entry included some other request than the above eg recreational fishing haven, rehabilitation, education, pollution issues etc.

Site name	Benefits	Threats	*Opportunities summary	Features
Wybung Head	Recreational fishing Boating Surfing / swimming SCUBA diving / snorkeling Traditional use & knowledge Education Health & wellbeing Intrinsic values Tourism Aquaculture **Other:** Spearfishing Whale watching Bird watching Oceanic watching Nature	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Charter activities Aquaculture Research and education Recreation and tourism Dredging Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal floodplain development and use Climate Change Extreme weather events **Other:** Rock fishing safety Moorings	• Protection • Other **Themes** • Biodiversity conservation • Fisheries and aquaculture • Tourism • Shipping and boating **Methods** • Engagement o Education • Planning	A headland, an ocean beach, an offshore reef, open coastal waters, an estuary

Site name	Benefits	Threats	*Opportunities summary	Features
		Vessel cleaning Discharge from ships that pass and anchor offshore Fishing Blackspot		
Bouddi National Park	Recreational fishing Boating Surfing / swimming SCUBA diving / snorkeling Traditional use & knowledge Education Research Health & wellbeing Intrinsic values Urban, industrial & agricultural development Tourism **Other:** Hiking the coastal path Discovery activities (NPWS) First MPA in NSW	Foreshore development Commercial fishing Charter fishing Recreational fishing Cultural fishing Charter activities Aquaculture Research and education Recreation and tourism Dredging Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal floodplain development and use Industrial activities Climate change Extreme weather events **Other:** Anti-social behaviour	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture **Methods** • Planning • Funding	A headland, an estuary, an ocean beach, an offshore reef, open coastal waters
Barrenjoey Head AR	Recreational fishing Commercial fishing Boating Surfing / Swimming SCUBA diving / Snorkelling Traditional use & knowledge Education Research Health & wellbeing Intrinsic values Tourism **Other:** Biodiversity Seafood	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Charter activities Aquaculture Research and education Recreation and tourism Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal and floodplain development and use	• Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Fisheries and aquaculture • Water quality and litter • Climate change • Cultural heritage • Shipping and boating	A headland, an estuary, an ocean beach, an offshore reef, open coastal waters

Site name	Benefits	Threats	*Opportunities summary	Features

	Picnicking
	Walking
	Provate companies
	Replenish coastal and offshore fish stocks
		Industrial activities
		Climate Change
		Extreme weather events
			Methods
			• Engagement
			  o Education
			  o Volunteer / stewardship opportunities
			• Planning
			• Regulation and compliance
			• Research	

Narrabeen Head AR	Surfing / Swimming Education
	Research
	Health & wellbeing
	Intrinsic values
	SCUBA diving/Snorkelling
	Tourism
	Boating
	Commercial fishing
	Recreational fishing
	
	Other:
	Biodiversity
	Replenish coastal and offshore fish stock
	Private companies
	Seafood
	Picnicking
	Walking
		Foreshore development
		Recreational fishing
		Recreation and tourism
		Dredging
		Stormwater discharge
		Pollution
		Climate Change
		Extreme weather events
		
		Other:
		Overfishing
		Warriewood Wastewater Treatment Plant
		Wet weather bypass
		Illegal collecting
		Sedimentation
			• Sanctuary
			• Protection
			• Other
			Themes
			• Biodiversity conservation
			  o Protected areas
			• Fisheries and aquaculture
			Methods
			• Engagement
			  o Volunteer / stewardship opportunities
			  o Education
			• Planning
			• Regulation and compliance
			• Research
				A headland, an estuary, an ocean beach

Long Reef AR	Recreational fishing
	Surfing / Swimming
	SCUBA diving / Snorkelling
	Traditional use & knowledge
	Education
	Research
	Health & wellbeing
	Intrinsic values
	Tourism
	Boating
	
	Other:
	Large underwater reef area
	Sightseeing
		Foreshore development
		Commercial fishing
		Charter fishing
		Recreational fishing
		Cultural fishing
		Recreation and tourism
		Stormwater discharge
		Pollution
		Coastal floodplain development and use
		Climate Change
		Charter activities
		Industrial activities
			• Sanctuary
			• Protection
			• Other
			Themes
			• Biodiversity conservation
			  o Protected areas
			  o Management of threatened species
			• Fisheries and aquaculture
			• Water quality and litter
			• Access and amenities
			Methods
			• Engagement
			  o Education
				A headland, an offshore reef, an ocean beach, an estuary, open coastal waters

