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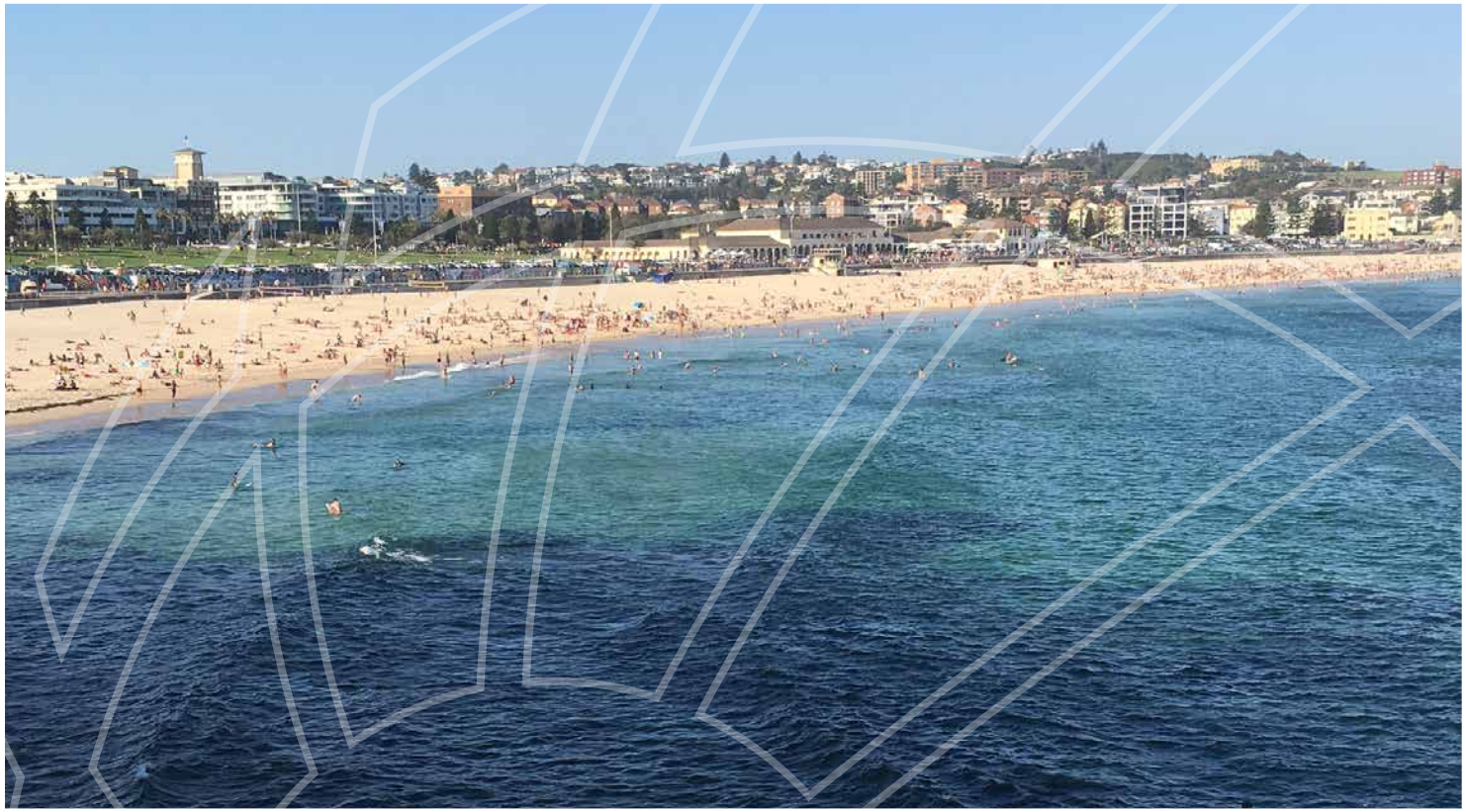

Eastern Beaches CMP Stage 1 Scoping Study

Final Report

June 2020

WAVERLEY COUNCIL

Randwick City Council
a sense of community

Woollahra Municipal Council

Document Control Sheet

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Project Manager	Geoff Withycombe	**Client Reference**	CMP A18/0517
Authors	Ainslie Downes, Geoff Withycombe, Tom Doyle, Madelaine Broadfoot, Daniel Machado	**Synopsis**	This document presents the Eastern Beaches Coastal Management Program Scoping Study.

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Executive Summary

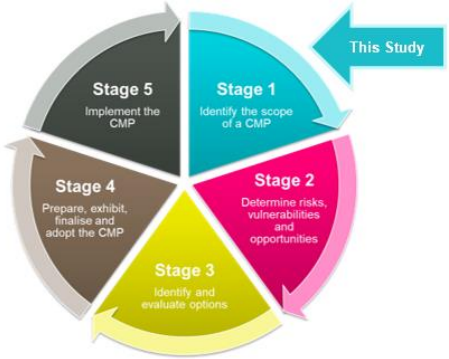
Introduction

Woollahra Municipal Council, Waverley Council and Randwick City Council (the Councils) and the NSW Department of Planning, Industry and Environment (DPIE) are considering the preparation of a Coastal Management Program (CMP) for Sydney's Eastern Beaches.

A CMP aims to provide a long term, coordinated strategy for managing the coastal zone in accordance with the Coastal Management Act 2016.

This Stage 1 Scoping Study for an Eastern Beaches CMP has determined the scope and defined a path for progressing to further stages of the CMP. This study includes: the strategic context for coastal management; the CMP vision and objectives; areas to be covered (geographic extent and coastal management areas); priority issues to be addressed; identified knowledge and information gaps requiring attention; potential governance issues and roles and responsibilities; and a preliminary business case; a community and stakeholder engagement strategy; and a forward plan to complete the CMP.

This Scoping Study is the first of five stages of preparing a CMP as defined by the NSW Coastal Management Framework.



Study area

The project is focused on the coastal catchments, open beaches and coastal waters of the Woollahra Municipal Council, Waverley Council and Randwick City Council Local Government Areas (LGA). The study area extends from South Head in the north, down to Cape Banks in the south and into Botany Bay around to Port Botany where the Randwick City Council LGA boundary ends. It also extends 3 Nautical miles seaward, and is therefore predominantly Sea Country. The study area is shown below.

Figure 1 Study Area Eastern Beaches CMP

Vision

Vision for the Eastern Beaches CMP

The iconic Eastern Beaches coastline of Sydney is resilient through integrated and co-ordinated planning and management that protects and improves its unique cultural, biodiverse and economic values now and for the communities, development and climate changes of the future.

Objectives

Thirteen objectives are defined for a Eastern Beaches CMP relevant for local issues and conditions. These have been developed to reflect aspirations gathered from stakeholders and the community engaged during the development of the Scoping study and Councils' Community Strategic Plans.

The objectives are consistent with and give effect to the management objectives provided in the Coastal Management Act, 2016 for the four coastal management areas that comprise the NSW coastal zone. They also support the objects of the *Marine Estate Management Act 2014*.

Context and Scope

The coastal management context for Eastern Beaches has been defined, based on consultation and literature review, in terms of its

- Strategic legislative, planning, governance and management context
- Physical and environmental context
- Social, cultural, economic and future context.

Values, and Key Coastal Management Issues

Priority values for the CMP as determined by stakeholders are:

Table 1 Values and Key Coastal Management Issues

Values	Key Management Issues
• **V1:** Good water quality • **V2:** Terrestrial biodiversity and ecosystem integrity • **V3:** Marine biodiversity and ecosystem integrity • **V4:** Scenic landforms, natural beauty and geodiversity • **V5:** Abundant recreational opportunities • **V6:** Cultural and heritage recognition • **V7:** Connected and cohesive community • **V8:** Sustainable tourism • **V9:** Accessible and inclusive place management	• **I1:** Impact of catchment activities, runoff and discharges • **I2:** Disturbance to biodiversity and habitat • **I3:** Impacts from coastal development • **I4:** Conflict over resource use, recreation and access availability • **I5:** Public safety • **I6:** Degradation of Aboriginal and cultural heritage • **I7:** Impacts from commercial and industrial activities • **I8:** Lack of engagement, governance and compliance • **I9:** Coastal hazards and future sea level rise

First Pass Risk Assessment

The first pass risk assessment undertaken for the Scoping Study provides the methodology for determining the severity of known threats in the study area, at present and into the future. The assessment process developed by BMT recognises that data and information gaps may exist at the present time to provide a detailed assessment of all potential risks. The aim therefore of the first pass risk assessment is to direct efforts for preparing the CMP to those risks that are likely to pose the greatest risk now or in the future. It also enables the identification of data and information gaps required to enable a detailed risk assessment to be undertaken as part of Stage 3 of the CMP. Overall risk rating for the 9 priority CMP management issues is provided in Table 2 below.

Table 2 Overall Risk Rating

Priority Management Issues	Overall Level of Risk
Issue 1: Impact of catchment activities, runoff and discharges	High
Issue 2: Biodiversity and habitat	High
Issue 3: Impacts from coastal development	Medium
Issue 4: Resource use, recreation and access availability	Medium
Issue 5: Public safety	Medium
Issue 6: Aboriginal and cultural heritage	Medium
Issue 7: Impacts from commercial and industrial activities	Medium
Issue 8: Engagement, governance and compliance	Medium
Issue 9: Coastal hazards and future sea level rise*	Medium to High

**Coastal and tidal inundation rated medium, beach erosion and shoreline recession rated medium / high and coastal cliff or slope instability rated high.*

Benefits of Preparing the CMP

A CMP aims to provide a coordinated, strategic and integrated approach to sustaining the coastal zone over both the immediate and medium term with consideration of long-term trends (i.e. 10 year plan, considering hazards to 2100). By providing a coordinated management strategy for the Eastern Beaches coastline, a CMP will provide the plan for maintaining and improving the health of the coast and the associated environmental, social and economic values. Developing a CMP provides the participating councils a unique opportunity to build on the existing coastal management work, coordinate engagement and collaboration with relevant stakeholders including state agencies, to implement a holistic and inclusive CMP for the Eastern Beaches.

The potential benefits from preparing a Eastern Beaches CMP are substantial and include:

- Eligibility for 2:1 grant funding from the NSW coastal and estuary grant program and other sources, for example for sea wall construction
- Managing uncertainty and making informed and collaborative coastal management decisions such as planning decisions relating to future sea level rise and coastal hazards
- Obtaining legislative support
- Improving capacity to address strategic and sediment compartment and catchment wide issues
- Ensuring a clear and strategic approach for achieving a shared vision of the coast

- Engagement and collaboration with various land owners and coastal managers such as Sydney Water, NPWS, La Perouse Land Council and Crown Lands and their leases.

Risks of not preparing and preparing a CMP

- Liability exposure for coastal risks and management
- Risk to coastal values and associated cost implications
- Limitations to accessing the NSW coastal and estuary grants program
- Delayed implementation costs and likelihood of increasing adaptation costs as coastal risks increase over time with climate change.

Key Risks of Preparing a CMP

- Community and stakeholder expectations
- Councils' accountability and obligations for implementing the CMP
- Conflict with other resource commitments and demands of Councils and other land managing agencies

Forward Plan

The preparation of the Eastern Beaches CMP is contingent on identifying next stages in the process (i.e. Stage 2–4). These include:

Stage 2: undertaking detailed studies that will assist Council in identifying, analysing and evaluating risks, vulnerabilities and opportunities in the study area. The studies c provide information to support decision-making in the subsequent stages of the CMP planning process.

Stage 3: the identification and evaluation of management options in order to select preferred coastal management. The aim of Stage 3 is to develop strategies and actions that reduce exposure to coastal hazards, address coastal management issues and take advantage of opportunities in partnership with public authorities and the community.

Stage 4 involves a draft coastal management program being prepared, exhibited and then submitted to the Minister for certification. This stage also requires agency sign off, which enacts section 23 of the Coastal Management Act requiring public authorities to have regard to coastal management program to the extent that those programs are relevant to the exercise of their functions.

Stage 5 of the process is implementation of the approved CMP over the designated 10 year program timeframe and to include ongoing progress monitoring.

Estimated cost of Eastern Beaches CMP

The total cost of preparing the Eastern Beaches CMP is estimated at between $1,350,000 and 1,975,000. The total cost estimated for projects that involve Eastern Beaches Councils is estimated to be between $1,190,000 and $1,745,000. To undertake High Priority studies / components only estimated costs between $920,000 and $1,380,000 and projects involving Councils costs of between $835,000 and $1,265,000.

NB Projects involving Councils are likely to be supported by grant funding including the NSW Coastal Program (2:1) and other sources including contributions by participating public authorities (See Section 5.5.3)

This report has been prepared on behalf of Woollahra, Waverley and Randwick Councils' and DPIE and has been prepared in accordance with the CM Act, the Coastal Management Manual (the Manual) (OEH, 2018), and is consistent with the NSW Coastal Management Framework.

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1 Introduction

1.1 Introduction to the Project

The project is focused on the coastal catchments, open beaches and coastal waters of the Woollahra Municipal Council, Waverley Council and Randwick City Council Local Government Areas (LGA). The study area extends from South Head in the north, down to Cape Banks in the south and into Botany Bay around Port Botany where the Randwick City Council LGA boundary ends. The study area is shown in Figure 1-1. Further definition of the study area is provided in Section 1.3.

Woollahra Municipal Council, Waverley Council and Randwick City Council (the Councils) and the NSW Department of Planning, Industry and Environment (DPIE, formerly the Office of Environment and Heritage; OEH) have resolved to prepare a Coastal Management Program (CMP) for this portion of the Sydney coastline. A CMP aims to provide a long term, coordinated strategy for managing the coastal zone in accordance with the Coastal Management Act 2016 (CM Act) and local objectives. It shall be implemented through coordination between the Councils, state agencies and other key stakeholders.

In accordance with the NSW Coastal Management Framework, Stage 1 of preparing a CMP is to undertake a Scoping Study. The aims of a Scoping Study for an area of interest are to:

- review management arrangements and supporting technical information to determine elements that should be retained in the CMP;
- develop a shared understanding of the strategic context of the CMP, identifying priorities;
- establish the focus (purpose, vision, objectives and scope) of the CMP;
- provide a forward plan for undertaking subsequent stages (Stages 2 to 5) of the CMP;
- provide a preliminary business case to develop the CMP; and
- provide a stakeholder and community consultation and engagement strategy for the preparation of the CMP.

This Eastern Beaches CMP Stage 1 Scoping Study documents the above elements. It has been prepared by BMT for the Woollahra, Waverley and Randwick Councils and DPIE in consultation with relevant state and local stakeholders and in accordance with the NSW Coastal Management Framework.

1.2 NSW Coastal Management Framework

The NSW Government completed a re-invigoration of the NSW Coastal Management Framework for managing the open coast, estuaries and the marine estate. The new framework came into force in April 2018 and comprises the key elements including legislation as outlined in Figure 1-2.

Figure 1-1 Eastern Beaches CMP Study Area

NSW Coastal Management Framework

Environmental Planning & Assessment Act 1979 (EP&A Act)

Is the principal legislation regulating land use in NSW, which provides for environmental planning instruments, which establish development controls.

The EP&A Act also provides for the determination of development applications, and includes enforcements and compliance powers in respect of unauthorized development.

Coastal Management Act 2016 (CM Act)

Sets the State framework and objects for managing the NSW coastal zone, which is now defined as comprising four coastal management areas (CMAs).

Establishes the NSW Coastal Council, to provide independent advice to the Minister.

Sets the minimum requirements for preparing and implementing a Coastal Management Program (CMP).

Marine Estate Management Act 2017 (MEM Act)

Brings a closer link between marine estate and coastal management.

The marine estate is defined to include all features of the coastal zone (including estuaries).

An object of the CM Act is to support the objectives of the MEM Act.

Section 9.1 Directions (Coastal Management)

Applies to planning authorities preparing Planning Proposals under Section 9.1 of the EP&A Act.

Planning Proposals can be amended in conjunction with preparation and implementation of CMPs.

Proposed land use changes must be consistent with the CM Act and CM SEPP.

State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP)

Identifies and maps the coastal zone, comprised of the following four CMAs: Coastal Wetlands and Littoral Rainforest Area (CWLRA), Coastal Vulnerability Area (CVA); Coastal Environment Area (CEA); and Coastal Use Area (CUA).

Sets development controls for each four CMA, as defined by the CM Act.

Marine Estate Management Strategy (2018)

Details how the Marine Estate Management Authority (MEMA) will achieve its vision for the NSW marine estate over the next 10 years.

The Strategy is underpinned by an evidence based statewide NSW marine estate Threat And Risk Assessment (TARA), completed by MEMA.

NSW Coastal Management Manual 2018 (the Manual)

Provides guidance to local councils on preparing CMPs.

Part A outlines the mandatory requirements in the CM Act, and the essential elements councils are required to follow in preparing a CMP.

Part B describes the process for completing each of the five stages of a CMP in detail.

Coastal and Estuary Grants Program

Provides financial and technical support to local governments assisting in management of the coastal zone.

Assistance provided for both: coastal and estuary planning; and implementing works (identified within a certified CMP).

Coastal Management Programs

Set the long-term strategy for coordinated management of the coast, with focus on achieving the objects of the CM Act. CMPs are prepared by local councils in consultation with their communities and relevant public authorities. CMPs are implemented by councils through their Integrated Planning and Reporting (IP&R) framework.

Figure 1-2 NSW Coastal Management Framework

In relation to the preparation of CMPs, the framework includes the following elements:

- the *Coastal Management Act 2016* (the CM Act) replaces the *Coastal Protection Act 1979*, and provides minimum requirements for preparing CMPs (which replace CZMPs previously made under the *Coastal Protection Act 1979*) and a revised definition of the coastal zone as comprising four coastal management areas;
- the *State Environmental Planning Policy (Coastal Management) 2018* (CM SEPP) amalgamates and replaces SEPP No. 71 Coastal Protection, SEPP No. 14 Coastal Wetlands, and SEPP 26 Littoral Rainforest, and provides development controls for each of the four coastal management areas with supporting mapping for these areas (*except for Coastal Vulnerability Area)*;
- the NSW Coastal Management Manual (OEH, 2018), (the Manual) outlines the framework and the mandatory requirements for preparing CMPs in Part A, and guidelines for the five stages of CMP preparation in Part B (noting Part B is not mandatory). The Manual is the certified guideline document that, when followed, provides exemptions for liability for Council under Section 733 of the *Local Government Act 1993*; and
- The *Marine Estate Management Act 2014* (MEM Act) repealed the Marine Parks Act 1997 to establish a new approach to managing the whole marine estate to reduce social conflict and improve effective management of coastal and marine resources beyond existing marine parks. The Marine Estate Management Authority (MEMA) was established as an advisory body by the NSW Government.

  The Marine Estate Management Authority (MEMA) is not a statutory authority. It is established under statute as an advisory committee that reports to the Ministers responsible for the management of the marine estate – the Minister for Agriculture and Western NSW and the Minister for Environment and Energy. Four agencies are jointly responsible for implementation of the Marine Estate Management Strategy: Department of Primary Industries-Fisheries (DPI Fisheries), DPIE-Environment, Energy and Science, DPIE-Planning and Assessment, and Department of Transport.
- MEMA has prepared the Marine Estate Management Strategy (2018), which provides the overarching framework for marine estate management over the next decade, and outlines management initiatives to address the priority threats to the NSW marine estate and to maximise community benefits. The priority threats have been identified through the State-wide Threat and Risk Assessment (TARA), which is available for use in preparing CMPs. Consistency between the Marine Estate Management Strategy and CMPs is an essential element listed in the Manual. Key initiatives promoted by the Marine Estate Management Strategy (2018) include “Improving water quality and reducing litter”, which can be associated to management of threats in estuaries and coastal areas, and hence may relate back to CMPs.

1.2.1 What is a Coastal Management Program?

As stated in the CM Act (s12): *“The purpose of a coastal management program is to set the long-term strategy for the co-ordinated management of land within the coastal zone with a focus on achieving the objects of this Act”*.

That is, a CMP aims to provide a long-term, coordinated strategy for managing the coastal zone, considering the local context, priorities and objectives as well as the state objectives in accordance with the CM Act.

The mandatory requirements for preparing a CMP are set out in section 13 to 18 of the CM Act, and Part A of the Manual. Part B of the Manual provides guidance for how to prepare a CMP. The Manual outlines five stages of preparation of a CMP, as illustrated in Figure 1-3.

A CMP shall be implemented through coordination between local government, state agencies and other key stakeholders. Councils are responsible for ensuring that their CMP(s) are reviewed at least once every 10 years. Nevertheless, any CMP may be amended (in whole or in part) or replaced by another CMP at any time.

This study relates to the Scoping Study (Stage 1) of preparing a CMP. It is the first step for Councils along the new NSW Coastal Management Framework for the study area.

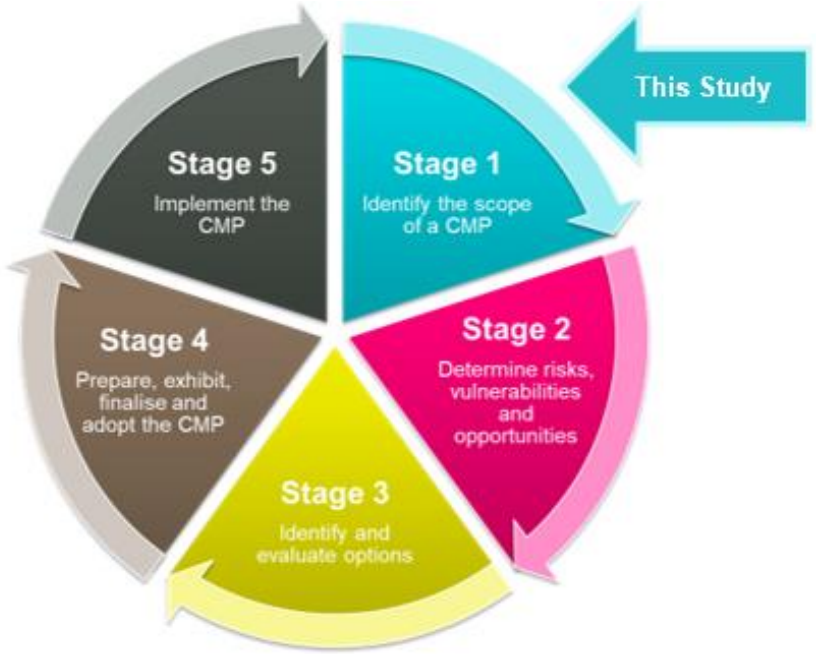


Figure 1-3 Stage Process for Developing a CMP (adapted from the Coastal Management Manual; NSW Govt, 2018)

1.2.2 What is the Purpose of the CMP Stage 1 Scoping Study?

A Scoping Study (Stage 1) is instrumental in helping Councils to "get ready" and understand where their organisations are now, where they need to be, and how to make informed and confident decisions during development and implementation of the CMP. It is therefore about establishing a plan to complete the rest of the CMP stages (Stages 2 to 5).

The primary purpose of Stage 1 of a CMP is to determine the scope of the CMP and define a path for progressing further stages of the CMP. In this regard, the scope comprises: the strategic context for coastal management; the vision and objectives of the CMP; the areas to be covered (geographic extent and coastal management areas); the priority issues to be addressed, as well as knowledge and information gaps requiring attention; the communities and stakeholders to be involved; the governance, roles and responsibilities of stakeholders on the CMP; a preliminary business case and a forward plan to complete the CMP, including the possibility of fast-tracking.

The required components of a Scoping Study as specified in the Manual are outlined in Figure 1-4.

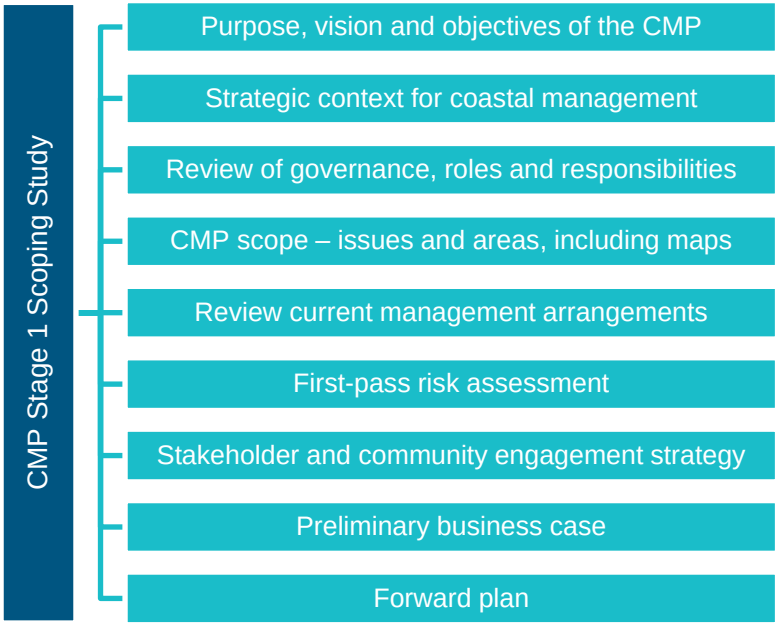


Figure 1-4 Components of CMP Scoping Study

1.3 Study Area and Values

The study area for this CMP includes the coastal catchments, open beaches, and coastal (State) waters from South Head (Hornby Lighthouse near Watson's Bay) in the north to Cape Banks in the south and into Botany Bay to include the south eastern portion of Port Botany's Brotherson Dock to the boundary of Randwick City Councils LGA (Bunnerong Creek). The study area extends inland to include the coastal drainage catchments and extends 3 nautical miles offshore to the boundary of State and Commonwealth waters.

It should be noted that the study area of the Eastern Beaches CMP as defined in this Scoping Study meets the study area boundaries of the following proposed CMPs: Sydney Harbour CMP and Cooks River Catchment CMP, and the adjacent Georges River CMP. Therefore, the Eastern Beaches CMP area aligns Woollahra, Waverly and Randwick LGA coastal catchments with a focus on with open coast processes, areas and issues. The study area is shown in Figure 1-1.

Priority values of the study area as determined by stakeholders are:

- **Value 1:** Good water quality
- **Value 2:** Terrestrial biodiversity and ecosystem integrity
- **Value 3:** Marine biodiversity and ecosystem integrity
- **Value 4:** Scenic landforms, natural beauty and geodiversity
- **Value 5:** Abundant recreational opportunities
- **Value 6:** Cultural and heritage recognition
- **Value 7:** Connected and cohesive community
- **Value 8:** Sustainable tourism
- **Value 9:** Accessible and inclusive place management

1.3.1 SEPP Coastal Management Area Overlay

The study area includes all four management areas that make up the coastal zone as defined by the CM Act and mapped under the CM SEPP, including:

(1) Coastal Wetland and Littoral Rainforest Area (CWLRA);

(2) Coastal Vulnerability Area (CVA) (*not presently mapped*);

(3) Coastal Environment Area (CEA); and

(4) Coastal Use Area (CUA).

The CM SEPP has defined and mapped areas for the CWLRA, CEA and CUA and these are shown for the study area in a series of maps (Figure 1-5 to Figure 1-7).

The current CM SEPP mapping identifies the following within the study area:

- There are several instances of coastal wetland areas adjacent to the Randwick Environment Park, North western edge of Lake Malabar, within the NSW Golf Course and the adjacent Botany Bay National Park. SEPP mapped wetlands only occur within Randwick City Council LGA. There are no littoral rainforest areas as mapped within the entire study area.
- Lands within a minimum of 100m adjacent to the open coast and estuaries, including cliffs, headlands and rock platforms across the study area.
- The entire beach and foreshore areas is within the CUA to 200m landward, apart from waterway and ocean areas which are part of the CEA. This area sets the most landward boundary of the Eastern Beaches CMP.

Much of the foreshore has urbanisation within a relatively close distance of the beach, foreshore and cliff areas. All beaches have adjacent open space park areas and key headland areas remaining relatively undeveloped. The southern coastal area within Randwick Council is dominated by national park areas and golf courses on Crown Land.

Coastal Wetland and Littoral Rainforest Area (CWLRA)

Coastal wetlands and littoral rainforest support high value biodiversity that are particularly sensitive to development. This management area is defined in the CM Act as land which displays '*the hydrological and floristic characteristics of coastal wetlands or littoral rainforests and land adjoining those features*' (NSW Government, 2016). This area focusses on protecting well established and more extensive vegetation communities (as opposed to single trees or isolated stands). The maps include a 100-metre proximity area, applying to all land use zones, around coastal wetlands and littoral rainforests.

The objectives of the coastal wetland and littoral rainforest management area within the CM Act are to:

- protect coastal wetlands and littoral rainforests in their natural state, including their biological diversity and ecosystem integrity,
- promote the rehabilitation and restoration of degraded coastal wetlands and littoral rainforests,
- improve the resilience of coastal wetlands and littoral rainforests to the impacts of climate change, including opportunities for migration,
- support the social and cultural values of coastal wetland and littoral rainforest communities, and
- promote the objectives of State policies and programs for wetlands or littoral rainforest management.

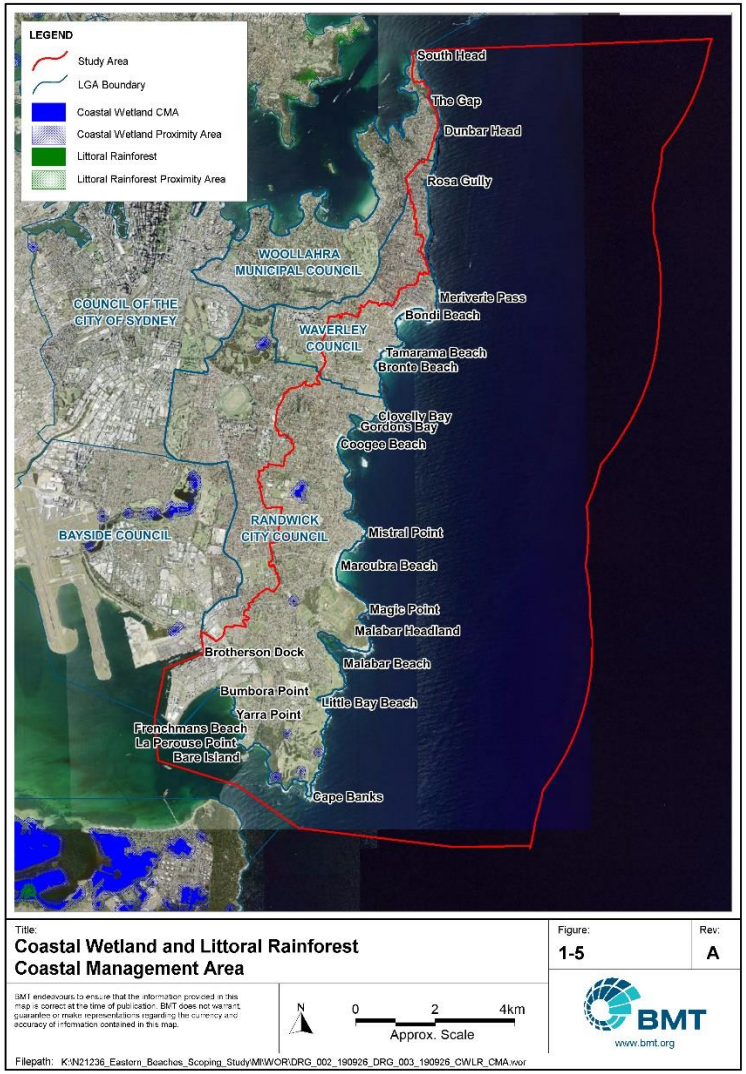


Figure 1-5 Coastal Wetland and Littoral Rainforest – Coastal Management Areas

Coastal Vulnerability Area (CVA)

The CM Act recognises seven coastal hazards within the NSW coastal zone, focusses on identifying land subject to current and future coastal hazards and ensuring that land use management undertaken in these areas recognises coastal risk. The summarised objectives of the coastal vulnerability management area within the CM Act are to:

- ensure public safety and prevent risks to human life,
- mitigate current and future coastal hazards,
- maintain the presence of beaches, dunes and other natural features,
- maintain public access, amenity and use of the coast,
- encourage land use that reduces exposure to hazards, including through siting, design, construction and operational decisions,
- adopt coastal management strategies that reduce exposure to hazards, in the first instance by restoring or enhancing natural defences such as dunes, and then by taking other action and if taking other action, to:
  - avoid significant degradation or disruption of biological diversity, ecosystem integrity, coastal processes (ecological, biophysical, geological, geomorphological), beach and foreshore amenity, and social and cultural values, and
  - avoid adverse offsite impacts, or otherwise restore the land if any impacts are caused by the action to reduce exposure to hazards,
- maintain essential infrastructure, and
- improve community resilience and reduce reliance on emergency responses.

Coastal Vulnerability Area - Not currently mapped.

Coastal Environment Area (CEA)

The NSW coastal environment is diverse and encompasses a range of different landforms, processes and environments. The coastal environment management area is land containing features such as the coastal waters of the State, estuaries, coastal lakes and lagoons, and land adjoining those features such as headlands and rock platforms.

The objectives of the coastal environment areas within the CM Act are to:

- protect and enhance coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes, coastal lagoons, and enhance natural character, scenic value, biological diversity and ecosystem integrity,
- reduce threats to and improve resilience of these coastal environments, including in response to climate change,
- maintain and improve water quality and estuary health,
- support social and cultural values of the coastal environments,
- maintain the presence of beaches, dunes and natural features of the foreshore, and
- maintain and improve public access, amenity and use of the coast.

Figure 1-6 Coastal Environment – Coastal Management Areas

Coastal Use Area (CUA)

The coastal zone comprises land that is extremely valuable to the economy and society. Indeed, the coast supports a range of human uses and development types that enable the wider coastal community to live, work and play on the coast. The coastal use management area encompasses land adjacent to coastal waterways (ocean, estuaries, lakes etc.) where impacts of development on the use and enjoyment of the beaches, dunes, estuaries and lakes need to be considered.

The objectives of the coastal use area within the CM Act are to:

- protect and enhance the scenic, social and cultural values of the coast by ensuring that:
  - the type, bulk, scale and size of development is appropriate for the location and natural scenic quality of the coast,
  - adverse impacts of development on cultural and built environmental heritage are avoided or mitigated,
  - urban design, including water sensitive urban design, is supported and incorporated into development activities,
  - adequate public open space is provided, including for recreational activities and associated infrastructure, and
  - the use of the surf zone is considered.
- accommodate both urbanised and natural stretches of coastline.

Figure 1-7 Coastal Use – Coastal Management Areas

1.3.2 Coastal Sediment Compartment

The study area is mostly located within the Sydney Eastern Beaches sediment compartment that extends from South Head to Cape Banks, whilst the Botany Bay portion of the study area is located within the Botany Bay-Port Hacking sediment compartment extending from Cape Banks to Port Hacking Point (Shoreline Explorer on Coast Adapt, 2018), see Figure 1-8.

It is noted that Sydney Eastern Beaches are essentially closed sediment systems (bounded by headlands) with the dominant transport mechanism being cross-shore transport (onshore – offshore). Some headland bypassing of sand may occur under extreme storms.

The CM Act requires councils and public authorities to consider the study area for a CMP in the context of the broader regional coastal processes, which occur within the primary sediment compartment.

This means that management of the study area should consider the impact of activities that may affect natural sand transport as changes in management could result in surplus or deficit of sand in the northern portion of the primary coastal compartment, which is located north of the study area. Examples of coastal management actions may include changes to coastal protection works (creation or removal) or other practices such as beach nourishment.

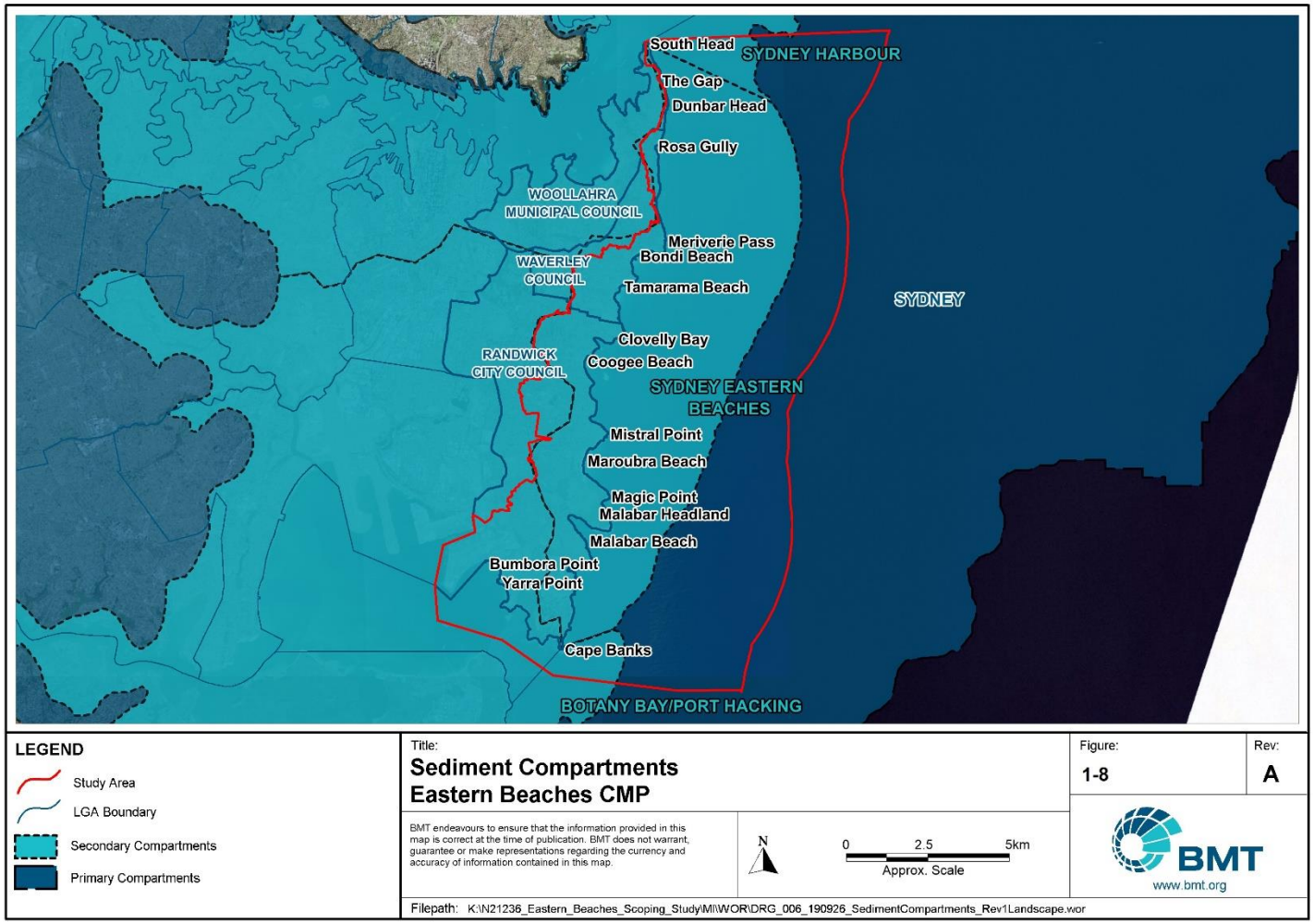


Figure 1-8 Eastern Beaches Sediment Compartment (CoastAdapt, 2018)

2 Overarching Strategy for the Eastern Beaches Coastal Management

2.1 Coastal Management in the Eastern Beaches

The entire coastal zone of the Councils LGA area comprises the open coastline extending from South Head to Cape Banks. It also extends into Botany Bay to the boundary of Randwick City Council LGA (Bunnerong Creek) and includes a large stretch of Sydney Harbour from South Head around to Rushcutters Bay ceasing at Rushcutters Creek.

For the purposes of adequately encompassing and addressing coastal management issues for the entire LGA areas covered by the Councils, the following format for CMP coverage is being undertaken and is illustrated in Figure 2-1.

- **Eastern Beaches CMP Scoping Study** (i.e. this study) – this CMP covers a large extent of the Councils coastline and includes coastal drainage catchments. The study area for this CMP excludes the stretch of Woollahra Municipal Councils coast within Sydney Harbour but will include the entrance where relevant insomuch as it influences the condition and future management of the open coast. This CMP encompasses the entire coastal zone of both Waverley Council and Randwick City Council.
- **Sydney Harbour Estuary CMP Scoping Study** – Woollahra Council is also participating in the development of a CMP for the Sydney Harbour estuary utilising the Sydney Harbour CMP Stage 1 Scoping Study (BMT, 2018). The Sydney Coastal Councils Group together with DPIE is leading this initiative in partnership with relevant councils and agencies. A steering committee has now been set up to address coordinated governance issues. Activities and outcomes of this process will feed into and align where appropriate with activities of the Eastern Beaches CMP.

Together the Eastern Beaches CMP and the Sydney Harbour CMP will encompass the entire LGA area of the Councils. Other neighbouring CMPs that are currently being developed that will need to interact with the Eastern Beaches CMP, such as those being prepared for Botany Bay, include the:

- **Cooks River CMP Scoping Study** – The scoping study recommends that the CMP encompasses the complete coastal river, its catchment, tributaries, estuary and adjacent bay area within Botany Bay to the boundary of Bayside Council LGA (Bunnerong Creek), (BMT, 2020).
- **Georges River CMP Scoping Study** – This scoping study has commenced and the spatial extent and Coastal Management Areas to be covered by the CMP are to be confirmed during the scoping study process.