Site name	Benefits	Threats	*Opportunities summary	Features
	Walking the rock platform Threatened species – grey nurse shark and blue devil fish School excursions Kayak fishing Monthly Long Reef Fishcare Educational walks Spearfishing Biodiversity Migratory birds Only intertidal rock platform exposed to all compass points	**Other:** Run off and pollution from the golf course Collecting from the intertidal shoreline Inadequate / No signage Dogs disturbing migratory birds Spearfishing Lack of compliance Disturbance from the increase of educational activities	o Communications o Volunteer / stewardship opportunities • Planning • Regulation and compliance	
Manly Wharf and Cove	Recreational fishing Boating Surfing / Swimming SCUBA diving / Snorkelling Traditional use & knowledge Education Research Health & wellbeing Intrinsic values Shipping & ports Tourism **Other:** Bait fishing - squid	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Cultural fishing Charter activities Aquaculture Recreation and tourism Dredging Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal floodplain development and use Industrial activities Climate change Extreme weather events **Other:** Marina and ferry pollution Anchoring Predation of Little Penguins	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Fisheries and aquaculture • Water quality and litter • Shipping and boating **Methods** • Engagement o Education • Regulation and compliance	An ocean beach, an offshore reef, open coastal waters, a headland, an estuary
Cabbage Tree Bay AR	Surfing / Swimming SCUBA diving / Snorkelling Research Intrinsic values Tourism	Recreational fishing Charter activities Pollution Industrial activities Climate Change	• Sanctuary • Other **Themes** • Biodiversity conservation	An ocean beach, a headland, an offshore reef, open coastal waters

Site name	Benefits	Threats	*Opportunities summary	Features
	Education Health & wellbeing **Other:** Abundance and diversity of fish	Commercial fishing Stormwater discharge **Other:** Sedimentation Lack of compliance Illegal harvesting Removal of sand & grit Volume of users User conflict Anti-social behavior Anchoring Dogs off leads Increased green weed in intertidal Frequent phytoplankton blooms Shark meshing	• Fisheries and aquaculture • Shipping and boating **Methods** • Regulation and compliance	
North Harbour AR	Boating Education Health & wellbeing Research SCUBA diving / Snorkelling Surfing / Swimming Tourism **Other:** Fishing Kayaking Ferries Observing wildlife Breeding and feeding for birds Fish breeding site	Charter activities Charter fishing Climate Change Coastal Floodplain development and use Commercial fishing Cultural fishing Foreshore development Industrial activities Pollution Recreational fishing Shipping Stormwater discharge **Other:** Removal of mature fishing species Marina and ferry pollution Squid fishing Lack of compliance Anchoring Predation of Little Penguins	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Management of threatened species **Methods** • Regulation and compliance	A headland, an ocean beach, an offshore reef, open coastal waters
Chowder Bay	Recreational fishing Boating Surfing / Swimming SCUBA diving / Snorkelling	Foreshore development Commercial fishing Charter fishing Recreational fishing	• Sanctuary • Protection • Other	An estuary, an ocean beach, a headland,

Site name	Benefits	Threats	*Opportunities summary	Features
	Traditional use & knowledge Education Research Health & wellbeing Intrinsic values Tourism **Other:** Walking Picnicking Bay watching Biodiversity History of community engagement with the Bay Bordered by Sydney Harbour National Park Seahorse populations Local economy Wharf facilities Recreational spaces Foreshore access Kayaking Off leash dog areas	Charter activities Research and education Recreation and tourism Aquaculture Mining and extractive industries Stormwater discharge Pollution Climate Change Extreme weather events **Other:** Litter from wharf fishing Damage to seagrass beds from anchoring Receives the garbage from southerly winds Sewer overflows Weed species Illegal collecting Dog off leash areas	**Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture • Water quality and litter **Methods** • Engagement o Education • Research • Regulation and compliance	
Bronte-Coogee AR	Recreational fishing Surfing / Swimming SCUBA diving / Snorkelling Traditional use & knowledge Education Research Health & wellbeing Intrinsic values Tourism Aquaculture **Other:** Biodiversity Running along the cliffs A chance for our children to interact and develop an understanding and love for nature Economic income for small business Whales and dolphins	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Cultural fishing Charter activities Aquaculture Research and education Recreation and tourism Dredging Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal floodplain development and use Industrial activities Climate Change	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture • Water quality and litter **Methods** • Engagement o Communications o Education • Regulation and compliance	An ocean beach, a headland, open coastal waters, an estuary

Site name	Benefits	Threats	*Opportunities summary	Features
	Easy access Proximity to the city Walking the coastal paths Giant cuttlefish population Weedy seadragons Collecting Local economy	Extreme weather events **Other:** Litter from fishing Incidental damage from fishing to intertidal species, rock shelves and lost gear Collecting from rock platforms, including for bait Fractured sewer pipes leaking into stormwater drains Fish feeding with urchins Collection of weedy-dragons for research and aquariums Intense use Lack of knowledge about rules Misinformation User conflict Dog off leash areas Lack of signage		
Magic Point	Recreational fishing Boating Surfing / Swimming SCUBA diving / Snorkelling Health & wellbeing Intrinsic values Education Research Tourism Aquaculture **Other:** Conservation value Critical habitat for Grey nurse shark Weedy sea dragon Spearfishing Fish diversity Biodiversity	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Cultural fishing Charter activities Aquaculture Dredging Mining and extractive industries Agriculture Stormwater discharge Pollution Coastal floodplain development and use Industrial activities Climate change Extreme weather events **Other:** Line fishing with plastics and lures – Greynurse Sharks	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Management of threatened species • Fisheries and aquaculture • Shipping and boating • Water quality & litter **Methods** • Engagement o Education • Regulation and compliance • Planning	A headland, an ocean beach, an offshore reef, open coastal waters, an estuary

Site name	Benefits	Threats	*Opportunities summary	Features
		Shark Meshing program – south Sydney nets Historical leaching from landfill site at Malabar headland Housing development and golf courses Lack of protection Spearfishing		
Cape Banks AR	Education Intrinsic values Research Traditional use & knowledge SCUBA diving / Snorkelling Surfing / Swimming Health & wellbeing **Other:** Sightseeing Walking Shipwreck Good whale watching spot Natural shelter from ocean swells Undeveloped coastline Variety of underwater habitats	Shipping Foreshore development Commercial fishing Charter fishing Recreational fishing Cultural fishing Charter activities Dredging Stormwater discharge Pollution Industrial activities Climate change Mining and extractive activities	• Sanctuary • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture • Water quality and litter **Methods** • Planning	A headland, an estuary, an ocean beach, an offshore reef, open coastal waters
Towra Point AR	Recreational fishing Boating Traditional use & knowledge Education Research Health & wellbeing Intrinsic values **Other:** Listed in the directory of Important Wetlands Variety of estuarine habitats Large areas of seagrass, saltmarsh and mangroves High biodiversity Ramsar site JAMBA species – migratory birds	Shipping Foreshore development Commercial fishing Recreational fishing Cultural fishing Recreation and tourism Dredging Stormwater discharge Pollution Industrial activities Climate change Extreme weather events **Other:** Heavy industry and port facilities Changes in wave action by revetment walls	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Water quality and litter • Shipping and boating • Aquatic biosecurity • Fisheries and aquaculture **Methods** • Engagement	An estuary

Site name	Benefits	Threats	*Opportunities summary	Features
	Threatened species Water quality Scenic values Kite surfing Dog off leash areas Walking	Shoreline instability and erosion Sewage overflow from Cronulla Treatment Works Coastal erosion Erosion from changes to wave action in Botany Bay Bird habitat shrinking Salinisation of freshwater lagoons Off leash dogs in undesignated areas Poor signage and delineation of boundaries Illegal collection User conflict	o Education • Regulation and compliance • Research	
Boat Harbour AR	Swimming / surfing Recreational fishing SCUBA diving / Snorkelling Aquaculture Intrinsic values Education Research **Other:** Kite surfing Dog off leash areas Walking	Foreshore development Industrial activities Pollution Stormwater discharge Climate Change Dredging **Other:** 4WDs on beach and rock platform Off leash dogs Illegal reclamation of saltmarsh High bacterial count Poor signage User conflict Migratory bird disturbance	• Protection • Other **Theme** • Water quality and litter **Method** • Regulation and compliance	An ocean beach, an offshore reef, a headland
Shiprock AR	SCUBA diving / Snorkelling Intrinsic values **Other:** High biodiversity Improved access	Recreational fishing Stormwater discharge Pollution **Other:** Jet skis Wake issues	• Sanctuary • Other **Theme** • Biodiversity conservation o Protected areas **Method** • Research	None listed

Appendix D: Additional sites – benefits, threats and management opportunities

Benefits, threats and management opportunities from entries to the Web Portal, submissions to MEMA's 'contactus' email and meetings with local councils

Additional sites identified through community engagement

*Opportunities summary:

- Sanctuary zone or extend sanctuary zone – this is noted when the entry for management options included the words 'sanctuary' or 'no-take' or 'no fishing'.
- Protection – this is noted when the entry included a request for some form of protection eg marine park, the word 'protection', or removal of commercial fishing/spearfishing etc.
- Other – this is noted when the entry included some other request than the above eg recreational fishing haven, rehabilitation, education, pollution issues etc.

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
1	Bondi	Education, Health & Wellbeing, Intrinsic values, SCUBA diving / Snorkelling, Surfing/Swimming, Tourism, Research, Boating, Recreational fishing **Other:** • Blue devilfish, weedy seadragons, Port Jackson shark aggregation • Register of the National Estate (Commonwealth of Australia 2003) • Iconic location • Spearfishing • Diving (The Cathedrals), • Fishing club, • Boat ramp • Spearfishing	Pollution, Recreational fishing, climate change, Recreation and tourism, Stormwater discharge, Commercial fishing, Industrial activities **Other:** • Collection • Uninformed users • Dogs on beach • Harvesting of urchins from intertidal zone. • User conflict between swimmers, local community and spearfishers. • Stormwater into beach, • Sewage overflows – untreated sewage (400 households) into Diamond Bay.	• Sanctuary zone • Protection **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture **Method** • Engagement o Education	A headland, an ocean beach, an offshore reef, open coastal waters, an estuary
2	Botany Bay	Boating, Education, Health & Wellbeing, Intrinsic values, Recreational fishing, Research, SCUBA diving/Snorkelling, Surfing/Swimming, Traditional use	Agriculture, Aquaculture, Charter Activities, Charter fishing, Climate change, Coastal floodplain development and use, Commercial fishing, Cultural fishing, Dredging,	• Protection • Other **Themes** • Biodiversity conservation o Protected area	An estuary (includes enclosed bays, harbours,