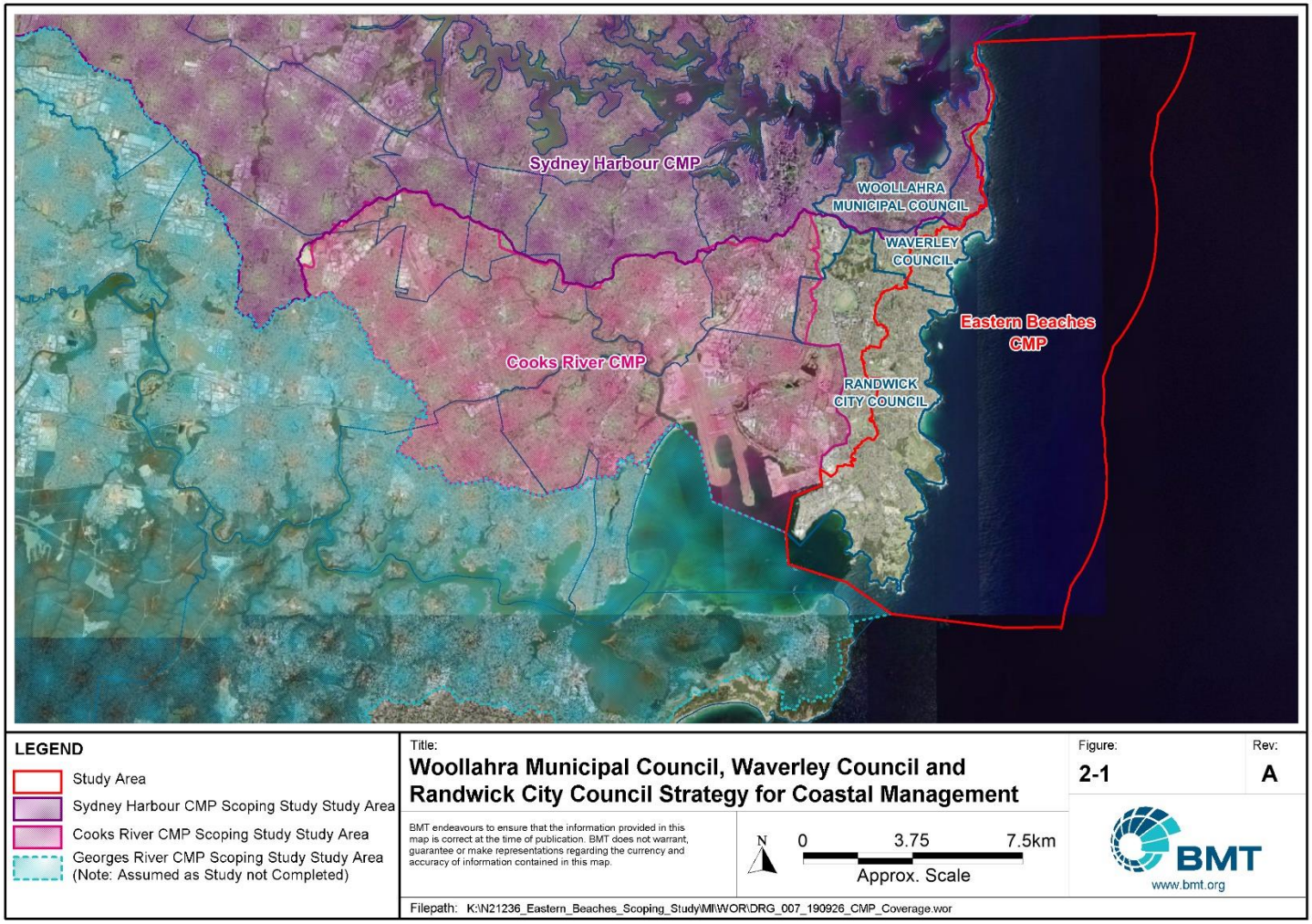


Figure 2-1 Woollahra Municipal Council, Waverley Council and Randwick City Council Strategy for Coastal Management

2.2 CMP Purpose, Vision and Objectives

2.2.1 Purpose

The CMP will provide the long term coordinated strategy for managing the coastal zone of the coastline of the Sydney Eastern Beaches. A coordinated whole of government and community approach is needed, to bring Council, DPIE, other state agencies, stakeholders and local communities together to achieve the strategy, and management objectives.

The purpose of this Scoping Study is to identify the scope of the CMP and detail the forward works program and costs to complete the CMP from Stage 2 to Stage 5.

2.2.2 Vision Statement

Key “visions” for the Eastern Beaches coastline that were highlighted by Council, DPIE and other attendees at the Visioning and First Pass Risk Assessment Workshop conducted as part of the project (details provided in Section 4.5) are shown in Figure 2-2.

Figure 2-2 Stakeholder Workshop Visions for the Eastern Beaches

The following vision statement was developed based upon the vision given in the CM Act and the feedback received in the workshop.

Vision for the Eastern Beaches CMP

The iconic Eastern Beaches coastline of Sydney is resilient through integrated and co-ordinated planning and management that protects and improves its unique cultural, biodiverse and economic values now and for the communities, development and climate changes of the future.

2.2.3 CMP Draft Objectives

The objectives for the Eastern Beaches are:

- to protect and preserve natural coastal processes and environmental values of the eastern beaches including scenic values, biological diversity and terrestrial and marine ecosystem integrity and resilience;
- to support the social and cultural values of the eastern beaches and maintain public access, amenity, use and safety;
- to acknowledge and help enable the ongoing custodianship by the Cadigal / Gadigal and Bidjigal peoples including their spiritual, social, customary and economic use of the coastal zone;
- to recognise the coastal zone as a vital economic zone and to support sustainable coastal economies;
- to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning and decision-making;

- to mitigate current and future risks from coastal hazards, taking into account the effects of climate change including scientific projections of Sea Level Rise, and seek potential opportunities;
- to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (cliffs and headlands), and to manage coastal use and development accordingly;
- to foster and guide integrated and co-ordinated coastal planning, management and reporting;
- to identify and promote plans, strategies and funding opportunities to improve the resilience of coastal assets to the impacts of dynamic and increasing climate change risks including impacts of extreme storm events;
- to ensure co-ordination of the policies and activities of government and public authorities relating to the coastal zone and to facilitate effective integration of relevant management activities;
- to support public participation in coastal management and planning and foster greater public awareness, education and understanding of coastal processes and risk management actions;
- to identify land in the coastal zone which may be adversely affected by coastal processes or management actions, and or considered for acquisition by public or local authorities in order protect, enhance, maintain and/or restore the environment of the coastal zone; and
- to support the objects of the *Marine Estate Management Act 2014*.

These objectives:

- Are consistent with the CM Act objectives;
- Give effect to the management objectives provided in the CM Act for the four coastal management areas that comprise the NSW coastal zone;
- Support the objects of the *Marine Estate Management Act 2014*;
- Are relevant for local issues and conditions; and
- Reflect aspirations gathered from stakeholders and the community engaged during the development of the Councils Community Strategic Plans and the Scoping Study.

It should be recognised that the above objectives will likely undergo refinement as the CMP progresses through the later stages of development (i.e. Stages 2-5) in consultation with stakeholders and the community so that they are consistent statewide but reflect local issues and conditions.

3 Strategic Context for the CMP

3.1 Data and Information Review

There is a wealth of information from a variety of sources relating to the functioning and management of the Sydney's Eastern Beaches and Open Coast, including the following information sources:

- Technical studies and academic literature;
- Planning and management documents (e.g. strategic, operational and natural resource/coastal management policies);
- Legislation and regulation; and
- Spatial mapping and data.

The review of information, supplied by the participating Councils, provide an understanding of the strategic context for the study area (Table 3-1). Table 3-1 outlines the key documents used for this review (Appendix B-1 includes the full list of reports and resources used in this study). This supports the subsequent identification of values/benefits, hazards/threats and management issues, in addition to identifying critical information gaps for progressing with a CMP. Key documents reviewed include:

- State, regional and local strategic planning documents: including the Greater Sydney Regional Plan (GSC, 2018) and the associated Eastern City District Plan; the Three Ports SEPP; and the three Council's Local Strategic Planning Statements and Community Strategic Plans.
- Local Environment Plans (LEPs) and Development Control Plans (DCPs), for each of the three Councils within the study area.
- Other key strategic and operational policies, strategies and management plans including but not limited to open space, coastal management, biodiversity, sustainability, asset management, climate risk and adaptation and indigenous cultural and reconciliation.

A critical review of this information was conducted to determine content of the reports that is directly or indirectly relevant to:

- Understanding the physical, environmental, social and economic features and processes occurring within the study area;
- Identifying key values (or benefits), and known issues or threatening processes that may be reducing or undermining these values; and
- Determining existing management actions or strategies for managing the threats, and if possible, the effectiveness of these actions.

Table 3-1 Key strategic and operational policies and management plans for the Eastern Beaches study area.

Regional
Eastern City District Plan 2018
A Metropolis of Three Cities - Greater Sydney Regional Plan (GSRP) 2018
The Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
Woollahra
Our Vision. Our Woollahra (Local Strategic Planning Statement) 2020
Woollahra - 2030: Our community, our place, our plan (Community Strategic Plan), 2018
Woollahra Local Environmental Plan 2014

Woollahra Develop Control Plan 2015
Woollahra Coastal Zone Management Study (Cardno 2015)
Biodiversity Conservation Strategy 2015
Environmental Sustainability Action Plan 2013-2025
Christison Park Plan of Management 1996
Natural Area (Foreshore) Plan of Management 1996
Gap Park Masterplan 2008
Waverley
Waverley Local Strategic Planning Statement 2020
Waverley Community Strategic Plan 2018-2029
Waverley Local Environmental Plan 2012
Waverley Development Control Plan 2012
Waverley Coastal Risk Management Policy
Waverley Environmental Action Plan 2018-2030
Coastal Risk Management Policy 2012
Interim Sea Level Risk Policy 2010
Strategic Asset Management Plan 2018
Coastal Risks and Hazards Vulnerability Study (Worley Parsons 2011
Coastal Reserves Draft Plan of Management 1997
Tamarama Park Plan of Management 2007
Bondi Park, Beach and Pavilion Plan of Management 2014
Bronte Park and Beach Plan of Management 2017
Biodiversity Action Plans Remnant Sites 2014-2020

Randwick
Vision 2040 - Randwick City draft Local Strategic Planning Statement 2020
The Randwick City Plan – A 20 Year Plan (Comm. Strategic Plan) 2018-2029
Sustaining Our Cities 2014 - 2019
Randwick Local Environmental Plan 2012
Randwick Development Control Plan 2013
Open Space Asset Management Plan (2018 – 2028)
Plans of Management (Beach and Coastal Reserves, Clovelly Bay, Coogee Beach Foreshore, Frenchmans Bay, Malabar Beach, and Historic La Perouse Management Plan
Foreshore Building Line and Foreshore Scenic Protection 2012
Climate Change Adaptation Plan 2015

A review of the key governance, legislation and policy related to this scoping study is provided in Appendix B.

3.2 Strategic Direction for the Coast

The strategic direction for the study area is formulated acknowledging existing visions, strategies and directives outlined in state, regional and local plans, acts and policies.

3.2.1 Related Visions

The following visions from existing relevant documentation are outlined below:

- **Coastal Management Framework 2018 (OEH) -** “aims to have thriving and resilient coastal communities living and working on a healthy coast, now and into the future”.

- **Coastal Management Act 2016 -** "manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State".
- **Marine Estate Management Strategy 2018 – 2028** – "A healthy coast and sea managed for the greatest wellbeing of the community, now and into the future".
- **Eastern City District Plan (2018) –** "The vision for Greater Sydney as a metropolis of three cities…will see the Eastern City District become more innovative and globally competitive, carving out a greater portion of knowledge intensive jobs from the Asia Pacific Region. The vision will improve the District's lifestyle and environmental assets".
- **Woollahra Council**

Woollahra Council has developed and implements an Integrated Planning & Reporting (IP&R) Framework through the Community Strategic Plan and Council combined Delivery Program and Operational Plan. Environmental impacts important to the community have been captured in the Community Strategic Plan **Woollahra 2030-Our community, our place, our plan**. Actions are supported by Councils Resourcing Strategy which includes the Asset Management Strategy 2011-2021. This outlines how the resources available will deliver the Community Strategic Plan and Delivery Program. Additional and site-specific Plans of Management are developed in accordance with the Local Government Act. Other relevant documents include the Gap Park Masterplan Report 2008, Christison Park Plan of Management 1996, and Woollahra Coastal Zone Management Study 2015 (Table 3-1).

  - **Community Strategic Plan - Woollahra 2030 –** "Woollahra will continue be a great place to live, work and visit where places and spaces are safe, clean and well-maintained. Our community will offer a unique mix of urban villages with a good range of shops, services and facilities. We will make the most of the natural beauty, leafy streetscapes, open spaces, views and proximity to the water and the city. We will be a harmonious, engaged and connected community that looks out for each other";
  - **Draft Local Strategic Planning Statement – Our Vision. Our Woollahra**

    "Outstanding heritage, lifestyle, leafy, boutique villages and an unrivalled open, sunny harbour-side landscape in Sydney's east".

    - **Planning Priority 10** Protecting and improving the health, diversity and enjoyment of our waterways and water ecosystems.
    - **Strategy 42:** Continue to collaborate with government agencies and neighbouring councils on coastal management programs to improve catchment and waterway health for Sydney Harbour and the ocean coast.
    - **Planning Priority 14** Planning for urban resilience so we adapt and thrive despite urban and natural hazards, stressors and shocks.
    - **Strategy 54:** Continue to support collaboration and implementation of urban resilience initiatives in Resilient Sydney, the Eastern Suburbs Low Carbon Future Plan 2015, coastal management programs, and the Woollahra Environmental Sustainability Action Plan 2013-2025, including developing an urban resilience action plan for our area.

- **Waverley Council**

Waverley Council has integrated coastal management and coastal management principles into their Integrated Planning & Reporting framework. The Environmental Action Plan is the resourcing Plan within the IP&R framework and includes actions to prepare for coastal impacts and the impacts of climate change. In addition to this, the Bondi Park, Beach and Pavilion Plan of Management (POM) and the Bronte POM incorporate the findings and recommendations of the Waverley Coastal Hazards Risks & Vulnerability Assessment and the Waverley Coastal Risk Policy, of which the majority have been implemented. Through this Policy, Council has also identified property lots that have a coastal geotechnical risk and lots that have a coastal inundation risk. This risk is listed on the property lots section 10.7 Certificates and specific development controls for these properties.

Through the IP&R Framework Council has a Strategic Asset Management Plant (SAMP5) and this is responsible for the ongoing monitoring of Council assets and infrastructure including coastal cliffs, sea walls and drainage assets. SAMP is updated every 4 years.

- **Community Strategic Plan 2018-2029 –** "Waverly: connecting the city and the sea. A welcoming and cohesive community that celebrates and enhances our spectacular coastline, vibrant places and rich cultural heritage";
- **Planning Priority 14:** Planning for urban resilience so we adapt and thrive despite urban and natural hazards, stressors and shocks.
- **Action 7:** Work with other Councils to manage, maintain and promote coastal walks in the LGA, including the Bondi to Coogee and the Bondi to Manly coastal walks. This will include identifying key public domain and infrastructure upgrades, and opportunities for rest locations
- **Planning Priority 12** Conserve our water resources and protect our coasts and beaches
- **Action 1**: Work with Woollahra and Randwick Councils to prepare and implement Eastern Beaches Open Ocean Coastal Management Program
- **Planning Priority 13** Protect and grow our areas of biodiversity and connect people to nature
- **Action 5**: Identify and implement the Green Grid and opportunities for green infrastructure projects such as increased tree planting and increased coastal bushland areas to improve opportunities for people to experience nature and to improve amenity
- **Action 7:** Develop and implement coastal bushland and habitat improvement plans, and implement into planning controls where relevant
- **Draft Local Strategic Planning Statement Vision 2036**

  "Waverley will contribute to the Eastern City District with vibrant and sustainable places that provide opportunities for a prosperous and diverse local economy, a protected and celebrated a stunning natural environment and rich cultural heritage, and a range of housing to accommodate our whole community. Waverley will continue to offer an attractive lifestyle by world-class beaches and recreation facilities, and a convenient trip to all that the Eastern Harbour City has to offer".

- **Randwick Council**

The Randwick City Council Integrated Planning and Reporting Framework comprises the 20-year Randwick City Plan; combined Delivery Program and Operational Plan; and Budget which are all supported by the Resourcing

Strategy. The Annual and Quarterly Reports monitor progress against achieving the goals and aspirations of the Randwick community. Specific and more relevant plans of management are listed in Table 3-1 and Section 3.2.9.

- **Community Strategic Plan - The Randwick City Plan: A 20 Year Plan 2018-2029 –** "Aims to direct these influences and manage environmental, social and economic change across our City over the next 20 years for the benefit of our community".
- **Randwick Council Draft Local Strategic Planning Statement – Vision 2040**

  "In 2040 Randwick City will continue to have a strong sense of community. Our culturally diverse community will have access to quality housing, beautiful open spaces and our unique coastline. Our thriving economy will provide for lively town centres and emerging work opportunities in knowledge based industries. Our urban environment will be adaptable and resilient to climate change through increased tree canopy and sustainable development. Mobility across our City will allow active transport options and an integrated network. A diverse range of social infrastructure will meet the social and cultural needs of our community, fostering greater connectedness and well-being".

  – **Planning Priority 14:** Provide high quality open space and recreational facilities

  – **Action 14.2:** Continue to upgrade and extend the coastal walkway to allow residents and visitors to experience the whole eastern coastal environment

  – **Planning Priority 19:** Better manage our water and coastal environments

  – **Action 19.2:** Collaborate with Waverley and Woollahra Councils to prepare an Eastern Beaches Coastal Management Program.

3.2.2 Coastal Management SEPP

The *State Environmental Planning Policy (Coastal Management) 2018* (the 'CM SEPP') was enacted in Parliament in April 2018, defines the strategic planning objectives and development controls applicable to the four coastal management areas comprising the coastal zone as defined in the CM Act (i.e. coastal wetlands and littoral rainforests area, coastal vulnerability area, coastal environment area, and coastal use area). The CM SEPP amalgamated and repealed SEPP No. 71 – Coastal Protection, SEPP No. 14 – Coastal Wetlands and SEPP No. 26 – Littoral Rainforest. The CM SEPP also allowed for the repeal of compulsory LEP Clause 5.5 Development in the Coastal Zone.

The CM SEPP is supported by maps of the coastal management areas (except the Coastal Vulnerability Area). Under the new process for the preparation of CMPs, Councils may submit a Planning Proposal (in accordance with the EPA Act via the Gateway process) to update any of the coastal management area maps. It is anticipated that Councils will submit planning proposals to have existing or new coastal hazard mapping adopted as the coastal vulnerability area. Updating the coastal wetland and littoral rainforest management area maps is also likely to be common. The preparation of a planning proposal, and associated engagement activities to be undertaken through this CMP are further outlined in Section 4.3.

3.2.3 Infrastructure SEPP

The State Environmental Planning Policy Infrastructure (2007) assists the NSW Government, private infrastructure providers, local councils and the communities they support by simplifying the process for providing

infrastructure like schools, hospitals, roads, railways, emergency services, water supply and electricity delivery. December 2017 amendments to the Infrastructure SEPP included new provisions for health service facilities, public administration buildings, state sports and recreation centres, and lead-in sewer and water infrastructure. They also optimised the use of commuter hubs and enabled councils to better manage and maintain their lands, including their operational lands.

The aim of this Policy is to facilitate the effective delivery of infrastructure across the State by:

(a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and

(b) providing greater flexibility in the location of infrastructure and service facilities, and

(c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and

(d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and

(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and

(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing, and

(g) providing opportunities for infrastructure to demonstrate good design outcomes.

3.2.4 SEPP 19 (Bushland in Urban Areas)

SEPP 19 (Bushland in Urban Area) is intended to protect and manage urban bushland in Sydney and applies to Councils and public authorities as managers of public and Crown land (but excludes national parks or forest reserves).

The SEPP provides a mechanism for the development of 'plans of management' and regulating activities that could disturb remnant bushland in public open space areas, including minimisation of development impacts from adjoining land. The policy sets out where consent is required to disturb bushland in areas zoned or reserved for public open space. It also sets out requirements for assessing development on land adjoining bushland in public open space, based on the need to retain bushland on the site itself, and the potential impacts of development on adjoining public open space bushland.

Importantly, the SEPP 19 extends beyond the protection of environmental values of bushland, to also protecting aesthetic, community, recreational, educational and scientific values of bushland.

Where appropriate, plans of management established under SEPP 19 provide a potential mechanism to improve the level of protection for riparian and wetland values on or adjoining areas zoned or reserved for public open space purposes.

3.2.5 Draft - Environment SEPP

The NSW Government is working towards developing a new State Environment Planning Policy (SEPP) – the Environment SEPP is proposed to repeal and replace a number of SEPPs and Regional Environmental Plans (REPs).

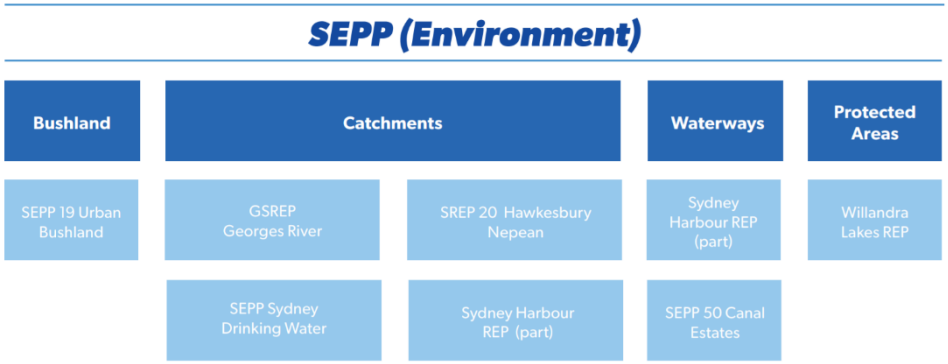
The proposed new Environment SEPP aims to consolidate seven existing state level planning provisions into a single instrument, that will set out provision under four parts, being: catchments, waterways, bushland and protected areas.

Currently, policy provisions related to various environmental typologies are contained within seven existing SEPPs and REPs. DPIE have noted a need for a new SEPP to address inconsistencies and policy duplication across a range of statutory documents.

The proposed SEPP fits within a range of plans and strategies including: A Plan for Growing Sydney, District Plans, Regional Plans, local environmental plans, Ministerial Directions, and development control plans.

It is noted that the SEPP (Coastal Management) provides a planning framework for defined coastal management areas. It is understood the proposed SEPP (Environment) will provide a policy framework to manage land use and development outcomes for areas not included in the SEPP (Coastal Management).

The Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (the Sydney Harbour REP) is proposed to be merged within the draft Environment SEPP. The Explanation of Intended Effects details the key components and development controls that are proposed, repealed or transferred across to the draft SEPP (Environment). All provisions in the seven existing SEPPs that relate to the preparation of local environmental plans are proposed to be transferred into a new or updated Ministerial Directions. The timing for the finalisation of the draft SEPP (Environment) is unclear.



3.2.6 Three Ports SEPP

In 2014, the NSW Government finalised an amendment to the State Environmental Planning Policy (Port Botany and Port Kembla) 2013, to apply the same planning controls to the Port of Newcastle that already apply at Port Botany and Port Kembla. As a consequence of the amendment, the State Environmental Planning Policy (Port Botany and Port Kembla) 2013 was renamed to the State Environmental Planning Policy (Three Ports) 2014 (i.e. the 'Three Ports SEPP').

Note, Clause 7(2) of the Coastal Management SEPP means that this SEPP does not apply to the Lease Area as identified in the Three Ports SEPP (see Figure 3-1).

(7) Relationship with other environmental planning instruments

> *(2) This Policy does not apply to land within the Lease Area within the meaning of State Environmental Planning Policy (Three Ports) 2013.*

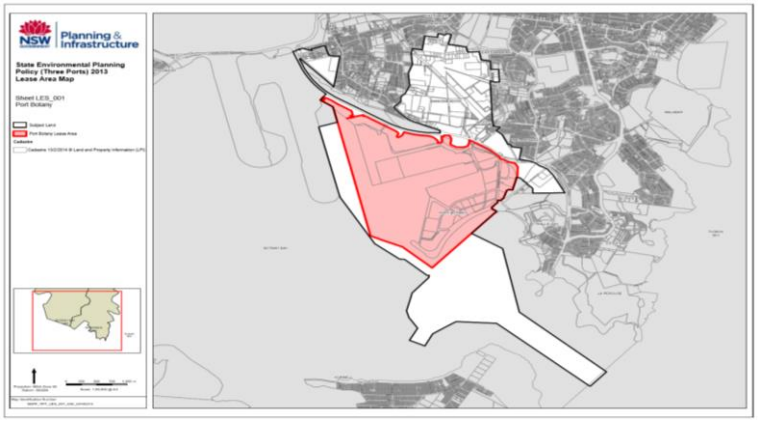


Figure 3-1 Three Ports SEPP 2013 – Ports Lease Area map for Port Botany

The Coastal Management SEPP does, however, apply to the land affected by the Three Ports SEPP excluding the Lease Area (i.e. the "Subject Land" other than the red "Lease Area")

The relevant consent authority for this area is defined in Clause 8 of the Three Ports SEPP, which states:

The consent authority for the purposes of this Policy is:

(a) The Minister, for development on land within the Lease Area or land that is unzoned, or

(b) The Council, for development on any other land to which this Policy applies.

3.2.7 Regional Level Plans

At a regional level, the 'A Metropolis of Three Cities - Greater Sydney Regional Plan' (GSRP), and the Eastern City District Plan, are the primary State-led Strategic Planning Policies relating to Sydney and specifically to the Eastern Beaches catchment and associated coastal area. These Plans were prepared by the Greater Sydney Commission, an independent organisation established under the Greater Sydney Commission Act 2015 and tasked with preparing a strategic land use plan for Greater Sydney over the next 40 years.

The GSRP (GSC, 2018) sets out an overarching vision and strategy for the Greater Sydney Region, which comprises a future as a metropolis of three unique but connected cities. The GSRP identifies infrastructure and collaboration, liveability, productivity and sustainability as four key themes that underpin the plan. Ten directions are outlined to guide delivery of the key themes. An Eastern Beaches CMP would support several of the key directions of the GSRP.

Five District Plans sit below the GSRP, which provide the framework to implement the overarching vision and strategy for Greater Sydney. The plan for the Eastern City District, covers the Eastern Beaches CMP study area. The key objectives of the Eastern City District Plan and their relevance to the Eastern Beaches catchment CMP are outlined in Table 3-2.

Table 3-2 Key Objectives of the District Plan

Objective[1] / Planning Priority	Details of Objective	Relevance to CMP Catchment
5 / E2	Benefits of growth realised by collaboration of governments, community and business.	Primary
7 / E4	Communities are healthy, resilient and socially connected.	Primary
12 / E6	Great places that bring people together	Primary
13 / E6	Environmental heritage is identified, conserved and enhanced.	Primary
25 / E14	The coast and waterways are protected and healthier.	Primary
27 / E15	Biodiversity is protected, urban bushland and remnant vegetation is enhanced	Primary
28 / E16	Scenic and cultural landscapes are protected.	Primary
31 / E18	Public open space is accessible, protected and enhanced.	Primary
34 / E19	Energy and water flows are captured, used and re-used.	Primary
36 / E20	People and places adapt to climate change and future shocks and stresses.	Primary
37 / E20	Exposure to natural and urban hazards is reduced	Primary
16 / E9	Freight and logistics network is competitive and efficient.	Secondary
23 / E12	Industrial and urban services land is planned, retained and managed.	Secondary
30 / E17	Urban tree canopy cover is increased.	Secondary
32 / E17	The Green Grid links parks, open spaces, bushland and walking and cycling paths.	Secondary
35 / E19	More waste is re-used and recycled to support the development of a circular economy.	Secondary
39 / E21	A collaborative approach to city planning.	Secondary

[1] Common to all District plans

3.2.8 Local Level Plans

All NSW Councils are required to prepare a Local Strategic Planning Statement (LSPS) (for Metropolitan Councils this is to be completed by 31 March 2020). The LSPS sets out the 20-year vision for land use in the local area, the special character and values that are to be preserved and how change will be managed into the future. The LSPS are to give effect the Regional and District Plan(s) and will inform amendments to LEPs and DCPs.

Under the direction of the State Government, all NSW local governments are required to prepare a Local Environment Plan (LEP) that outlines particular aims for the use and development of land within their LGA. LEPs must be prepared in accordance with the relevant standard environmental planning instrument outlined under Section 33A of the *Environment Protection and Assessment Act 1979*. Three LEPs cover the study area, being, the Woollahra Local Environmental Plan 2014, Waverley Local Environmental Plan 2012 and Randwick Local Environmental Plan 2012.

A Development Control Plan (DCP) provides detailed planning and design guidelines to support the planning controls in the LEP. The relevant DCPs applying to the study area are the Woollahra Development Control Plan 2015,

Waverley Development Control Plan 2012 and Randwick Comprehensive Development Control Plan 2013.

All Councils in NSW are tasked to produce the following documents as part of the State Government's Integrated Planning and Reporting (IP&R) Framework (as set out in the *Local Government Act 1993*).

- Community Strategic Plan (10+ years), which identifies the community's main priorities and aspirations for the future. A Resources Strategy describes how a council will achieve the objectives and strategies outlined the Community Strategic Plan.
- Delivery Program (4 years), that outlines to the community how council intends to achieve the community priorities and goals.
- Operational Plan (1 year), which outlines the details of the Delivery Program on an annual basis.

Under the CM Act, councils are required to establish links and alignment between management strategies in their CMPs and objectives and strategies in their Community Strategic Plan – with the aim to mainstream coastal management into councils' overall service delivery and asset management responsibilities.

The cornerstone of the IPR Framework (shown in Figure 3-2) is the Community Strategic Plan (CSP), which for the study area includes: Woollahra Municipal Council's Community Strategic Plan, *Woollahra – 2030*, *Waverley Community Strategic Plan 2018 – 2029* and Randwick City Council's Community Strategic Plan, *The Randwick City Plan*.

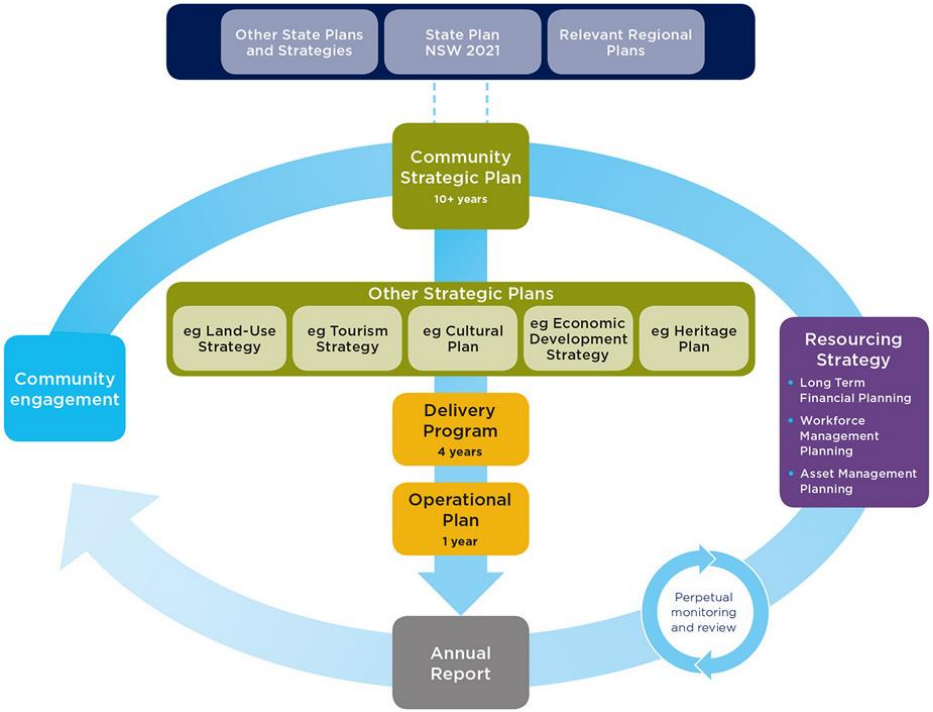


Figure 3-2 Integrated Planning and Reporting (IP&R) Framework (Source: Office of Local Government, 2019)

These CSPs identify the community's main priorities and aspirations for the future. Woollahra – 2030, identifies "***a healthy environment***" as a priority for the community with the goals of "***sustainable use of resources***" and "***protecting our environment***" to achieve this.

The Waverley Council CSP 2018 – 2029 sets the community vision for "***connecting the city and the sea***" and being a "***community that celebrates and enhances our spectacular coastline, vibrant places and rich cultural heritage***".

The Randwick City Plan has a theme "***looking after our environment***" and their aim is "***to improve the way we conserve our resources and the natural systems that provide us with the high quality of life we all enjoy***".

The aims, goals and visions above align with the overarching objects of the CM Act being to "*manage the coastal environment in an ecologically sustainable way for the social, cultural and economic well-being of the people of New South Wales*". In the context of this CMP relevant and related strategies and goals are listed in Table 3-3.

Table 3-3 Community Strategic Plan Goals

Woollahra	Waverley	Randwick
• Protect natural landscapes, systems and biodiversity • Support cleaner, healthier waterways including improved water quality and healthy water catchments, creeks and harbour • Monitor and strategically manage environmental risks and impacts of climate change • Plan for the future for Woollahra • Keep the community engaged and informed • Improve communication with the community and increase awareness of Council's activities • Facilitate community led decision-making that is open, honest, and ethical and benefits the broad community • Protect our heritage, including significant architecture and the natural environment • Provide attractive, accessible, connected and safe parks, sports grounds, foreshore areas and other public spaces	• Reduce greenhouse gas emissions and prepare for the impacts of climate change • Conserve water and improve water quality • Protect and increase our local bushland, parks, trees and habitat • Engage the local community in shaping the future of Waverley • Improve health and quality of life through a range of recreational opportunities and quality open spaces • Keep our streets, beaches and parks clean and free of litter, rubbish and pollution	• The community has increased opportunities to participate in decision-making processes. • Maximise opportunities for residents and visitors to enjoy both active and passive open space uses. • Our centres, beaches, streets and other public places are safe, inviting, clean and support a recognisable image of our City. • Policies and programs are developed and implemented in response to environmental risks and their potential impacts. • Bushland, open spaces and biodiversity are protected and enhanced for future generations. • Council has a long-term vision based on sustainability

3.3 Legislative and Policy Context

The legislation and policy governing the management of the Eastern Beaches coastline includes:

- 8 Commonwealth Acts,
- 25 State Government Acts,
- 1 Regional Plan and 1 District Plan, and
- 10 State Environmental Planning Policies.

As outlined previously, the CM Act establishes the framework and overarching objectives for coastal management in NSW which focus on strategic, integrated and ecologically sustainable management of the NSW's coastal zone. Table 3-4 provides a snap shot of the legislation that have a major influence in the management of the Eastern Beaches coastal zone, as detailed in Appendix B.

Table 3-4 Key Legislation Governing the Study Area

NSW Coastal Zone Legislation	Coastal Management Act 2016 Coastal Management SEPP 2018 Marine Estate Management Act 2014 *(Regulation – 2017)*
Additional Key Legislation Supporting Coastal Management	**Commonwealth** Environment Protection and Biodiversity Conservation Act 1999 Biosecurity Act 2015 **NSW** National Parks and Wildlife Act 1974 Environmental Planning & Assessment Act 1979 Mining Act 1992 No 29 Local Government Act 1993 Fisheries Management Act 1994 Protection of the Environment Operations Act 1997 Water Management Act 2000 Local Land Services Act 2013 Crown Land Management Act 2016 Biodiversity Conservation Act 2016 Infrastructure SEPP Draft Environment SEPP Three Ports SEPP

3.4 Environmental Context

3.4.1 Physical Features and Processes

The study area is comprised of a diverse range of environments including open water, beaches, intertidal areas, foreshores, headlands and cliffs, coastlines, open spaces and pockets of biodiversity and remnant bushland with largely sandstone and sandy soil. Additionally, a variety of manmade features and cultural artefacts exist within the study area.

3.4.1.1 Coastal Processes

Coastal processes refer to the interaction of waves and water levels with sandy beaches, river and creek estuary entrances and bedrock headlands and reefs. Coastal hazards are defined in the CM Act as the following:

(a) beach erosion,

(b) shoreline recession,

(c) coastal lake or watercourse entrance instability,

(d) coastal inundation,

(e) coastal cliff or slope instability,

(f) tidal inundation,

(g) erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters.

Detailed studies that assessed coastal processes and hazards have previously been undertaken for both the Woollahra and Waverley LGA coastal zones. These studies include;

- Woollahra Coastal Zone Management Study (Cardno, 2015); and

- Waverley Council Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011).

The Eastern Beaches study area is part of an embayed coastline, which comprises rocky headlands alternating with bays that have been infilled with sediment (Roy et al., 1980).

The study area is dominated by south-southeast swells, with a mean wave height of 1.6 m, at a frequency of 9.8 seconds, with maximum significant wave heights reaching up to 8 m (Worley Parsons, 2011; Phillips et al., 2017). The beaches are highly dynamic but intermediate beach types predominate with nearshore bars and frequent rip currents responding to ambient wave conditions (Short, 1993; Harley et al., 2011). Majority of this area is dominated by sea walls behind the beach, but where foredunes are present, they are not so dynamic. Major storms, however, reach the dune base and cause substantial scarping and erosion (Doyle and Woodroffe, 2018).

Tides in the region are semi-diurnal, with a mean microtidal spring tidal range of 1.3 m and a neap range of 0.8 m (Phillips et al., 2017; Worley Parsons, 2011). Key factors contributing to elevated still water levels on the NSW coast not only include storms (and storm surge), but also astronomical tides and wave set up (caused by breaking waves). In a regional assessment by Hanslow and others (Hanslow et al., 2018), using NSW's extensive and long-term water level data, it was found that tidal water levels within estuaries varies from the open ocean. They have mapped the potential tidal inundation scenarios for each NSW estuary, using an innovative approach that as built upon previous methods. In doing so, they identified considerable exposure to future sea level rise, and found tidal lake and coastal river systems as being particularly vulnerable, as the previous reduced tidal ranges experienced in these systems has allowed development to occur in areas very close to present sea level (Hanslow et al., 2018).

Storm surge and wave setup in NSW can increase open coast water levels by several meters during storms. Additional recorded values can be up to 0.6m for storm surges, and 1.5m from wave set up. Sea Level Rise (SLR) is a gradual process that will further enhance these water levels. The best national and international projections of SLR are from the Intergovernmental Panel on Climate Change (IPCC), and in their most recent report: "Special Report on the Ocean and Cryosphere in a Changing Climate" (SROCC), they found that global mean sea levels will most likely rise between 0.29 and 1.1 m by the end of this century (IPCC, 2019).

The most common forms of wave induced currents in NSW are longshore current and rip currents. Sediments are transported in the coastal zone (littoral zone and inner continental shelf) under prevailing currents and waves. Along the Eastern Beaches coastline south-southeast swell waves drive a dominant northerly longshore sediment transport. This transport is interrupted, by headlands in this region, and only becomes more continuous in northern NSW (i.e. north of 33^{o}S) (Short, 2010; Goodwin et al., 2016).

Dominant storm wave direction for this area is predominantly from the south-southeast (Worley Parsons, 2011). The most significant coastal storms that have been recorded, and have significantly impacted this area include the May, and June 1974 storms, the June-July 2007 storm, and most recently the June 2016 storm. The May 1974 storm was particularly severe as it occurred alongside the highest recorded water level along the NSW coastline (Chapman et al., 1982). Figures 3-3 – 3-5 demonstrates some of the impacts the 1974 and 2016 storms caused for the Eastern Beaches region. All of these storms were described as East Coast Low weather systems and are most likely to occur in Autumn / Winter (Worley Parsons, 2011).

Coastal inundation hazard mapping for the Sydney region has been conducted, and produced a set of high-resolution hydrodynamic model

simulations in order to obtain current climate, as well as storm tide return level estimates and sea level rise considerations (McInnes et al., 2012). Six Inundation scenarios were developed:

- 1 in 1-year event;
- 1 in 1-year event with 40 cm Sea Level Rise;
- 1 in 1-year event with 90cm Sea Level Rise;
- 1 in 100-year event;
- 1 in 100-year event with 40 cm Sea Level Rise;
- 1 in 100-year event with 90cm Sea Level Rise.