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		& Knowledge, Tourism, Shipping and Ports **Other:** • Only ocean embayment in the bioregion • Endangered *Posidonia australis* population • Eve St. Marsh - Listed in the Directory of Important Wetlands and includes diverse saltmarsh habitat.	Extreme weather events, Foreshore development, Industrial activities, Pollution, Recreation and tourism, Recreational fishing, Mining and extractive activities, Shipping, Stormwater discharge **Other:** • Invasive species • Reclamation • Boat moorings • Foreign operated ships – skill level and knowledge below standard	o Habitat management and rehabilitation **Methods** • Research • Engagement o Communications • Partnerships / Whole of Government • Regulation and compliance	lagoons and coastal lakes), an ocean beach, an offshore reef, open coastal waters
3	Botany Bay – Bare Island	Education, Health & wellbeing, Intrinsic values, Research, SCUBA diving / Snorkelling, Surfing/Swimming, Tourism **Other:** • High biodiversity for small fish and invertebrates • Popular dive site • Accessible	Charter fishing, Climate change, Commercial fishing, Cultural fishing, Dredging, Industrial activities, Mining and extractive industries, Pollution, Recreational fishing, Shipping, Stormwater discharge, Foreshore development **Other:** • Overfishing - Growing number of sea urchins gradually destroying the kelp gardens • Overfishing – low numbers of male crimson banded wrasse	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture • Water quality and litter **Methods** • Planning • Regulation and compliance	A headland, an estuary, an offshore reef, open coastal waters, an ocean beach
4	Brisbane Water	Recreational fishing **Other:** • Seagrass, mangrove, saltmarsh, juvenile fish • Endangered *Posidonia australis* population • listed in the Directory of Important Wetlands • Register of the National Estate and provide critical feeding and breeding areas for migratory wader species	Dredging **Other:** • Sand mining, reclamation, boat moorings, boat propellers and changes to the physical environment (e.g., wave heights). • Poor water quality • Invasive alga *Caulerpa taxifolia* • Wildlife disturbance	• Protection **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture	None listed

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
5	Bronte to Coogee Beaches and Headlands	Boating, Health & wellbeing, SCUBA diving/Snorkelling, Surfing/Swimming Tourism	Climate change, Commercial fishing, Cultural fishing, Dredging, Foreshore development, Pollution, Recreational fishing, Shipping Stormwater Discharge	• Sanctuary zone • Other **Themes** • Biodiversity conservation o Protected areas • Water quality and litter	An ocean beach, a headland, an offshore reef, open coastal waters
6	Central Coast Beaches and Headlands	Education, Health & wellbeing, Intrinsic values, Recreational fishing, SCUBA diving/Snorkelling **Other:** • Black rockcod – vulnerable • Identified as candidate sites for rocky shore aquatic reserve (Otway 1999) • Toowoon Bay is a safe enclosed bay	Climate change, Commercial fishing, Dredging, Pollution, Recreational fishing, I do not perceive any threats	• Protection • Other **Themes** • Biodiversity conservation o Protected areas o Management of threatened species	A headland, an estuary, an offshore reef
7	Coastal Waters	Intrinsic values, Recreational fishing, SCUBA diving / Snorkelling **Other:** • Geological complexity • Sustainability of the aquatic ecosystem	Climate change, Coastal floodplain development and use, Commercial fishing, Dredging, Extreme weather events, Industrial activities, Pollution, Recreational fishing, Shipping	• Protection • Other **Themes** • Biodiversity conservation o Protected areas • Water quality and litter • Shipping and boating	An offshore reef, open coastal waters
8	Cronulla	Intrinsic values, SCUBA diving / Snorkelling, Surfing / Swimming **Other:** • Blue groper, weedy seadragons • Submerged shoal complex in Bate Bay • Oak Park is a well-known place to SCUBA dive due to easy access and diversity of fish - underwater sandstone walls.	Commercial fishing, Industrial activities, Pollution, Recreational fishing, Stormwater discharge **Other:** • Spearfishing	• Sanctuary zone • Protection **Themes** • Biodiversity conservation o Protected areas	An estuary, a headland, an ocean beach, an offshore reef
9	Curl Curl Lagoon	Boating, Health and Wellbeing, Intrinsic values, Recreational fishing, Surfing / Swimming	Charter fishing, Climate Change, Coastal floodplain development and use, Commercial fishing, Dredging, Extreme weather events, Foreshore	• Other **Themes** • Biodiversity conservation o Habitat management and	A headland, an estuary, an ocean beach

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
			development, industrial activities, mining and extractive industries, Pollution, Stormwater discharge **Other:** • Landfill in swamps adjoining coastal estuaries and lagoons.	rehabilitation • Water quality and litter **Methods** • Planning	
10	Dee Why Lagoon	Aquaculture, Surfing / Swimming, Tourism **Other:** • Mature intermittent estuary, wading birds, diverse intertidal communities • Listed on the Register of the National Estate • Was identified as a priority candidate site for an estuarine aquatic reserve • Most diverse fish community of any mature intermittent estuary in the Hawkesbury Shelf bioregion (D. Hoese, pers. comm., in Frances 2000) • Habitat for more than 580 species of fish (Amonline, 2002)	Climate change, Commercial fishing, Dredging, Foreshore development, Industrial activities, Mining and extractive industries, Pollution, Recreational fishing, Shipping, Stormwater discharge	• Sanctuary • Protection **Themes** • Biodiversity conservation o Protected areas	An ocean beach
11	Fairlight	Education, Health & wellbeing, Recreational fishing, Research, SCUBA diving / Snorkelling, Surfing / Swimming, Tourism **Other:** • Green corals, turtles, blue morwong, wobbegongs • Survey sites for Reef Life Survey • Great area for kids to swim and snorkel	Cultural fishing, Climate change, Pollution, Recreational fishing, Recreation and tourism, Stormwater discharge **Other:** • Marine debris	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas	An estuary, an ocean beach, an offshore reef
12	Five Islands	Intrinsic values, Research, Recreational fishing, SCUBA diving / Snorkelling, Tourism, Education, Surfing/Swimming **Other:**	Charter activities, Charter fishing, Commercial fishing, Industrial activities, Pollution, Recreational fishing, Cultural fishing **Other:**	• Protection • Sanctuary **Themes** • Biodiversity conservation o Protected areas	Open coastal waters, a headland, an offshore reef

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		• Australian fur seal colony, fairy penguins • Rocky reef/island habitat, uncommon habitat type in the region	• Competition for food for seals from commercial and recreational fishing • Overfishing caused lack of food source for seals and penguins • Marine debris	• Fisheries and aquaculture	
13	Freshwater	**Other:** • Rays, blue groper, wobbegongs		• Protection **Themes** • Biodiversity conservation	
14	Georges River	**Other:** • Massing small fish fry • Canoeing		• Protection **Themes** • Biodiversity conservation	
15	Hawkesbury River	Boating, Education, Health & wellbeing, Intrinsic values, Research, Recreational fishing, Surfing / Swimming, SCUBA diving / Snorkelling, **Other:** • Seagrass, mangrove, saltmarsh, juvenile fish, • marine worm – presumed extinct • sites originally short-listed for investigation by an advisory panel of stakeholders and community representatives (Otway 1999) • Least proportion of urban development • Coastal Rocks are all on the Register of National Estate	Agriculture, Charter activities, Climate Change Coastal floodplain development and use, Commercial fishing, Dredging, Foreshore development, Industrial activities, Mining and extractive industries, Pollution, Stormwater discharge, Shipping, Extreme weather events, Recreational fishing, Charter fishing,	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture • Water quality and litter • Shipping and boating • Access and amenities **Methods** • Planning • Regulation and compliance	A headland, an estuary, an ocean beach, an offshore reef, open coastal waters
16	Hunter River	Education, Health and wellbeing, Intrinsic values, Research, Shipping, Ports, Surfing / Swimming, Tourism, Urban, Industrial, Agricultural development, Boating, Recreational fishing, Shipping and	Climate change, coastal floodplain development and use, Dredging, Extreme weather events, Foreshore development, Mining and extractive industries, Pollution, Recreation and tourism, Recreational fishing, Research and education, Shipping,	• Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation	A headland, an estuary, an ocean beach

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		ports **Other:** • Ramsar wetlands, saltmarsh, migratory birds • Walking • Bird watching	Stormwater discharge, Industrial activities **Other:** • Introduced species	o Management of threatened species **Methods** • Planning	
17	Kurnell	Aquaculture, Health and wellbeing, Education, Intrinsic values, Research, SCUBA diving/Snorkelling, Surfing/Swimming, Tourism **Other:** • Weedy seadragons, soft corals, diverse intertidal communities • Register of the National Estate	Coastal floodplain development and use, Foreshore development, Industrial activities, Pollution, Climate change, Commercial fishing, Dredging, Recreational fishing, Stormwater discharge, Charter fishing, Cultural fishing	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Water quality and litter **Methods** • Planning	An island, an ocean beach, an offshore reef, a headland, open coastal waters
18	Lake Illawarra	Aquaculture, Boating, Commercial fishing, Education, Health and wellbeing, Intrinsic values, Recreational fishing, Research, Tourism, Traditional use and knowledge, Surfing / Swimming, SCUBA diving / Snorkelling, Urban and Industrial, agricultural development, Shipping and ports **Other:** • Wetland, seagrass, saltmarsh, black rockcod, wading birds, juvenile fish • Site of national importance • Rowing, sailing • Largest ICOLL in NSW • 2005 report on Broadscale Biodiversity Assessment of the bioregion identifies Lake Illawarra as being of	Climate change, Coastal floodplain development and use, Dredging, Extreme weather events, Foreshore development, Industrial activities, Mining and extractive industries, Pollution, Stormwater discharge, Commercial fishing, Recreational fishing, Agriculture, Recreation and tourism, Aquaculture, Charter activities, Charter fishing, Cultural fishing, Research and education **Other:** Urban development, over commercialising of Lake Illawarra Sediment build up	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Fisheries and aquaculture • Water quality and litter • Shipping and boating • Access and amenities **Methods** • Planning • Engagement o Education • Research • Funding	An estuary, a headland, an ocean beach, open coastal waters, an offshore reef, open coastal waters