Figure 3-3 South Bondi Beach, 1974 (Source: Office of Local Government, 2019)

Figure 3-4 Bondi Beach (Icebergs), 2016 (Source: © Media-Mode.com, 2019)

Figure 3-5 Coogee Promenade damaged during the 2016 storm (Source: Daily Telegraph, 2016)

The shoreline of the study area within the Woollahra Municipal Council LGA contains a large stretch of coastal cliffs that are exposed to the Tasman Sea. The cliff lines are located within both private and public lands including Crown land, NPWS land and Council reserves. The cliff faces in this area range from between 2m to 50m in vertical height and are comprised of sub-vertical sandstone bedrock faces with occasional step features. Wave cut rock platforms exist over the toe of most of the cliff lines and are typically covered with numerous sandstone blocks which range in size (Cardno, 2015).

As part of the Woollahra Coastal Zone Management Study (Cardno, 2015), investigations into coastal and estuarine processes were undertaken to establish a scientific foundation for management of the Woollahra coastal zone. As such, J&K Geotechnics completed an assessment of the risk of geotechnical failure along Woollahra LGAs rocky cliff lines. J&K Geotechnics (2013 and 2015) found that *"the topography of the majority of the cliff faces has been influenced by the orthogonal joint sets present within the rock mass. At the base of the cliff faces where sandstone wave cut platforms are present, they will generally be covered by an abundance of detached blocks from previous rock falls. The block sizes and shapes are typically controlled by the two principal orthogonal joint sets*". Overall, J&K Geotechnics (2013 and 2015) surmised that the cliff faces within the Woollahra LGA had a 'tolerable' to 'acceptable' risk of instability.

The Waverley Council Coastal Risks and Hazard Vulnerability Study (Worley Parsons, 2011) assesses and documents the coastal hazards and climate change vulnerability of the beaches and cliffs of Waverley Council LGA. The report provides details on the prevalent coastal processes and risks across the study area including wave climate, coastal storms, elevated water levels, wave induced currents, sediment transport, wave runup and overtopping and climate change.

The study surmised that overall the hazard risk to Waverley's coastal assets is low. A summary of the coastal hazards as stated in the study is provided below.

"The cliff faces and foreshore slopes have a 'tolerable' to 'acceptable' risk of instability. Under existing conditions and into the near future on-going monitoring and periodic geotechnical assessments are an appropriate method of coastal zone and landslide risk management.

However, projected sea level rises over ensuing decades would be likely to cause reductions in the widths of Waverley's beaches, resulting in the gradual reduction in the amenity of all the beaches. Further, there would be an increasing risk to the stability of the seawalls during storms as sand is eroded from the beaches. Overtopping of seawalls also would increase with time due to sea level rise. As the relative crest levels and rock levels are lowered larger waves would reach the coastal lots and seawalls, increasing the risk of inundation to foreshore buildings, increasing the risk to pedestrians promenading during storms and increasing the risk to the structure of the seawalls.

More intense storm events and elevated sea levels would result in elevated erosion rates over a greater height of the cliff faces and their bases, which would be likely to lead to localised collapses of undercuts and potential instability of the toe areas of the fill batter slope within Waverley Cemetery."

The study area includes an approximately 10km length of coastline within the northern section of Botany Bay from Cape Banks around to Brotherson Dock. The Botany Bay entrance is approximately 1.1 km wide and open to ocean swell from the east. The Bay has a dredged navigation channel at the entrance but is relatively shallow with a mean water depth of approximately 5m (URS, 2003).

The foreshore stretch of Botany Bay within the study area includes rocky headlands, sandy beaches, sheltered embayments and a small island (Bare Island) along with extensive manmade development in the form of Port Botany. During the 1970s with the construction of the Port Botany revetment, Yarra Bay experienced significant shoreline re-alignment caused by waves reflecting off the revetment (Molino Stewart Pty Ltd, 2007). Subsequently, a program of beach nourishment was undertaken to protect the shoreline and a breakwater was constructed to protect the Yarra Bay Sailing Club (Molino Stewart Pty Ltd, 2007).

3.4.1.2 Urbanisation of the Coastal Zone

The majority of the coastline including the beaches and coastal cliffs of the study area are backed by urban or industrial development such as houses, surf clubs and beach amenities. The exception to this is the stretch of coastline in the south of the study area from Malabar Headland down to Cape Banks, which has national park areas and golf courses along the foreshore. Extensive coastal modifications have occurred at many of the beaches in the study area, for example:

- Numerous sea walls and promenades at the back of beaches;
- Ocean baths and pools;
- Concrete slab platform i.e. at Clovelly Bay;
- Port Botany development and associated infrastructure; and
- Breakwater at Yarra Bay.

3.4.1.3 Coastal Protection Structures

The study area includes approximately 3,050 meters of seawalls with varying types, construction dates and condition located in both Waverly and Randwick Council areas. Woollahra Council does not have any sea walls within the geographical range of this plan. Many of these public seawalls are heritage listed and there are no private seawalls in the study area. Storm damage over the last 100 years has seen construction and upgrades to this infrastructure across both Waverly and Randwick.

- **Waverley Council**

Seawalls in Waverley are located at Bondi (1300m), Bronte (400m) and Tamarama Beach (250m).

Initial construction of the Bondi Beach seawall started in 1909, increased demands on the area and storm events have seen substantial upgrades to the seawall and associated infrastructure. By 1992 the entire length of the seawall had been reinforced.

The Bronte seawall and promenade were constructed from 1914-17, although it has been overtopped it has not suffered severe storm damage except for in 2016 which saw repairs to the fencing, railing and seawall. A initial condition report was subsequently conducted and concluded that current seawall and ancillary structures defects have the potential to propagate and in time threaten the serviceable function of the wall if left untreated. It also noted that as the seawall is founded on beach sands it is vulnerable to foundation failure from wave-induced scour during a 100 year ARI design storm event in present day, and the risk of failure increases when future 2050 and 2100 sea level rise scenarios are considered.

Tamarama seawalls were originally built in 1906/7 however by 1924 construction of a new seawall was underway. Since this time there has been

no reported collapses. However, it is noted that all Waverley's Coastal walls have existing maintenance needs and there are currently localised weak spots. As risks from coastal processes increase in future, these needs will escalate.

- **Randwick Council**

Randwick City has seawalls located at Coogee (450m), Clovelly (150m) and Maroubra Beach (500m).

The Coogee Esplanade (seawall) was built out of sandstone in the early 1900s following increased visitation with the extension of the tram line to Coogee. The esplanade currently extends 450m along the majority of the Coogee beach front.

Clovelly sea wall, located on the south side of the embayment was built during the Great Depression (1930s) when Randwick Council instituted a scheme to keep unemployed men employed by building 150m long concrete foreshores for Clovelly in an attempt to make access to the bay's foreshores easier for swimmers. Northern concrete armouring of the sandstone rock platform was carried out in the early 1960s.

The Maroubra seawall built in the 1930s extends from the northern end of the beach 500 metres to the Maroubra surf lifesaving club in the centre of the beach, there is no seawall south of the surf lifesaving club.

The Eastern Beaches sea walls are maintained and repaired as needed to address damage and deterioration post storms and other impacts. Forward planning and resourcing to ensure adequate maintenance and repair to account for coastal erosion, recession and sea level rise will become increasingly important. Coastal risk increasing will necessarily inform asset renewal plans and revisions.

3.4.1.4 Water Quality

The Beachwatch Program monitors swimming sites and grades them from 'very good' to 'very poor' in accordance with the National Health and Medical Research Council's 2008 Guidelines for Managing Risks in Recreational Waters. The grades provide a long-term assessment of beach suitability for swimming and are determined from the most recent 100 water quality results (which can be 2 to 4 years of data depending on sampling frequency). The rating also includes a risk assessment of potentially polluting sources. Generally, water samples are analysed in a laboratory for enterococci and the results are combined with a sanity inspection to determine an overall grading, noting that the statistical confidence in the result increases for a greater sample number.

Sites rated as 'very good' are considered suitable for swimming almost all of the time, with few potential sources of faecal contamination. Sites rated as 'good' are considered suitability for swimming most of the time, but they may have some susceptibility to contamination. 'Fair' rated sites should be avoided for the purposes of swimming during and for three days following rainfall or if there are signs of stormwater pollution, such as discoloured water or odour or floating debris. 'Poor' sites indicate microbial water quality is susceptible to faecal pollution, particularly after rainfall and occasionally during dry weather conditions, with several potential sources of faecal contamination including stormwater.

There are 12 sites monitored in the study area, these locations and the grades achieved by each over the past five years is outlined in Table 3-5. From 2012 to 2018 the grade at each of the monitored beaches across the study area was relatively consistent with the majority of locations receiving Good or Very Good Beach Suitability Grades. However, Malabar Beach and Yarra Bay have received reoccurring Poor grades in recent years.

Table 3-5 Water Sampling Sites (Beachwatch - OEH, 2011-18)

Monitoring Site	Beach Suitability Grade					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Bondi Beach	G	G	G	G	G	G
Tamarama Beach	G	G	G	G	G	G
Bronte Beach	G	G	G	G	G	G
Clovelly Beach	G	VG	VG	VG	VG	VG
Gordons Bay	N/A	G	G	G	G	G
Coogee Beach	G	G	G	P	G	G
Maroubra Beach	VG	G	VG	VG	VG	G
Malabar Beach	G	G	G	P	P	P
Little Bay Beach	G	G	G	G	G	G
Congwong Bay	G	VG	VG	VG	G	G
Frenchmans Bay	G	G	G	G	G	G
Yarra Bay	G	G	G	P	P	G

VG Very Good G Good F Fair P Poor VP Very Poor

3.4.1.5 Waste Water Management

Sydney Water owns and operates the two the sewage treatment plants in the study area (Bondi and Malabar). Performance of these facilities and their associated network of sewer pipes, sewage pumping stations and sewer overflow structures is managed via pollution licences issued by the NSW EPA and reported on monthly basis. These licences are reviewed on a 5 yearly cycle with reviews for both plants due 1 July 2020.

Sydney Water also undertakes the Sewage Treatment System Impact Monitoring Program (STSIMP) reporting to the NSW EPA annually *(since 2008*). The STSIMP aims to monitor the environment within Sydney Water's area of operations to determine general trends in water quality over time, monitor Sydney Water's performance and to determine where Sydney Water's contribution to water quality may pose a risk to environmental ecosystems and human health.

3.4.1.6 Terrestrial Biodiversity

The terrestrial biodiversity within the Councils LGAs have been documented in various plans and strategies in recent years.

The Woollahra LGA has a total of 48.7 hectares of remnant vegetation, comprised of mostly Coastal Sandstone Foreshores Forest (30.7 ha) and Coastal Headland Banksia Heath (16.3 ha), as shown in Figure 3-6.

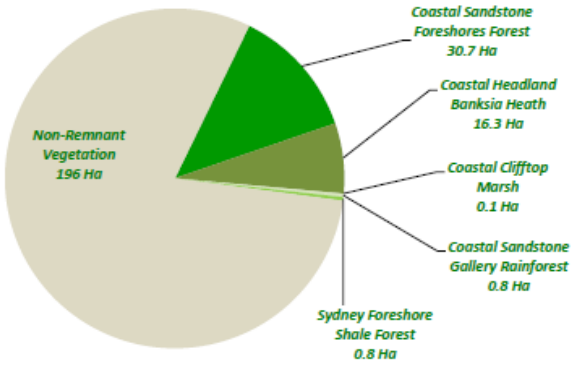


Figure 3-6 Woollahra LGA Current Vegetation Types (Total Earth Care Pty Ltd, 2015)

The Woollahra Biodiversity Conservation Strategy (Total Earth Care Pty Ltd, 2015) outlines that the LGA is home to numerous State and/or Commonwealth listed species including:

- Sunshine Wattle (*Acacia terminalis subsp. Terminalis*);
- Nielsen Park She-oak (*Allocasuarina portuensis*);
- Magenta Cherry (*Syzygium paniculatum*);
- Sooty Oystercatcher;
- Powerful Owl;
- Eastern Bentwing-bat;
- Southern Myotis;
- Grey-headed Flying Fox; and
- Seahorses, seadragons, pipehorses, ghostpipefish and seamoths (*Syngnathids*)

Additionally, 28 native animal species have been recorded that are protected under the *National Parks and Wildlife Act 1974*.

A number of open spaces and vegetated areas within the study area provide important environmental and biodiversity values and are key habitats and/or habitat links within the broader area. These include Christison Park (6.2 ha), Gap Park (4.6 ha), South Head (6.7 ha) and Gap Bluff (7.6 ha).

The Waverley LGA has approximately 6 ha of remnant vegetation and is home to a total of 121 indigenous plant species. This is equivalent to 6% of all native species in the Sydney Basin which is commendable given the extremely populated nature of the LGA. Of these species, one, the Sunshine Wattle, *Acacia terminalis* subsp. *terminalis*, is listed under both State and Commonwealth legislation (Sydney Bush Regeneration Company, 2010). A small area of the community, Eastern Suburbs Banksia Scrub is also present in Waverley which is also State and Commonwealth listed.

Despite only having a small area of remnant vegetation or habitat, past surveys have identified 37 native birds, 11 reptiles, 4 frogs and 4 mammal species within the area. This includes the threatened species the Grey-headed Flying-fox which has been recorded in numerous locations across the LGA (Australian Museum Business Services, 2011).

The Biodiversity Study of the Waverley Local Government Area (Australian Museum Business Services, 2011) identified large numbers of Pale-lipped Shadeskink (*Saproscincus spectabilis*) within Tamarama Park. Given this species has a limited distribution and is only known to occur in 12 different locations in the Sydney region, this area is considered highly important habitat within the study area (Australian Museum Business Services, 2011). Similarly, the Biodiversity Study outlines that the Velvet Gecko (*Oedura lesueurii*) occurs in high numbers in Diamond Bay and given the habitat for this species has been reduced across the Sydney region its range within the LGA is likely to be limited to the coastal sandstone remnants.

Within the open spaces and bushland pockets of Randwick City LGA over 500 native plant species and 300 animal species have previously been recorded. Randwick City Council (2017) outlined that this represents 25% of all species indigenous to the Sydney Basin which makes Randwick one of Australia's main centres of plant diversity.

Randwick LGA is home to the largest remaining areas of the critically endangered ecological community Eastern Suburbs Banksia Scrub, along with other key species, the Sunshine Wattle (*Acacia terminalis ssp. terminalis*), the Grey Headed Flying Fox and the Green and Golden Bell Frog.

3.4.1.7 Marine Biodiversity

The study area is part of the Hawkesbury Shelf marine bioregion. This bioregion extends from Stockton (Newcastle) in the north to Shellharbour (near Wollongong) in the south. It includes the coastline, estuaries, coastal lakes and lagoons, beaches, and ocean waters out to the continental shelf.

The study areas contain a mosaic of marine and foreshore habitats and values know to support more than 600 marine animals (Booth, 2012), and 4,760 different marine species (Australian Museum, 2019). Specific records and occurrence maps of each of these species can be found on the Atlas of Living Australia website.

The Department of Planning, Industry and Environment (DPIE) are currently collecting detailed information of NSW seabed habitats (DCCEW, 2010 - https://www.environment.nsw.gov.au/research-and-publications/our-science-and-research/our-research/water/offshore-mapping). As part of the SeaBed NSW project, DPIE are conducting marine laser scanning (LADS), multibeam surveying and sediment (grab) samples to map (in greater detail than ever before) seabed habitats of our marine estate. This program will be conducted within the Eastern beaches region, and will provide valuable data for council to perform seabed habitat management and conservation, as well as potentially determining offshore sand sources (for extraction/ nourishment programs).

There are marine reserves defined within the study area. Bordering Randwick's LGA, are two of NSW's twelve aquatic reserves which are protected as part of the NSW marine estate to conserve marine biodiversity and support marine science, recreation and education (DPI, 2019). These aquatic reserves are the Bronte-Coogee Aquatic Reserve and the Cape Banks Aquatic Reserve, which are mapped in Figure 3-7 and Figure 3-8 respectively. Both reserves were established in 2002 and are part of the broader Hawkesbury Shelf bioregion, which extends between Newcastle, Sydney and Wollongong.

The Bronte-Coogee Aquatic Reserve extends from the rock baths at Coogee Beach to the southern end of Bronte Beach and out to 100m offshore. This covers an approximately 4 km stretch of coastline, encompassing a total of approximately 40 hectares which includes Clovelly Bay, Gordons Bay and an underwater snorkel trail. This area is home to a diversity of marine life including the blue groper (*Achoerodus viridis*) which is afforded additional protections through a fishing closure in the part of the reserve where the local groper population lives.

The Cape Banks Aquatic Reserve is approximately half the size of the Bronte-Coogee Aquatic Reserve, covering 20 hectares on the northern headland of Botany Bay. The Reserve extends from the Cape Banks Bridge to the Endeavour Light at Henry Head and encompasses a range of rocky intertidal habitats which are home to a diversity of intertidal marine plant and animal communities.

It is noted that any land within 100m of an aquatic reserve is identified as an environmental sensitive area under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. This includes several assets and properties within Randwick LGA in Clovelly. It is noted that any development within this area cannot be carried out as exempt or complying development.

The study area also contains intertidal protected areas (IPAs) established to protect selected rocky habitats and intertidal species. These occur between Bondi Beach and Tamarama and also at Long Bay – Malabar in Figure 3-9. All IPAs extend from the mean high water mark to 10 metres seaward from the mean low water mark. Collecting seashore animals is prohibited in these closures. This includes crabs, snails, cunjevoi, octopus, sea urchins,

anemones, pipis, cockles, mussels, oysters, and nippers (saltwater yabbies). See Protecting Seashore Animals for further information.

Magic Point on Malabar Headland is also defined as a critical habitat for the Grey Nurse shark. In this area all line fishing using bait excluding soft plastics is prohibited see Figure 3-10.

Figure 3-7 Bronte-Coogee Aquatic Reserve (Source: DPI, 2014)

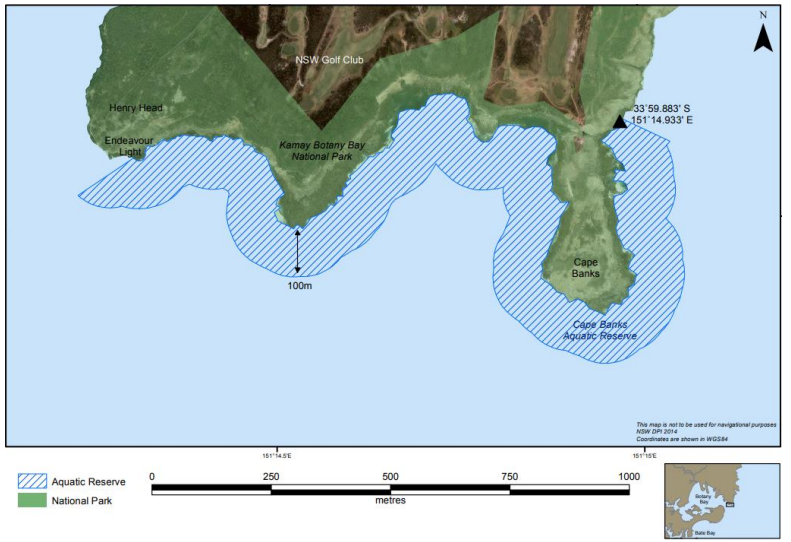


Figure 3-8 Cape Banks Aquatic Reserve (Source: DPI, 2014)

Figure 3-9 Intertidal Protected Areas – Bondi and Long Bay (Source NSW DPI)

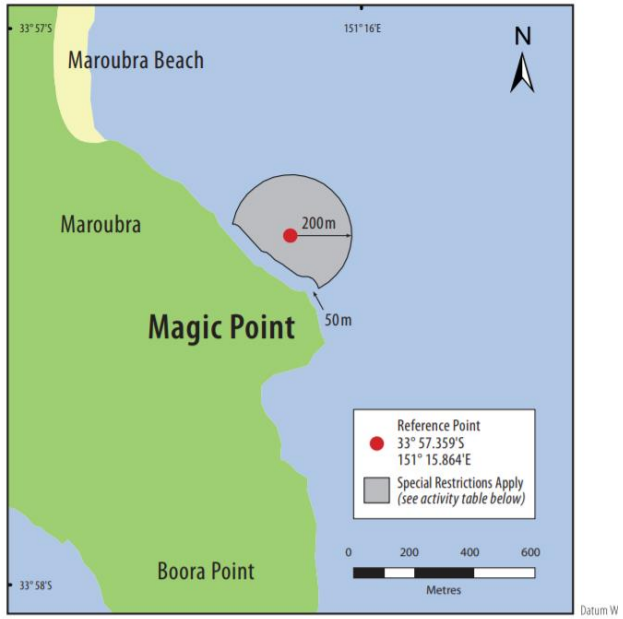


Figure 3-10 Magic Point Greynurse Shark Critical Habitat

3.4.2 Environmental Pressures

Within the Eastern Beaches region, there are a number of threats and threatening processes that pose a risk to the terrestrial biodiversity of the area. Past and present human activities within the waterways and the broader catchment continue to place pressure on many of the local environmental values. These have been documented in previous studies and reports published by the Councils and are summarised herein.

The Woollahra Biodiversity Conservation Strategy (2015) documents a number of key threats to the biodiversity of the region, these include:

- Loss of native vegetation and connectivity between habitat areas;
- Stormwater runoff;
- Water pollution and debris;
- Introduced flora species, weeds and diseases;
- Increase in introduced animals and domestic pets;
- Over-aggressive native species;
- Decreased understorey habitat for small birds;
- Recreational use of natural areas and associated infrastructure;
- Climate change; and
- Other threats including, decreased genetic diversity of flora and fauna species surviving in isolated habitat patches resulting in the reduced ability of these populations to survive disease and environmental changes; an ageing tree canopy including mature planted species in parks and remnant species in bushland and illegal tree removal by foreshore residents to improve views.

The Biodiversity Study of the Waverley Local Government Area (Australian Museum Business Services, 2011) also outlines a number of existing threats to biodiversity, including

- Vegetation clearing and replacement by human infrastructure or open space;
- Urban development;
- Habitat loss and fragmentation;
- Weed invasion;
- Road mortality;

- Predation by introduced predators (including domestic cats and dogs);
- Frequent habitat disturbance (e.g. vegetation slashing, rubbish dumping, access from people);

Similarly, Randwick City Council documents numerous key threatening processes listed under Commonwealth and State legislation that are likely to be operating in the region (Randwick City Council, 2014), these include:

- Anthropogenic climate change;
- Clearing of native vegetation;
- Competition and land degradation by feral rabbits;
- Competition from feral honeybees;
- Infection and dieback caused by the root-rot fungus (*Phytophthora cinnamomi*);
- High frequency fire resulting in the disruption of life cycle processes;
- Infection of amphibians with chytrid fungus resulting in chytridiomycosis;
- Invasion of native plant communities by exotic perennial grasses;
- Invasion of native plant communities by *Chrysanthemoides monilifera*;
- Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases;
- Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish);
- Predation by the European Red Fox (*Vulpes vulpes*);
- Predation by the Feral Cat (*Felis catus*);
- Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations;
- Removal of dead wood and dead trees;
- Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments; and
- Death or injury to marine species following capture in shark control programs on ocean beaches.

Whilst not specifically documented in previous literature or reports, it is likely there are numerous other threats or pressures that are currently having or have the potential to have an impact on the terrestrial and marine vegetation, fauna and ecological processes within the study area. These are likely to be human driven and could include:

- Diversion of natural channels and drainage;
- Dredging activities (i.e. Port Botany);
- Industrial and commercial activities;
- Road and transport routes;
- Dumping of commercial and domestic waste;
- Land filling;
- Plastic pollution;
- Water pollution;
- Overfishing;
- Illegal taking of marine animals;

- Sewer overflows; and
- Sewage treatment plants discharges.

There is currently limited monitoring and information on the current and future threats to Marine Biodiversity related to the study area, as this is not under the jurisdiction of councils. In 2017 the Marine Estate Management Authority completed an evidence-based threat and risk assessment for the NSW marine estate (statewide TARA), which has assessed the current and future threats and risks to environmental assets and social, cultural and economic benefits of the coastal zone.

Threats are identified in the NSW Marine Estate TARA Report (BMT WBM, 2017) are listed in Table 3-6.

Table 3-6 NSW Marine Estate TARA Report Priority Threats

Priority Threats – Environment Assets *(in descending order of significance)*	**Priority Threats – Social, Cultural and Economic Benefits** *(in descending order of significance)*
• Urban stormwater discharge • Estuary entrance modifications • Agricultural diffuse source runoff (in estuaries) • Clearing riparian and adjacent habitat including wetland drainage • Climate change stressors 20-year timeframe (sea level rise, altered storm / cyclone activity, flooding, climate and sea temperature rise, altered ocean currents and nutrient inputs) • Modified freshwater flows (in estuaries) • Foreshore development • Recreation - Boating and boating infrastructure (in estuaries) • Navigation & entrance management and modification, harbour maintenance etc. • Sewage effluent and septic runoff • Stock grazing of riparian and marine vegetation (in estuaries) • Four-wheel driving • Recreational fishing -boat-based line and trap fishing • Passive recreational use • Recreational fishing-shore-based line and trap fishing • Beach nourishment and grooming • Commercial fishing -ocean trawl (in coast and marine waters) • Commercial fishing - ocean trap and line (in coast and marine waters) • Commercial fishing- estuary general (in estuaries) • Deliberate introduction of plants and animals (e.g. foxes, Bitou bush) • Shipping- small commercial vessels • Oyster aquaculture (in estuaries) • Commercial fishing-ocean haul (in coastal and marine waters) • Recreational fishing- hand gathering • Whale and dolphin watching	• Water pollution on environmental values - urban stormwater discharge • Water pollution on environmental values - agricultural diffuse source runoff • Water pollution on environmental values - litter, solid waste, marine debris and microplastics • Inadequate social and economic information • Lack of compliance with regulations (by users) or lack of compliance effort (by agencies) • Limited or lack of access infrastructure to the marine estate • Reductions in abundances of species and trophic levels • Anti-social behaviour and unsafe practices • Climate change stressors 20-year time frame (sea level rise, altered storm/cyclone activity, flooding, climate and sea temperature rise, altered ocean currents and nutrient inputs) • Loss of public access (either by private development or Government area closures) • Inadequate, inefficient regulation, overregulation (agencies) • Pests and diseases • Sediment contamination • Overcrowding / congestion • Conflict over resource access and use • Habitat (physical) disturbance (e.g. from foreshore development, commercial and recreational fishing methods, four-wheel driving, and extractive industries (mining) • Loss or decline of marine industries • Seafood contamination • Modified hydrology/hydraulics and flow regime • Water pollution on environmental values - septic runoff, point source pollution and sewage overflows (such as outfalls, STPs, etc.) • Wildlife disturbance (Shorebirds, Turtles, Whales) by dog walkers, 4WD, marine vessels, etc. • Lack of community awareness of the marine estate, associated threats and benefits, regulations and opportunities for participation • Lack of or ineffective community engagement or participation in governance • Other water pollution/contamination affecting human health and safety • Excessive or illegal extraction

3.5 Governance Context

3.5.1 Waterway and Land Ownership and Management

Land ownership and management within the study area includes both private and public lands with varying land uses.

The majority of land across the study area is privately owned. This area has various land uses but is predominately urban residential, commercial land uses and small sections of light industrial, and transport related use. Heavy industry areas occurs in parts of Port Botany and the adjacent Orica industrial lands.

Local Government Authorities (LGAs) manages or owns much of the foreshore and parklands adjacent to the coastline, while State Government manages and/or owns the ocean areas of the study area up to the high tide point on the beaches. There is also section of National Park within the study area which is managed by the NSW National Parks and Wildlife Service (NPWS). Sydney Water own and manage lands around the Bondi and Malabar treatment plants and own and manage the potable and sewerage infrastructure in the Study area. Sydney Water also own small portion of trunk drainage in the study area for example in Cliffton Road and Penkivil Street.

The La Perouse Local Aboriginal Land Council covers land from the south head of Sydney Harbour down to Royal National Park. It is the representative body of the La Perouse Aboriginal community. It plays a key role in the protection and promotion of cultural heritage in the area, operates an Indigenous rangers' program and provides support to its members in the form of social housing, youth and social services. The organisation also maintains a large property portfolio.

The Federal Government agencies manage lands including parts of Malabar Headland, Macquarie light station, and naval defence base (HMAS Watson) on south head. The Australian Communications and Media Authority (ACMA) also administers the *Telecommunications and Other Legislation Amendment (Protection of Submarine Cables and Other Measures) Act 2005*, and the associated Southern Sydney Submarine Cable Protection Zone extending from Tamarama and Clovelly beaches and extending 30 nautical miles offshore.

The governance of the study area and associated coastal area is complex and multi-layered and includes all levels of government which are responsible for overseeing or delivering, legislation, policy and plans (see Appendix B). There are 3 LGAs within the CMP area of study, 24 State Government agencies and organisations and 8 Commonwealth Government agencies. The councils work together regionally in a number of ways including for catchment wide management with the Sydney Coastal Councils Group (SCCG) and the, Southern Sydney Regional Organisation of Councils (SSROC). Overall, there is some jurisdictional ambiguity and fragmented management responsibility throughout the study area.

3.5.2 Roles and Responsibilities

In the Federal context, the Commonwealth Government have management and regulatory responsibilities for key areas of Port Botany, Malabar Headland and defence bases. The *Environmental Protection and Biodiversity Conservation Act 1999* protects national significant heritage, including threatened species and communities (e.g. *Posidonia australis* seagrass beds), marine mammals and international bird migratory treaties which apply within the broader Botany Bay areas, e.g. Towra Point Japan-Australia Migratory Bird Agreement (JAMBA) and China-Australia Migratory Bird Agreement (CAMBA).

State and Local Governments share strategic and statutory planning responsibilities for land in the study area. Both the Department of Planning,

Industry and Environment and local councils administer the NSW *Environmental Planning and Assessment Act 1979*, which is the key legislation for land use planning and development assessment in NSW. LEPs are made under the *NSW Environmental Planning and Assessment Act 1979* (Part 3) and specify land zoning and permissible development for each local council area.

The CM Act 2016 provides the legislative framework for managing the coastal zone in a strategic and coordinated manner. The CM Act is administered by the Department of Planning, Industry and Environment under the responsibility of the Minister for Local Government.

Under the CM Act, CMPs are developed and certified to specify actions to be implemented by local councils (generally through councils Integrated Planning and Reporting Framework, which is established in the Local Government Act 1993) and state agencies (through written agreement).

The NSW Maritime Division of Roads and Maritime Services (RMS) is responsible for property administration and infrastructure management related to commercial and recreational boating. Within Port Botany, the Port Authority of NSW manages navigation, security and operational safety needs of commercial shipping. NSW Ports is the port operator for Port Botany. NSW Ports is a private company made up of a consortium of institutional investors.

The Greater Sydney Commission (GSC) is an independent organisation funded by the NSW Government that has a specific role in coordinating and aligning Strategy planning for Greater Sydney, with responsibilities for leading and guiding the planning for development, transport and housing to ensure a productive and sustainable city. The GSC has also developed the Eastern City District Plan which will guide the redevelopment of Council LEPs to achieve urban growth and management objectives. The GSC is also leading defined collaboration areas. None of these occur within the study area.

3.6 Social Context

3.6.1 Population and Demographics

The estimated resident populations of the three Council LGAs for 2018 were:

- Woollahra: 58,964 people with a population density of 48.13 persons per hectare. This represents an increase of 4,888 people (9.0%) from 2008.
- Waverley: 74,114 people with a population density of 80.16 persons per hectare. This represents an increase of 7,656 people (11.5%) from 2008.
- Randwick: 154,265 people with a population density of 42.46 persons per hectare. This represents an increase of 23,129 people (17.6%) from 2008.

Both Woollahra and Waverley LGA growth rates are slightly below that experienced by NSW over the same period (15.0%). However, Randwick LGA experienced a slightly higher growth rate than both NSW and Woollahra and Waverley LGAs (.idcommunity, 2019a).

The median age of residents in Woollahra, Waverley and Randwick LGAs is 39, 35 and 34, respectively. Analysis of the five-year age group data for each of the LGAs shows that in 2016 all three Council areas had a lower proportion of people in the younger age groups (under 15) compared to Greater Sydney. Overall, Woollahra, Waverley and Randwick had 15.6%, 16.0% and 14.9% of their population aged between 0 and 15 years, respectively, compared with Greater Sydney's 18.7%. Waverley Council also had a lower proportion of people aged 65 and over (12.7%) whilst Woollahra had a higher proportion (18.7%) and Randwick had a similar proportion (13.4%) when compared to Greater Sydney (13.9%).

DPIE Planning (2019) states that population projects shown that NSW will grow to 9.9 million people by 2036, that being a 2.71-million-person growth

from 2011. Based on their 2016 population projections data, Woollahra, Waverly and Randwick LGAs are expected to have respective total increases in population of 6.3%, 12.5% and 30.7% between 2011 and 2036 (under the main series projection).

The Eastern City District Plan (GSC, 2018) stated that projections of population and household growth in the Eastern City District translates to a need for an additional 157,500 homes between 2016 and 2036. There are five key housing market demand areas in the Eastern City District, one of those is identified as the Eastern Shore. The Eastern Shore is identified as being located entirely within the Eastern City District, and comprising the majority of Randwick, part of the City of Sydney and the former Botany Bay LGAs. Thus, it is anticipated that most of the population growth experienced by the study area will occur in the south within the Randwick LGA section.

3.6.2 Community Values and Issues

There wasn't any direct community consultation undertaken as part of the development of this scoping study. However, outcomes from previous community engagement activities undertaken by the Councils were reviewed and key values and issues related to the Eastern Beaches coastal zone derived.

Woollahra Municipal Council undertook community engagement and gained feedback during the process of updating the Woollahra 2030 Community Strategic Plan. Key community values obtained during this process as documented in Woollahra 2030 that are directly relevant to the coastal zone are summarised in Table 3-7.

Table 3-7 Community Values

Community Values
Quality places and spaces
• Protection of local history, heritage values and buildings • Retention of local urban character • Sustainable development • Good access to the city, harbour, beaches and facilities • Well-managed trees in streets and parks • Well-maintained foreshores, beaches, parks, sports fields and recreation areas • Local parks and green open spaces • Trees and leafy green streetscapes that are well maintained • Children's play areas and playgrounds • A clean and well-maintained environment
A healthy environment
• Environmental monitoring and protection • Environmentally sustainable initiatives • Retention of bushland and bush regeneration • A commitment to sustainable waste management • Reduced water pollution and improved stormwater drainage • A commitment to responsible management of biodiversity • Good street cleaning, recycling and waste collection

Additionally, the Woollahra Coastal Zone Management Study (Cardno, 2015) conducted community consultation to ascertain key values and issues associated with the coastal zone. This consultation found that:

- Passive recreation is the most popular foreshore activity, followed by walking/jogging (73%), swimming (56%) and picnicking (56%).
- The least popular activities included dog walking (18%), recreational fishing (22%) and diving (29%). However, these activities still represent a large proportion of respondents.
- Typically, people believe the natural environment and its preservation are highly valued and important – 89% of respondents identified the protection of environment as important to them with 80% identifying the protection of threatened species as important.
- Additionally, the majority of respondents (78%) regard protection and enhancement of the aesthetic values of the area as important, which indicates that water views and landscape character are highly valued.
- Respondents identified the main changes and areas of concern they have involve increasing development with 5 in 8 people stated that “too much” development was occurring and/or they had concerns with specific developments.
- Loss of vegetation was the next highest ranked change indicated by respondents. Other changes / concerns centred around foreshore user conflicts (particularly in open spaces), foreshore condition (increasing pollution and rubbish, and stormwater issues) and unauthorised clearing of vegetation by private residents for the improvement of views from their properties.

To inform the Waverley Community Strategic Plan an extensive consultation and engagement program was conducted to ensure the whole community had the opportunity to contribute. The Waverley Community Strategic Plan Community Engagement Report (UTS Sydney Centre for Local Government, 2018) outlines the engagement process undertaken and the community views across 11 themes, with key themes relevant to the CMP process including Sustainable Environment; Recreation and Public Spaces; Planning, Development and Heritage; and Sustainable Waste Management. The key overall messages to emerge from the engagement as stated in the Waverley Community Strategic Plan Community Engagement Report include:

- *“The beaches and parks are highly valued by the community. High standards of maintenance are important.*
- *The community is very proud of the natural assets of the Council area, particularly the iconic beaches and the parks. They are keen for these highly valued assets to be protected from any development encroachment, to be well maintained and the litter generated by the very high visitation rates to be effectively managed.*
- *A clean green LGA is important: a holistic approach encompassing climate change, biodiversity, green spaces and recycling is valued.*
- *There is strong concern about the impact of waste on the environment, particularly beaches and the ocean and the unsightliness of litter throughout the Council area.*
- *There is a desire for increased cleaning and improved maintenance of public areas”.*

Excerpts from the detailing recreation and public space, and sustainable environment theme engagement outcomes are provided in Figure 3-11.

Figure 3-11 Waverley Community Engagement Outcomes: Recreation and Public Space and Sustainable Environment

The key elements that the Community respondents' value most about the Waverley LGA were: beaches; clean and well-maintained public spaces; parks/green spaces; strong community and village environment; easy access to public transport; flora and fauna; and sustainability.

Similarly, the key issues for respondents were: avoid overdevelopment and high rise; traffic congestion; more open green space or preserve what is there; public cleansing; standards; litter on streets and beaches; and inadequate parking, charging residents for parking and parking restrictions.

The Environmental Levy Community Consultation Report (Randwick City Council, 2019a) documents the comprehensive engagement program that was carried out to gain feedback around Randwick's Environmental Levy which funds a range of important community sustainability projects and events. One notable outcome for coastal management was the ratepayers views on projects they consider to be important.

Overall, the Randwick ratepayers indicated that the most important Environmental Levy projects were those that improved water quality at beaches (as shown in Figure 3-12). It can be seen that the majority of respondents viewed improving beach water quality as very important (68%), important (25%) or moderately important (5%). Respondents in the Coogee and South Coogee (2304) and Clovelly, Clovelly West, Randwick and St Pauls (2301) postcodes rated this most highly with respondents in Daceyville and Kingsford (2032) rating this lower. However, the 2302 poctcode responders rated all proposed projects less favourably than other postcodes.

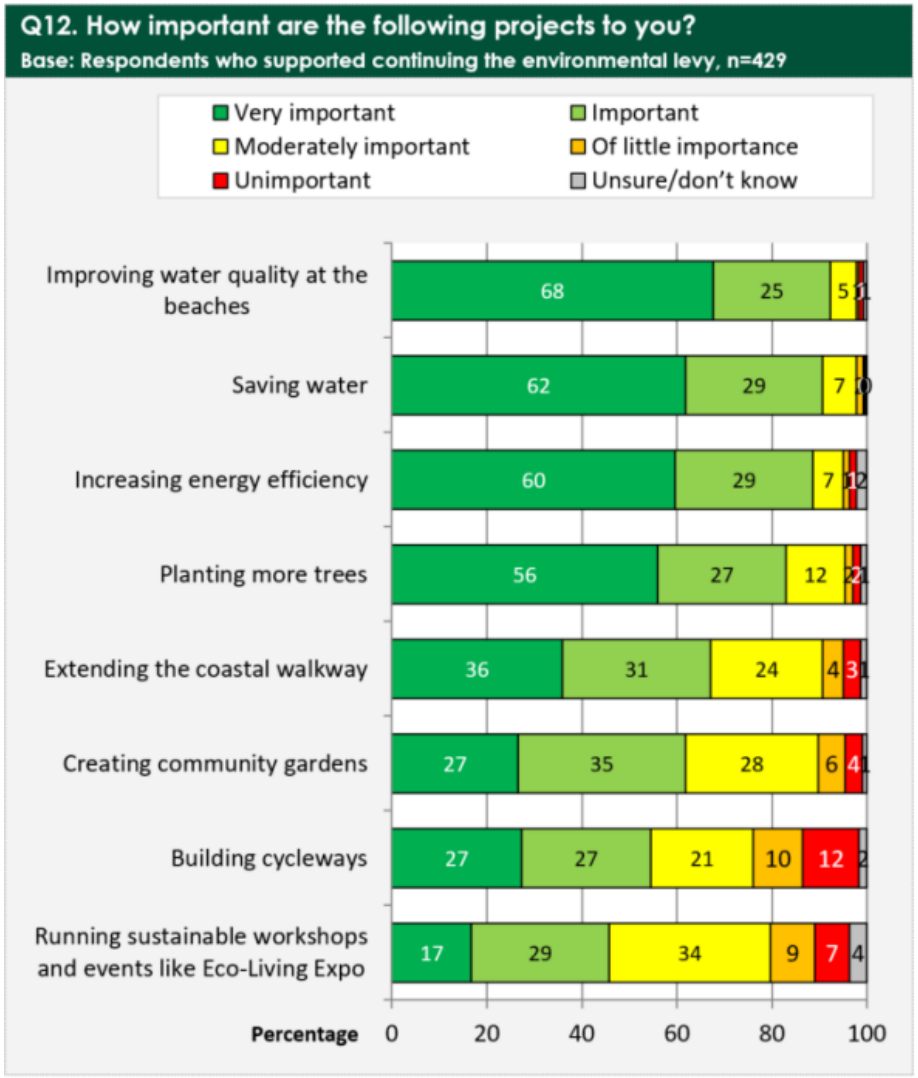


Figure 3-12 Community Consultation Results – Important Projects (Source: Randwick City Council, 2019a)

3.7 Cultural and Heritage Context

The Eastern Beaches have a rich Aboriginal, cultural and heritage history that reinforces its sense of place and identity. There are a range of local Aboriginal and cultural heritage items and heritage precincts that form part of the study area.