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		high ecological importance • Breeding habitat of Little Tern • Prawning • Sporting events • Cultural heritage • Bushcare volunteering • Walking • Cycling		• Regulation and compliance	
19	Lake Macquarie	Commercial fishing, Education, Intrinsic values, SCUBA diving/Snorkelling, Health and wellbeing, Recreational fishing, Research, Surfing/swimming **Other:** • Seagrass, saltmarsh, juvenile fish, Endangered *Posidonia australis* population • Swansea Bridge is a popular dive site	Aquaculture, Charter fishing, Recreational fishing, Shipping, Coastal floodplain development and use, Foreshore development, Mining and extractive industries, Pollution, Stormwater discharge, Agriculture, Industrial activities, Climate change, Extreme weather events, Foreshore development **Other:** • SCUBA diving, Dredging, sand mining, reclamation, boat moorings, boat propellers and changes to the physical environment. The invasive alga *Caulerpa taxifolia* • Overharvesting of urchins and other rock platform animals • Mining discharge • Marine debris	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture • Water quality and litter • Shipping and boating **Methods** • Regulation and compliance	An estuary, a headland, an ocean beach, an offshore reef, open coastal waters
20	Lion Island	Education, Intrinsic values, Recreational fishing, Research, SCUBA diving/Snorkelling **Other:** • Register of the National Estate and breeding habitat for the wedge-tailed shearwater, sooty shearwater and little	Charter fishing, climate change, commercial fishing, recreational fishing	• Protection **Themes** • Biodiversity conservation o Protected areas	An offshore reef, open coastal waters

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		penguins.			
21	Little Bay	Intrinsic values, SCUBA diving / Snorkelling, Tourism, Surfing/Swimming, Education, Research	Cultural fishing, recreational fishing, Pollution, Stormwater discharge **Other:** • Spearfishing • Fishing and Collecting • Dogs on rock platform • Increased density of users	• Sanctuary • Protection **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture **Methods** • Engagement o Education • Regulation and compliance	A headland, as estuary
22	Long Bay	Health and wellbeing, Intrinsic values, SCUBA diving / Snorkelling, Surfing / Swimming, Traditional use and knowledge, **Other:** • Diverse intertidal communities • Sheltered, easy access	Climate change, cultural fishing, extreme weather events, foreshore development, pollution, recreation and tourism, stormwater discharge, **Other:** • Rec line fishing from boats and spearfishing • Increasing population, • Spills • Overdevelopment of the coast • Inadequate treatment facilities • Long Bay sewage works – level of treatment and outfall • Marine debris	• Sanctuary zone • Protection **Themes** • Biodiversity conservation o Protected areas • Water quality and litter	A headland, an ocean beach, open coastal waters, an estuary
23	Long Reef offshore	Health and wellbeing, SCUBA diving / Snorkelling **Other:** • Coastal Rocks are all on the Register of the National Estate	Charter fishing, Commercial fishing, Pollution, Recreational fishing	• Sanctuary zone • Protection **Themes** • Biodiversity conservation o Protected areas o Management of threatened species • Tourism	An ocean beach, offshore reef, open coastal waters
24	Maroubra	Health and wellbeing, Intrinsic values, surfing / swimming,	Pollution, recreation and tourism, stormwater discharge, aquaculture,	• Protection	A headland, an estuary,

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		tourism, SCUBA diving/Snorkelling **Other:** • Listed as critical habitat for the grey nurse shark • Shipwrecks	charter fishing, climate change, commercial fishing, dredging, pollution, recreational fishing	• Other **Themes** • Biodiversity conservation o Protected areas o Management of threatened species • Water quality and litter	an ocean beach, open coastal waters
25	Moon Island	Boating, Commercial fishing, recreational fishing, tourism, SCUBA diving/Snorkelling, Education, Intrinsic values, Traditional use and knowledge **Other:** • Biodiverse rock platform • Large populations of protected, threatened and endangered species • Culturally significant	Cultural fishing, recreational fishing, mining and extractive industries, shipping, charter fishing, recreation and tourism **Other:** • Targeting of grey nurse sharks (accidental or deliberate) • Collecting • Lack of education by users • Harvesting of Cunjevoi and sea urchins • Weeds • Human impact	• Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation o Management of threatened species • Fisheries and aquaculture • Shipping and boating **Methods** • Regulation and compliance • Engagement o Education	A headland, an ocean beach, open coastal waters, an estuary, an offshore reef
26	Narrabeen Lagoon	Health and wellbeing, Intrinsic values, Tourism **Other:** • Intermittent estuary, seagrass, wading birds • Identified as a first priority candidate sites for estuarine AR (Frances 2000)	Dredging, Foreshore development, Recreational fishing, Stormwater discharge	• Protection **Themes** • Biodiversity conservation	An estuary (includes enclosed bays, harbours, lagoons and coastal lakes)
27	Norah Head	**Other:** • Black Rock Cod – vulnerable • Migratory birds	Recreational fishing, Commercial fishing	• Protection **Themes** • Biodiversity conservation	
28	Northern Beaches Coastal Beaches and Headlands	Research, SCUBA diving / Snorkelling, Health and wellbeing, Intrinsic values, Surfing and Swimming, Education	Charter fishing, Foreshore development, Pollution, Stormwater discharge, Climate changes, commercial fishing, mining and	• Sanctuary zone • Protection **Themes** • Biodiversity conservation	A headland, an estuary, an ocean beach, open

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		Other: • Diverse intertidal communities • Fish breeding	extractive industries **Other:** • Spearfishing	o Protected areas • Fisheries and aquaculture • Water quality and litter • Tourism **Methods** • Research	coastal waters
29	Northern Illawarra	Health and wellbeing, intrinsic values, recreational fishing, SCUBA diving/Snorkelling, Surfing/Swimming **Other:** • Lobster diving • Large and prominent intertidal platform	Foreshore development, recreational fishing	• Sanctuary • Other **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture	A headland, an offshore reef
30	North Head, Sydney	Aquaculture, Education, Health and wellbeing, Intrinsic values, Research, SCUBA diving / Snorkelling, Surfing / Swimming, Tourism, Boating **Other:** • Weedy seadragons, sea fans, giant cuttlefish, sponge gardens, blue groper, tropical species recruitment • Register of the National Estate • Migratory birds	Charter activities, Charter fishing, Climate change, Commercial fishing, Extreme weather events, Foreshore development, Industrial activities, Pollution, Recreational fishing, Shipping, Stormwater discharge **Other:** • Illegal fishing • Over extraction of marine life • Spearfishing • Fishing gear entanglement • Migratory bird disturbance	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas **Methods** • Engagement	A headland, an ocean beach, open coastal waters, an offshore reef
31	Osborne Shoals (Submerged shoal complex in Bate Bay and near Boat Harbour Aquatic Reserve)	**Other:** • migratory bird roosting area • Snorkelling • Diving location • Underwater Research Group discovered live specimen of the mollusc, *Bursa mammata*, which was previously thought extinct.		• Sanctuary zone **Themes** • Biodiversity conservation o Protected areas	

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		• Sponge Gardens			
32	Parramatta River	Aquaculture, Boating, Health and wellbeing, Recreational fishing, SCUBA diving / Snorkelling, Surfing / Swimming, Traditional use and knowledge, Health and wellbeing **Other:** • Second highest diversity and highest summed irreplaceability for threatened bird species (Breen Avery and Otway 20015) • Nine significant wetlands • Register of the National Estate	Agriculture, Charter fishing, Climate change, Coastal floodplain development and use, Commercial fishing, Dredging, Foreshore development, Industrial activities, Mining and extractive industries, Pollution, Shipping, Stormwater discharge, Recreational fishing	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas • Water quality and litter	A headland, an estuary (includes enclosed bays, harbours, lagoons and coastal lakes), an ocean beach, open coastal waters
33	Pittwater	Education, health and wellbeing, intrinsic values, surfing / swimming, traditional use and knowledge **Other:** • Endangered *Posidonia australis* population • Seagrass meadows • Fringing seagrass beds on the western shores of Pittwater	Agriculture, charter activities, coastal floodplain development and use, commercial fishing, dredging, foreshore development, industrial activities, mining and extractive industries, pollution, shipping, stormwater discharge, charter fishing, climate change, extreme weather events, pollution **Other:** • Sediment and erosion, • Future development, • Illegal collection	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Water quality and litter • Shipping and boating **Methods** • Regulation and compliance • Engagement o Education	An estuary, an ocean beach, open coastal waters
34	Port Hacking	Education, Health and wellbeing, intrinsic values, research, SCUBA diving / Snorkelling, Surfing/Swimming, tourism, traditional use and knowledge, boating, recreational fishing, urban, industrial, agricultural development **Other:** • Diverse intertidal communities	Coastal floodplain development and use, Foreshore development, Industrial activities, Recreational fishing, stormwater discharge, pollution, Mining and extractive industries, industrial activities, Agriculture, climate change, dredging, extreme weather events, shipping **Other:**	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture	An estuary, a headland