Woollahra Municipal Council acknowledges that the first people of their LGA area are the Aboriginal people of the Cadi-gal clan of the Eora nation. Additionally, the Waverley Aboriginal Cultural Heritage Study (Dominic Steele Consulting Archaeology, 2009) identified the Waverley areas as forming the traditional lands of the clan known as the Cadi-gal. It stated that the Cadi-gal extended along the southern shore of Port Jackson from South Head to around Pyrmont. However, noted that the southern boundary of Cadi is less well defined and may have reached Botany Bay around present-day Mascot. Thus, the Cadi-gal are likely to have occupied some if not all of the Randwick LGA as well. The Bidjigal people were another coastal dwelling clan that is known to have lived in and around the Coogee area (Randwick City Council, 2019b). Dominic Steele Consulting Archaeology (2009) outlines that from what we know from other parts of Sydney, the Cadi-gal is likely to have numbered between 30 and 70 people in 1788.

Across all three LGAs, the local area is rich in evidence of early Aboriginal history. Woollahra LGA is home to over 70 sites including 13 midden sites, 29 rock engraving and numerous shelters, many with axe grinding grooves where stone tools were made and sharpened. The Waverley Aboriginal Cultural Heritage Study (Dominic Steele Consulting Archaeology, 2009) identified 11 Aboriginal cultural heritage sites, with the Waverley LEP 2012 listing 12 Part 3 Archaeological Sites related to Aboriginal heritage, including middens, rock carvings and engravings, open campsite and burial and shelters. The Randwick LEP 2012 identifies one Part 4 Aboriginal Heritage site which occurs

at Little Bay (within the study area) and is referred to as having Aboriginal objects and being an Aboriginal place of heritage significance.

The study area resides completely within the La Perouse Local Aboriginal Land Council (LALC) and their vision is to have "*A confident, prosperous, autonomous, united community*". The objects of each LALC are to "*improve, protect and foster the best interests of all Aboriginal persons within the Council's area and other persons who are members of the Council*". LALC's operate to acquire and manage land, promote/protect culture and heritage and facilitate business enterprise.

The study area is also home to a rich and diverse history of post European settlement heritage and culture. Within each of the LGAs there is a number of local, state and national listed heritage items. Additionally, there are established heritage conservation areas.

Of particular note for the CMP is Bondi Beach, which was listed on the National Heritage List in January 2008. National listed items are considered to demonstrate significance to Australia. The summary statement of significance for Bondi Beach (DEE, 2008) identifies it as being "*significant because of its special associations for Australians, having a central place in the development of beach culture in Australia*" and also "*one of the world's most famous beaches*".

3.8 Economic Context

The total Gross Regional Product (GRP) for the three LGAs that cover the study area is estimated at $18.49 billion, representing approximately 3.3% of NSW's Gross State Product. Woollahra, Waverley and Randwick LGAs estimated GRP totals $5.16 billion, $4.18 billion and $8.52 billion, respectively (.idcommunity, 2019b).

The Waverley Economic Development Strategy 2015 – 2020 (Waverley Council, 2015) sets an economic vision for Waverley to be, "*A prosperous Waverley – a vibrant, sustainable and progressive economy that provides a gateway to Sydney's east*".

Randwick City Council also has a Randwick Economic Development Strategy (SGS, 2009) that was prepared to support the economic theme of "*a prospering city*" as identified in their Community Strategic Plan.

There is a wide range of economic and commercial values provided by the study area, these broadly include:

- The Eastern Beaches coastline is a vibrant holiday and tourist destination and home to some of Australia's most iconic and popular beaches. These, provide both employment and bringing economic stimulation to the area;
- Commercial recreational providers such as surf schools and fisherman use the coastline to support their industries; and
- House and land values within the Eastern Beaches region maintain their high value in part due to the natural environment and recreational pursuits provided in the area by the coastal zone.

3.8.1 Tourism and Visitation

The Eastern Suburbs are a key tourist destination within Sydney. There are many key locations across the Woollahra, Waverley and Randwick LGAs, these locations are outlined in Figure 3-13.

The unforeseen Eastern beaches closures during March and April 2020 due to the Covid-19 Global Pandemic has resulted in significant economic losses to local businesses and local government authorities, as well as social impacts

for the communities within this region. Please note this event was not considered in the first pass Risk Assessment.

Figure 3-13 Major Attractions in the Eastern Suburbs (SGS, 2013)

The Bondi Tourist Precinct Visitor Profile (Destination NSW, 2019) reports that for the year ending March 2019 there were:

- Nearly 1.7 million international visitors to NSW who visited Bondi (day trip);
- Of these 1.7 million international visitors, more than 99,000 stayed overnight in Bondi, equivalent to approximately 6%;
- Nearly 975,000 domestic visitors to Bondi who visited as part of an overnight trip in NSW;
- Of the domestic visitors, 42% of them visited NSW for the purpose of having a holiday, followed by 37% who were visiting friends and relatives. The majority of these were interstate visitors (75%) with most visiting from Victoria (45%), Queensland (26%) and the ACT (10%);
- Over 459,000 domestic visitors went to Bondi on a day trip, with 80% of them being from Sydney.

In summary, of the more than 2.6 million visitors to Bondi, most visit Bondi as a day trip. A breakup of visitation to Bondi is provided in Figure 3-14.

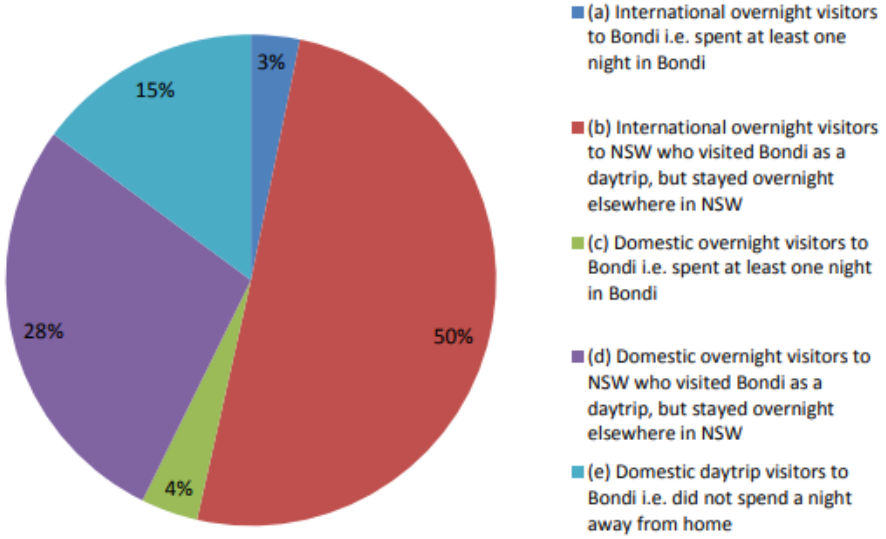


Figure 3-14 Bondi Visitor Market (Destination NSW, 2019)

Tourism is also an important part of the broader Eastern Suburbs economy. Overall, tourism and hospitality sales across the three Council LGAs contributes a total of $2,328 million (.idcommunity, 2019b).

Key statistics on tourism and visitation (.idcommunity, 2019b) to each of the Council LGAs include:

- Woollahra Municipal Council area had an average of 25,550 international visitors in the 5 years up to 2017/18 who stayed in the LGA. The average length of stay for these visitors was 26.1 days, which is higher than the New South Wales average of 17.5 days. In 2017/18, there were 653,053 international visitor nights and the total tourism and hospitality sales was $451.1m.
- Waverley Council area had an average of 84,529 international visitors in the 5 years up to 2017/18 who stayed in the LGA. The average length of stay for these visitors was 28.4 days, which is also higher than the New South Wales average. In 2017/18, there were 2,980,141 international visitor nights and the total tourism and hospitality sales was $1,262.8m.
- Randwick City Council area had an average of 95,595 international visitors in the 5 years up to 2017/18 who stayed in the LGA. The average length of stay for these visitors was 46.9 days, which is significantly higher than the New South Wales average and that of both Waverly and Woollahra LGAs. In 2017/18, there were 5,717,497 international visitor nights and the total tourism and hospitality sales was $614.2m. It should be noted that over the period of 2006 – 2019, visitor numbers have more than doubled in coastal areas (Space Time Research, 2015). Potentially increasing pressure on the sensitive coastal environment that is predominantly paid for by local residents through rates and will need to be increasingly managed and resourced in the future.

Based on the key attractions across the Eastern Suburbs which include Bondi Beach, the Bondi to Coogee coastal walk, Icebergs and Botany Bay National Park, it is evident that the coastal zone has great importance in terms of tourism for the study area, the broader Eastern Suburbs and Greater Sydney. Of particular note is Bondi Beach, which has national significance in terms of visitor numbers. For the year ending March 2019, more than 2.6 million people visited Bondi, an increase of 8% on visitors for the year ending March 2018 (Destination NSW, 2019).

The importance of the coastal zone (i.e. the study area containing the near shore waters, beaches, coastal cliffs and foreshores) is clearly linked to drivers of tourism across all three LGAs, which occurs year round.

3.9 Future Context

3.9.1 Population Growth

The 2016 NSW Population Projections for Sydney Metropolitan LGAs (DPIE, 2019) outlines predicted populations across 2021, 2026, 2031 and 2036 timeframes. Table 3-8 shows the projected increases from 2016 through to 2036 for each LGA.

Table 3-8 Population Projections (DPIE, 2019)

LGA	Total Population					2016-36
	2016	2021	2026	2031	2036	Increase
Woollahra	57,800	58,100	58,450	59,200	59,850	2,050
Waverley	72,250	74,450	75,350	76,450	77,300	5,050
Randwick	146,250	150,550	155,350	167,950	180,150	33,900

3.9.2 Responding to Climate Change

The threat of climate change and its implications is expected to place stress on species, ecosystems and human settlements and industries.

Major development in the Eastern Beaches region is likely to be incremental and occur primarily outside of the coastal zone. However as detailed in the Eastern District Plan, key infrastructure projects such as the CBD & South East Light Rail, the Randwick Health and Education Precinct, as well as increases

in medium and high density housing to meet population growth will need to be carefully managed to minimise indirect impacts on the Eastern Beaches catchment and coastal areas.

Sydney Water are currently undertaking major works to divert effluent from Watsons Bay, Vaucluse and Rose Bay ocean outfalls at Eastern Reserve, Diamond Bay and Christensen Park to the Bondi Waste Water Treatment Plant, which will significantly improve water quality in coastal and marine environments.

The Eastern Beaches Councils have no plans to alter the pattern of development along coastal land, however they are intending to create greater accessibility along the coastline for visitors. The Councils will continue to apply restrictions to retain existing residential densities along the vulnerable areas of the coastline. No significant increase in density is required to meet the housing targets for Waverley or Woollahra. Accordingly, any increase will be predominantly residential infill in existing areas that are well connected by public transport. Currently there are no major transport or social infrastructure projects planned in Waverley and Woollahra that will change the use of coastal land. Other major infrastructure projects will be considered in so far as they protect and enhance the high value heritage and sensitive coastal environments of the region.

In recognition of the climate change threat, all three Councils have also tailored individual approaches to climate change mitigation that assist in gaining a better understanding of climate risk and adaptation pathways.

Woollahra Municipal Council developed the Environmental Sustainability Action Plan 2013-2025 (ESAP) which details Council's targets and commitments in relation to five key priority action areas (energy & emissions, water, biodiversity, waste, transport). In addition to the ESAP, a range of other supporting plans and strategies have been implemented to ensure the sustainable future of the LGA. One such plan is the Carbon Reduction Strategy and Action Plan (Kinesis, 2010). This document quantifies Woollahra's Greenhouse Gas emissions and outlines a strategy and action plan to reduce and manage these emissions. This project built on the ICLEI Cities for Climate Protection (CCP) program and Planet Footprint Reporting that Council was already undertaking and sets out a target and strategies for Council to reduce greenhouse gas emissions by 30% by 2025.

Waverley Council acknowledge that they have two policy options available in responding to climate change, mitigation and adaptation. Council have already implemented actions to mitigate climate change impacts by increasing the energy efficiency of Council property as well as within the community to reduce the carbon footprint of the Council.

Waverley's Environmental Action Plan 4 (EAP4) outlines their goals and objectives in reducing their greenhouse gas emissions (which contribute to climate change). Councils aim is to achieve a target of a 30% reduction in Council and the wider Community's greenhouse gas emissions by 2020 (based on 2003/2004 levels) and 70% reduction in the wider community's emissions by 2050. Council have undertaken a Climate Change Risk Assessment, which has identified vulnerability to sea level rise and reinforces the need to plan the use, operation and development of our coastal zones with close consideration to changes in the future (Waverley Council 2012). Council will be updating this risk assessment in the near future.

Council has committed to plan and respond to the impacts of climate change, including through the Eastern Beaches CMP, an Urban Tree Strategy and developing an Adaptation plan for climate change, with the purpose being "to prepare Council and the community for the inevitable changes to the climate that are, at this stage, unavoidable" (Waverley Council, 2017).

Randwick City Council is currently targeting reducing their greenhouse gas emissions through various activities (based on their Energy and Greenhouse Management Plan), including:

- Undertaking energy efficiency measures in major buildings;
- Installing energy efficient street lights;
- Implementing solar photovoltaic projects;
- Creating a renewable energy master plan; and
- Supporting sustainable transport options.

Randwick City Council's Housing Strategy (2020) takes a balanced approach to growth across Randwick City, identifying new areas for growth aligned with infrastructure while continuing to respect, manage and preserve our built heritage. Areas identified for housing growth in the 0-10 year timeframe include around the Randwick Health and Education Precinct and along the Light Rail corridor, where housing will be located close to jobs, services and transport. Randwick will continue to encourage and advocate for increased sustainable building outcomes in Randwick City including encouraging precinct-wide innovations in waste management, water and energy provision.

New local character statements will outline the existing and desired future local character of Randwick City, including our coastal areas. Council will investigate opportunities to exclude a defined coastal character area from State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to ensure the protection of its sensitive coastal character.

The investigation for mass transit from the CBD to Malabar via Randwick and Eastgardens-Maroubra Junction has the potential to create additional opportunities for urban renewal and long-term housing growth. Little Bay Cove, a major development site, has development approval for 450 dwellings of which approximately 224 dwellings has been constructed. In 2019, a planning proposal for Little Bay Cove was submitted to Council to increase the dwelling capacity of the site. While not in a protected coastal zone, Council is considering the impact of the planning proposal on views, the character of the scenic coastal area and the open space nearby.

Randwick Council has also developed a Climate Change Adaptation Roadmap to identify and respond to risks arising as a result of climate change. This locally focussed roadmap has identified that the greatest risk for Randwick related to climate change is potential flooding from an increased frequency of extreme weather events, being high intensity rainfall and storms, and less from predicted rising seas levels facing other coastal areas. Randwick Council is currently considering and addressing these issues through updates to planning controls and infrastructure solutions.

Additionally, in 2009, the Sydney Coastal Council Group (SCCG), in collaboration with the University of New South Wales (UNSW), trialled a new GIS tool to assess the vulnerability of coastal infrastructure to catastrophic marine floods (tsunami). The GIS model was applied at two study areas within the SCCG area including Maroubra Beach (found within the Randwick LGA).

The inundation scenario modelled a locally generated submarine landslide tsunami achieving a run-up of +5 metres above maximum tide level (+2m asl). The model calculated a Relative Vulnerability Index (RVI) score for every building that would be touched by the water. The modelling calculated the inundation at Maroubra would cover 27 hectares and 96 structures with a maximum water depth of 3 metres (Dall'Osso and Dominey-Howes, 2009). Based on the modelling results the project provided a series of recommendations for Councils to reduce the average vulnerability of different building types and to organize emergency and evacuation plans.

Climate change may affect coastal areas through sea-level rise, increased temperatures, and changed storm events. Natural systems associated with the coast such as vegetation, wetlands and estuaries and reefs including estuaries, coastal vegetation, wetlands and reefs will become more vulnerable as they will experience difficulty in adapting to these changes (CSIRO, 2011). In addition, development trends in coastal areas due to population and economic growth are likely to lead to greater community risk and exposure to current and future hazards (CSIRO, 2011).

3.9.2.1 Sea Level Rise

Sea level variation, atmospheric, hydrologic and hydrodynamic processes are all predicted to shift under climate change, all of which influence coastal landforms and ecosystems. Climate models are used to develop multiple projections of the Earth's future climate. Drivers of these projections are social, economic and technical which will impact the future release of greenhouse gas emissions into the atmosphere. The most recent Intergovernmental Panel on Climate Change (IPCC) emissions scenarios used are described as Representative Concentration Pathways (RCPs) and range from very low (RCP2.6) to very high (RCP8.5) concentrations.

Sea level Rise (SLR) future climate information based on these RCP scenarios was produced for Australian coastal councils. Projections for Woollahra, Waverley and Randwick LGAs indicate a predicted increase of between 0.30m for RCP 4.5 and 0.88m for RCP8.5 by 2090 (CoastAdapt, 2017). However, recent scientific research indicates that these projections may be underestimated (Church et al., 2018).

The RCP4.5 and RCP8.5 scenarios are presented in Figure 3-15 with solid lines indicating median SLR and dashed lines indicating additional allowances based on projections and modelled scale parameters incorporating tides and storm surges. Note that the graph for Waverley is shown, however the results are consistent across the three LGAs due to their immediate proximity.

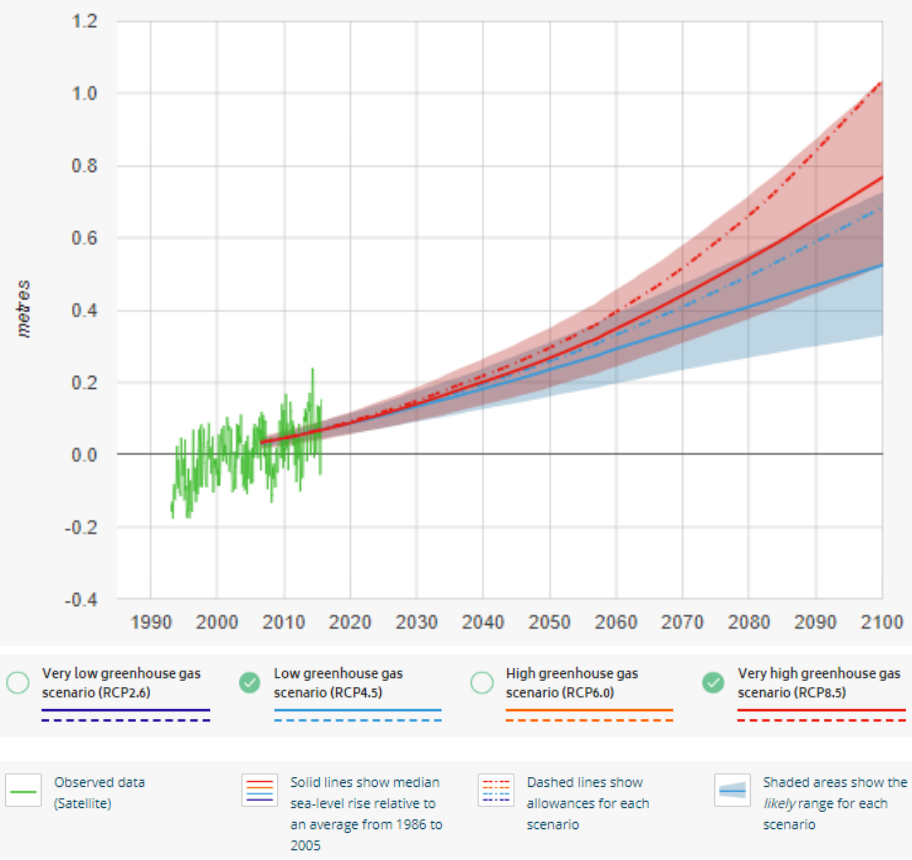


Figure 3-15 Predicted SLR for Woollahra, Waverley and Randwick LGAs for Very Low and Very High Scenarios (CoastAdapt, 2017)

Waverley Council currently has an Interim Sea Level Rise Policy in place. This Policy is designed to provide Council with the guiding principles "to manage climate change risks to natural and human systems within the Waverley Local Government Area using a combination of sustainable adaptation and mitigation measures" (Waverley Municipal Council, 2010).

3.9.2.2 Temperature

CSIRO investigated a range of future potential temperature extremes based on the same RCP scenarios and determined increases for:

- **Hot days -** Mean annual number of days with a maximum temperature greater than 30˚;
- **Warm nights -** Mean annual number of nights with a minimum temperature greater than 25˚; and
- **Heatwaves -** Average of longest run of days in each year with maximum temperature greater than 30˚.

These are presented in Figure 3-16 for Waverley LGA and indicate that the eastern beaches study area can expect:

- the number of hot days to increase to between 41 and 69 days (RCP4.5 and RCP8.5) by 2090 compared to the historic average of 22 days;
- the number of warm nights to increase to between 0.9 and 7.8 days (RCP4.5 and RCP8.5) by 2090 compared to the historic average of 0; and
- the length of heatwaves to increase to between 5.1 and 7.6 days (RCP4.5and RCP8.5) by 2090 compared to the historic average of 3 days.

Sea surface temperatures around Australia are expected to rise by around 0.4-1.0˚C by 2030 and around 2-4˚C by 2090 under RCP 8.5 (CCIA, 2018).

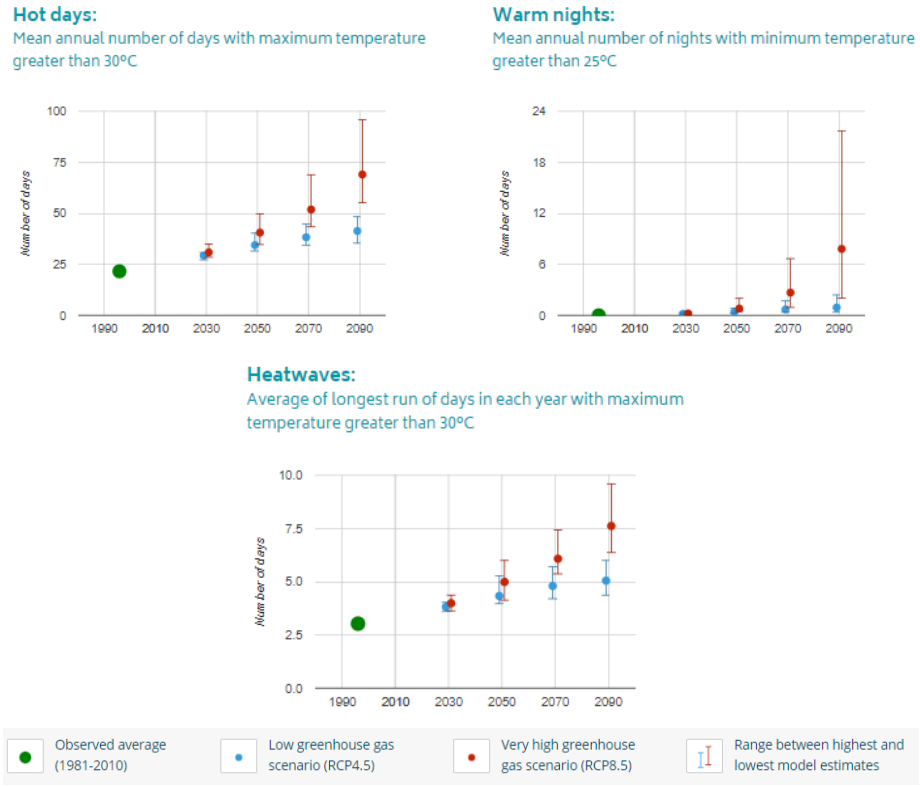


Figure 3-16 Eastern Beaches Future Temperature (CoastAdapt, 2017)

3.9.2.3 Rainfall

Similarly, future rainfall projections have been determined based on the RCP scenarios including:

- **Very wet days –** mean annual number of days where rainfall exceeds the observed 99.9th percentile; and

- **Dry conditions –** mean annual (May to Apr) number of months when the total rainfall is less than the historic 10th percentile.

These results are presented in Figure 3-17 and indicate the mean number of very wet days is expected to remain fairly consistent, with both the RCP4.5 and RCP8.5 scenarios expected 0.5 days in 2090 for Woollahra, Waverley and Randwick by 2090 which is the same as is currently experienced. However, the number of dry months is expected to increase to between 1.11 and 1.22 months compared to the historic average of 1.03 months.

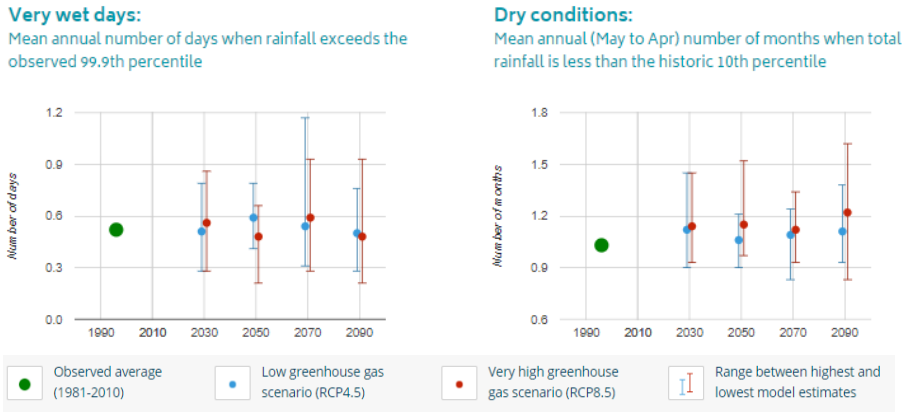


Figure 3-17 Eastern Beaches Future Rainfall (CoastAdapt, 2017)

3.9.2.4 Water Quality

Higher water temperatures and increases in extreme hydrological events, including floods and droughts, are projected to affect water quality and exacerbate many forms of water pollution – from sediments, nutrients, dissolved organic carbon, pathogens, pesticides and salt, as well as thermal pollution with possible negative impacts on ecosystems, human health, and water system reliability and operating costs (UNESCO, 2011). Increasing atmospheric carbon dioxide concentrations are causing a global decline in oceanic pH leading to ocean acidity. Again, having a potentially negative impact on coastal ecosystems, for example a reduction in calcium carbonate availability for the protective shells of some species.

3.9.3 Flooding

Each of the three Councils are completing flood studies and progressively studying all catchments within their local government areas in accordance with the NSW Government's Floodplain Development Manual.

The objective of a flood study is to identify the nature and extent of flooding within a catchment. The next step is to undertake a Floodplain Risk Management Study and Plan which requires Councils to consider predicted sea level rise and rainfall intensity projections association with climate change. The outcome of the study and plan is the development of strategies to reduce the risk of flooding to people and properties within the catchment. It considers various options to manage flooding including works to reduce flood levels, development controls, education and emergency management. Flooding information is made available to the public when flood models are considered reliable.

Given the topography of the eastern beaches and east coast rainfall intensities combined with the impermeable urban nature of the catchments, floods and the associated flood studies have historically been a higher priority action for eastern beaches Councils to focus available resources on.

4 Setting the CMP Scope

4.1 Section Overview

As outlined in the Manual (Part B), the scope of a CMP needs to be determined through the course of the scoping study, and should identify for the CMP:

- The geographical scope, spatial extent or area to be covered;
- The coastal management areas to be included (mapping their extent, where possible); and
- The key coastal management issues to be addressed (considering values and threats).

This section summarises the definition of the above listed elements, to conform the scope of the Eastern Beaches CMP.

4.2 Geographical Scope

The geographical scope of the Eastern Beaches CMP will match the study area defined for this scoping study in Section 1. That being the open beaches, foreshore and coastal waters from South Head (Hornby Lighthouse) in the north to Cape Banks in the south and into Botany Bay to include the south eastern portion of Port Botany's Brotherson Dock to the point that Randwick City Councils LGA ceases (Bunnerong Creek). The study area extends inland over the foreshore to the landward extent of the mapped Coastal Use CMA, 200 metres from beaches and foreshores. The study area extends inland to include the coastal drainage catchments and extends 3 nautical miles offshore to the boundary of state and commonwealth waters. The study area is shown in Figure 1.1 (Section 1.3).

The NSW natural coastline does not recognise local government boundaries. Therefore, effective coastal management must recognise related and adjacent jurisdiction and management priorities to ensure that the CMP process delivers the best outcomes to the NSW community and coastal environments.

Randwick Council was invited to join the Cooks River Catchment Advisory Group in early 2018 and participated in a number of workshops in the development of that draft scoping study. Options for geographic scope included Cooks River mouth to Cape Banks, including the entire northern foreshore of Botany Bay to Cape Banks encompassing Yarra and Frenchmen's Bay, which was consistent with the definition of the Botany Bay sediment compartment (CM Act 2016). However, during the scoping study process it was determined that the inclusion of areas east of the Port Botany (i.e. Randwick LGA) would involve a larger proportion of open coast processes, areas and issues; and may divert focus from the Cooks River catchment needs.

At the August 2018 meeting of the Cooks River Alliance (CRA) Board it was determined the Cooks River Catchment CMP Scoping Study would cover the coastal extent from the mouth of the Cooks River to Bunnerong Creek, including Sydney Airport, Botany Wetlands (to the northern boundary of Bayside Council), Mill Stream, Foreshore Beach, Penrhyn estuary, and Port Botany north of Brotherson Dock; i.e. encapsulating all of the eastern side Bayside LGA and subsequently excluding the Randwick City Council Botany Bay foreshore from the study area.

The Eastern Beaches CMP area aligns Woollahra, Waverley and Randwick LGA catchments to focus on open coast processes, areas and issues, and the proposed scope excludes Botany Bay foreshore and Cooks River catchment issues. The study area of the Eastern Beaches CMP proposed in this Scoping

Study thus meets the study area boundaries of the proposed Sydney Harbour CMP in the north and the Cooks River CMP in the south.

4.3 Coastal Management Areas included in the CMP

All four coastal management areas are to be included in the scope of the Eastern Beaches CMP All of the coastal management areas within the geographical scope of the study area are shown in a series of figures (refer Figure 1.5 – Figure 1.8) including a combined figure with all management areas overlaid (refer Figure 1.1; Section 1).

Presently, there is no mapping for coastal vulnerability area (CVA) gazetted with the CM SEPP. In order to have a CVA gazetted for the study area Council will need to submit a Planning Proposal (see Section 4.3.1).

Currently there is limited vulnerability and hazard study information available and the availability of this data varies between the Council LGAs. There is no existing hazard mapping for any of the Council areas that is complete and considers each of the coastal hazards as defined in the CM Act. Coastal hazards under the CM Act relevant to the study area include: beach erosion, shoreline recession, coastal inundation, coastal cliff or slope instability, and tidal inundation. In order to complete a planning proposal and have a CVA gazetted for the study area, hazard mapping studies will need to be undertaken either during Stage 2 of the CMP development, recommended (or as an activity that is implemented as part of the CMP, i.e. during Stage 5).

4.3.1 Planning Proposal Process

Under the new process for the preparation of CMPs, Councils may submit a Planning Proposal (in accordance with the EPA Act via the Gateway process) to update any of the coastal management area maps. It is anticipated that Councils will submit planning proposals to have existing and/or new coastal hazard mapping adopted as the CVA.

Planning Proposals are assessed by the DPIE through the ‘Gateway’ process. There are important legislative requirements for preparing a Planning Proposal in relation to technical information and engagement processes. The preparation of a Planning Proposal, and associated engagement activities to be undertaken through the Eastern Beaches CMP (if pursuing a planning proposal to map the CVA area) are outlined in Figure 4-1 below.

Figure 4-1 Gateway Determination Process

4.4 Coastal Management Issues Considering Values and Threats

In order to assess risk to the Eastern Beaches and open coast, the values of the coastline and threatening processes or issues affecting the coastline and its values require definition. Understanding the values of the coastline in terms of environmental, social and economic assets and benefits provides a pathway to understanding activities or processes that threaten them and need to be managed through a program of management (i.e. the CMP).

4.4.1 Values of the Eastern Beaches Coastline

Values of the study area as identified by both the community (in past consultation) and stakeholders during the first pass risk assessment workshop conducted for this study are extensive. These values are diverse and include environmental, social and economic values related to various facets of the coastline, including:

- the physical assets of the coastline itself e.g. the cultural and natural character and scenic beauty of the iconic coastal landscape of the Eastern Beaches;
- the recreational and leisure activities that are enjoyed and highly prized as evident by the area's international reputation as a tourism destination;
- the way community interacts with the coastline; e.g. social connectivity, interaction and nature appreciation; and
- the enormous economic benefits the coastline provides and drives e.g. the iconic beachside culture and its flow on effects through the study area.

A classic "triple-bottom line" approach was used to define the environmental, economic and social values of the Eastern Beaches coastline. The list of

values across these categories was developed based upon the NSW Marine Estate Statewide Threat and Risk Assessment (TARA) (BMT WBM, 2017), and refined using outcomes from the data and information review and feedback during the first pass risk assessment workshop, conducted as part of this study. The resulting list of 9 priority values for the Eastern Beaches CMP includes:

- **Value 1: Good water quality**
  - Clean waters with high water quality
  - Pollution is controlled ensuring cleanliness of beaches and waterways
- **Value 2: Terrestrial biodiversity and ecosystem integrity**
  - Preserved natural environments and the variety of habitats including rock platforms
  - Maintaining or enhancing biodiversity and bio abundance
  - Presence and health of flora and fauna and terrestrial and aquatic connections
- **Value 3: Marine biodiversity and ecosystem integrity**
  - Marine life is protected
  - Marine habitats and vegetation are preserved
  - Conservation of all marine life and habitats including sharks
- **Value 4: Scenic landforms, natural beauty and geodiversity**
  - Diverse range of landforms and iconic coastal geology i.e. cliff faces, sandy beaches
  - Iconic, unique and beautiful scenery, natural beauty and aesthetics
- **Value 5: Abundant recreational opportunities**
  - Ample recreational opportunities on both the foreshore and in the water
  - Areas for passive recreation i.e. places to relax, make memories and enjoy
  - Social interactions through coastal activities i.e. spending time with family, surf lifesaving, nippers etc
- **Value 6: Cultural and heritage recognition**
  - Tangible and intangible Aboriginal cultural heritage
  - Presence of historical sites – colonial and settlement heritage
  - Diverse multi-cultural society that respects heritage and culture
  - Iconic cafe lifestyle and Australian beach / beachside culture
- **Value 7: Connected and cohesive community**
  - Strong local community identity and sense of community
  - Well-connected communities via coastal activities and shared values
  - Enhanced community health and wellbeing
- **Value 8: Sustainable Tourism**
  - Strong tourism industry that is a key economic driver
  - Renown international tourist destination
  - Sustainable and balanced tourism industry
- **Value 9: Accessible and inclusive place management**
  - Sustainable economic growth and development providing opportunity for local businesses
  - Accessible areas that are sustainable and inclusive of all the community and different groups
  - Planning outcomes that maintain a balance between community needs, tourism, development and the environment

4.4.2 Threats to the Eastern Beaches Coastline

A comprehensive list of potential threats was developed based on the same sources as used for the values (i.e. TARA and data and information review), plus the seven coastal hazards defined in the CM Act. The threats were initially determined to be high, medium or low based upon the information and data review, to derive a refined list of threats for the first pass risk assessment workshop; this allowed workshop attendees to focus their time and attention towards the higher threats. The comprehensive list of threats that was collated and reviewed through the first-pass risk assessment process is documented in Appendix C.

After further refinement following the workshop feedback and background knowledge, threats were reviewed against values and coastal management issues in the study area. A final shortlist of 9 priority coastal management issues for the Eastern Beaches CMP were identified, including:

- **Issue 1:** Impact of catchment activities, runoff and discharges
- **Issue 2:** Disturbance to biodiversity and habitat
- **Issue 3:** Impacts from coastal development
- **Issue 4:** Conflict over resource use, recreation and access availability
- **Issue 5:** Public safety
- **Issue 6:** Degradation of Aboriginal and cultural heritage
- **Issue 7:** Impacts from commercial and industrial activities
- **Issue 8:** Lack of engagement, governance and compliance
- **Issue 9:** Coastal hazards and future sea level rise

Table 4-1 lists the identified values, the threats that may impact upon those values and the priority coastal management issues associated. In this manner, a clear link can be drawn between the values and objectives for the study area, the processes occurring that may threaten these values, and the likely future threat from these processes to known values.

Table 4-1 Priority Coastal Values and Management Issues

Priority Values		Key Stakeholder Values	Main Threats	Priority Mgmt. Issues	
No.	Description			No.	Description
V1	Good water quality	• Clean waters with high water quality • Pollution is controlled ensuring cleanliness of beaches and waterways	• Reduced amenity and environmental impacts from litter, microplastics / plastics, pesticides / herbicides, solid waste and marine debris • Sewage effluent from existing sewer outfalls including untreated outfalls • Sewage effluent from overflow events • Impact from legacy landfill sites • High levels of visitation and resulting litter and run-off. • Poor water quality in the ocean due to runoff from coastal / urban development (stormwater) • Sediment contamination (toxicants) • Runoff from construction sites (sediment)	I1	Impact of catchment activities, runoff and discharges
			• Commercial vessels and impacts from ballast water and other discharges • Overfishing by commercial fishers • Industrial activity impacts on land and water habitat (including industrial discharges) • Dredging and harbour maintenance for Port access	I7	Impacts from commercial and industrial activities
V2	Terrestrial biodiversity, and ecosystem integrity	• Preserved natural environment including variety of habitats including rock platforms • Maintaining or enhancing biodiversity and bio abundance • Presence and health of flora and fauna and terrestrial and aquatic connections	• Habitat disturbance / impacts due to recreation activities (e.g. boating, fishing, bush / beach walking, dog walking etc.) • Fragmentation of the coastal habitat corridor due to urbanisation and high levels of visitation. • Invasive vegetation species, pests and feral animals (e.g. foxes, dogs, cats, bitou bush) • Illegal removal of vegetation by residents (for personal gains / views)	I2	Disturbance to biodiversity and habitat
			• Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development • Hazard impacts resulting from poorly sited coastal developments • Illegal removal of vegetation by residents for development or views • Expansion of Port activities within Botany Bay	I3	Impacts from coastal development
			• Insufficient facilities and accessways (i.e. boat ramps, amenities etc.) to meet demand • Recreational fishers depleting marine biodiversity • Conflicts between various user groups on the beaches and in waterways • Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	I4	Conflict over resource use, recreation and access availability

Priority Values		Key Stakeholder Values	Main Threats	Priority Mgmt. Issues	
No.	Description			No.	Description
			• Loss of habitat in the intertidal zone due to sea level rise. • Wave overtopping • Coastal inundation • Beach erosion • Shoreline recession • Tidal Inundation • Coastal cliff or slope instability	I9	Coastal hazards and sea level rise
V3	Marine biodiversity, and ecosystem integrity	• Marine life is protected • Marine habitats and vegetation are preserved • Conservation of all marine life and habitats including sharks	• Habitat disturbance / impacts due to recreational activities (e.g. boating, fishing, swimming, beach walking etc.) • Invasive marine vegetation species, pests and feral animals (e.g. European fan worm) • Increased ocean temperature due to climate change and movement of species from north to south • Over-fishing and collection of biodiversity	I2	Disturbance to biodiversity and habitat
			• Loss of habitat in the intertidal zone due to sea level rise. • Reduced amenity and environmental impacts from litter, microplastics / plastics, pesticides / herbicides, solid waste and marine debris • Sewage effluent from existing sewer outfalls including untreated outfalls. • Sewage effluent from overflow events • Dumping and land clearing • Poor water quality in the ocean due to runoff from coastal / urban development (stormwater) • Sediment contamination (toxicants) • Construction Sites (sediment)	I1	Impact of catchment activities, runoff and discharges
			• Commercial vessels • Overfishing by commercial fishers • Industrial activity impacts on land and water habitat (including industrial discharges) • Dredging and harbour maintenance	I7	Impacts from commercial and industrial activities
V4	Scenic landforms, natural beauty and geodiversity	• Diverse range of landforms and interesting coastal geology i.e. cliff faces, sandy beaches	• Habitat disturbance / impacts due to recreation activities (e.g. boating, fishing, bush / beach walking, dog walking etc.) • Invasive vegetation species, pests and feral animals (e.g. foxes, dogs, cats, bitou bush) • Removal of vegetation by residents for development or views	I2	Disturbance to biodiversity and habitat
			• Reduced amenity and environmental impacts from litter, microplastics / plastics, pesticides / herbicides, solid waste and marine debris	I1	Impact of catchment

Priority Values		Key Stakeholder Values	Main Threats	Priority Mgmt. Issues	
No.	Description			No.	Description
		• Iconic, unique and beautiful scenery, natural beauty and aesthetics	• Dumping and land clearing • Poor water quality in the ocean due to runoff from coastal / urban development (stormwater) • Sediment contamination (toxicants) • Construction Sites (sediment)		activities, runoff and discharges
			• Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development • Hazard impacts resulting from poorly sited coastal developments	I3	Impacts from coastal development
			• Shoreline recession of our beaches from erosion and sea level rise. • Damage to coastal infrastructure such as sea walls due to coastal inundations and storms • Wave overtopping • Coastal inundation • Beach erosion • Tidal Inundation • Coastal cliff or slope instability	I9	Coastal hazards and sea level rise
V5	Abundant recreational opportunities	• Ample recreational opportunities on both the foreshore and in the water • Areas for passive recreation i.e. places to relax, make memories and enjoy • Social interactions through coastal activities i.e. spending time with family, surf lifesaving, nippers etc.	• Insufficient facilities and accessways to meet demand • Potentially limited options for fishing including options that are unsafe due to ocean conditions and cliff access • Conflicts between various user groups on the beaches and in waterways • Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	I4	Conflict over resource use, recreation and access availability
			• Other water pollution affecting human health and safety (toxic algal blooms, bacteria, etc.) • Wildlife interactions (e.g. shark bite, jellyfish, boat striking a whale) • Seafood contamination	I5	Risk to Public safety
			• Wave overtopping • Coastal inundation • Beach erosion • Shoreline recession • Tidal Inundation • Coastal cliff or slope instability	I9	Coastal hazards and sea level rise
V6	Cultural and heritage recognition	• Tangible and intangible Aboriginal cultural heritage	• Aboriginal culture not recognised and preserved; including values and specific sites • Community not valuing culture and heritage generally	I6	Degradation of Aboriginal and cultural heritage

Priority Values		Key Stakeholder Values	Main Threats	Priority Mgmt. Issues	
No.	Description			No.	Description
		• Presence of historical sites – colonial and settlement heritage • Diverse multi-cultural society that respects heritage and culture • Iconic cafe lifestyle and Australian beach / beachside culture	• Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development • Hazard impacts resulting from poorly sited coastal developments	I3	Impacts from coastal development
			• Lack of community awareness and engagement with the coastal environment and its management • Lack of regulation compliance and compliance success from authorities • Insufficient or inappropriate governance and management of the coastal environment • Inadequate ownership and responsibility of the study area / intergovernmental coordination	I8	Lack of Engagement, governance and compliance
			• Access to the coast reduced through sea level rise and coastal inundation • Wave overtopping • Coastal inundation • Beach erosion • Shoreline recession reducing the amount of beach or coastal area available • Tidal Inundation • Reduction or fragmentation of the coastal walk or coastal access due to coastal erosion, coastal cliff or slope instability cliff or slope instability	I9	Coastal hazards and sea level rise
V7	Connected and cohesive community	• Strong local community identity and sense of community • Well-connected communities via coastal activities and shared values • Enhanced community health and wellbeing	• Insufficient facilities and accessways to meet demand • Changes to fishing management areas • Conflicts between various user groups on the beaches and in waterways • Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	I4	Conflict over resource use, recreation and access availability
			• Other water pollution affecting human health and safety (toxic algal blooms, bacteria, etc.) • Wildlife interactions (e.g. shark bite, jellyfish, boat striking a whale) • Seafood contamination	I5	Risk to Public safety
			• Lack of community awareness and engagement with the coastal environment and its management • Lack of regulation compliance and compliance success from authorities • Insufficient or inappropriate governance and management of the coastal environment • Inadequate ownership and responsibility of the study area / intergovernmental coordination	I8	Lack of Engagement, governance and compliance

Priority Values		Key Stakeholder Values	Main Threats	Priority Mgmt. Issues	
No.	Description			No.	Description
V8	Sustainable tourism	• Strong tourism industry that is a key economic driver • Renown international tourist destination • Sustainable and balanced tourism industry	• Habitat disturbance / impacts due to recreation activities (e.g. boating, fishing, bush / beach walking, dog walking etc.) • Invasive vegetation species, pests and feral animals (e.g. foxes, dogs, cats, bitou bush) • Illegal removal of vegetation by residents (for personal gains / views)	I2	Disturbance to biodiversity and habitat
			• Insufficient facilities and accessways to meet demand including increased coastal visitation in autumn, winter and spring due to increased temperatures • Safety issues for visitors due to cliffs and potentially dangerous ocean conditions • Conflicts between various user groups on the beaches and in waterways • Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	I4	Conflict over resource use, recreation and access availability
V9	Accessible and inclusive place management	• Sustainable economic growth and development providing opportunity for local businesses • Accessible areas that are sustainable and inclusive of all the community and different groups • Planning outcomes that maintain a balance between community needs, tourism, development and the environment	• Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development • Hazard impacts resulting from poorly sited coastal developments	I3	Impacts from coastal development
			• Insufficient facilities and accessways to meet demand • Unsustainable fishing practices • Conflicts between various user groups on the beaches and in waterways • Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	I4	Conflict over resource use, recreation and access availability
			• Lack of community awareness and engagement with the coastal environment and its management • Lack of regulation compliance and compliance success from authorities • Insufficient or inappropriate governance and management of the coastal environment • Inadequate ownership and responsibility of the study area / intergovernmental coordination	I8	Lack of Engagement, governance and compliance
			• Wave overtopping • Coastal inundation • Beach erosion • Shoreline recession • Tidal Inundation • Coastal cliff or slope instability	I9	Coastal hazards and sea level rise

4.5 First Pass Risk Assessment

4.5.1 Methodology

The first pass risk assessment provided the methodology for determining the severity of known threats in the study area, at present and in future (e.g. with climate change, population growth, urban development and so on).

The first pass risk assessment aims to recognise that data gaps may exist and that not all information may be available at the present time to adequately assess risks. Instead, the aim of the first pass risk assessment is to direct efforts for preparing the CMP to those risks that are likely to pose the greatest risk now or in the future, but also, towards filling data gaps or management information for threats that are not able to be adequately assessed or managed at present. The first pass risk assessment as opposed to a full-scale risk assessment is shown in Figure 4-2.

Full Scale Risk Assessment

Likelihood	Consequence: Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Almost Certain 5	Medium	High	High	Very High	Very High
Likely 4	Medium	Medium	High	High	Very High
Possible 3	Low	Medium	High	High	High
Unlikely 2	Low	Low	Medium	Medium	High

First-pass Risk Assessment

Risk / Issue / Threat	Level of Risk: High	Medium	Low

Figure 4-2 First Pass Risk Assessment vs Full Scale Risk Assessment

4.5.2 Inputs to the First Pass Risk Assessment

4.5.2.1 First Pass Risk Assessment Workshop

A first pass risk assessment workshop with key stakeholders was held on 10 October 2019 at Waverley Council Chambers, with 40 participants. Participants provided input to the ranking of threats, existing management actions and information, particularly where this may not have been identified through the data review and provided insight from key stakeholders as to how particular actions are enacted and implemented in practise.

Attendees to the workshop included those key stakeholders involved in the management of the Eastern Beaches coastline, such as:

- Woollahra, Waverley and Randwick Council staff (various departments);
- State agency representatives, including DPIE (Environment, Crown Lands and Planning personnel), NPWS, Transport for NSW (RMS) and Port Authority of NSW;
- Sydney Water representatives;
- Commonwealth Department of Defence representatives;
- Local community representatives.

The La Perouse Local Aboriginal Land Council were also invited to the workshop however unfortunately were unable to attend.

Further detail on the risk assessment methodology and first pass risk assessment worksheets with outcomes are provided in Appendix C.

Following the workshop, the assessment results were expanded upon using the information gathered from the data and information review. The results of the first pass risk assessment are used in the subsequent sections of this CMP Scoping Study and to inform forward works program.

4.5.2.2 Stakeholder Consultation

Various stakeholder consultation activities were undertaken to capture information for use in this Scoping Study. These activities have the additional advantage of establishing a stakeholder engagement process that will be carried through the entire CMP preparation and implementation. Activities included:

- Regular contact with Council representatives allowed for a flow of information relevant to the CMP; and
- The First Pass Risk Assessment Workshop where activities were conducted to gather feedback from the state agencies and other stakeholders including community groups (Friends of Waverley Cemetery and Friends of Malabar Headland) who are involved in coastal management; and
- Post-workshop follow-up contact, facilitated by the Councils, to collect input from relevant stakeholders that could not attend the workshop (i.e. La Perouse LALC) about the values, threats, issues and risk in the study area.

Outcomes of consultation were used to develop sections of the strategic context (i.e. Section 3) and the first pass risk assessment, in particular, to identify and rank coastline values and threats, and to help determine the adequacy of existing management and existing information to manage known threats at present and in the future. The outcomes of this critical assessment lead to the design of further studies to be completed in Stages 2 to 4 of preparing the CMP.

4.6 Outcomes of the Assessment of Risk, Management Arrangements, Data Gaps and Recommended Studies

This section presents the key coastal management issues that were identified within the first-pass risk assessment, it provides information in relation to their current and future risk, the adequacy of current management arrangements and suitability of existing data as well as identifying knowledge and information gaps. A summary of the overall risk rating for each priority management issue is provided in Table 4-2. Detailed assessment outcomes for each issue is presented in Table 4-3.

Table 4-2 Summary of Priority Management Issues

Priority Management Issues	Overall Level of Risk
Issue 1: Impact of catchment activities, runoff and discharges	High
Issue 2: Biodiversity and habitat	High
Issue 3: Impacts from coastal development	Medium
Issue 4: Resource use, recreation and access availability	Medium
Issue 5: Public safety	Medium
Issue 6: Aboriginal and cultural heritage	Medium
Issue 7: Impacts from commercial and industrial activities	Medium
Issue 8: Engagement, governance and compliance	Medium
Issue 9: Coastal hazards and future sea level rise*	Medium to High

**Coastal and tidal inundation rated medium, beach erosion and shoreline recession rated medium / high and coastal cliff or slope instability rated high.*

For each tabled issue, an outline of the recommended relevant studies and information needs are presented, with priority for either completion in Stage 2 or recommendation as management action for future consideration during CMP development. Note that, priority (for Stage 2 studies) given in the tables below relates to the need for the study in Stage 2 to support delivering the subsequent stages of the CMP, e.g. information required for the detailed risk assessment and evaluation of options for management of issues (Stage 3). This may be different to the priority or need for the study itself, which may still be high-medium-low in terms of its value to managing the coastline of Sydney's Eastern Beaches.

A full collated list of the recommended studies defined through this first pass risk assessment is presented in the Forward Program in Section 6 providing their priority, timing, indicative cost and responsibility.

Table 4-3 First Pass Risk Assessment – Detailed Outcomes

Issue 1: Impacts of Catchment Activities, Runoff and Discharges			
Overall Level of Risk *(considering existing management arrangements)*		**HIGH**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	Catchment generated impacts are perceived as being a medium risk to the study area and its coastal values overall, with the key catchment driven threat is pollution and stormwater runoff. This issue is likely to increase to present a high overall level of risk in the future due to population growth causing added pressure from increased urban development and tourist visitation to the area.	**Medium**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Pollution and Stormwater Runoff	**Current:** The existing risk from stormwater runoff is due to pollution including nutrients, sediment, litter and waste i.e. plastics, pesticides, herbicides and other litter e.g. fishing lines/hooks. The study area is dominated by highly urbanised land uses being predominately residential development with numerous commercial / business precincts and based on this the overall risk from stormwater runoff /pollution is rated as high. Due to past land uses sediment contamination / toxicants are also present in the study area. The high rates of construction and building across the broader study area catchment is considered a key source of sediment. **Future:** The risk from stormwater runoff is likely to increase in the future due primarily to population growth which is expected to place additional pressures on the study area in terms of added urban development and additional tourist numbers, and construction sediment impacts. Additionally, existing aging infrastructure could present issues in terms of capacity and functionality. Overall the risk from stormwater runoff in the future is perceived to be high, especially given the communities demands to swim 24/7 365 days per year, including after periods of rain. **Key Locations:** Whilst the entire coastal zone is at risk of being impacted by stormwater runoff, key locations identified with stakeholders include North and South Maroubra and Coogee Beach (and rock pool). Sediment toxicant issues are potentially an issue at Malabar Headland, South Maroubra, Little Bay (from Hospital Site) and Congwong Beach (Botany Bay).	**High**	**High**
Sewage Effluent and WWT Discharges	**Current:** Overall, sewage effluent is considered a medium risk to the study area currently with the potential implications on health safety (e.g. sewage/bacterial impact, outbreaks). However, this risk varies by location with Randwick LGA being flagged as high risk whilst Waverley is considered low to medium risk. This is primarily based on the existence of Wastewater Treatment Plants (WWTP), sewage outfalls and overflow discharge points located at key points along the Eastern Beaches coastline exacerbated by old infrastructure with limited capacity and a growing population. The proximity of toilet and shower amenities to beaches also present a risk. **Future:** The risk present from sewage effluent is expected to increase in the future due to expected population growth and additional pressure being placed on these aging systems with increased resident and visitor numbers. However, it is noted that with adequate forward planning and action this future load should be manageable. **Key Locations:** Stakeholders identified the following as key hotspots in terms of sewage effluent as the WWTP at Malabar, Diamond Bay and Vaucluse and Dover Heights. Although all beaches were noted as being at risk from sewer overflows particularly during wet weather.	**Medium**	**High**
Illegal Dumping and Land Clearing	**Current:** The threat of illegal dumping and land clearing occurring within the coastal zone is currently considered a medium risk. **Future:** It is considered likely that this threat will continue presenting the same level of risk or worsen into the future due to population increases. Land clearing is likely to worsen give that additional residential development pressure will existing within the study area, additionally the exposure of existing contaminated sites or dumped material is considered likely which has the potential of increasing the threat from stormwater and sediment (with and without toxicants) runoff. **Key Locations:** This threat has been highlighted as an issue within the Randwick LGA and at National Parks such as Malabar Headland National Park.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	In terms of beach water quality management, water testing is undertaken at various locations along the study area coastline as part of the NSW Beachwatch monitoring program. Sydney Water also have various policies and programs in place around their assets and are conducting the “Refresh Vaucluse and Diamond Bay” project which will see the continuous flow of untreated wastewater from three ocean outfalls at Vaucluse and Diamond Bay transferred to the Bondi Wastewater Treatment Plant. Various environmental licences and EPA regulations apply and the Councils also have capital works programs, site audits for DAs, planning controls and the Risk Based Framework for Water Quality that they can implement to manage catchment activities. In terms of litter and pollution management, the Councils have waste minimisation public education initiatives, GPTs and maintenance regimes for these existing devices and other stormwater assets including stormwater harvesting, treatment and reuse systems, awareness and education programs and conducts compliance activities. Each of the Sewage Treatment plant in the study area (Bondi and Malabar) have pollution licences issues by the NSW EPA and report monthly on performance. These licences are reviewed on a 5 year cycle with reviews for both plants due 1 July 2020. Sydney Water also undertakes the Sewage Treatment System Impact Monitoring Program (STSIMP) reporting to the NSW EPA annually *(since 2008*). The STSIMP aims to monitor the environment within Sydney Water’s area of operations to determine general trends in water quality over time, monitor Sydney Water’s performance and to determine where Sydney Water’s contribution to water quality may pose a risk to environmental ecosystems and human health.	**Moderate**	**Moderate**
Suitability of Existing Data	In general, there is reasonable information and data availability related to catchment influences across the study area. A key data gap exists in terms of sediment toxicants and the limited knowledge around the full extent of contaminated sites. Whilst additional information would be ideal, the information related to these threats is generally well understood. Stakeholders have indicated that a key issue regarding pollution is that the general public is not overly engaged or educated regarding their impacts on stormwater quality. It is generally considered that additional people, funding and regional coordination would assist in combating these threats now and in the future. Sydney Water reports on performance of Bondi and Malabar sewerage treatment systems on a monthly basis via requirement within their operating licences.	**Moderate**	

Issue 1: Impacts of Catchment Activities, Runoff and Discharges		
Recommended Studies		
Study No.	**Description**	**Priority**
1.1	**Integrated Eastern Beaches - catchment water quality modelling and recommendations analysis** Review, benchmark and expand from investigations completed to date, following the principles and guidelines recommended in the Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (NSW OEH and EPA, 2017), as well as the National Water Quality Management Strategy (NWQMS), based on the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, towards achieving the NSW Water Quality and River Flow Objectives. Modelling used to assess (coastal) catchment-wide as well as sub-catchment management scenarios and options, including: Water Sensitive Urban Design (WSUD), climate change, sea level rise, nutrient cycling, trophic networks, and others.	**High**
1.2	**Review of groundwater resources and impacts** Review existing information and data on groundwater resources to define investigations and modelling to assess future groundwater conditions under various sea level rise and development scenarios. Assessment outcomes should ensure management implications can adequately address the following: • ecosystems functioning • built asset and infrastructure risks • **contamination impacts.**	**Medium**
1.3	**Review of Eastern Beaches Water Quality Sanitary Inspection Categories** Review and rationalisation of the Councils Sanitary Inspection Category (SIC) and associated plans. This will review key sources of pollution redefine risk categories and developing mitigation action strategies and associated works program(s) to mitigate sources contributing to faecal contamination. (stormwater and sewage overflows management and treatment)	**Medium**
1.4	**Coastal Catchment health monitoring, reporting and improvement Strategy** A review study to develop a consistent strategy providing specific recommendations leading to an Eastern Beaches Waterways and Catchment Health Monitoring and Reporting Framework. This incorporates opportunities for citizen science and make consistent water quality and ecological programs and reporting, ultimate aimed at improving the condition and health of coastal catchments and receiving waters. This study should follow directions from the MER protocols (refer Roper et al, 2011). The Strategy to also provide information and targets for the LSPS, LEPs, DCPs, and the East Sydney District Plan Objective E and Planning priority E14.	**Medium**
1.5	**Stormwater outlets, sewer overflow and industrial discharges audit** An audit of stormwater infrastructure, sewer overflows and industrial discharges to enable meaningful risk assessment. This to also consider of tidal inundation under future sea level rise conditions. The audit should include assessment of infrastructure capacity, performance of existing pollution control devices and cumulative impacts and provide commentary on timeline for upgrades required. The audit may require an elevation survey of outlets and connecting pipes. Information should be documented in a georeferenced database. *This study is potentially a component of Council Flood Study(s)*	**Low**

Issue 2: Biodiversity and Habitat			
Overall Level of Risk *(considering existing management arrangements)*		**HIGH**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The overall perception is that the threat of biodiversity and habitat disturbance currently presents a high level of risk. These risks are perceived to increase further and likely be exacerbated with population growth and climate change. Furthermore, the existing management arrangements are viewed as inadequate for managing this issue now and in the future.	**High**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Recreational Activities	**Current:** Habitat disturbance due to recreation activities (e.g. boating, fishing, bush / beach walking, dogs etc.) **Future:** This threat is likely to increase in severity due in the future due to population increases and subsequent increase in the volume of people pursuing recreational activities in the study area. Additionally, climate change and sea level rise could add pressure as recreational activities and biodiversity and habitat values are likely to be restricted into smaller areas. **Key Locations:** all viable habitat areas where recreation occurs including intertidal zones and rock platforms. Specific hotspot areas include Malabar Headland, Gordons Bay, Congwong Beach and the Cape Banks Aquatic Reserve area	**High**	**High**
Invasive Species, Pests and Feral Animals	**Current:** Invasive vegetation species, pests and feral animals impacting on habitat and biodiversity (e.g. foxes, dogs, cats, bitou bush). **Future:** This threat is likely to worsen in the future as the existing invasive species (particularly the fox population) is not currently being adequately managed and their numbers are likely to increase. Invasive species typically have a better tolerance to different environmental conditions meaning it is likely they will adapt better to changes brought on by climate change than native species will. This could result in invasive species growing more prolifically than native species in the future and increasing their abundance and distribution across the study area. Invasive marine species are also likely to have significant impacts on current marine species. **Key Locations:** CMP wide however key areas include the open spaces and reserves and National Park areas including Sydney Harbour National Park, Malabar Headland National Park and Kamay Botany Bay National Park.	**High**	**High**
Illegal dune and coastal foreshore Vegetation Removal	**Current:** Illegal removal of dune and coastal foreshore vegetation by residents to improve views from private properties. This issue is complex and particularly difficult to monitor and mitigate. Vegetation frequently does not meet planning thresholds to require Council approval to be removed. **Future:** This issue is likely to remain consistent (or possibly worsen) and this will be heavily dependent on the management approach and community engagement undertaken. **Key Locations:** All coastal areas where private residences have or could potentially achieve water views. This has been highlighted as an issue at Bronte, Dover Heights (cliff areas generally) and South Coogee in particular.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Biodiversity legislation, site specific plans of management, local and regional biodiversity-related management policies and strategies such as the Woollahra Biodiversity Conservation Strategy 2015-2025 and the Waverley Biodiversity Action Plans for Remnant Sites partly control threats to biodiversity and habitat disturbance. Council internally have development assessment processes and apply conditions to developments to ensure limited environmental impacts and disturbance. Additional protections are also implemented at a State Government level include having Aquatic Reserves and fisheries catch limits in place and carrying out enforcement and issuing fines to individuals breaching these. In addition to Fisheries rangers, Council Rangers and Maritime inspectors are responsible for regulation of recreational activities (e.g. dogs and boating) in the study area. The existing management arrangements are currently viewed as inadequate due to limited financial resources, information and coordination between landowners / government organisations and agencies. Furthermore, it is anticipated that these management arrangements will not be adequate to address the increased risk present by this issue in the future.	**Inadequate**	**Inadequate**
Suitability of Existing Data	Vegetation mapping and biodiversity studies / assessments at a Council scale exist for some of the study area that provides information on the biodiversity values and species of significance. However, the availability of this data and the level of detail differs across the three Council LGAs. Across the entire study area, the NSW Government Biodiversity Values Map identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing. The Biodiversity Vales Map and Threshold Tool (BMAT) identifies various biodiversity values areas within the southern portion of the CMP study area. Additionally, Biodiversity Corridor Mapping is available via NSW LLS is available that maps connected biodiversity corridors and categories areas as either priority habitats, supporting habitats or supporting areas. This mapping is updated annually and currently includes the entire study area coastline along with other sections of the CMP study area catchments. An opportunity exists to update biodiversity and habitat data for the study area in order to have consistent baseline biodiversity and habitat mapping and enable risks to be assessed in more detail as well as to improve conservation of biodiversity and protection of threatened species, communities, and ecosystems. Marine data appears to be deficient with accessible information regarding species and habitats abundance, distribution and condition required.	**Moderate** **Inadequate (for marine)**	

Issue 2: Biodiversity and Habitat		
Recommended Studies		
Study No.	**Description**	**Priority**
2.1	**Studies into biodiversity of intertidal and fringing habitats** A comprehensive review of habitat characteristics, ecological patterns and processes throughout the study area, with focus on the coastal environment area (CEA) and coastal use area (CUA), including: • mangrove, saltmarsh habitats • soft sediment habitats • rocky intertidal habitats • rocky reefs • marine areas (NSW Marine estate) • modified habitats (seawalls, naturalised drainage channels) Identify current distribution, abundance and condition and to identify areas for remediation and protection. Investigate migration pathways, barriers and resilience to sea level rise. Consider the outcomes of coastal and tidal inundation modelling and erosion hazards. Consider aquatic species relationships between saltwater and freshwater and impacts. Leading to a management plan for known species e.g. eel and tortoise movement, mullet and bream	**High**
2.2	**Site specific condition assessment, resilience and threat assessment for *coastal wetlands and littoral rainforest area* (CWLRA)** CWLRA assessments (site specific) to identify potential threats to and opportunities for improved management practices. Include consideration of existing and future development and climate change (e.g. Drought) determining conservation priorities.	**Medium**
2.3	**Riparian Corridor Classification and Condition Assessment** Undertake study area wide riparian corridor classification and condition assessment utilising the Natural Resource Access Regulator (NRAR) guidelines and the River Styles® framework to determine and map stream orders, riparian corridors and then determine riparian character, behaviour, condition and recovery potential. NB existing NSW database provides consistent information for all third and higher order streams. Reference also to the “High Ecological Value Waterways and Water Dependent Ecosystems data set recently developed by DPIE.	**Medium**
2.4	**Studies of non-indigenous species** • study area wide genetic investigation of invasive species status and origin where needed; to assist with identifying invasive species management strategies across jurisdictions and key land managers. • identify invasive species that do not currently exist in the study area but are a risk for the future to identify invasive species management strategies. • identify opportunities for monitoring programme targeting high risk exotic species in key study area locations.	**Low**
Recommended Management Actions		
2.a	**Aquatic Reserve, Intertidal Protected areas and Critical habitat management** Develop Aquatic Reserves Network Management Plans and partnership Management Plan(s) IPAs with DPI Fisheries. Consideration to given to work previously undertaken with Randwick Council and the SCCG *(2005)* with potential linkages to Community Land Plans of Management of adjacent areas. Aquatic reserves: Bronte-Coogee, Cape Banks, IPAs - Bondi and Long Bay and Critical habitat Magic Point – Grey Nurse Shark.	**High**
2.b	**Connected Corridors for Biodiversity (with SSROC)** Maintain existing mapping of habitat corridors and continue identify opportunities for connectivity and contiguity across the study area with a focus on cross council boundaries opportunities with reference to Eastern City District Plan objective 32 and Planning priority E17 (Green Grid).	**High**
2.c	**Community Education and Engagement and Backyard Habitat Programs** Establish an Eastern Beaches Biodiversity Reference Group (with a focus on the Eastern Beaches Coastal corridor) to undertake a review of Councils community education programs including backyard habitat programs to identify opportunities for integration, operation efficiency gains and common messaging and engagement activities across the study area. NB reference be given to the review of backyard native flora and fauna programs in the SCCG, (Macquarie University and ARIES, 2016) .	**Low**

Issue 3: Impacts from Coastal Development			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	Overall, impacts from coastal development is currently viewed as a medium risk to the study area by key stakeholders, with the issue increasing to high risk in the future. Future pressures such as population growth and climate change, predominately sea level rise, have driven this change in risk level. However, the issue is currently managed reasonably with existing legislation, policy and planning controls and these will continue to manage the risk from coastal development in the future (subject to appropriate reviews).	**Medium**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Coastal Development	**Current:** Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development generally. This threat is currently considered to present a medium to high risk to the Eastern Beaches coastal zone, community and associated values. Associated issues include urbanisation, reduce public access and increased hard surfaces. **Future:** This threat will present greater pressure in the future due to an increase in population size. Population growth will impact the study area with greater numbers of both residents and tourists which will subsequently increase demand for development. Increased development has the potential to place coastal values at future risk. **Key Locations:** All of the study area is subject to this threat with key areas indicated being Botany Bay, Yarra Bay, Little Bay and South Coogee. Key location is the proposal for a cruise ship terminal at Yarra Bay which would significantly alter the coastal processes in that location.	**Medium / High**	**High**
Poorly Sited Development	**Current:** Hazard impacts resulting from the approval and construction of inappropriate development and/or development that is poorly sited is considered a medium risk. **Future:** This threat is also expected to get worse in the future due to climate change and population increases. Climate change could result in previously viable land for development and existing development being placed at risk due to sea level rise and/or coastal hazards. A population increase will result in amplified pressure for additional development. **Key Locations:** Both public and private assets are at risk with key locations including the Eastern Beaches Coastal walk and coastal reserves as well as Little Bay, Yarra Bay, Diamond Bay and Vaucluse.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Extensive legislation, policies and planning controls are implemented across all three Council LGAs to manage coastal development. These include the LEPs (including foreshore building lines), DCPs, Environmental Planning and Assessment Act, the Coastal SEPP, Fisheries Management Act, and Three Ports SEPP. The planning approval and development application processes are also well defined and implemented in an aim to ensure consistency and reduce the occurrence of poor development outcomes. Council also undertake monitoring of construction and building sites to ensure compliance with development controls and conditions of consent. Numerous management plans and strategies also assist in managing land use at a regional and local scale including the Greater Sydney Regional Plan, Eastern City District Plan and various Plans of Management for parks and open space areas. The existing management arrangements are considered adequate to manage this issue. There are however considered complex resulting in some duplication of management and governance responsibilities. Additionally, they are generally considered adequate / moderate for the long-term management of coastal development into the future, on the provision that they are subject to ongoing review and update as appropriate moving forward.	**Adequate**	**Moderate**
Suitability of Existing Data	The existing planning controls, legislation and policies are considered to provide adequate resources for managing coastal development. There is also biodiversity, habitat and vegetation mapping available across some of the study area which can be used to inform future land zoning decisions. Stakeholders indicated that more information on major State projects such as transport projects would be useful to them. However, there is currently no Coastal Management SEPP Coastal Vulnerability Area mapping (and limited existing hazard mapping to inform this) and this limits the Councils ability to assess coastal development in coastal environments that are potentially vulnerable to hazards.	**Moderate**	
Recommended Studies			
Study No.	**Description**	**Priority**	
	No specific studies identified		

Issue 4: Resource Use, Recreation and Access Availability			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	Overall, conflict over resource use, recreation and access availability is currently viewed as a medium risk to the study area by key stakeholders, with the issue increasing to high risk in the future. Population growth will be the dominate pressure that enhances this threat with additional visitor and resident numbers using the same limited area of shared public space.	**Medium**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Insufficient Facilities and Access	**Current:** The existing threat presented by that lack of sufficient facilities and access to meet demand in the coastal zone in the study area is rated a medium risk. There is a range of competing activities that are undertaken in the study area and these are always increasing, additionally there is pressure to commercialise areas of open space. **Future:** It is expected with population growth in the future this threat will increase to a high risk due to the additional number of local residents and tourists wanting to visit and use the coastal zone facilities thus placing additional pressure on existing facilities and access points. **Key Locations:** Areas along the Eastern Beaches coastline that are particularly susceptible to this threat include the Eastern Beaches Coastal Walkway, North Bondi, Coogee Beach, Maroubra Beach and areas that are popular for water-based activities, such as swimming, snorkelling, spearfishing and scuba diving. Lurline Bay and Diamond Bay are also lacking in amenities.	**Medium**	**High**
Recreational Fishing	**Current:** The threat presented by recreational fishers relates to individuals ignoring restrictions and exceeding catch / bag limits. This threat is rated as having a medium risk currently due to current compliance resources for the area. **Future:** It is expected that in the future this threat will increase to a high risk. This is due to population growth and the associated expectation that there will be additional people fishing and the high likelihood that in the future catch limits will be reduced to protect dwindling fish numbers. **Key Locations:** Any location where recreational fishing is undertaken with key hot spots in Randwick LGA.	**Medium**	**High**
User Group Conflicts	**Current:** This threat involves conflict between various user groups on the beaches and in waterways. There are a range of user groups and activities undertaken in the study area and this threat is currently rated as medium risk. However, due to the population within the study area it is not unexpected to have some level of conflict over values / uses at shared public spaces. **Future:** As with most other recreational usage threats, this threat is likely to increase to high risk in the future with population growth. Increased population numbers will result in more users and additional competition for public space. **Key Locations:** Whilst the entire coastline could be affected, the locations where most recreational activities are undertaken will be most impacted by this threat. These areas may include Bondi, Coogee, Maroubra, Malabar Headland and areas where water sports are popular i.e. kite surfing, swimming, spearfishing and surfing.	**Medium**	**High**
Poorly Maintained Facilities and Access	**Current:** This threat relates to poorly maintained or located recreational facilities and beach access points and the loss of public access, either through private development or Government closure of public areas. This threat presents a medium risk level currently. **Future:** This threat is also expected to get worse in the future due to population increases placing additional pressure on existing facilities and accessways. This in turn will add pressure for more capital funding to expand facilities and accessways and thus this threat presents a high risk in the future. **Key Locations:** Notable areas affected by this threat include areas along the Coastal Walkway, La Perouse Headland, South Head and Lurline Bay. Randwick LGA appears to be more affected by this issue than the other Council areas due to large areas of National Park and Crown land areas on the coast.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Various management actions are in place to manage resource use conflict and accessibility within the study area. Legislation including the Local Government Act, POEO Act, National Parks and Wildlife Service Act support this. Policies and plans including Plans of Management for open space areas, land use zoning and DCPs regulate appropriate usage of space. The Councils capital works programs, maintenance, facility upgrade programs and government grants (in addition to developer contributions s7.11) and Council levies can all be used with the intention of enhancing public space usability and access. In terms of user group conflicts, police, lifeguards and rangers patrol key locations and attempt to resolve any usage conflicts as they occur. Fisheries patrols also have a compliance role in the area in terms of recreational fishing limits. Community consultation and public education is also undertaken in respect to new facilities and capital upgrades. The management measures currently in place are considered somewhat adequate to manage the existing risk, however available funding is limited and can constraint their effectiveness. These measures are not considered adequate to manage this risk in the future, primarily due to funding availability and coordination between government departments and agencies.	**Moderate**	**Inadequate**
Suitability of Existing Data	Generally, there is a reasonable volume of information and data on recreational uses, tourism activities and facilities maintenance for the study area. This includes Council operational plans; delivery programs and strategic planning documents including master plans and plans of management. As the Eastern Beaches is such a renowned tourist destination, there is currently a reasonable (although patchy) amount of information regarding beach usage and this should be used to inform coordinated coastal management. This data would be useful to assist and inform forward planning by providing data on usage of areas and facilities, and the key recreational pursuits in these areas, which would assist in informing whether existing facilities are adequate for current and future demand.	**Adequate**	

Issue 4: Resource Use, Recreation and Access Availability		
Recommended Studies		
Study No.	**Description**	**Priority**
4.1	**Assess and maintaining future coastal access of the Eastern Beaches** Undertaken a study area wide assessment on coastal access points to identify key locations where access is suitable, restricted and can be enhanced (including the consideration of barrier free access provisions and opportunities). The Study to identify access opportunities improved/future access may extend to public land; and easements not currently utilised for access be considered and barriers including where current public access may be reduced with future land use change coastal development and or impacts of coastal hazards. A single repository of asset information to guide detailed assessment of risks arising from coastal hazards and development of management options to improve access. (Reference to joint council management of the Eastern Beaches Coastal Walk be considered and incorporated.	Medium
4.2	**Recreational fishing surveys and investigations** Investigate recreational fishers and non-compliance fishers in the Eastern Beaches, looking at: • patterns of recreational fishing • potential human health risks from fish consumption • threats to the fishery • reasons for non-compliance • improved design and delivery of education programs, including educational packages for culturally and linguistically diverse communities recommendations for ongoing management (e.g. regular 5-year assessments)	**Low**
4.3	**Eastern Beaches usage and demand analysis** Assessment of existing usage across the Eastern Beaches study area to quantify the economic and social value and benefits of coastal access and use and to determine the most valued locations for recreation and tourism activities to enable better forward planning. This assessment should include gathering of visitation numbers and analysis of beach usage and popularity as well as community consultation to identify key recreational activities at each location to inform what additional facilities would be the most valuable to users at each location. Information used to development of a study area wide policy to manage risks and impacts of recreation practices, comprising both passive (i.e. scenic) and active (e.g. swimming, surfing) activities. This is partially captured by Open Space and Recreation Plan, the Recreational Needs Study, Parks Plans of Management.	**Low**

Issue 5: Public Safety			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	Overall, the risk to public safety is currently viewed as a medium risk to the study area by key stakeholders both now and in the future. The management arrangements currently in place are considered adequate in managing this issue and will continue to be adequate in the future if funding and resourcing of these actions is continued and increased as necessary.	**Medium**	**Medium**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Water Quality / Pollution	**Current:** The threat of water pollution affecting human health and safety i.e. bacteria, toxic algal blooms etc. is rated a high risk for the study area. This is due to the existence of the Vaucluse Diamond Bay cliff face outfalls, Wastewater Treatment Plants (WWTPs) at Malabar and Bondi, sewer overflows and stormwater discharges into the ocean. **Future:** It is expected that this risk will continue at its current level (or possibly increase) in the future. Population increases could lead to additional overflows with more pressure being placed on the sewer network, however if Sydney Water maintain and upgrade their assets as required this is unlikely to be an issue. Algal blooms could have the potential to occur. **Key Locations:** All recreational beaches particularly those near stormwater discharges or points were sewer overflows regularly occur and the area along the Vaucluse Diamond Bay outfalls and locations close to WWTPs where ocean swimming occurs.	**High**	**High**
Seafood Contamination	**Current:** The threat of seafood contamination and its risk to public safety is classified as a medium risk to the study area, due primarily to the occurrence of spear fishing which is known to occur off the Vaucluse Diamond Bay cliff face outfalls and PFAS pollution in Botany Bay which has resulted in the EPA issuing precautionary dietary advice to minimise their exposure to PFAS from fish caught in Botany Bay. **Future:** As with most other recreational usage threats, this threat is likely to increase to high risk in the future with population growth. Increased population numbers will result in more users and additional competition for public space. **Key Locations:** Whilst the entire coastline could be affected, the locations where most recreational activities are undertaken will be most impacted by this threat. These areas may include Coogee, Maroubra, Malabar Headland and areas where water sports are popular i.e. kite surfing, swimming and surfing.	**Medium**	**Medium**
Wildlife Interaction	**Current:** The threat presented to public safety from wildlife interactions e.g. shark bites, jellyfish stings, blue ringed octopus, sting rays and boats striking a whale etc. is currently rated as a low to medium risk. It is considered as being low likelihood risk however potentially of high consequence for some events. **Future:** It is expected that in the future this threat will continue as is or increase to a medium risk. This is due to population growth and the associated expectation that there will be additional people in the coastal zone with the potential to interact with wildlife. Additionally, changes in the marine environment due to protections and/or climate change could see addition wildlife threats that weren't an issue become possible on the Eastern Beaches e.g. potentially new species in the area or greater numbers of species that present a risk. **Key Locations:** Any recreational areas and swimming spots from South Head to Yarra Bay.	**Low / Medium**	**High (Unknown)**
Cliff Instability / Suicide Risk/ Rock fishing	**Current:** The threat presented to public safety from cliff instability, rock fishing and inappropriate access is high. Whilst there being a relatively low likelihood the consequences of cliff failure, or slippage or deliberate are catastrophic **Future:** It is expected that in the future this threat will continue to increase. This is due to population growth and the associated expectation of increased visitation and tourism numbers. For rock fishing although new regulations are now in place including requirement for life jackets non-compliance, increasing fishing potentially numbers utilising more areas of the coastal risk is likely to increase. **Key Locations:** All cliff areas particularly those areas adjacent to the Eastern Beaches Coastal Walk and well known suicide locations. Key rock platform fishing locations in the vicinity of Diamond Bay, Clovelly, Coogee, Maroubra, Malabar and Cape Banks.	**Moderate**	**Moderate**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Education campaigns using signage, websites, pamphlets and alerts are used to inform the public about risks to public safety from water pollution, wildlife and seafood contamination. Various programs are implemented in conjunction to public education including: • Fisheries patrols, tagging, netting and smart drum lines in the Sydney region (not specifically in the study area) to control wildlife; • Health regulations, harvesting conditions and sea food catch regulations to manage seafood contamination; • EPA precautionary dietary advice regarding potentially contaminated seafood; and • Coast watch and Beachwatch water quality programs that inform the public of water quality and what beaches are acceptable for recreational pursuits. • Rock fishing regulation (Rock Fishing Safety Act 2016) and education programs (DPI Fisheries, Water Safety NSW, Surf Life Saving Australia and Recreational Fishing Alliance) In addition to this, monitoring and reporting of any pollution events occurs and if necessary, the public is informed for their safety. The Councils also implement a range of catchment-based initiatives such as WSUD and GPTs in order to treat and improve the quality of stormwater entering the waterways. As previously mentioned, Sydney Water are conducting the "Refresh Vaucluse and Diamond Bay" project which will see the continuous flow of untreated wastewater from three ocean outfalls at Vaucluse and Diamond Bay transferred to the Bondi Wastewater Treatment Plant and this will reduce the threat of seafood contamination and water quality pollution in this area. The management measures currently in place are considered adequate to manage the existing risk and are likely adequate to manage these threats in the future as long as the available funding and resourcing is available to the relevant organisations.	**Adequate**	**Moderate**

Issue 5: Public Safety		
Suitability of Existing Data	Public safety encompasses many aspects; hence, the type of information involved is very diverse, notably including water quality and contamination data. There is generally reasonable data available to inform management options and actions to manage this issue particularly through the Beachwatch water quality program. The NSW Food Authority and Food Standards Australia and New Zealand and the NSW EPA also provide substantial information regarding seafood contamination and appropriate limits / actions. In 2013 a detailed Rock fishing survey was undertaken by Randwick Council. Numbers and locations of suicide attempts and fatalities confidential.	**Adequate**
Recommended Studies		
Study No.	**Description**	**Priority**
5.1	**Cliff Slip and Suicide Risk** **Cliff Safety audit** • key areas where accidents have occurred / remediation action has occurred) • fencing and signage audit • general education / outreach • Risk management incident response • Guidance procedure insurance risk assessment **NB** Waverley Council is currently undertaking an Coastal Risk Assessment with a focus on the risk of falls from cliffs (to be completed in 2020).	**Medium**
5.2	**Rock Fishing** Undertake assessment of current safety management action effectiveness across the study to identify any new areas for declaration to wear life jackets *(RCC currently has areas defined)*	**Low**
5.3	**Wildlife Interaction and Management** Undertake a study area wide audit of know wildlife interactions that have presented risks to human safety to determine need to a management and education response in light of population and tourism growth projections (to include shark bites, jellyfish stings, blue ringed octopus, sting rays, whale strike).	**Low**
5.4	**NSW Shark Meshing (Bather Protection) Program** Undertake independent analysis of the impact of the Eastern Beaches Shark meshing program	**Low**