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		• Nursery area • Cabbage Tree Point (Port Hacking) IPA • Hungary Point Heritage site, middens (owned by trust)	• Dredging, sand mining, reclamation, boat moorings, boat propellers and changes to the physical environment (e.g., wave heights). • Poor water quality. • The invasive alga *Caulerpa taxifolia*. • Poor regulation of industry by Council, urban development, poor catchment management • Motorised boating...keep the barrier of low bridge at entrance, but entrance needs widening not deepening to stop sand build up caused by obstructing bridge works which carry utilities to Gundamain. • Fishing litter and debris	• Water quality and litter **Methods** • Planning • Engagement o Education	
35	Queenscliff	Commercial fishing, Education, Health and wellbeing, SCUBA diving / Snorkelling, Surfing/Swimming, Tourism	Agriculture, charter activities, charter fishing, climate change, coastal floodplain development and use, commercial fishing, dredging, extreme weather events, foreshore development, industrial activities, mining and extractive industries, pollution, recreational fishing	• Extend Sanctuary **Themes** • Biodiversity conservation o Protected areas	A headland, an estuary, an ocean beach
36	Royal National Park	Education, Intrinsic values, SCUBA diving / Snorkelling, Health and wellbeing **Other:** • SCUBA training, easily accessible lagoon	Cultural fishing, recreational fishing	• Sanctuary • Other **Themes** • Biodiversity conservation o Protected areas **Methods** • Engagement o Education	A headland, an estuary, an ocean beach
37	Swansea Heads	**Other:** • Largest coastal saltmarsh in Lake Macquarie • Important feeding area for migratory birds and other		• Protection **Themes** • Biodiversity conservation	

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		waders • Salts Bay Littoral rainforest and accompanying walking trails • Rock platform of high biological diversity • Aboriginal reburial site-zoned as a sensitive Aboriginal Cultural landscape • Themeda grassland (EEC) • Whale watching , offshore GNS aggregation, Eastern Reef Egret (dark phase) sighted on rock platform • Key coastal habitat and ecosystem functions - mangroves and seagrass as a broader wetland complex • Supports water quality health and provides roosting, feeding and nursey habitat for coastal fauna • Dune system along ~32km of coastline, climate change protection, high social and economic benefit, coastal hazard reduction			
38 39 40	Sydney Harbour Lane Cove River Middle Harbour Creek	Health and wellbeing, Intrinsic values, SCUBA diving / Snorkelling, Surfing / swimming, education, tourism, traditional use and knowledge **Other:** • Seahorses, seagrass, green corals, juvenile Port Jackson sharks, pipefish, tropical species recruitment • Bennetts Seaweed – presumed extinct • Hawell's caprellid – presumed extinct	Extreme weather events, foreshore development, pollution, recreation and tourism, recreational fishing, stormwater discharge, cultural fishing, commercial fishing, charter fishing, charter activities **Other:** • Damage to seagrass beds from anchors/chains • Threats to delicate sessile organisms, ascidians, gorgonians, sponges • Protection needed for pipe fish and cuttlefish habitat	• Sanctuary zone • Protection • Other **Themes** • Biodiversity conservation o Protected areas • Fisheries and aquaculture • Water quality and litter • Shipping and boating • Tourism **Methods** • Engagement o Education	A headland, an ocean beach, an estuary, an offshore reef,

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		• Endangered *Posidonia australis* population • Coastal rocks are on the Register of the National Estate • Major concentrations of mangroves • More than 580 species of fish are found in Sydney Harbour • Foreshore along the Hermitage walk • Habitat on Mona Vale Headland Reserve • Rowing • Centre of the species distributional range			
41	The Gap	**Other:** Soft corals, giant cuttlefish, weedy seadragons		• Protection **Themes** • Biodiversity conservation	
42	Tuggerah Lakes	Boating, Intrinsic values, research, health and wellbeing, recreational fishing, Surfing/swimming, Traditional use and knowledge **Other:** Wetlands, seagrass, juvenile fish, recreational value Budgewoi Sandmass is a relic Pleistocene tidal delta that has not been active for 1,000 years (Tuggerah Lakes Estuary Process Study, 2001). Valuable and unique ecological area	Aquaculture, climate change, commercial fishing, pollution, recreational fishing, dredging, extreme weather events, mining and extractive industries, stormwater discharge, commercial fishing, land reclamation, Charter activities, Charter fishing, Coastal floodplain development, Foreshore development, Industrial activities, Shipping	• Sanctuary • Protection • Other **Themes** • Biodiversity conservation o Protected areas o Habitat management and rehabilitation • Fisheries and aquaculture	A headland, an estuary (includes enclosed bays, harbours, lagoons and coastal lakes), an ocean beach, an offshore reef, open coastal waters
43	Voyager Point	Intrinsic values, research **Other:** • listed on the Register of the National Estate • Wetlands at the junction of the Georges River and Williams	Climate change, dredging, foreshore development, pollution **Other:** • Changes in water quality, wash from speedboats and drainage from nearby housing	• Sanctuary zone • Protection **Themes** • Biodiversity conservation o Protected areas	An estuary

No.	Additional Site	Benefits	Threats	*Opportunities summary	Feature/s
		creek	developments.		
44	Wamberal Lagoon	Boating, Health and wellbeing, intrinsic values, research **Other:** • Important habitat for fish, molluscs, crustaceans and a range of migratory waders	Climate change, pollution	• Protection **Themes** • Biodiversity conservation o Protected areas	An estuary
45	Windang Island	**Other:** • Site of national importance		• Protection **Themes** • Biodiversity conservation o Protected areas	