Issue 6: Aboriginal and Cultural Heritage			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The issue of degradation of Aboriginal and cultural heritage is currently seen as a medium risk that may increase slightly to medium / high risk in the future. However, management arrangements and existing information and data is considered suitable to manage the threats currently.	**Medium**	**Medium / High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Aboriginal Culture Not Preserved	**Current:** Aboriginal culture, including values and sites, not being recognised and preserved is currently rated as a medium level risk for the Eastern Beaches coastal zone. This is largely due to that the registration of terrestrial sites is thought to be incomplete with not everything of importance currently being mapped. **Future:** There is mixed sentiment about the future level of risk this threat presents. It is thought that the community is becoming increasing aware and acknowledgement is becoming apparent in the community however there is also likely to be additional tourism, usage and development adding pressure and possibly a loss of local knowledge moving forward. **Key Locations:** This threat presents a risk to the whole coastal area and in particular the foreshore and waterway areas which traditionally are rich in Aboriginal heritage values.	**Medium**	**Medium / High**
Community Not Valuing Culture and Heritage	**Current:** Community not valuing culture and heritage generally is only considered a relatively low risk threat within the study area currently. The broader community appear to genuinely value culture and heritage within the study area which is predominately Sea Country. **Future:** This threat is expected to potentially increase slightly in risk rating in the future due to population and development pressures and changing demographics in the area. However, it is also thought that development pressure will encourage the community to become more vocal in their appreciation of and will to protect cultural and heritage values of the area. **Key Locations:** Areas of cultural and heritage not that could be affected are spread across the entire coastline and study area.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Legislation and management arrangements are firmly embedded across NSW for the protection of cultural and heritage items and Places. These measures include site listings and registers, appropriate legislation and planning instruments including the Councils LEPs and due diligence assessments that are required for development or activities around listed sites. The Councils also have various education programs, site signage and historical societies that aim to increase awareness of culture and heritage in the area. The La Perouse LALC is also active and responsible for the study area. The existing management policies and approaches that are currently in place are considered adequate, however the effectiveness of these is limited to known sites. The larger issue involving Aboriginal heritage is the limited knowledge of existing sites.	**Adequate**	**Moderate**
Suitability of Existing Data	The data and information available for Aboriginal and heritage sites is available on the Aboriginal Heritage Information Management System, the NSW Heritage Database, and via DPIE directly. Other information on historical and cultural sites is available and/or documented in various locations, including the Councils LEP, local Historical Societies and the La Perouse LALC. Whilst there is a reasonable amount of data and information available, it is thought that additional mapping of sites based on research and investigations is likely necessary to document unknown sites such as middens and carvings. This would allow for protection of additional sites that are currently not identified or known about.	**Moderate**	
Recommended Studies			
Study No.	**Description**	**Priority**	
6.1	**Review of Aboriginal and heritage values, sites register and documentation** Review existing management techniques and recommendations, as well as databases of sites of heritage and cultural significance, including location, description and other relevant attributes of both Aboriginal significance and other Heritage significant areas and sites. This to include but not limited to defined sites as part of the Aboriginal Heritage Information Management System (AHIMS) This review to also consider culturally significant features and landscapes and the naming of significant sites and places.	**High**	
6.2	**Aboriginal Cultural Outreach and Economic Development** Study on education and engagement programs with indigenous culture and our local coast. Development of an economic development opportunities strategies for La Perouse LALC area including potential support for the Sea Ranger Program.	**High**	
6.3	**Aboriginal and heritage sites vulnerability assessment** Undertake a heritage sites vulnerability assessment with key responsible agencies and the La Perouse LALC (and/or other relevant persons). Assessment needs to utilise outcomes of key coastal hazards assessments such as access, sea level rise and identify key issues and locations of concern for risk treatment.(study to be undertaken following study 9a.5)	**Medium**	

Issue 7: Impacts from Commercial and Industrial Activities			
Overall Level of Risk *(considering existing management arrangements)*		MEDIUM	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	Both the existing and future risk presented by impacts of commercial and industrial activities is considered medium. The level of risk is unlikely to be exacerbated into the future as existing information and management arrangements that are implemented are well established and regulated by various key government agencies. However, with all management actions the success of this will depend on funding, resourcing and coordination between agencies being continued and enhanced as needed in the future.	Medium	Medium
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Commercial Shipping	**Current:** The threat presented by commercial shipping and commercial vessels is considered a medium risk. Key issues associated with this threat include fuel / oil spills, ballast contamination / biosecurity issues, groundings, capsizing and damaging environmental and/or heritage values. **Future:** This threat is likely to increase in severity in the future due to likely increases in the quantity of commercial vessels and aging of the existing fleet making issues more likely to arise. Additional risk could arise due to potential relocation of infrastructure i.e. the closing of Sydney Harbour for commercial purposes or limit to capacity would likely see the enhanced use of Botany Bay as an alternative. **Key Locations:** this threat is predominantly an issue in Botany Bay, however the broader coastal waters in the study area could be impacted.	Medium	High
Overfishing	**Current:** Commercial fishing has been prohibited in Botany Bay since 2002 and is typically undertaken some distance of the coastline and as such is only seen as a low risk to the study area. Key issues with this threat include dumping by-catch washing up on the beaches and pools within the study area as has previously occurred. **Future:** It is considered potentially likely that this threat could increase to a medium risk given population increases may impact commercial fishing and drive to increase yields. However, it is acknowledged that this sector is mindful of its own sustainability and existing licencing / management controls will limit this threat to a medium risk in the future. **Key Locations:** All coastal waters however issues have occurred with by-catch dumping washing up in Malabar, Maroubra and Little Bay historically.	Low	Medium
Industrial Activities	**Current:** Overall this threat presents a medium risk to the study area however the risk is high in Randwick LGA as opposed to Waverley and Woollahra due to the presence of historic industrial activities that were carried out in the vicinity of Port Botany. **Future:** This threat is unlikely to worsen due to increased legislation and environmental regulations and also the improvements in available technologies to prevent, mitigate and remediate industrial activities that present a risk. **Key Locations:** Any locations where industrial activities are occurring within the study area however Port Botany is a key hotspot due to existing activities and legacy contamination issues.	Medium	Medium
Dredging and Harbour Maintenance	**Current:** The existing risk from dredging and harbour maintenance is considered to be medium due to changes to ecosystem habitat and channel / beach profile. **Future:** This issue is likely to remain consistent (or possibly worsen) and this will be heavily dependent on future development and major projects planned for Botany Bay such as the potential cruise terminal. **Key Locations:** This threat is primarily associated with Botany Bay and Port Botany.	Medium	Medium
Tourism	**Current:** The Eastern Beaches include iconic tourism sites and landmarks that attract high numbers of visitors for example Bondi Beach is a key destination point for approximately 2.3 million visitors annually (Destination Marketing Store, 2018) The Coastal Walk which extends along the study area is one of the most popular things to do on a visit to Sydney (TripAdvisor).While providing commercial benefits for some local businesses, increasing visitation levels place pressure on waste management, local biodiversity, local amenity and walkway maintenance. Safety is a growing concern, increases in fatal cliff falls and drownings place pressure on local Rangers and Lifeguards. **Future:** Risks of overcrowding and congestion conflict will likely increase as visitation numbers continue to rise, as will challenges with fostering shared economic benefits. Additional council resources will be needed to support the high visitation and limit risk where possible. **Key Locations**: All Eastern Beaches and Landmarks, including Coastal Walk and Yarra Bay.	Medium	High
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	A number of key initiatives restrict shipping operations, industrial and commercial activities, and biosecurity measures. Various legislation is in place to address these issues including the POEO Act, Contaminated Land Management Act, Three Ports SEPP, Fisheries Management Act as well overarching Environmental Planning and Assessment Act. Australia also implements MARPOL (The International Convention for the Prevention of Pollution from Ships) through the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and the Navigation Act 2012. Key authorities involved in management of shipping and activities in Botany Bay are the Port Authority of NSW, NSW Ports and NSW Roads and Maritime Service and the Australian Quarantine and Inspection Service. Commercial fishing is controlled to protect fisheries for the future and Botany Bay is a designated as a recreational fishing haven as no commercial has been permitted since 2001. Commercial fishing vessels are regulated and licences are required to conduct this activity so it can be effectively managed and controlled. Industrial activities are managed and regulated through the NSW EPA licensing, DA planning approvals and controls, environmental assessments and approvals and trade waste licensing. However, there is currently no holistic approach to management of industrial impacts, which requires consideration of cumulative, associated and secondary impacts. Key sites within Botany Bay such as Port Botany have their own planning instruments (Three Ports SEPP) and environmental management plans and policies that are strictly implemented with the aim of complying with appropriate legislation and licencing conditions.	Adequate	Moderate
Suitability of Existing Data	Existing data and information regarding commercial and industrial activities in the study area is reasonably well known by the relevant Government agencies, particularly the EPA, RMS, NSW Port Authority and DPI Fisheries. Commercial vessel data is collected by RMS and industrial discharge licencing exists and it is a key role of the EPA to licence, regulate and manage these activities.	Adequate	

Issue 7: Impacts from Commercial and Industrial Activities		
Recommended Studies		
Study No.	**Description**	**Priority**
7.1	**Fuel / Oil spill risk assessment and review emergency plans** Detailed oil spill risk assessment and review of relevant emergency plans to identify potential impacts and management requirements.	**High**
7.2	**Dredging and Harbour Maintenance** Undertake study on the impacts of dredge disposal site within Sydney Offshore Spoil Ground, e.g. Caltex's dredging approval to dredge and dump 153,000m^3.	**High**
7.3	**Economic, Environmental and Heritage Impact assessment of proposed cruise terminal at Yarra Bay** Undertaken an independent of the economic, environmental and heritage and assessment of the proposed Port Botany (Yarra Bay) cruise terminal.	**High**
7.4	**Review commercial vessels information** Detailed review of existing boating and commercial vessel activity data, future plans and trends. This information will help to assess: • opportunity for improved boating infrastructure and management • threat of shipping to coastal areas and habitats	**Medium**

Issue 8: Engagement, Governance and Compliance			
Overall Level of Risk *(considering existing management arrangements)*		MEDIUM	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The overall perception is that the level of risk is medium for engagement, governance and compliance with risk moving too high in the longer term. There is a perceived general lack community awareness, engagement and participation with the coastal issues in the study area. Coastal management ownership, definition of responsibility and limited intergovernmental coordination is considered a key threat for integrated coastal management in the study area. This is couple with a defined medium risk due to lack of regulation compliance by coastal users and patchy regulation enforcement by public authorities.	Medium	High
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Lack of Compliance	**Current:** Impacts resulting from lack of compliance with regulations and compliance effort (by users) or lack of enforcement success (from authorities) is rated as a medium risk currently. Compliance enforcement is considered difficult and the view is that there is a lack of a long-term strategy around this. Compliance challenges have the potential to be heightened if land use zoning changes or additional regulations are introduced (either via the CMP process or other mechanisms). **Future:** This threat is not expected to increase in risk in the future. Although it is expected that increases in population numbers, both residents and tourists, will result in an associated increase in the number of compliance related issues, this will likely be offset by an increase in compliance enforcement efforts by responsible authorities. **Key Locations:** This threat is present and considered a risk along the entire coastline.	High	High
Insufficient Governance and Management	**Current:** Inadequate, inefficient, over- or under- regulation, governance and management of the coastal environment has been identified as a medium risk for the study area currently. It was acknowledged by stakeholders that even though there is good policy in place there is an issue with a lack of coordination. **Future:** This threat has a chance of increasing to high risk in the future due to several factors, including climate change, population pressure and changing political agendas. **Key Locations:** This threat applies across the entire study area.	Medium	Medium / High
Lack of Community Awareness and Engagement	**Current:** Lack of community awareness and engagement with the coastal environment and its management is currently consider a medium risk. The key issue identified with this threat is a lack of community awareness around issues. **Future:** This risk posed to the study area by this threat is not expected to worsen in the future as it is expected that as risks and impacts to the coastal environment increase, engagement by the community will also increase. **Key Locations:** The entire study area is impacted by this threat and this threat involves the entire Community of the area also.	Medium	Medium
Inadequate Ownership / Intergovernmental Coordination	**Current:** Unclear or inadequate definition of roles and responsibilities of the study area / intergovernmental coordination is ranked as a low to medium risk threat to the study area as existing communication and coordination is reasonably well handled by responsible entities. Water quality has been highlighted as a key area where there is shared responsibility and a lack of ownership and collaboration. **Future:** This issue is likely to remain consistent (or possibly worsen) in the future and this will be heavily dependent on the governance approach taken by Local and State Government departments and other land management agencies moving forward. **Key Locations:** This threat is present along the entire coastline and more broadly with relevant neighbouring entities that share ownership or management responsibilities.	Low / Medium	Medium
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	The existing management arrangements for engagement, governance and compliance are predominately centred around the Councils roles, responsibilities, plans and policies. The Councils typically have good policy and actions in place, however compliance is the one area that has limited management actions (likely due to resourcing and funding constraints). Legislation and planning controls such as Local Government Act, LEPs and DCPs, Marine Estate Management Act and the Fisheries Management Act, all support and direct engagement and governance roles and responsibilities. Within the Eastern Beaches region, collaboration between Councils appears to be reasonably strong, with collaboration with State and Federal Government departments an area that has potential to be improved. There is the opportunity for improvements in some areas which are currently responded to in a reactive manner when the issue arises rather than being addressed proactively. It is likely that additional coordination and resourcing will be necessary in the future to ensure that lack of engagement, governance and compliance are adequately managed.	Moderate	Inadequate
Suitability of Existing Data	There appears to be adequate information and policy associated with engagement, governance and compliance. Additional information that is provided throughout the CMP development process will also provide key information to inform management decisions and to assist with engagement with the community.	Adequate	

Recommended Studies		
Study No.	**Description**	**Priority**
8.1	**CMP Governance and Management Arrangements** Confirm clear governance framework for Eastern Beaches CMP to include Councils, state agencies and a potential Coastal Advisory Committee	**High**
8.2	**Detailed mapping of ownership and management responsibility of coastal areas (including in State waters)** Governance and management responsibility mapping be undertaken including definition and collation of key land and waterway attributes and boundary areas between low and high water and other foreshore boundaries. This be undertaken with stakeholder engagement and incorporated into the Stage 3 full-scale risk assessment (with consideration of the potential impact of un-integrated management) and thus to inform the development of management options in further stages of the CMP process.	**High**
8.3	**Regulations compliance auditing and strategy** • Audit of compliance activities and limitations of public authorities including DPI, Sydney Water, EPA within the study area to assess effort, limitation and potential risks against CMP objectives • Pending audit outcomes, develop a long term strategy for compliance focus, resourcing, and monitoring (include ongoing training of enforcement offices across public authorities)	**Medium**

Issue 9a: Coastal Hazards and Sea Level Rise – *Coastal and Tidal Inundation*			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The stakeholders have disparate views on the risk presented currently by the coastal hazards associated with coastal and tidal inundation. This is primarily due to the varying risk level presented across the three LGA areas and also in different key locations. Overall, coastal and tidal inundation is thought to present a medium risk to the entire study area. The stakeholders agree that future challenges due to climate change, notably sea level rise, will increase threat severity across the whole study area.	**Medium**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Coastal and Tidal Inundation	**Current:** The threat of coastal and tidal inundation (including wave overtopping) varies from low to high across the three Councils but is currently considered a medium risk overall for the study area. It is acknowledged that the risk varies at different location depending on exposure and the specific amenities and infrastructure situated there **Future:** Sea level rise is expected to exacerbate inundation risks across the study area moving forward, this will result in the risk of coastal and tidal inundation increasing to present a high risk in the future. **Key Locations** **Woollahra:** Overall this threat is considered to currently be a low risk for the Woollahra section of coastline located within the study area. This is due to Woollahra having no sandy beaches or low-lying assets and their coastline being comprised of coastal cliffs with minimal inundation risk. The risk of cliff overtopping is generally considered low. **Waverley:** Overall the Waverley LGA is classed as being at medium to high risk from coastal and tidal inundation with key locations including: • Bondi particularly the North Bondi Surf Club, stormwater pits and pipes, the Pavilion and amenities are currently considered at low risk from coastal and tidal inundation. However, this varies for specific assets e.g. the Skate Park. The Bondi Icebergs Pool and the GPT for the Ramsgate Avenue, North Bondi area are both currently classed as being at high risk of coastal and tidal inundation due to wave action. • Tamarama notably the Kiosk, stormwater pits and pipes, the playground and amenities are currently considered at medium risk from this threat. • Bronte including the Surf Club, Bronte Pool, GPT, stormwater pits and pipes and amenities are currently considered to be at high risk from this threat. **Randwick:** Overall the Randwick LGA is classed as being at low risk from coastal and tidal inundation with key locations including: • Bunnerong Canal as tidal inundation causes Botany Road flooding (currently low risk) • Ocean pools are currently considered to be at low risk from inundation (possible erosion and rocks and debris being washed in) • South Maroubra is also currently at low risk from inundation. During king high tides the stormwater drains and Commonwealth landfill area(s) are affected. • Generally, all low-lying infrastructure is considered at low risk from inundation due to the potential impacts on these assets.	**Medium**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Government and academic research about future inundation and climate change adaptation have been undertaken; however, there is no consistent policy, benchmarks nor long-term adaptation management plan for inundation issues and threats across the State of NSW or the study area. Waverley Council have a Coastal Risk Management Policy in place, however Woollahra and Randwick Councils do not. All three Councils do have existing plans of management and asset management plans however these have limited detail on coastal hazards. Similarly, legislation and planning controls (e.g. flooding / freeboard requirements, setbacks) are in place to assist with coastal and tidal inundation risk management. Natural and manmade infrastructure including brick retaining walls and sea walls at the back of beaches are currently seen as management measures for these risks in some locations and maintenance activities on physical works are undertaken. In terms of technical studies, the risk of inundation in some coastal areas is incorporated into catchment flood studies and / or floodplain risk management studies undertaken as part of the NSW Floodplain Management Program, which requires the consideration of sea levels rise and rainfall intensity associated with predicted climate change. Given the topography of the eastern beaches and high coastal rainfall intensities combined with the impermeable urban nature of the catchments, floods and the associate flood studies have historically been a higher priority action for eastern beaches Councils to focus available resources on. In the future these management arrangements are considered inadequate to address the risk presented by coastal and tidal inundation across the study area. Additional planning controls, coordination between responsible government agencies / organisations, shared knowledge and open access information is required to adequately manage this issue.	**Moderate**	**Inadequate**
Suitability of Existing Data	Information and data about coastal inundation and climate change exist mostly at the regional level, with limited studies or data about the potential impacts of coastal inundation or climate change specific to the study area. Both Woollahra and Waverley LGAs have undertaken specific studies that investigated coastal inundation including the Woollahra CZMS (Cardno, 2015) the Waverley Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011). However, there is no specific LGA wide coastal assessment in terms of tidal or coastal inundation and wave overtopping for the Randwick coastline, although specific assessments associated with capital works projects have been completed and are required for all projects located in coastal areas. Key knowledge gaps for future management of the issue include detailed information/studies on storm surges, assessment of projected frequency and intensity of future storm events including east coast lows.	**Moderate**	

Issue 9a: Coastal Hazards and Sea Level Rise – *Coastal and Tidal Inundation*		
Recommended Studies		
Study No.	**Description**	**Priority**
9a.1	**Coastal and tidal inundation hazard assessments** • Review and update (as appropriate) coastal and tidal inundation assessments and mapping for the catchment and all tidal waterways, including review of SCCG inundation mapping (2010), Waverley Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011), Woollahra CZMS (Cardno, 2015), flood / drainage studies from Sydney Water (2009) and other site specific studies. Give consideration to using a consistent and best practice approaches specifically model, assess and map. • Tidal inundation of land by tidal action under average meteorological conditions and the incursion of sea water onto low lying land, due to longer-term sea level rise. • Coastal Inundation of foreshores and coastal creeks and channels caused by tides, storm surge events and the action of waves, including the interaction of those waters with catchment floodwaters (joint probability analysis**).** *A coastal inundation assessment should be undertaken that combines the various components of elevated oceanic water level (i.e. astronomical tide, wind set up, wave set up, barometric set up, wave run up, and future sea level rise and wave climate change) for relevant return periods and storm durations, at timeframes of interest. The assessment should consider the potential location of the shoreline in future with shoreline recession and map the elevated ocean levels to illustrate potential areas of inundation from wave overtopping. In mapping the hazard, careful consideration to be given to creek entrances and stormwater drainage that may experience wave run up impacts.*	**High**
9a.2	**Flood, coastal and tidal inundation damages and risk assessment** Review, update and develop a robust damages assessment framework to address both temporary (coastal) inundation (e.g. storm surge and catchment flooding events) and permanent (tidal) inundation impacts due to future sea level rise conditions. Risk assessment (including damages) incurred from sea level rise must consider permanent ground water impacts to soil chemistry, groundwater dependant ecosystems, underground services and building foundation etc, as well as permanent tidal inundation to above ground built and environmental assets.	**High**

Issue 9b: Coastal Hazards and Sea Level Rise – *Beach Erosion and Shoreline Recession*			
Overall Level of Risk *(considering existing management arrangements)*		**MEDIUM / HIGH**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The current risk presented by the coastal hazards associated with beach erosion and shoreline recession is considered to be a medium to high risk by the stakeholders for the overall study area. The level of risk present across various LGAs and key hotspots or locations varies considerably (from low to high risk). The stakeholders expect that climate change including sea level rise and also population growth will increase the severity of this issue to a high risk in the future.	**Medium / High**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Beach Erosion and Shoreline Recession	**Current:** The threat of beach erosion and shoreline recession varies from low to high across the three Councils. Overall it is currently considered a medium to high risk overall for the study area. It is acknowledged that the risk varies at different locations depending on the coastal hazard impact and specific amenities and infrastructure situated there. The study area includes approximately 3,050 meters of seawalls with varying types, construction dates and condition located in both Waverley and Randwick Council areas. Woollahra Municipality does not have any sea walls within the geographical range of this plan. **Future:** Climate change, notably sea level rise, is expected to exacerbate beach erosion and shoreline recession risks across the study area, this will result in the risk of increasing too high in the future. Additionally, population growth is likely to add addition pressure to this risk in terms of the consequences as greater numbers of people will be wishing to utilise the coastline and particularly the beaches. Public access will therefore be threatened by these dual threats. **Key Locations** **Woollahra:** As with inundation, the threat of beach erosion and shoreline recession to the Woollahra section of coastline located within the study area is currently considered at low risk overall due to the coastal cliff nature of their coastline. **Waverley:** Overall the Waverley LGA is classed as being at medium to high risk from beach erosion and shoreline recession currently with key locations including: • Bronte considered by stakeholders as an erosion hotspot (beach sand) and currently rated as at medium risk from this threat. • Bondi Beach is rated as having a medium risk from erosion and recession currently due to the high risk to amenity this threat presents. However, it is only of low to medium concern overall. • The Bondi, Bronte and Tamarama Seawalls are considered to be at high risk from beach erosion and shoreline recession currently. • Mackenzies Beach is another location noted as at potential risk. **Randwick:** Overall the Randwick LGA is classed as being at medium to high risk from beach erosion and shoreline recession with key locations including: • Coogee is considered to be at high risk from erosion and recession currently. This is due to local infrastructure damage that has historically already occurred (i.e. to the Promenade, lifeguard office and SLSC gym) • North Maroubra is currently considered at a medium risk. • Maroubra Beach (the middle section) is also considered at a medium risk from erosion and recession, with the Promenade and McKeon Street experiencing sand overtopping which already impacts these areas. • South Maroubra which currently has a medium risk from beach erosion and shoreline recession due to NE swells and the local grading of sand. • Botany (Yarra) Bay frontage including wharf and Boat Shed Café is considered to be at high risk.	**Medium / High**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	Currently, the three Councils have a range of plans, policies and programs in place the help to manage beach erosion and shoreline recession. These include the various Plans of Management for public spaces and planning controls such as the LEP and DCPs. For the most part, the Councils are managing beach erosion using on ground works and capital works (as required). This includes the use of sea walls or brick walls along the back of the beaches, maintaining existing vegetation, reactive works involving beach scraping and sand shaping and other maintenance works. Additionally, site specific technical studies and risk assessments are undertaken for individual projects. Typically, management measures across the Councils in terms of beach erosion and recession are project based or reactive in nature rather than proactive or forward planning focused, as historically beach erosion and recession have not posed a major problem for the Councils within the study area. The existing management arrangements are not considered adequate to manage the existing risk present and are subsequently also considered inadequate to manage the future increased risk presented by beach erosion and shoreline recession. It is expected that additional understanding, resourcing, information and knowledge, and policy is needed as a minimum to manage this risk moving forward.	**Moderate**	**Inadequate**
Suitability of Existing Data	Each of the three Councils have varying information and data currently available to determine the risk from beach erosion and shoreline recession. Woollahra Municipal Council has the Woollahra CZMS (Cardno, 2015) and Waverley Council has the Waverley Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011). Randwick City Council has no existing LGA wide coastal hazard assessments, studies or data that has looked at beach erosion and shoreline recession for the LGA but have to date adequately managed past erosion events through assessments undertaken for individual capital works projects and upgrades to public facilities along the coast. Key knowledge gaps include coastal hazards and processes information (notably Randwick LGA),	**Moderate**	

Issue 9b: Coastal Hazards and Sea Level Rise – *Beach Erosion and Shoreline Recession*		
Recommended Studies		
Study No.	**Description**	**Priority**
9b.1	**Regional coastal processes conceptual model** Develop a regional coastal processes model for the Eastern Beaches sediment compartment. This should involve analysis of data (sediment compartment analysis, waves, water levels, marine lidar, lidar, aerial photography, historical beach behaviour information), a thorough site inspection and geomorphic analysis (which shall also support the coastal cliff and slope assessment), wave transformation modelling (e.g. SWAN) and sediment transport potential analysis (using accepted cross-shore and longshore sediment transport equations). The regional coastal processes conceptual model should define: the sediment transport pathways, sources and sinks, and net longshore and onshore transport rates (if any); the influence of coastal structures on sediment transport and beach state (i.e. natural headlands, reefs, etc and manmade structures such as seawalls); embayment and exposure of the beaches; and critical wave conditions (i.e. what wave direction is of greatest impact to a particular beach).	**High**
9b.2	**Probabilistic analysis of beach erosion and shoreline recession assessment** Modelling simulations should be conducted using probabilistic methods (e.g. Monte Carlo simulations), based upon model input parameters, and considering the NSW Sediment Compartments Framework. Outputs for beach erosion and shoreline recession can be then be used to develop maps of relevant probable erosion extents (e.g. 10th percentile, 50th percentile, 90th percentile, etc). It is recommended for the hazard mapping approach to incorporate (where relevant and possible) the presence of bedrock and other such features that provide a limit to erosion extents. The latest data e.g. sea level rise projections, wave measurements, bathymetry (marine lidar etc), photogrammetry, etc. should be incorporated.	**High**
9b.3	**Management guidelines for sand movement at open coast beaches to maintain amenity and reduce coastal risks.** Development management guidelines for sand movement at open coast beaches to maintain amenity and reduce coastal risks. This to include an overarching strategy, beach scraping approvals, operations and implementation triggers and monitoring procedures and processes.	**High**
9b.4	**Seawall Condition Assessment (first pass and detailed assessment)** Conduct first pass condition assessment (i.e. visual inspection) for existing seawalls and investigation of future maintenance requirements (including for sea level rise). This to include: asset ownership, type of structure, structure condition rating with observation notes, start and end spatial coordinates (handheld GPS), approximate slopes and elevation above water level, photographs – including scale, spatial position and orientation, nature and proximity of infrastructure behind the seawall, safety related observations. Providing recommendations on seawalls (sections) requiring further detailed investigation. Conduct detailed survey, condition audit and risk assessment for existing seawalls rated in first pass condition assessment as fair to very poor. This to include: detailed review of existing engineering drawings (for those available), detailed survey of structures including crest and toe heights, assessment of construction type and materials, fit for purpose geotechnical investigations through appropriate methods which may include excavation, ground penetrating radar and or seismic survey, determination of assets adjacent to wall both above and below ground including access, promenades, recreational and commercial facilities, drainage and other services and undertake a risk assessment to include detailed coastal process hazards to determine replacement or maintenance priorities. Information to be collated and included into maintenance and asset management systems.	**High**

Issue 9c: Coastal Hazards and Sea Level Rise – *Coastal Cliff or Slope Instability*			
Overall Level of Risk *(considering existing management arrangements)*		**HIGH**	
Perception of the Issue		**Current Risk**	**Future Risk**
Stakeholders	The currently risk presented by the coastal hazards associated with coastal cliff or slope instability is considered to be a high risk by the stakeholders for the overall study area. This risk is present across all three LGAs and is considered by the Stakeholders to be likely to increase in severity in the future due to climate change causing increased storm events and erosion and also increased population density and usage and visitation due to population growth. Each of these factors is considered likely to result in increased risk across the study area.	**High**	**High**
Threat	**Description of Current and Future Risk** *(and threats)*	**Current Risk**	**Future Risk**
Coastal Cliff or Slope Instability	**Current:** The threat currently presented by coastal cliff or slope instability is rated as a high risk. The severity of this threat varies depending on location however it is viewed as at least a medium risk threat at most locations across all three LGAs. **Future:** It is anticipated that the risk presented by this threat will increase in severity in the future to an overall risk rating of high. This is due to a number of factors, in summary, instability is likely to get worse with increased frequency of major storm events and associated erosion that occurs, increased pressure on local infrastructure networks (e.g. sewage) and also with increased usage and visitation by the public and that the consequences of cliff and slope failure is often catastrophic. **Key Locations** **Woollahra:** Coastal cliff or slope instability is seen as a medium risk for the Woollahra coastline included as part of the study area. The key hot spot identified is South Head Cliff and Gap Park both of which have a medium risk currently. **Waverley:** Overall the Waverley LGA is classed as being at high risk from coastal cliff or slope instability currently with key locations including: • Ben Buckler currently considered at medium risk • The coastline from Dover Heights to Vaucluse is currently considered at high to very high risk • The Coastal Walk is currently considered at high risk, due to the risk to amenity • Waverley Cemetery is currently considered at high risk **Randwick:** Overall the Randwick LGA is classed as being at medium to high risk from beach erosion and shoreline recession with key locations including: • Clovelly Headland is currently considered at medium risk and was subject to a rock armouring project in 2015 • Lurline Bay, South Coogee is currently considered at high risk (due to the proximity of private property to cliff edges) • The southern side of Gordons Bay is currently considered at high risk (due to private property localities) • Malabar headland, particularly the landfill end of Fisherman's Road, is currently considered at low to medium risk • Little Bay is currently considered at low to medium risk	**High**	**High**
Data and Management		**Current**	**Future**
Adequacy of Existing Management Arrangements	The current management arrangements in place to management coastal cliff or slope instability are centred around legislation and planning controls along with physical works for all three Council LGAs and also NPWS and others who management susceptible locations within the study area. Legislation such as the Local Government Act (e.g. internal risk framework/s), Heritage Act, National Parks and Wildlife Services Act (e.g. safe setbacks, descaling report/policy, fencing prioritisation, signage and website info), Port Authority Act set guidance related to this issue. Other documents such as Plans of Management and site-based assessments also provide direction on appropriate and permissible management activities and risks. Planning controls such as LEPs and DCPs are in place and facility appropriate planning requirements for at risk areas. Each Council LEP contains a Foreshore Building Line clause which applies to properties along the foreshore. These clauses identify an area between the foreshore building line and the mean high water mark (or similar) in which limited forms of development are permitted with consent to minimise buildings and other works adjacent to the foreshore that may impact on natural foreshore processes. Physical works are the key management tool currently used to mitigate instability risks. This includes undertaking detailed design and planning assessments for new capital works being undertaken and having maintenance programs in place to repair damaged assets and infrastructure (e.g. the coastal walk replaced like for like in 2016). Protection works such as piling and reinforcement and armouring of headland areas have been undertaken for instability risks previously. The current management arrangements are considered by the Stakeholders to be moderately effective, however in the future these will be inadequate. As the risk presented by this issue increases additional or stricter controls and monitoring of cliff instability risks will need to be implemented. Key gaps / needs related to coastal cliff or slope instability include ongoing monitoring of cliff stability, potential notation on Planning Certificate (as per Waverly Council), stricter planning controls e.g. pools and improved geotechnical study and investigation requirements.	**Moderate**	**Inadequate**
Suitability of Existing Data	The existing data and information related to coastal cliff or slope instability varies between Council LGAs. As previously outlined, Woollahra Municipal Council has the Woollahra CZMS (Cardno, 2015) and Waverley Council has the Waverley Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011). Both of these studies investigated geotechnical hazards and cliff instability across these areas. Additionally, Woollahra Council has undertaken ad-hoc condition assessments as needed when faults have been reported, typically by residents (noting, BMT have not reviewed these assessments). Randwick City Council does not have an existing whole of LGA assessment on coastal hazards / coastal cliff or slope instability and as such limited information for the Randwick coastline is available. Some site-specific geotechnical assessments / reports have been prepared in association with developments	**Inadequate**	

Issue 9c: Coastal Hazards and Sea Level Rise – *Coastal Cliff or Slope Instability*		
	involving significant earthworks and isolated projects undertaken such as piling stabilisation within Randwick however this information is limited to individual sites. There is an issue that many of these studies are looking at Geotech stability in the 25-year time frame which is inadequate for buildings and assets that will have much longer lifespans.	

Recommended Studies for CMP Stage 2		
Study No.	**Description**	**Priority**
9c.1	**Cliff and slope instability assessment** A geomorphic assessment of cliff stability should be undertaken consistent across the 3 LGAs *(NB, after reviewing existing studies including: Woollahra CZMS (Cardno, 2015), Waverley Coastal Risks and Hazards Vulnerability Study (Worley Parsons, 2011) and previous site specific assessments).* Study area wide assessment based on existing studies, review of literature, lidar and site inspection relating to the geology; coastal cliff/slopes types and failure mechanisms, and assets. The assessment will need to provide a first and second pass screening for cliff and slope stability as it will be used to develop recommendations for areas requiring a detailed geotechnical assessment; and interim planning controls. The study should determine if cliff stability is likely to pose a coastal hazard in the study area at present and in future with sea level rise, and if there are location(s) requiring further detailed assessment to define, map and project the hazard and conduct a risk assessment for public safety (e.g. risk to life) from proximity to cliff edges, rock/land slip etc risk. The site inspection and geomorphic analysis outcomes should also be fed into the regional coastal processes conceptual model and beach erosion and shoreline recession assessments.	**High**

Issue 9d – Coastal Hazards - Coastal Vulnerability Area Mapping		
9d.1	**Coastal Vulnerability Area Mapping** (note, to be undertaken after completion of defined studies Issue 9a-c Coastal Hazards and Sea Level Rise) Mapping of a coastal vulnerability area identifying all applicable coastal hazards (e.g. see definition in the CM Act) and created in accordance with current guidelines. This will be used to support a Planning Proposal at a later stage of CMP preparation (if selected for preparation).	**High**

5 Preliminary Business Case

5.1 Section Overview

This section presents the reasoning for preparing a CMP including the economic, environmental and social basis; governance basis; and evidence and analysis supporting coastal management.

This is followed by an outline of the benefits of preparing a CMP; risks of preparing and not preparing a CMP; and the funding and financing considerations of preparing the CMP.

5.2 Reasoning for Preparing a CMP

A CMP aims to provide a coordinated, strategic and integrated approach to sustaining the coastal zone over both the immediate and medium term with consideration of long-term vision and trends (i.e. 10 year plan, considering hazards to 2100). By providing a consolidated and coordinated management strategy for the Eastern Beaches coastline, a CMP will provide the action plan for maintaining and improving the health of the coast and the environmental, social and economic values underpinned by this.

Reforms to the NSW coastal management legislative and regulatory framework presents a unique opportunity to; build on the existing coastal management work; consider lessons learnt, and: improve the engagement and collaboration with relevant stakeholders / agencies, to prepare a holistic, inclusive CMP for the Eastern Beaches study area.

5.2.1 Economic, Environmental and Social Basis

The Eastern Beaches coastline is an important environmental, cultural, social and economic resource that forms a vital part of the area's regional growth and economy.

The local tourism and hospitality industries here are estimated to generate over $2.33 billion, equivalent to almost 13% of the Eastern Beaches GRP (.idcommunity, 2019b). The Eastern Beaches' tourism industry is driven by several key sites found within the study area, including Bondi Beach, the Bondi to Coogee coastal walk, Icebergs and Botany Bay National Park, and all of which operate year-round. It is therefore evident that the coastal zone has great importance in terms of tourism for the broader Eastern Suburbs and Greater Sydney, as most destinations are found within the coastal zone. Of particular note is Bondi Beach, which has national significance in terms of visitor numbers (see Section 3.8.1).

The natural environment found within the study area is also locally enriched by a long history and ongoing connection of Aboriginal people with this coast, Post-European settlement heritage and a wide variety of passive / active recreational, health and leisure pursuits.

The study area is highly bio-diverse, comprising a variety of environments including open water (inc. marine habitats), cliffs, beaches, rock platforms (intertidal areas), dunes and foreshores, as well as endangered ecological communities, and threatened species. The Australian museum's database has recorded 4,760 marine species occurring within the study area (Australian Museum, 2019).

As such the study area supports many significant and important environmental, economic, sociocultural values and community benefits. These values and benefits are threatened by increasing pressures including coastal hazards, climate change, sea level rise, population and tourism growth and coastal development.

A complete CMP will provide comprehensive strategic vision and action plans, locally contextualised and enabled through a government supported process, for managing the priority issues affecting the Eastern Beaches area.

5.2.2 Governance Basis

The governance of the study area and associated coastal area is complex and multi-layered and includes all levels of government which are responsible for overseeing or delivering, legislation, policy and plans There are 3 LGAs within the CMP area of study, 24 State Government agencies and organisations and 8 Commonwealth Government agencies. (for more information see section 3.5.1 and Appendix C).

Presently there is no single regulatory body or framework to oversee coastal management of the Eastern beaches, its coastal catchments or state marine waters. The 3 councils work together regionally in a number of ways including for catchment wide management with the Sydney Coastal Councils Group (SCCG) and the, Southern Sydney Regional Organisation of Councils (SSROC). There, however, remains some jurisdictional ambiguity, fragmented management responsibility, and action throughout the study area. As a result, coastal management initiatives undertaken to date have been primarily in response to localised plans and initiatives, as opposed to a more regional coordinated approach.

The legal status of CMPs given under section 23 of the CM Act, states “other public authorities to have regard to coastal management program and coastal management manual”. S23 serves as a key driver to improve collaboration between and ownership by local and state agencies for coastal management.

The NSW Government has given a significant funding boost to both coastal management and marine estate management, by committing $87 million to the NSW Coastal Management Program, and some moneys via the implementation of the MEM Strategy over the next 2-5 years for such activities including capacity building in applying the risk-based framework. These funds are available to councils and organisations such as the CRA to prepare a CMP, and furthermore, to implement actions within a certified CMP.

5.2.3 Evidence and Analysis Supporting Coastal Management

One of the key issues impeding effective coastal management is not having the appropriate information and data available for analysis in order to make well-informed decisions. The CMP process provides an excellent framework and opportunity for any relevant data and information gaps to be identified and filled to ensure an adequate understanding of the environment, social, cultural, economic and governance context of a study area. For example, the extent and level of coastal hazards, the ongoing changes in community and tourism use and the changing economic activity and trends at the local and regional scale.

A detailed risk assessment and fit-for-purpose cost benefit analysis to guide the selection of management options is a key requirement when preparing a CMP. Thus, the CMP process provides a mechanism for developing effective management of short-term risks, and for developing adaptation pathways for long term risks, such as shoreline recession and tidal inundation from sea level rise; or effective planning schemes to manage the expected population and tourism pressures that threaten coastal and marine health.

The CMP process allows for the continuing development of information and knowledge to fulfil its needs but also utilises and builds upon the existing body of information and knowledge of local processes, values and issues that has been developed in the past.

5.3 Benefits of Preparing a CMP

Managing uncertainty and making informed coastal management decisions

- coastal management decision making typically involves uncertainty and complexity due to the numerous coastal processes at play and the extensive number of future scenarios and pressures. Added complexity is

introduced due to the large number of possible management and mitigation options available and the complexity of governance arrangement and responsibilities. With a CMP in place, decision makers have a well-considered and proper understanding of the risks and opportunities within the study area and the consequences of specific courses of action. Accurate and detailed information about risk and consequence is necessary to assist decision makers generate effective management strategies which identify and prioritise future actions and investment or justify a business-as-usual approach.

- a CMP provides a mechanism to develop and deliver action to mitigate the threats to the study area's community values, ecological values and economic benefits and deliver a long-term, risk based strategy to manage coastal hazards, climate change and other risks likely to manifest over the next 100 years.

Legislative Support

- NSW legislation, particularly the CM Act, the MEM Act provide legislative weight and legitimacy for Councils to prepare CMPs. The legislation backed by the NSW Coastal and Estuary Grants Program and the MEM Strategy which are both well-funded, providing further incentive to develop a CMP.
- further legal weight for preparing a CMP is given through S733 of the Local Government Act, where public authorities are exempted from liability where decisions are made substantially in accordance with the Coastal Management Manual.

Improved capacity to address strategic and sediment compartment wide issues

- collaboration between Councils and public authorities within the same sediment compartment (as directed via s16, CM Act, 2016) and collaboration and partnership with state agencies and public authorities (as directed via s23, CM Act, 2016) the preparation and implementation of the CMP, will assist drive and facilitate commitments to contribute towards the necessary studies and implementation of management actions as agreed within the final CMP. This should result in benefits that contribute to improved environmental, economic and social outcomes through strategically addressing regional issues and interests such as:
  - Resilience generated by improved networks and relationships;
  - Improved knowledge and capacity building;
  - Improved access to skills, expertise, experience and specialist services;
  - Adequate consideration and agreed approaches to cross-boundary issues;
  - Improved communication, advocacy and promotion; and
  - financial efficiency and enhanced economics of scale for policy and management action.
- **Clear and strategic value proposition for achieving a shared vision of the coast** – Economic and financial efficiencies across council boundary CMP promotes consistency in management effort and approach between the councils, state agencies and other stakeholders and should result in cost and resources savings compared with LGA-based individual CMPs. A robust CMP that has been developed in collaboration with the community, relevant government agencies and stakeholders will support the necessary partnerships to better align all stakeholders' priorities and investments, thus allowing for collaborative seeking and raising additional funding to achieve identified strategic objectives. An integrated partnership focused CMP will build upon past studies, information and management initiatives, rather than replace them.

- **Engagement with various land owners and coastal managers** – the preparation of the CMP represents a significant strategic opportunity to improve engagement with the various land owners, coastal managers, stakeholders and communities within the study area. The CMP provides the opportunity to establish their commitment and partnership to contribute towards the necessary studies and implementation of management actions as agreed within the final CMP.

5.4 Risks of Not Preparing and Preparing the CMP

5.4.1 Key Risks of Not Preparing the CMP

There are a number of key risks that arise from not preparing a CMP, these include:

- **Liability exposure for coastal risks and management** – Section 733 of the *Local Government Act 1993* provides an exemption from liability for public authorities for coastal risks where they have identified and made publicly available coastal risk information using the specified guidelines, namely the Manual. By not pursing a CMP, Councils in the study area increase their exposure to liability for decisions made or not made relating to coastal risk. This inherently includes climate change related risks (especially sea level rise), as climate change related hazards are a core component of the CM Act and the Manual's requirements for CMPs.
- **Risk to coastal values and associated cost implications** – By not pursuing a CMP for the study area, key coastal values of the Eastern are placed at risk from threats and coastal hazards. Pressures on coastal values are expected to increase due to climate change, population growth, coastal development, tourism and recreation. As such, it is likely that in the long term this will have cost implications for council trying to manage these issues and diminishing values.
- **Coastal management funding limitations** – Actions in a CMP are eligible grant funding (if successful) through the NSW Government Coastal and Estuary Grants Program. Not preparing a CMP will limit Council(s) from applying for and thus obtaining funds from this program and this is likely to significantly limit Councils ability to implement the defined coastal management actions.
- **Opportunity cost** – Failing to develop a long-term strategic plan could result in a long-term missed opportunity cost, i.e. the opportunity to reduce future risks and associated financial costs through planning for future outcomes is diminished or lost. The preparation of a CMP provides an excellent mechanism for assessing these risks, and developing actions relating to strategic land use planning and development controls.
- **Adaptation cost** – Substantial costs are expected for failing to prepare a CMP with thorough consideration and assessment of coastal and climate change adaptation options. According to the Australian Business Roundtable for Disaster Resilience and Safer Communities (November 2017) current insurance and damage costs of natural disasters in Australia is $9B per year, while in NSW over the past decade these costs have averaged $3.2B per year, with storms accounting for 49% of this cost and flooding 23%. Climate change is projected to increase the frequency and severity of climate-related natural disasters. It is predicted that annual costs of natural disasters in Australia will be $33B by 2050 with the total economic cost of natural disasters in NSW predicted to reach $10.6B per year by 2050, a growth rate of 3.4% per year. A CMP provides a mechanism to assess the risks to existing assets (natural and built) from coastal and climate related hazards and provide a subset of adaptation outcomes. The

CMP should serve as a basis for suitable, practical and most affordable actions to manage the risks to existing assets, and a pathway for when and how such actions shall be implemented over the short to long term. Stage 3 of preparing a CMP enables potential actions to be subject to detailed cost benefit analysis, such that the economic cost savings from avoided damages to natural and built assets can be estimated.

5.4.2 Key Risks of Preparing a CMP

There are a number of key risks that arise from preparing a CMP, these include:

- **Community and stakeholder expectations** – The community and stakeholder engagement and consultation to support preparation of the CMP is likely to create (or exacerbate) expectations in the community for implementation of actions for coastal management. An inherent risk lays thereafter if the CMP process then fails to deliver the actions, or if these actions do not achieve the vision and objectives of the CMP.
- **Councils' accountability and obligations for implementing the CMP** – As the leading entity preparing and driving the CMP process, once gazetted Councils are accountability and implementation obligations, which include:

  Under Division 4 section 22 of the Coastal Management Act:

  (1) A local council is to give effect to its coastal management program and, in doing so, is to have regard to the objects of this Act.

  (2) In particular, without limiting subsection (1), a local council is to give effect to its coastal management program in:

  (c) the preparation, development and review of, and the contents of, the plans, strategies, programs and reports to which Part 2 of Chapter 13 of the Local Government Act 1993 applies, and

  (d) the preparation of planning proposals and development control plans under the Environmental Planning and Assessment Act 1979.

  Also, Part 5 Miscellaneous (Section 30), the Minister to report failures to comply with directions to Local Government Minister also has implications for councils in regards to implementing a CMP; in that

  (1) The Minister administering this (the CM) Act may:

  (a) report any failure by a local council to comply with a direction under section 13 (1) or 14 (2) to the Minister administering the Local Government Act 1993, and

  (b) cause a copy of the report to be published on the website of the Department.

  (2) The Minister administering the Local Government Act 1993 may consider any such report in determining whether to take action in relation to the local council, including, but not limited to, action under Part 6 (Performance management) or Part 7 (Temporary suspension of council) of Chapter 13 of that Act.

- **Conflict with other resource commitments and demands of Councils and agencies** – Preparing a CMP may result in conflict within Council and contributing agencies, in terms of competing need for scarce resources (including but not limited to funding and staff). However, the CMP preparation process should be thorough, so any potential conflicts are identified, and controls are implemented to mitigate associated risks.

5.5 Funding and Financing Considerations of Preparing the CMP

5.5.1 Estimated Cost of Preparing the CMP

The total cost of preparing the Eastern Beaches CMP is estimated at between $1,350,000 and 1,975,000. The total cost estimated for projects that involve Eastern Beaches Councils is estimated to be between $1,190,000 and $1,745,000. To undertake High Priority studies / components only estimated costs between $920,000 and $1,380,000 and projects involving Councils costs of between $835,000 and $1,265,000.

NB Projects involving Councils are likely to be supported by grant funding including the NSW Coastal Program (2:1) and other sources including contributions by participating public authorities (See Section 5.5.3)

The range provides for uncertainty around the final defined scope and application of defined studies. These costs do not include internal council staff costs including a potential future consideration to engage a dedicated CMP project manager to facilitate the development and implementation of the Eastern Beaches CMP.

5.5.2 Funding Opportunities

The NSW state government is committed to managing the coastal environment and marine estate of NSW. Major reforms have taken place and associated government funding has been allocated for coastal management ($84M package) and managing the marine estate (an initial $46M package). These funding packages should be available to support preparation of CMPs, and further studies that support the management of the marine estate.

Waverley Council (in partnership with Randwick and Woollahra Councils) received grant funding under the NSW Government Coast and Estuary Management Program in 2018-19 in order to prepare the Eastern Beaches CMP Scoping Study, with the grant funds being matched by the Councils.

There are other grant programs that may be suitable for funding further studies associated with preparing the CMP. Many of these programs, such as the NSW Environmental Trust, also be available to fund implementation of actions specified in a CMP at Stage 5 when the CMP is being implemented. Funding contributions may also be available through partnerships, aligned groups and individuals. Supporting in-kind resources may also be available via community participation and input from other interests particularly research institutions and universities.

5.5.3 Cost Sharing Arrangements

Responsibilities, collaboration and cost sharing arrangements will need to be determined with all project partners for the finalise preparation of the CMP including studies identified for Stage 2 as well as ongoing support for CMP implementation (Stage 5).

A gazetted CMP provides enhanced opportunities for collaboration and partnership with Councils, state agencies and public authorities. Via the CM Act, 2016 the preparation and implementation of the CMP will be able to assist drive and facilitate commitments to contribute towards the necessary studies and implementation of management actions as agreed within the final CMP via fairly proportioned contributions depending on land ownership and management.

Under recently announced amendments for funding allocations for the NSW Coastal Management Program *(Minister Hancock press release 7 April 2020),* Councils are eligible to apply for 2:1 funding (state $2 for every $1 for councils) to prepare the CMP under the NSW Coastal and Estuary Grants Program competitive grant program and should budget for this accordingly.

The Councils and agencies may also be eligible for funding support via the marine estate management funding to undertake studies recommended for preparing the CMP, where the study aligns with or supports the 7 management initiatives as defined with the NSW Marine Estate Management Strategy (e.g. implementing the risk-based framework for waterway health by OEH and EPA, 2018).

Much of the MEMA funding is expected to flow to DPIE – EES in urban areas and LLS and DPI Fisheries in rural areas to implement the strategies. There are some studies specified in the Forward Plan that Councils may seek joint responsibility and funding assistance from DPIE – EES through MEMA to implement. For example, the MEMA Strategy lists Water Quality improvement as the #1 priority, and so water quality studies in Stages 2 and 3 (and presumably CMP actions in future) may be eligible for funding assistance or technical support, especially where they are based upon the waterway health framework (OEH and EPA, 2018).

6 Forward Plan

6.1 Section Overview

As stated in the Manual and as outlined in Section 1.2, preparation of the CMP is to be completed following a staged process (illustrated in Figure 1-3). The subsequent stages in this process after this Stage 1 Scoping Study are:

- *Stage 2 – Determine risks, vulnerabilities and opportunities* (through further detailed studies);
- *Stage 3 – Identify and evaluate options* (through risk assessment and cost, benefit analysis);
- *Stage 4 – Prepare, exhibit, finalise, certify and adopt a CMP* (leading to implementation); and
- *Stage 5 – Implement, monitor, evaluate and report* (feedback to the cycle).

This section provides:

- CMP implementation obligations for the Councils and public authorities;
- A summary of the requirements, process and expected outcomes for Stages 2 to 4 outlined from the Manual (Part B);
- A section with considerations, analysis of options and recommendations related to governance of the CMP project going forward; and
- A summary of the recommended studies, investigations and assessments proposed forming the forward program, as an outcome of this Stage 1 Scoping Study.

The section summarises with details of the way forward for Council through the CMP.

6.2 CMP Implementation Obligations for Councils and Public Authorities

Obligations for Councils and public authorities for implementation of the CMP are defined with Division 4 (22 and 23) of the Coastal Management Act, 2016:

- **Councils**

(22). Implementation of coastal management program by local councils

(1) A local council is to give effect to its coastal management program and, in doing so, is to have regard to the objects of this Act.

(2) In particular, without limiting subsection (1), a local council is to give effect to its coastal management program in:

(a) the preparation, development and review of, and the contents of, the plans, strategies, programs and reports to which Part 2 of Chapter 13 of the Local Government Act 1993 applies, and

(b) the preparation of planning proposals and development control plans under the Environmental Planning and Assessment Act 1979.

- **Public Authorities**

(23). Other public authorities to have regard to coastal management program and coastal management manual

(1) Public authorities (other than local councils) are to have regard to coastal management programs to the extent that those programs are relevant to the exercise of their functions.

(2) In particular, those public authorities are to have regard to relevant coastal management programs and the coastal management manual in the preparation, development and review of, and the contents of, any plans of management that those public authorities are required to produce and, in doing so, are to have regard to the objects of this Act.

6.3 CMP Stages 2 to 4 Key Requirements – from the Manual

6.3.1 Stage 2 – Determine risks, vulnerabilities and opportunities *(through further detailed studies)*

Stage 2 of the CMP process involves undertaking detailed studies that will assist Council in identifying, analysing and evaluating risks, vulnerabilities and opportunities in the study area. The studies conducted during Stage 2 are to provide information to support decision-making in the subsequent stages of the CMP planning process.

In summary, the Coastal Management Manual identifies Stage 2 as including the following:

- Engaging with the community and stakeholders;
- Refining understanding of key management issues;
- Identifying areas exposed to coastal hazards and threats to coastal values;
- Analysing and evaluating current and future risks (detailed risk assessment);
- Identifying scenarios for social and economic change and related opportunities for coastal communities;
- Preparing a planning proposal to amend maps of coastal management areas, to commence the Gateway process; and
- Identifying timing and priorities for responses, thresholds and lead times.

6.3.2 Stage 3 – Identify and evaluate options *(through risk assessment and cost, benefit analysis)*

Stage 3 of the CMP process requires Council to identify and evaluate possible management options in order to select preferred coastal management actions to address the issues identified as affecting the CMP study area. The aim of Stage 3 is to develop strategies and actions that reduce exposure to coastal hazards, address coastal management issues and take advantage of opportunities.

In summary, the Coastal Management Manual identifies Stage 3 as including the following:

- Identifying and collating information on management options;
- Evaluating management actions, considering:
  - Feasibility (is it an effective and sustainable way to treat the risks?);
  - Viability (economic assessment);
  - Acceptability to stakeholders;
- Engaging public authorities about implications for their assets and responsibilities;
- Evaluating mapping options and implications if a planning proposal is being prepared;
- Identifying pathways and timing of actions; and
- Preparing a business plan for implementation.

6.3.3 Stage 4 – Prepare, exhibit, finalise, certify and adopt a CMP *(leading to implementation)*

Stage 4 of the CMP process involves a draft coastal management program being prepared, exhibited and then submitted to the Minister for certification. It is a mandatory requirement of the Coastal Management Manual that a draft CMP be exhibited for a period of at least 28 calendar days. It is also a requirement under Section 16 of the CM Act that consultation is carried out during the preparation of the draft CMP.

Once the CMP is certified by the Minister, Council must publish it in the Gazette. The CMP takes effect on the date on which it is published in the Gazette (or on a later date if specified in the CMP).

6.3.4 Stage 5 – Implement, monitor, evaluate and report (feedback to the cycle).

Stage 5 of the process is CMP implementation over the 10 year program

In summary, the Coastal Management Manual identifies Stage 5 as including the following:

- implementing actions in the published coastal management program (CMP) through the Integrated Planning and Reporting (IP&R) framework and land use planning system
- implementing actions in partnership with adjoining councils and public authorities where relevant
- implementing an effective monitoring, evaluation and reporting (MER) program
- monitoring indicators, trigger points and thresholds
- amending, reviewing and updating the CMP
- reporting to stakeholders and the community on progress and outcomes through the IP&R framework.

6.4 CMP Project Governance Considerations

This section informs the governance arrangements for the preparation and delivery of the CMP. It reviews and provides recommendations for CMP Governance, Roles and Responsibilities.

6.4.1 CMP Structure and Project Governance

The NSW Coastal Management Framework provides flexibility around the scope, structure and governance arrangements of a CMP.

A CMP provides a unique opportunity for Councils, state government agencies and their communities to achieve a strategic and coordinated approach to manage coastal risks and improve coastal habitats and environments, for both environmental and social (community) benefit within the Eastern Beaches area.

Councils will manage the CMP development, implementation and reporting process(es). This includes the preparation, development and review of, and the contents of, the plans, strategies, programs and reports to which Part 2 of Chapter 13 of the *Local Government Act* 1993 applies, and the preparation of planning proposals (if required) and development control plans under the *Environmental Planning and Assessment Act* 1979.

Potential governance and management arrangements for the CMP are outline below in table 6-1.

Table 6-1 Proposed CMP Governance and Management Arrangements

Entity	Role and Responsibility
Eastern Beaches Councils (Woollahra / Waverley / Randwick)	Lead agency, coordination, preparation and implementation of the CMP
State Agencies • DPIE (EES) • DPIE (Crown Land) • DPIE (NPWS) • DPI (Fisheries) • Sydney Water • NSW EPA • Port Authority NSW • Transport for NSW • Greater Sydney LLS • Others as appropriate	Written agreement to CMP Actions for which they are responsible (as a primary or supporting organisation).
Coastal Advisory Committee • Key Council staff • Representative Council Councillors • Relevant state agencies • Relevant regional bodies	Non-statutory committee to assist in facilitating local community and stakeholder involvement and oversight of the CMP planning and implementation process. Noting, advisory only, potentially a committee of council under Section 355 of the *Local Government Act 1993*)
Community	To be engaged with throughout the CMP to ensure community buy-in and ownership in the process.

6.5 The Way Forward: CMP Stages 2 to 4 Recommended Studies, Investigations and Assessments – Indicative Cost and Timeline

The recommended studies, investigations and assessments for Stages 2 to 4 of the CMP are listed in Table 6-2 as derived from the first-pass risk assessment, review of current management arrangements and data and information review. Readers are referred to sections 4.5 and 4.6 for detailed descriptions of the studies.

Table 6-2 provides priority, timeframe (Figure 6-1), indicative costs as well as recommendations of responsibilities and partnerships for those actions (in order of responsibility and investment). Figure 6-1 defines the categories used for the timeframe component of the Forward Plan (Table 6-2).

Note, cost estimates are based on available information, past experience, and expert judgement. A range of cost (low – high) is provided to account for uncertainty regarding application and level of detail required to provide sufficient detail of management action purposes (i.e. fit for purpose).

More detailed cost assessments would be required prior to progression of specific study contracts when specific management questions are defined, and refined definition of study deliverables is determined through a more detailed understating of knowledge state from past investigation.

Immediate	Carried out within 1-2 years
Medium	Carried out within 2-3 years
Future	Carried out within 3-4+ years
Ongoing	Continuing work over the life of this CMP

Figure 6-1 Timeframe categories used for implementation the Eastern Beaches Scoping Study Forward Plan

Table 6-2 Forward Plan, Indicative Costs, Timeline and Responsibility for Preparation of the CMP

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
	Stages 2 to 4: CMP Project management and implementation of engagement strategy					
	CMP project management					
1.01	*1.0 EFT for Project Manager to facilitate development of CMP including management and engagement of consultant(s), Coastal Advisory Group, project promotion and community consultation*	*High*	*Per annum*	*$80,000*	*$120,000*	*Council, ESS, SCCG*
	Community and stakeholder engagement strategy					
1.02	*Ongoing internal and external engagement activities including surveys, fact sheets, information sessions, workshops, presentations, meetings and so on.*	*High*	*Per annum*	*$15,000*	*$25,000*	*Councils*
	CMP Project management and engagement strategy implementation	***Sub-total***	***Per annum***	***$95,000***	***$145,000***	
	Stage 2: Risks, Vulnerabilities and Opportunities					
I1	**Impacts of Catchment Activities, Runoff and Discharges**					
1.1	**Integrated Eastern Beaches - catchment water quality modelling and recommendations analysis**	High	Medium	$70,000	$90,000	Councils, ESS, EPA, Sydney Water, NPWS
1.2	**Review of groundwater resources and impacts**	Low	Medium	$30,000	$40,000	Office of Water, Councils, ESS
1.3	**Review of Eastern Beaches Water Quality Sanitary Inspection Categories**	Low	Medium	$20,000	$30,000	Councils, DPIE (Beachwatch)
1.4	**Coastal Catchment health monitoring, reporting and improvement Strategy**	Low	Medium	$30,000	$40,000	Councils, ESS, EPA, Sydney Water, NPWS
1.5	**Stormwater outlets, sewer overflow and industrial discharges audit**	Low	Medium	$30,000	$50,000	Sydney Water, EPA, ESS
I2	**Biodiversity and Habitat**					

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
2.1	**Studies into biodiversity of intertidal and fringing habitats**	High	Immediate	$40,000	$50,000	DPI – Fisheries
2.2	**Site specific condition assessment, resilience and threat assessment for *coastal wetlands and littoral rainforest area* (CWLRA)**	Medium	Medium	$10,000	$15,000	Councils, ESS NPWS
2.3	**Riparian Corridor Classification and Condition Assessment**	Medium	Medium	$30,000	$40,000	Councils, ESS DPIE – Planning, NPWS, Crown Lands
2.4	**Studies of non-indigenous species**	Low	Medium	$20,000	$30,000	Councils, ESS NPWS
	Recommended Management Actions (only)	**Priority**	**Timing**	**Cost (Low)**	**Cost (High)**	**Responsible**
2.a	***Aquatic Reserve, Intertidal Protected areas and Critical habitat management*** *(Inc Aquatic Reserves Network Management Plans)*	*High*	*Ongoing*			*DPI – Fisheries*
2.b	***Connected Corridors for Biodiversity (with SSROC)***	*High*	*Ongoing*			*Councils, SSROC, SCCG, DPIE, ESS / Planning, NPWS*
2.c	***Community Education and Engagement and Backyard Habitat Programs***	*Low*	*Future*			*Councils, ESS*
I3	**Impacts from Coastal Developments** (no specific studies identified)					
I4	**Resource Use, Recreation and Access Availability**					
4.1	**Assess and maintaining future coastal access of the Eastern Beaches**	Medium	Medium	$30,000	$40,000	Councils, ESS DPIE – Planning, NPWS
4.2	**Recreational fishing surveys and investigations**	Low	Medium	$20,000	$30,000	DPI – Fisheries
4.3	**Eastern Beaches demand analysis**	Low	Medium	$30,000	$40,000	Councils, DPIE – Planning, ESS, NPWS, Destination

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
						NSW Crown Lands,
I5	**Public Safety**					
5.1	**Cliff Slip and Suicide Risk**	Medium	Medium	$40,000	$50,000	Councils, DPIE – Planning, NPWS, Crown Lands, Police, Mental Health Commission of NSW
5.2	**Rock Fishing**	Low	Medium	$10,000	$20,000	Councils, DPI – Fisheries
5.3	**Marine Wildlife Interaction and Management**	Low	Medium	$15,000	$20,000	DPI – Fisheries, NPWS
5.4	**NSW Shark Meshing (Bather Protection) Program**	Low	Medium	$80,000	$90,000	Councils, DPI – Fisheries
I6	**Aboriginal and Cultural Heritage**					
6.1	**Review of Aboriginal and heritage values, sites register and documentation**	High	Medium	$20,000	$30,000	Councils, ESS, NPWS, Crown Lands,
6.2	**Aboriginal Cultural Outreach and Economic Development**	High	Medium	$15,000	$25,000	Councils, LPLC, DPC,
6.3	**Aboriginal and heritage sites vulnerability assessment**	Medium	Medium	$10,000	$15,000	Councils, ESS, NPWS, Crown Lands
I7	**Impacts from Commercial and Industrial Activities**					
7.1	**Fuel / Oil spill risk assessment and review emergency plans**	High	Medium	$30,000	$40,000	EPA, Transport NSW, Fire and Rescue NSW, DPI

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
7.2	**Dredging and Harbour Maintenance**	High	Medium	$15,000	$25,000	ESS, Transport NSW, DPI, EPA, Crown Lands
7.3	**Economic, Environmental and Heritage Impact assessment of proposed cruise terminal at Yarra Bay**	High	Immediate	$80,000	$100,000	Councils
7.4	**Review commercial vessels information**	Medium	Medium	$10,000	$15,000	Transport NSW, DPI
I8	**Engagement, Governance and Compliance**					
8.1	**CMP Governance and Management Arrangements**	High	Immediate	$10,000	$20,000	Councils, State agencies (as listed)
8.2	**Detailed mapping of ownership and management responsibility of coastal areas (including in State waters)**	High	Immediate	$10,000	$20,000	Councils, DPIE – Planning, Crown Lands, NPWS, DPI – Fisheries
8.3	**Regulations compliance auditing and strategy**	Medium	Medium	$15,000	$30,000	Council, Crown lands, EPA, DPI Fisheries, Sydney Water, ESS
I9a	**Coastal Hazards and Sea Level Rise – Coastal and Tidal Inundation**					
9a.1	**Coastal and tidal inundation hazard assessments**	High	Immediate	$50,000	$70,000	Councils, ESS, , DPIE – Planning, Crown Lands
9a.2	**Flood, coastal and tidal inundation damages and risk assessment**	High	Immediate	$20,000	$30,000	Councils, ESS, DPIE – Planning, Crown Lands

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
I9b	**Coastal Hazards and Sea Level Rise – Beach Erosion and Shoreline Recession**					
9b.1	**Regional coastal processes conceptual model**	High	Immediate	$20,000	$30,000	Councils, ESS
9b.2	**Probabilistic analysis of beach erosion and shoreline recession assessment**	High	Immediate	$30,000	$40,000	Councils, ESS,
9b.3	**Management guidelines for sand movement at open coast beaches to maintain amenity and reduce coastal risks.**	High	Immediate	$10,000	$20,000	Councils, ESS
9b.4	**Seawalls Condition Assessment** (first and second pass)	High	Immediate	$30,000	$100,000	Councils, ESS, Crown Lands
9c	**Coastal Hazards and Sea Level Rise – Coastal Cliff or Slope Instability**					
9c.1	**Cliff and slope instability assessment**	High	Immediate	$70,000	$100,000	Councils, ESS, NPWS, Crown Lands
9d	**Coastal Hazards - Coastal Vulnerability Area Mapping**					
9d.1	**Coastal Vulnerability Area Mapping**	High	Medium	$5,000	$10,000	Councils, DPIE – Planning. EES
	Stage 2	***Sub-total***	***Years 1-3***	***$955,000***	***$1,395,000***	
	Stage 2 (Projects involving Councils)			***$795,000***	***$1,165,000***	
	Stage 3: Identify and Evaluate Options					
3.01	Full-Scale Risk Assessment (*optionally to be completed in Stage 2*)	High	Medium	$35,000	$55,000	Councils, State Agencies, Utilities, Stakeholders
3.02	Identify and Evaluate Potential Management Options: • tier 1 – identify potential management options • tier 2 – multi-criteria analysis (MCA) of options	High	Medium	$250,000	$350,000	Councils, EES, State Agencies,

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
	• tier 3 – cost benefit analysis (CBA) of options					Utilities, Stakeholders
3.03	Prepare a Coastal zone emergency action subplan	High	Medium	$10,000	$15,000	Councils, EES, Crown lands, NPWS
3.04	Prepare Planning Proposal (*optionally to be completed in Stage 4*)	High	Medium	$15,000	$25,000	Councils and DPIE – Planning.
	Stage 3	***Sub-total***	***Years 2-3***	***$310,000***	***$445,000***	
	Stage 4: Prepare, Exhibit, Finalise, Certify and Adopt the Coastal Management Program					
4.01	Prepare CMP document, including: • executive summary • introduction • a snapshot of issues • actions to be implemented by the local council • actions to be undertaken by public authorities • a business plan • a coastal zone emergency action subplan • mapping • reference list • supporting documentation	High	Medium	$40,000	$60,000	Councils, State Agencies
4.02	Business Plan for CMP Implementation	High	Medium	$20,000	$30,000	Councils, EES and Key Stakeholders
4.03	Community and Stakeholder Engagement and input to Draft CMP	High	Medium	$10,000	$15,000	Councils
4.04	Public Exhibition of CMP	High	Medium	$5,000	$10,000	Councils, EES, State Agencies
4.05	Planning Proposal Exhibition and Amendment *(optionally to be completed in Stage 5)*	High	Medium	$5,000	$10,000	Councils, DPIE – Planning

Forward Plan

Item	Recommended Studies / Components	Priority	Timing	Cost (Low)	Cost (High)	Responsible
4.06	Finalising the CMP	High	Medium	$5,000	$10,000	Councils, State Agencies
	Stage 4	***Sub-total***	***Years 3-4***	***$85,000***	***$135,000***	
	CMP Planning and Preparation Cost *(excluding cost of Project Manager)*	**Total**	**3-4 years**	**$1,350,000**	**$1,975,000**	
	CMP Planning and Preparation Cost (Projects involving Councils)	*Total*	*3-4 years*	*$1,190,000*	*$ 1,745,000*	
	High Priority Studies/ Components only *(excluding cost of Project Manager)*	**Total**	**3-4 years**	**$920,000**	**$1,380,000**	
	High Priority Studies/ Components only *(Projects involving Councils - excluding cost of Project Manager)*	Total	3-4 years	$835,000	$1,380,000	
	* Not including project management costs	Total	Per annum	$95,000	$145,000	

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Appendix A Eastern Beaches CMP Stakeholder and Community Engagement Strategy

A.1 Introduction

A.1.1 Project Context

Waverley, Randwick and Woollahra Councils are preparing a Coastal Management Program (CMP) for Sydney's eastern beaches

This Community and Stakeholder Engagement Strategy ('Engagement Strategy') establishes a framework and sets the strategic direction for how communication and engagement will be undertaken with internal and external stakeholders, including the community, throughout development of the Kiama Coastline CMP through Stages 1 to 4. as outlined in Figure A-1.

The Strategy has been prepared in accordance with the Coastal Management Act 2016 (the CM Act) and associated Coastal Management Manual (DPIE, 2018) ('The Manual'), and the Guidelines for Community and Stakeholder Engagement in Coastal Management.

The CM Act requires councils to consult with the community and stakeholders throughout the preparation of and before adopting a CMP. Part A of the Manual includes mandatory requirements relating to community and stakeholder engagement processes. The mandatory requirements specify that a draft CMP must be exhibited for public inspection for no less than 28 calendar days before it is adopted.

This Strategy is focussed on the development of the CMP, and is expected to be revised once the CMP is certified, to support implementation of the CMP in Stage 5.

Effective and ongoing engagement with stakeholders and the community substantially supports the success of the CMP to be completed, funded and implemented. Therefore, it is essential that the engagement strategy is meaningfully resourced.

This document establishes a framework and sets the strategic direction for how communication and engagement will be undertaken with internal and external stakeholders, including the community, throughout development of the Eastern Beaches CMP. This Engagement Strategy is focussed on the development of the CMP (Stage 1 to 4) and will need to be revised once the CMP is certified and implemented. Effective, ongoing and meaningfully resources engagement is needed to ensure the success of the CMP.

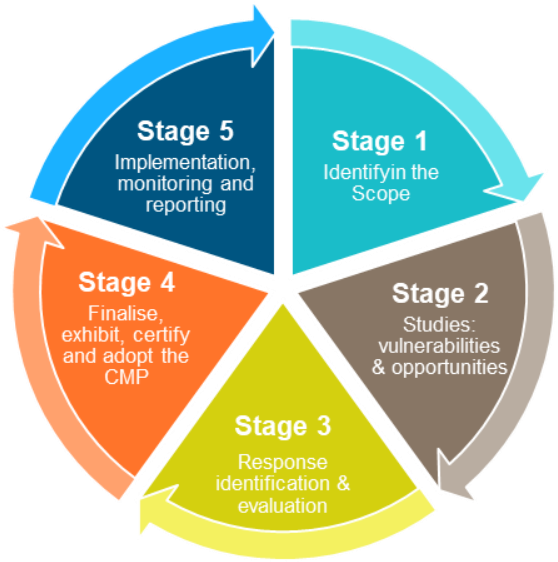

Figure A-1 Five Stage Process for Preparing a Coastal Management Program

A.2 Principles of Engagement

The engagement framework for the Strategy is based on leading practice, including consideration of the International Association for Public Participation (IAP2), in particular the IAP2 engagement spectrum as outlined below and shown in Figure A-2. A range of engagement activities are provided, that can be applied in a fit for purpose manner.

- Inform (Stakeholders are informed about the project and process)
- Consult (Engaged and feeding advice and information into the project)
- Involve (Two-way engagement and joint learning)
- Collaborate (Two-way engagement; joint learning, decision-making and actions)
- Empower (To place final decision-making in the hands of the public).

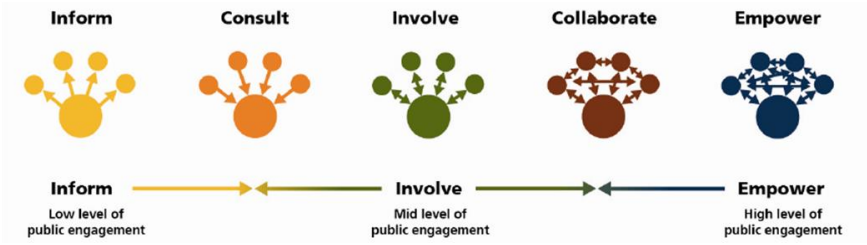

Figure A-2 IAP2's Public Participation Spectrum

The IAP2 has a set of core values which should be considered when designing a coastal engagement strategy.

A.2.1 Engagement purpose, objectives and requirements

The overarching purposes of this Engagement Strategy is to:

- Highlight the need for Eastern Beaches CMP and how it adds value to what has been done and what will be done by individual councils and State agencies;
- Assist CMP managers and other council staff to gain internal buy-in for undertaking a CMP;
- De-risk the CMP process by bringing stakeholders and community on board;
- Provide an overarching engagement approach that is adaptive and flexible, and can be modified/refined throughout the remaining CMP stages; and
- Facilitate meaningful exchange of information.

In addition, the specific aim of this Engagement Strategy is to:

- Outline who, how, what and when of engagement within the CMP planning and implementation process, underpinned by (IAP2) engagement spectrum.

A.3 Project Stakeholders and Communities

Key stakeholder and community groups that should be engagement with and afforded the opportunity to provide input into the development of the Eastern Beaches CMP include the following:

- Participating Councils;
- Surrounding councils (including Cooks River and Sydney Harbour catchment councils ie those within the Botany Bay – Port Hacking and the Sydney Harbour sediment compartments);
- Regional Organisations of Councils

- NSW government agencies / authorities;
- Federal Agencies
- Business and industry;
- Research and education;
- Aboriginal organisations;
- Community organisations, interest and user groups; and
- Catchment communities.

A breakdown of the stakeholder and community groups are provided in Table A 1, with suggested level of engagement as outlined in IAP2 for each outlined in Table A-1.

Table A-1 Key Stakeholders

Interested Sectors	Key Stakeholder / Organisation	
Eastern Beaches CMP Councils	• Waverley Council • Randwick Council • Woollahra Council	
Internal Council Stakeholders	• Councillors • Executive management team • Council departments: - Governance and Finance	- Planning and development - Assets and infrastructure - Natural resource management and Heritage - Community services
Surrounding Councils	Those Councils within the 'Botany Bay – Port Hacking' and the 'Sydney Harbour' sediment compartments;	
Regional Councils Groups	• Sydney Coastal Councils Group • Southern Sydney Regional Organisation of Councils	• Cooks River Alliance • Georges River Combined Councils • Parramatta River Catchment Group
State Government Agencies / Organisations	• Department of Planning, Industry and Environment • Department of Primary Industries • Greater Sydney Commission • Sydney Water • Greater Sydney Local Land Services	• DPIE - National Parks and Wildlife Service • Environment Protection Authority • Port Authority NSW • Transport for NSW
Federal agencies	• Australian Maritime and Safety Authority • Department of Environment and Energy	• Department of Agriculture • Dept Infrastructure, Regional Development and Cities
Business and Industry	• NSW Ports • Sydney Trains	• Local Businesses • Sydney Business Chamber
Research and Education	• Universities (University of NSW, Sydney, Wollongong	• Other research organisations (e.g. SIMS)
Aboriginal Organisations	• Metropolitan LALC	• La Perouse LALC
Community Organisations	• Bushcare Groups • Sporting and special interest groups	• Community Associations • Surf Life Saving
Individuals	• Landowners • Volunteers	• Community members • Visitors

Table A-2 Stakeholder Analysis

Sector	Stakeholder / Organisation	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Councils	**CMP Councils**	Empower	Empower	Empower	Empower	Empower
	Surrounding Councils	Inform	Inform	Consult	Consult	Consult / Collaborate
Stage Agencies	**DPIE - ESS**	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate
	DPIE	Involve	Consult / Involve	Consult / Involve	Consult / Empower	Involve / Collaborate
	LLS	Involve	Involve	Involve	Involve	Involve
	NPWS	Involve	Inform	Involve	Involve	Involve
	EPA	Consult	Inform	Involve	Involve	Involve
	Port Authority NSW	Consult	Involve / Collaborate	Involve	Involve / Collaborate	Involve / Collaborate
	Sydney Water	Consult	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate
	Transport NSW	Consult	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate	Involve / Collaborate
	GSC	Consult	Consult / Involve	Consult / Involve	Consult / Involve	Consult / Involve
Federal Agencies	***See table A-1***	Inform	Inform	Consult	Consult	Consult / Involve
Business and Industry	**NSW Ports**	Inform / consult	Consult / Involve / Collaborate	Consult / Involve / Collaborate	Consult / Involve	Consult / Involve
	Sydney Airport	Inform / consult	Consult / Involve / Collaborate	Consult / Involve / Collaborate	Consult / Involve	Consult / Involve
	Sydney Trains	Inform	Consult / Involve	Consult / Involve / Collaborate	Consult / Involve	Consult / Involve
	Business Chambers	Inform	Consult / Involve	Consult / Involve / Collaborate	Consult / Involve	Consult / Involve

Sector	Stakeholder / Organisation	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
	Local Businesses	Inform	Consult / Involve	Consult / Involve / Collaborate	Consult / Involve	Consult / Involve
Research	**UNSW/UoS/ UOW/SIMS**	Involve / Consult	Involve / Consult	Involve / Consult	Consult	Consult / Involve
Aboriginal Organisations	**LALCs, ATSI reference group(s)**	Involve	Involve / Consult	Involve / Consult	Involve / Consult	Involve / Empower
Community Organisations	**Various**	Inform	Consult	Involve	Involve / Consult	Inform / Involve / collaborate
Individuals	**Various**	Inform	Consult	Involve	Involve / consult	Inform / Involve / collaborate

A.4 Engagement Tools

A wide range of tools should be used to ensure people are aware of opportunities to be informed of, and have input to, the CMP as it progresses. These include:

- CMP project webpage on participating Councils web sites;
- Social media (e.g. Facebook);
- Media release(s);
- Fact sheets;
- Meetings and briefings;
- Targeted workshops;
- Information drop-in sessions;
- Online surveys;
- Letters to community / CMP collaborators; and
- Speaking engagements and presentations.

A.5 Frequently Asked Questions

FAQs that may arise during stakeholder engagement activities are to be developed as required in consultation with Council.

Categories may include:

- CMP processes
- CMP stages and activities
- Council roles and responsibilities
- Community engagement and consultation (how to get involved)
- CMP area
- Technical questions
- Coastal hazards
- Areas not covered in the CMP
- Who is the consultant?
- How is this being funded?
- How is climate change being addressed?

A.6 Key Messages

A.6.1 General Messages

Key messages (benefits) of the Eastern Beaches CMP that apply to most target groups are:

- The NSW government supports the development of Coastal Management Plans (CMPs) for coastal and estuarine systems by local councils to achieve the objectives of the Coastal Management Act (2016).
- CMPs provide a framework for integrated coastal and catchment management. The Eastern Beaches CMP is being developed by Waverley, Randwick and Woollahra Councils.

- Development of the Eastern Beaches CMP will help ensure coastal areas and drainage catchments are managed in a strategic and ecologically sustainable manner.
- The Eastern Beaches CMP will ensure its social, cultural, economic and environmental values are maintained or enhanced.
- The CMP will establish clear objectives and direction for managing the defined coastal zone and assist with implementation of the Coastal SEPP.
- The CMP will provide the basis for securing State Government funding to implement strategy that is being developed in consultation with the community.

A.6.2 Key Messages by CMP Stage

Key messages that may be outlined when explaining the five stage CMP process are provided in Table A-3.

Table A-3 Key Messages: CMP Process

CMP Stage	Key Messages
Stage 1 - Scoping Study	• Stage 1 of a CMP involves identifying the scope of a CMP and outlining the forward plan for its development • The goal of this stage is to determine the context, purpose and scope of a CMP, and initiate engagement and buy-in
Stage 2 - Studies of Opportunities and Vulnerabilities	• Stage 2 of a CMP involves determining the risk, vulnerabilities and opportunities associated with the CMP study area coastal zone • The goal of this stage is to undertake studies to provide information to support evidenced based decision-making in later stages of the CMP planning process
Stage 3 – Response Identification and Evaluation	• Stage 3 of a CMP involves identifying and evaluating the coastal management options, to improve environmental, social and economic benefit of the coastal zone and marine estate • The goal of this stage is to identify preferred coastal management actions in consultation with stakeholders and the community, that addresses issues in an integrated and strategic manner
Stage 4 – Finalise, Exhibit, Certify, Adopt the CMP	• Stage 4 of a CMP involves preparing, exhibiting, finalising, certifying and adopting the CMP • The goal of this stage is to finalise a CMP that achieved certification from the Minister
Stage 5 – Implementation, Monitor, Reporting	• Stage 5 of a CMP involves implementation of the CMP and monitoring and reporting on its outcomes • The goal of this stage is to implement actions within the CMP and monitor the effectiveness of the plan

A.7 CMP Engagement Strategy

The strategy for engagement with Eastern Beaches stakeholders and the community is provided herein. Direction in relation to the ‘who’, ‘how’, ‘what’ and ‘when’ of engagement at each stage of the CMP is outlined tables below.

celebrating achievements and successes with internal/external stakeholders (Section A-17).

A.7.1 Stage 1 – Identify the scope of a CMP

Table A-4 Stage 1 Engagement Strategy

Stage 1 – Identify the Scope of a CMP	
Timing	**August 2019 – May 2020**
Engagement intent	**Community/stakeholders** Bring all interested parties on board early to share information and ideas (before decisions are made). **CMP content** Identify stakeholders and prepare stakeholders profile. Review existing information about stakeholder perspectives to help set focus and priorities of subsequent stages of the CMP.
IAP2 levels of engagement	Inform, consult, involve
Level of community influence on decisions	Councils' retain decision-making about the scope of subsequent stages and will incorporate community input.
Engagement Outcomes	• stakeholders and the community understand how they can be involved in the preparation of a CMP • establish working relationships built on mutual trust and respect • understand stakeholder goals, aspirations, values and priorities • understand stakeholder motivations to participate in planning and implementation • determine the engagement activities that are required during the preparation of subsequent stages of the CMP
Engagement Activities, Aims and Audiences	**Deliverable**: Community Consultation and Engagement Strategy **Aims**: provide aims, activities and audiences for the life of the CMP, which will likely include all activities outlined in this table **Audiences**: all
	Activity: Visioning and First Pass Risk Assessment Workshop **Aim**: promote CMP start up, gather specific information on CMP vision and current and future risk potential, data gaps, management and governance arrangements and performance. **Audience**: Council, state agencies, asset owners, key community groups, other key stakeholders as determined at project initiation
	Activity: Presentation of Draft Scoping Study Report **Aim**: Present key findings **Audience**: Councillors
	Deliverable: MOU (or similar) formalising CMP Governance and Management Arrangements **Activity**: Governance and management arrangements workshop **Aim**: Present and workshop draft proposed CMP governance and management arrangements finalising signoff by Councils, and public authorities **Audience**: Councils and public authorities (asset owners, key community groups, other key stakeholders as determined)

Stage 1 – Identify the Scope of a CMP	
Assistance from Councils	• Assistance to organise CMP Visioning and First pass risk assessment workshop (invites, logistics) • Council(s) provide internal briefing information regarding CMP development, activities and outcomes of Stage 1 – Scoping Study • Councils with assistance from BMT (TBD) organise and facilitate Governance and management arrangements workshop

A.7.2 Stage 2 – Determine risks, vulnerabilities and opportunities

Table A-5 Stage 2 Engagement Strategy

Stage 2 – Determine Risks and Vulnerabilities and Opportunities	
Timing	**June 2020 – December 2020**
Engagement intent	**Community/stakeholders** Empower community and stakeholders with knowledge to contribute to decisions in subsequent stages. Share information equitably among stakeholders. **CMP content** Explore risks, vulnerabilities and opportunities of coastal management. Explore different perspectives on coastal risk management.
IAP2 levels of engagement	Inform, consult, involve
Level of community influence on decisions	Councils' retains decision-making. Community and stakeholders may contribute to detailed studies on issues of concern & participate in risk assessment & evaluation.
Engagement Outcomes	• a shared understanding of risks and opportunities over different timeframes, and the range of actions that could address different risks • a shared understanding of the varied perspectives about coastal management within the community • councils understand community's 'attitude to risk' • community and stakeholders understand vulnerabilities, risk and opportunity studies, including technical aspects such as scenarios for sea level rise, hazards and impacts • increased community trust of technical information based on their involvement and understanding of assumptions
Engagement Activities, Aims and Audiences	**Activity**: Expert Panel Workshop **Aim:** agree on model input parameters, promote confidence and trust in project (stage) outcomes. **Audience**: DPIE experts, academic leaders, core BMT project team delivering hazard assessments
	Activities: 3 x Community Drop -in Sessions Online Survey

Stage 2 – Determine Risks and Vulnerabilities and Opportunities	
	Aim: begin dialogue about hazard and risk, and gather hazard data and information **Audience**: general / broad community
	Activity: Risk Assessment Workshop **Aim:** conduct full-scale risk assessment to critically evaluate consequence of coastal hazard impacts and exposure, assess other risks in the coastal zone relating to community use and environmental values **Audience**: Council, state agencies, asset owners, key community groups, other key stakeholders as determined during the project
	Activity: Presentation of Draft Stage 2 Report **Aim**: Present key findings **Audience**: Committee, Council
Assistance from Council	Council to arrange locations for 3 x drop in sessions with community at separate locations along coastline (at least one in each Council area). Online Survey to be hosted on councils' websites

A.7.3 Stage 3 – Identify and evaluate options

Table A-6 Stage 3 Engagement Strategy

Stage 3 – Identify and Evaluate Options	
Timing	**December 2020 – June 2021**
Engagement intent	**Community/stakeholders** Share the decision-making dilemma. Establish a process that will be used to choose between options, incorporating community preferences and criteria. **CMP content** Identify and evaluate opportunities to address coastal risks for relevant coastal management areas, consistent with management objectives.
IAP2 levels of engagement	Inform, involve, collaborate
Level of community influence on decisions	Councils, stakeholders and community collaborate to identify the full range of potential responses to manage coastal vulnerabilities and to evaluate options.
Engagement Outcomes	• strong working partnerships • managers within councils aware of coastal hazards, threats, risks and vulnerabilities, opportunities and actions relevant to their responsibilities and potential conflict with other council priorities • public authorities contribute to identification and evaluation of management options, are aware of responsibilities and accept the adaptive nature of the CMP • councils understands stakeholder views about cost-benefit distribution, willingness to pay and potential trade-offs

Stage 3 – Identify and Evaluate Options	
	• robust options, understood by all stakeholders in terms of risks, cost and benefits
Engagement Activities, Aims and Audiences	**Activity**: Management Options Workshop **Aim**: evaluate options, considering acceptability, financing and funding, resourcing, governance and political will to implement an option(s) **Audience**: Council, state agencies, asset owners, community groups, others determined in the project
	Activities: 3 x Community Drop -in Sessions, Brochure and Online Survey **Aim**: present hazard / risk outcomes with potential management options, to gauge acceptability Audience: general / broad community
	Activity: Presentation of Draft Stage 3 Report **Aim**: Present key findings **Audience**: Committee, Council
Assistance from Council	• Council(s) to arrange location for Management Options Workshop • Council(s) to arrange locations for 3 x drop in sessions with community at separate locations along coastline (at least one in each Council area). • Brochure to be hosted on Councils' websites and disseminated at key locations (by Councils) • Online Survey 3 to be hosted on councils' websites

A.7.4 Stage 4 – Prepare, exhibit, finalise, certify and adopt the CMP

Table A-7 Stage 4 Engagement Strategy

Stage 4 – Prepare, Exhibit, Finalise, Certify and Adopt the CMP	
Timing	**July 2021 – December 2021**
Engagement intent	**Community/stakeholders** Gain community confidence and support for decisions that are in the documented CMP. **CMP content** High involvement stakeholders participate in the detailed process of finalising a plan, e.g. in the coastal advisory committee or other activities relevant to the risks.
IAP2 levels of engagement	Inform, consult, involve
Level of community influence on decisions	Councils retains decision-making about the CMP. Community involvement and feedback refine actions in the CMP to address risks considered unacceptable by the community

Stage 4 – Prepare, Exhibit, Finalise, Certify and Adopt the CMP	
Engagement Outcomes	• community and stakeholder support for actions and priorities in the CMP • increased awareness about funding options and how CMP implementation will be integrated with councils' Resourcing Strategy and Delivery Program under IP&R • public authorities accept roles and responsibilities in the CMP
Engagement Activities, Aims and Audiences	**Activity:** Implementation and Operations workshop **Aim**: review and update costings and other implementation details., outline plan for putting CMP into operation, **Audience**: Council, state agencies, asset owners, community groups, others determined in the project
	Activities: 3 x Community Drop -in Sessions, Executive Summary "Brochure" and Online Feedback Form **Aim:** present the Public Exhibition Draft of the CMP, and opportunity for feedback / submissions **Audience:** general / broad community
	Activity: Presentation of Draft CMP document for endorsement for public exhibition **Aim**: Present document **Audience**: Councillors
Assistance from Council	• Councils to arrange locations for Implementation and Operations Workshop • Councils to host public exhibition of Draft Report • Arrange Councillor Briefing(s) for endorsement of public exhibition • Arrange location for 3 x Community Information Sessions during Public Exhibition period along the coastline (at least one in each Council area).

A.7.5 Stage 5 – Implement, monitor, evaluate and report

Table A-8 Stage 5 Engagement Strategy

Stage 5 – Implement, monitor, evaluate and report	
Timing	**January 2022 -> 10 years**
Engagement intent	**Community/stakeholders** Maintain Councils, public authorities and community support for an commitment to the CMP, especially among those directly involved in, or impacted by the implementation. **CMP content** Active stakeholder and community participation in implementation of CMP actions, and in monitoring and review of CMP implementation.
IAP2 levels of engagement	Inform, involve, collaborate, empower
Level of community influence on decisions	Councils retains decision-making but will look to the community for advice, innovation and resources to improve implementation of the CMP actions.
Engagement Outcomes	• continue focus and commitment to CMP implementation by Councils, public authorities and relevant stakeholders and the community • community understanding of how CMP will be implemented through the IP&R framework and land use planning system; and by other public authorities • community informed about progress on actions • community is aware of the effectiveness of actions in terms of changes to coastal risk profile, coastal condition and community satisfaction • continue partnership with community by creating opportunities for community involvement in implementing, monitoring, evaluating and reporting effectiveness of CMP
Engagement Activities, Aims and Audiences	**Activity:** Biannual Eastern Beaches CMP Coastal Advisory Committee meeting (workshop) **Aim**: review and update CMP implementation progress, review outcomes over last 6 month period and those planned for next 6 months, review finances, program risks and community and stakeholder consultation activities **Audience**: Council, state agencies, asset owners, community groups, others determined in the project
	Activities: bi annual community newsletter / web page update **Aim**: to provide public information CMP activities over previous and next period (6 months) **Audience:** general / broad community
Assistance from Council	• Councils to Biannual Eastern Beaches CMP Coastal Advisory Committee meeting (workshop) • Councils to prepare and publish bi-annual newsletter / web site update

A.8 Consultation Risks

Table A-9 Consultation Risks

Risk	Mitigation Measure
Poor Engagement of internal staff	• Send email internally to ensure relevant teams/ staff are notified of the project and the input that will be required of them. • Provide update emails to relevant staff to keep updated on issues and progress.
Poor Engagement with external stakeholders (agencies)	• Send emails/ phone calls to ensure relevant agencies are notified and informed of workshops they are encouraged to participate in • Continue to review and update MOU (or similar) when necessary attaching to all Coastal Advisory Committee meeting agendas
Poor engagement in online surveys	• Poster/Survey Monkey link promoted in council newsletters, web site(s), Facebook page, Twitter page, and the "Community News" space in Wentworth and Southern Couriers • Outreach events in the form of Community Information and Drop- In Sessions to inform community members of the survey opportunity. • Hard-copy surveys and online survey • Dissemination of FAQ sheets
Poor engagement for Drop-In Sessions and Workshops	• BMT consultation team to set up a range of dates/times for the consultations to ensure a diverse variety of individuals can attend. • Council to ensure relevant people are available for workshops • Council to ensure meeting room(s) are available for workshop (and include catering where needed)
Poor collation of consultation outcomes	• BMT to record all drop-in session conversations, for detailed write up • BMT to ensure succinct and practical workshop sheet to record all workshop outcomes with nomination of table scribe
Unrealistic community aspirations or expectations around issues they raise	• Council to define appropriate and consistent governance / positions when interacting with the community • Council to develop and adopt management responses that are consistent.

A.8.1 Planning Proposal Engagement Process / Requirements (CM SEPP Mapping Updates)

Councils may seek to amend / create maps of coastal management areas (such as amendments to the Coastal Wetlands and Littoral Rainforest Area (CWLRA) and creating the Coastal Vulnerability Area (CVA) under the CM SEPP through the preparation of a planning proposal(s). Planning proposals are assessed by the DPIE through the 'Gateway' process. There are some important legislative requirements for preparing a planning proposal in relation to technical information and engagement processes. The preparation of a planning proposal, and associated engagement activities to be undertaken through this CMP are outlined in the below table.

Table A-10 Coastal management area mapping

CM SEPP Planning Proposal Activities	
Step 1 in Gateway process: Planning Proposal *Undertake technical studies, determine mapping amendments, prepare the planning proposal.* Consult with internal CRA / catchment council stakeholders in the preparation of a planning proposal, through meetings and workshops (CMP Stage 1, 3). Planning proposal to be adopted internally at council meetings (CMP Stage 3). **Step 2 in Gateway process: Gateway** *Minister (or delegate) decides if planning proposal can proceed (merit assessment), and any conditions. Conditions are compiled, and changes made if necessary.* Seek advice from the Minister (or delegate) on conditions for planning proposal (technical, engagement) (CMP Stage 3).	**Step 3 in Gateway process: Community Consultation** *Planning proposal is publicly exhibited. Submissions may request a public hearing.* Consult with community during exhibition period, through media release, info sheets/webpage, community drop in session. Planning proposal and maps to be on exhibition for 28 days (CMP Stage 4). Any required amendments to the planning proposal (& associated maps) would then need to be adopted again internally, at council meetings (CMP Stage 4). **Step 5 in Gateway process: Making of the LEP** *Minister (or delegate) approves the local environmental plan, which is then published on the legislation website* No engagement requirements for CRA / catchment councils.

A.8.2 Celebrating CMP Achievements / Success

Effective management of coastal environments can be challenging when competing stakeholder priorities need to be balanced and big issues such as climate change must be addressed. For this reason, it is important to celebrate successes achieved through the CMP planning and implementation process. Recognising achievements of individuals, groups/organisations and the CMP itself can also be an effective communication and engagement tool, which helps to bring community together and encourage stakeholder buy-in to the CMP.

Successes / achievements of a range of stakeholders may be celebrated, including the:

- Councils (internal stakeholders)
- Coastal Advisory Committee member authorities and stakeholders (external stakeholders)
- Broader community (external stakeholders)

Success means different things to different stakeholders. Success may be defined in relation CMP planning, CMP implementation and CMP engagement. For example, success may be defined by:

- Successful progression through CMP planning stages.
- Completion of CMP background studies / initiatives (e.g. Stage 2 studies).
- Achieving community engagement outcomes sought through this Engagement Strategy.
- In terms of CMP implementation, the bi-annual and annual review process should provide an opportunity to identify and celebrate CMP success. This may include the successful implementation of an action, or the demonstrated progress towards achieving the CMP vision and objectives.

Achievements may be recognised through various platforms / initiatives. As a starting point, the following are suggested for the development stage of the CMP (Stage 2 to 4):

- CMP planning and implementation achievements promoted on Councils website
- Annual certificates of recognition awarded to internal and external stakeholders for contributions
- Promoting the commencement and / or completion of key studies and stages, through media releases and “launching” the document at a community information session, event or similar
- Issuing brochures, FAQs and surveys at the start and completion of key studies and stages.

As the CMP progresses, the above listed opportunities to recognise achievement should be updated and refined, as new ideas come to light by the CRA and member councils.

Appendix B Governance Policy, Legislation, and Relevant Reports / Documents Additional Information

B.1 Complete list of relevant reports, documents, policies and plans for scoping study review

Table B-1 Complete list of key reports, documents and management plans for the Eastern Beaches study area

Author /s	Date	Document
Australian Museum Business Services	2019	Biodiversity Study of the Waverley Local Government Area.
Australian Museum	2019	Waverly Council Species List (marine species database).
BMT WBM	2017	NSW Marine Estate Threat and Risk Assessment Report, Australia
Booth, D.	2012	Natural history of Sydney's Marine Fishes: where south meets north, SIMS
Cardno	2015	Woollahra Coastal Zone Management Study
Chapman, D.M., Geary, M., Roy, P.S., and Thom, B.G.	1982	Coastal Evolution and Coastal Erosion in New South Wales
Church, J.A., P.U. Clark, A. Cazenave, J.M. Gregory, S. Jevrejeva, A. Levermann, M.A. Merrifield, G.A. Milne, R.S. Nerem, P.D. Nunn, A.J. Payne, W.T. Pfeffer, D. Stammer and A.S. Unnikrishnan.	2018	IPCC - Sea Level Change
Climate Change in Australia	2007	Climate Change in Australia
Climate Change in Australia	2018	Coastal and Marine Projections
CSIRO	2011	Climate change: science and solutions for Australia
Dall'Osso, F. and Dominey-Howes, D.	2009	A method for assessing the vulnerability of buildings to catastrophic (tsunami) marine flooding.
Dominic Steele Consulting Archaeology	2009	Waverley Aboriginal Cultural Heritage Study.
Doyle, T.B., and Woodroffe, C.D	2018	The application of LiDAR to investigate foredune morphology and vegetation
GHD	2002	Randwick City Council – Frenchmans Bay Plan of Management
Goodwin, I.D., Mortlock, T.R., and Browning, S.	2016	Tropical and extratropical-origin storm wave types and their influence on the East Australian longshore sand transport system under a changing climate
Greater Sydney Commission (GSC)	2018	Eastern City District Plan

Author /s	Date	Document
GSC	2018	A Metropolis of Three Cities - Greater Sydney Regional Plan (GSRP).
Hanslow, D.J., Morris, B.D., Foulsham, E. and Kinsela, M.A.	2018	A Regional Scale Approach to Assessing Current and Potential Future Exposure to Tidal Inundation in Different Types of Estuaries.
Harley, M.D., Turner, I., Short, A., and Ranasinghe, R.	2011	A re-evaluation of coastal embayment rotation in SE Australia: the dominance of cross-shore versus alongshore sediment transport processes.
Hassell Pty Ltd.	1996	Randwick City Council - Maroubra Beach Plan of Management
IPCC	2019	IPCC Special Report on the Ocean and Cryosphere in a Changing Climate - Summary for Policymakers
IPCC	2014	Climate Change 2014 Synthesis Report.
Manidis Roberts Consultants	1997	Coogee Beach and Foreshore Plan of Management
Manidis Roberts Consultants	1999	Clovelly Bay Plan of Management
McInnes, K., Lipkin, F., O'Grady, J. and Inman, M.	2012	Modelling and Mapping of Coastal Inundation Under Future Sea level Rise.
Molino Stewart Pty Ltd.	2007	Energy Australia's Proposed Botany Bay 132kV Cable Project Wave and Hydrodynamic Issues.
MUSEcape Pty Ltd	2000	Historic La Perouse Management Plan
NSW Government	2005	Sydney Regional Environmental Plan (Sydney Harbour Catchment).
NSW Government	2013	State Environmental Planning Policy (Port Botany and Port Kembla).
NSW Government	2016	Coastal Management Act 2016
NSW Government	2018	Marine Estate Management Strategy 2018-2028.
OEH	2013	New South Wales State of the Beaches 2012–2013.
OEH	2014	New South Wales State of the Beaches 2013–2014.
OEH	2015	New South Wales State of the Beaches 2014–2015.
OEH	2016	New South Wales State of the Beaches 2015–2016.
OEH	2017	New South Wales State of the Beaches 2016–2017.

Author /s	Date	Document
OEH	2018	New South Wales State of the Beaches 2017–2018.
Office of Local Government	2019	Integrated Planning and Reporting (IP&R) Framework.
Phillips, M.S., Harley, M.D., Turner, I.L., Splinter, K.D., Cox, R.J.	2017	Shoreline recovery on wave-dominated sandy coastlines: the role of sandbar morphodynamics and nearshore wave parameters.
Randwick City Council	1994a	Beach and Coastal Reserves Generic Plan of Management
Randwick City Council	1994b	Malabar Beach and Foreshore Plan of Management
Randwick City Council	2013	Sustaining Our City – 5 year Environmental program (2014 – 2019)
Randwick City Council	2014	Threatening Processes Operating in the City of Randwick.
Randwick City Council	2015	Climate Change Adaptation Plan
Randwick City Council	2017a	Asset Management Plan: Open Space (2018 – 2028).
Randwick City Council	2017b	The Randwick City Plan – A 20 Year Plan (2018-2029)
Randwick City Council	2019a	Environmental Levy.
Randwick City Council	2019b	Coogee and the Bidjigal and Gadigal People.
Roy, P.S., Thom, B.G., and Wright, L.D.	1980	Holocene sequences on an embayed high-energy coast: an evolutionary model.
SGS Economics and Planning	2009	Randwick Economic Development Strategy.
SGS Economics and Planning	2013	Eastern Suburbs Economic Profile.
Short, A.D.	1993	Beaches of the New South Wales Coast. A Guide to their Nature, Characteristics, Surf and Safety.
Short, A.D.	2010	Role of geological inheritance in Australian beach morphodynamics.
Sydney Bush Regeneration Company	2010	Waverley Flora Study Report.
Space Time Research	2015	SA2 - Counting: Visitors, Visitor nights – Randwick LGA
Thompson Berrill Landscape Design PTY Ltd	2008	Gap Park Masterplan – prepared for Woollahra Municipal Council.
Total Earth Care Pty Ltd	2015	Biodiversity Action Plans Remnant Sites 2014-2020 – prepared for Waverley Council.

Author /s	Date	Document
UNESCO	2011	The Impact of Global Changes on Water Resources: the response of UNESCO's International Hydrological Programme.
URS	2003	Port Botany Expansion Environmental Impact Statement – Volume 1, Chapter 15 Hydrodynamics and Coastal Processes.
UTS Sydney Centre for Local Government.	2018	Waverley Community Strategic Plan: Community engagement report.
Waverley Council	1997	Coastal Reserves – Draft Plan of Management
Waverley Council	2007	Tamarama Park Plan of Management
Waverley Council	2010	Interim Sea Level Rise Policy.
Waverley Council	2012	Coastal Risk Management Policy.
Waverley Council	2014	Bondi Park, Beach and Pavilion Plan of Management
Waverley Council	2017a	Environmental Action Plan (2018 – 2030).
Waverley Council	2017b	Waverley Economic Development 2015 – 2020.
Waverley Council	2017c	Bronte Park and Beach Plan of Management
Waverley Council	2018a	Waverley Community Strategic Plan 2018-2029.
Waverley Council	2018b	Strategic Asset Management Plan 5.
Woollahra Municipal Council	1996a	Natural Area (Foreshore) Plan of Management.
Woollahra Municipal Council	1996b	Christison Park Plan of Management.
Woollahra Municipal Council	2013	Environmental Sustainability Action Plan 2013-2025.
Woollahra Municipal Council	2018	Woollahra 2030 - our community, our place, our plan.
Worley Parsons	2011	Waverley Coastal Risks and Hazards Vulnerability Study

B.2 Review of Governance, Roles and Responsibilities

Table B-2 Eastern Beaches Governance: Organisations and Responsibilities

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
Federal	Australian Defence Force	• The military organisation responsible for defence in Australia, and forms the Maritime Border Command in partnership with the Department of Immigration and Border Protection. • In partnership with the Department of Defence, makes up the Australian Defence Organisation.
Federal	Australian Maritime Safety Authority (AMSA)	• • Established by the *Australian Maritime Safety Authority Act 1990* • Administers the *Protection of the Sea Act 1983* • Co-ordinates maritime safety, including environmental management and pollution prevention
Federal	Department of Agriculture, Water and the Environment	• Designs and implements Australian Government policy and programs to protect and conserve the environment, water and heritage, promote climate action, and provide adequate, reliable and affordable energy (former environment portfolio) and designs and implements policy, programs and services improve the productivity, competitiveness and sustainability of the food and agriculture industry (former Agricultural portfolio). • Administers the *Environmental Protection and Biodiversity Conservation Act 1999* • Projects listed Threatened species occurring in and around Eastern Beaches study area • No Heritage items of national environmental significance within the Eastern Beaches study area • Administers all biosecurity threats and associated quarantine services. It is responsible for the monitoring of all vessels scheduled to enter and leave Australian waters, including Botany Bay. NB department established on 1 February 2020. Prior to this was Department of Agriculture and Department of the Environment and Energy
Federal	Department of Home Affairs	Home Affairs brings together Australia's federal law enforcement, national and transport security, criminal justice, emergency management, multicultural affairs, settlement services and immigration and border-related functions. Australian Border Force in now incorporated into DoHA. This also includes Maritime Border Command Australia's lead civil maritime security authority which includes ABF officers and Australian Defence Force officers. The command has various roles and responsibilities, including to counter civil maritime security threats such as illegal activity in protected areas, illegal exploitation of natural resources, marine pollution

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
		and compromises to bio-security. It liaises with a range or partner agencies including the Australian Fisheries Management Authority and the Australian Maritime Safety Authority.
Federal	Department of Infrastructure, Transport, Regional Development and Communications.	• Responsible for administration of the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 *NB The Department of Infrastructure, Transport, Cities and Regional Development has been renamed as the Department of Infrastructure, Transport, Regional Development and Communications.* *As a result of the Administrative Arrangement Order introduced on 5 December 2019, the functions that were previously the responsibility of the Department of Communications and the Arts have been transferred.*
Federal	Civil Aviation Safety Authority	Government body that regulates Australian aviation safety and the operation of Australian aircraft overseas. Licencing pilots, registering aircraft, oversee aviation safety and promote safety awareness. Roles described in Civil Aviation Act 1988
Federal	Maritime Border Command	• Australia's lead civil maritime security authority that operates primarily offshore to safeguard Australia's maritime jurisdiction.• Comprises staff from the Department of Immigration and Border Protection, and the Australian Defence Force.• Has various roles and responsibilities, including to counter civil maritime security threats such as illegal activity in protected areas, illegal exploitation of natural resources, marine pollution and compromises to bio-security.• Liaises with a range or partner agencies including the Australian Fisheries Management Authority and the Australian Maritime Safety Authority.
Federal	National Health and Medical Research Council	• Australian government body expert body promoting the development and maintenance of public and individual health standards. • Oversees the ongoing development of the National Water Quality Management Strategy, that consists of policy, process and guidelines (including the 'ANZECC guidelines')
State	Department of Health	• Department of Health has a diverse set of responsibilities centred around improving the health and wellbeing of all Australians both now and in the future. They provide evidence-based policy advice, program management, research and regulation.

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
State	Department of Industry	• Supports the growth and advancement of globally competitive and sustainable NSW industries to attract investment increase trade and create new jobs.
State	Department of Industry, Crown Lands and Water	• Agency within the Department of Industry. • Develops strategy, programs and policy for the management of the Crown land estate and Water, with key business areas aiming to deliver social and economic outcomes for the state.• Administers the *Crown Land Management Act 2016 (as at 2 July 2018),* which provides for ownership and management of NSW Crown land.• Administrator for Crown land within the catchment area out to 3 nautical mile limit off Botany Bay. • Many Crown reserves are managed by Local Government either through appointment as trust managers or by devolvement under the *Local Government Act 1993*.• Approves jetties and other domestic waterfront structures on estuaries not covered by other agencies.• Investigates and assesses Aboriginal land claims across the state under the *NSW Aboriginal Land Rights Act 1983*. The Crown estate is managed in accordance with Commonwealth Native Title legislation.• Manage NSW water resources, both groundwater and surface waters, through planning, policy and regulation including implementing the *Water Management Act, 2000*.
State	Department of Industry, Regional Development Advisory Council - Sydney	• Regional Development Australia (RDA) is a joint partnership between the Australian, State, Territory and Local Government to support growth and development of Australia Region; RDA Sydney is one of 14 committees in NSW and covers the Greater Sydney region • RDA Sydney's purpose is to build partnerships between governments, key regional organisations, local businesses, community groups and key regional stakeholders to provide strategic and targeted responses to economic, environmental and social issues affecting Sydney. • RDA Sydney believes ongoing, economic analysis for the “Whole of Sydney” Metropolitan Region is critical for current and future planning and decision making.
State	Department of Planning, Industry and Environment (DPIE)	• State government department tasked at making NSW a great place to live and work, by providing homes and services, building communities, creating jobs and protecting the environment • Is affiliated with multiple agencies that have various roles and responsibilities in managing the Eastern Beaches study area, including: – Environment, Energy and Science (EES) – Office of Local Government – Urban Growth NSW

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
		– Environment Protection Agency
State	Department of Planning, Industry and Environment, Environment, Energy and Science (EES)	• Agency within the Department of Planning, Industry and Environment portfolio. • Cares for and protects NSW's environment and heritage (natural, cultural and built), and supports the community, business and government in protecting, strengthening and making the most of a healthy environment and economy in NSW. • Administers the *Biodiversity Conservation Act 2016,* which establishes a balanced approach to land management and biodiversity conservation in NSW • Administers the *Coastal Management Act 2016*, which provides framework for strategic management of the NSW coastal zone now and into the future • Provides technical advice and financial assistance to Councils with preparing and implementing Coastal Management Programs, in line with the Coastal Management Manual and CM Act
State	Department of Planning, Industry and Environment - Office of Local Government	• Agency within the Department of Planning, Industry and Environment portfolio • Is responsible for local government across NSW and is an advisor to the NSW Government on Local Government matters. • Has a policy, legislative, investigative and program focus in matters ranging from Local Government finance, infrastructure, governance, performance, collaboration and community engagement. • Administers the *Local Government Act 1993*, which provides the legal framework for the system of local government for New South Wales.
State	Department of Primary Industries, Biosecurity and Food Safety	• Agency within the Department of Primary Industries. • Responsible for the protection of the NSW economy, environment and community from biosecurity and food safety risks. • Administers the *Biosecurity Act 2015*, which provides flexible and responsive statutory framework to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants, for the benefit of the NSW economy, environment and community.

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
State	Department of Primary Industries, Fisheries	• Agency within the Department of Primary Industries • Administers the *Fisheries Management Act 1994*, which provides the legislative framework for conserving, developing and sharing the fishery resources of NSW for present and future generations. • Supports economic growth and sustainable access to aquatic resources through commercial and recreational fisheries management, research, aquaculture development, marine protected areas management, habitat protection and rehabilitation, regulation and compliance. Also mitigates and manages risks from use of land and water. • Responsible for ensuring that fish stocks are conserved, and key fish habitat is protected. • Responsible for ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing, aquaculture, aquatic habitat and biodiversity, and marine protected areas within NSW. IPAs, Marine and habitat protection area exists in Eastern Beaches CMP area • In study area DPIO- Fisheries undertakes compliance of recreational fishing and assessing development applications within waterways (e.g. jetties).
State	Destination NSW	• Destination NSW is the lead government agency responsible for the major events and tourism sectors. • Their role is to devise and implement strategies to grow the State's visitor economy.
State	Greater Sydney Commission	• The Greater Sydney Commission is an independent organisation funded by the NSW Government that has a specific role in coordinating and aligning planning for Greater Sydney. • They are responsible for leading and guiding the planning for development, transport and housing to ensure a productive and sustainable city. • Developed the Eastern City Plan • Leading Collaboration Areas within the study area include the Randwick health and education precinct
State	Independent Pricing and Regulatory Tribunal (IPART)	• IPART provides advice and independent regulatory decisions to protect and promote the interests of taxpayers, citizens and consumers of NSW. They are the independent pricing regulator for water, public transport and local government as well as the licence administrator of water, gas and electricity. • IPART is responsible for reviewing Sydney Waters operating licence every 5 years.

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
State	Infrastructure NSW	• Infrastructure NSW is an independent statutory agency tasked with identifying and prioritising the delivery of critical public infrastructure for NSW. • Infrastructure NSW is involved in implementation of the Port Botany-Sydney Airport precinct strategy.
State	Local Land Services (LLS)	• LLS are a regionally based NSW Government agency that delivers quality services to farmers, landholders and the community. LLS have 11 regions, one of which is Greater Sydney. • The *Local Land Service Act 2013* requires the development of regional strategies to set the vision, priorities and strategy for the delivery of LLS in each region. Greater Sydney Local Land Services consulted with landholders, customers and the community to develop their local strategic plan. The plan was adopted in the first half of 2016 for the period from 2016 to 2020. • Each LLS region is governed by a board of local community representatives. The statewide LLS Board is responsible for safeguarding the delivery of state-wide priorities under the direction of the Minister for Primary Industries.
State	Marine Estate Management Authority	• The NSW Government Marine Estate Management Authority assist in ensuring that policies and programs address priority issues, are efficient and evidence based and result in positive outcomes. Their vision is to have a healthy coast and sea managed for the greatest wellbeing of the community now and in the future. • The Marine Estate Management Act 2014 and Marine Estate Management Regulation 2017 provides for the strategic and integrated management of the whole marine estate.
State	National Parks and Wildlife Service (NPWS)	• NPWS manages more than 870 protected areas in NSW including national parks, nature reserves, flora reserves, World Heritage areas, beaches etc. This includes the management of Sydney Harbour, Malabar Headland and Botany Bay National Parks.
State	NSW Coastal Council	• The NSW Coastal Council provides independent expert advice to the Minister administering the *Coastal Management Act 2016* on coastal planning and management issues. • The NSW Coastal Council was appointed under the *Coastal Management Act 2016 and* replaced the NSW Coastal Panel and the Coastal Expert Panel. • The Minister can request the NSW Coastal Council to audit a local council's implementation of its coastal management program to determine if they are being effectively implemented.

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
State	NSW Environment Protection Authority	• The EPA is the primary environmental regulator for NSW and aims to reduce pollution and waste, protect human health and prevent degradation of the environment. • The NSW EPA is an independent statutory authority that sits in the Environment Portfolio under the Minister for the Environment as part of the Planning and Environment Cluster. • Responsible for administering the Protection of the Environment Operations Act 1997.
State	NSW Land Registry Services (LRS)	• The NSW LRS is maintains a secure, efficient and guaranteed system of land ownership for NSW, defines the legal ownership and boundaries of land parcels throughout the State, both private and public, and records changes as they occur. • NSW LRS collects, collates and integrates property information in NSW and makes it readily available. • The community, business and government rely on this information for a variety of purposes including land management, conveyancing, property development, investment, local planning, state economic and social development and historical research.
State	Port Authority of NSW	• Port Authority of New South Wales is a state-owned corporation that manages and develops port facilities and services to cater for the existing and future commercial shipping needs of the State of NSW. Operating under the Ports and Maritime Administration Act 1995 they manage the navigation, security and operational safety needs of commercial shipping including Port Botany including the role of Harbour Master in all NSW ports NB - NSW Ports is a consortium of leading institutional investors and is the Port Operator for Port Botany (and Port Kembla) as well as Cooks River / Enfield Intermodal terminals. NSW Ports
State	Sydney Water	• Sydney Water supplies water, wastewater, recycled water and some stormwater services to the people in Sydney, the Illawarra and the Blue Mountains. Their operating licence sets out standards and requirements they must meet as a water utility. • Sydney Water operates wastewater treatment plants and deep-water outfalls at North Head, Bondi and Malabar.
State	Transport for NSW	• Transport for NSW is the lead agency of the NSW Transport cluster. • Tasked with leading the development of a safe, efficient, integrated transport system that connects communities and regions.• Responsible for strategy, planning, policy, regulation, funding allocation and

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
		other non-service delivery functions for all modes of transport in NSW (including driving, maritime activities, cycling and walking)
State	Treasury	• NSW Treasury manage the State's finances and assets, monitor the performance of its commercial agencies and develop its financial and industrial relations policies. • They assist the NSW government in establishing, implementing and delivering the State Budget and provide funding to government agencies and programs.
State	UrbanGrowth NSW Development Corporation (previously part of Urban Growth NSW)	• UrbanGrowth NSW Development Corporation is responsible for promoting, co-ordinating, managing and securing the economic development of five growth centres across metropolitan Sydney.
Local	Local Government NSW	• Local Government NSW is the peak industry association that represents the interests of NSW general and special purpose councils.
Local	Local Aboriginal Land Councils (LALC) • Metropolitan LALC • La Perouse LALC	• LALCs established following the *Aboriginal Land Rights Act 1983 (ALRA)* • LALCs bound by key legislative requirements in the amended ALRA. • The objects of each LALC are to " improve, protect and foster the best interests of all Aboriginal persons within the Council's area and other persons who are members of the Council". • Functions include acquiring and managing land, and promoting/protecting culture and heritage, facilitating business enterprise, provide community benefits
Local	Local Government Areas administering lands within the study area: Woollahra Council Waverley Council Randwick Council	• Each local council is an independent entity responsible for administering the local government area over which it has jurisdiction as per the *Local Government Act 1993.* • Councils are responsible for administering various legislation and developing their own plans and policies for their LGA (i.e. LEPs, CMPs etc). • Councils have key responsibilities in relation to Coastal Zone Management in Sydney including: land use planning, development approval, water quality and pollution regulation, open space and stormwater management etc.

Govt Level	Agency / Organisation	Responsibility: Agency / Organisation
Local	Southern Sydney Regional Organisation of Councils (SSROC) *(Bayside, Burwood, Canterbury Bankstown, City of Canada Bay, City of Sydney, Georges River, Inner West, Randwick City, Sutherland Shire, Waverley and Woollahra Municipal Councils).*	• SSROC is an association of 11 councils aiming to serve large and diverse communities and work together to address the challenges and utilise the opportunities of a metropolitan city. This includes waterways and land fronting Sydney Harbour.
Local	Sydney Coastal Councils Group (SCCG) *(Bayside, Inner West, Northern Beaches, North Sydney, Randwick City, Sutherland Shire, Waverley, Willoughby City and Woollahra Municipal)*	• The Sydney Costal Councils Group is a co-operative organisation responsible for leading sustainable management of the coastal and estuarine environment across Sydney. • They provide advocacy, facilitate and promote collaboration and capacity building between member Councils and identify and adders current and emerging regional coastal issues.

B.3 Key Commonwealth Legislation Supporting Coastal Management

B.3.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is Australia's key piece of environmental legislation focusing on the protection of matters of national environmental significance (MNES). It provides the legal framework for the protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places.

The nine MNES to which the EPBC Act applies are:

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development

Additionally, the EPBC Act confers jurisdiction over actions that have a significant environmental impact where the actions affect or are taken on Commonwealth land or are carried out by a Commonwealth agency (even if the significant impact is not on a MNES).

The EPBC Act is administered by the Australian Government Department of Agriculture, Water and the Environment.

B.4 Key NSW Legislation Supporting Coastal Management

B.4.1 Environmental Planning & Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EPA Act) is the key NSW legislation for planning and land use. The Act provides a system of environmental planning and assessment for NSW, and involves developing plans to regulate competing land uses, through 'environmental planning instruments'. The EPA Act establishes three types of environment planning instruments (EPI):

- Local Environmental Plans;
- Regional Environmental Plans; and
- State Environmental Planning Policies.

The objectives of the EPA Act are to encourage:

- proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;

- promotion and co-ordination of the orderly and economic use and development of land;
- protection, provision and co-ordination of communication and utility services;
- provision of land for public purposes;
- provision and co-ordination of community services and facilities;
- protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats;
- ecologically sustainable development;
- the provision and maintenance of affordable housing;
- promotion of the sharing of the responsibility for environmental planning between the different levels of government in the State; and
- provision of increased opportunity for public involvement and participation in environmental planning and assessment.

Approval processes for "development" and "works" in NSW are provided for in Part 3A, Part 4, Part 5 and Part 5A of the EPA Act. Key provisions are outlined briefly below.

Part 3A – Major Infrastructure and Other Projects

Part 3A came into operation in August 2005 and applies to development that is declared to be a project to which the part applies. A project can be declared by:

- A State Environmental Planning Policy (SEPP), with SEPP No. 71 – Coastal Protection of relevance to the coastal zone, or
- By order of the Minister for Planning published in the Government Gazette.

There are two types of development that may be declared for Part 3A approval (i.e. in addition to those directed to the Minister via a SEPP):

- Major infrastructure or other development that in the opinion of the Minister is of state or regional environmental significance, or
- Old Part 5 activity approvals where the proponent is the determining authority and an EIS would have been required.

Guidelines regarding Part 3A projects have been provided by DPE. Part 3A of the AP&A Act has now been repealed, with the provisions largely incorporated into other planning instruments, such as *SEPP Infrastructure*.

Part 4 – Development Assessment

Part 4 of the EPA Act lays out the legislative regime for the standard process for lodgement and consideration of development applications. Part 4 processes essentially apply where the local authority (Council) is the consent authority.

The controls and permissibility for development of particular sites and / or uses are found in the Local Environment Plan (LEP) and Development Control Plan (DCP) (see following sections).

Part 5 – Environmental Assessment

Part 5 outlines the requirements for determining authorities to consider the environmental impact of activities, through an environmental assessment for the proposed activity. The environmental assessment shall outline the effect of

the activity on critical habitat, endangered fauna, vulnerable species, conservation agreements (under the *National Parks and Wildlife Act 1974*), plans of management, wilderness areas (under the *Wilderness Act 1987*) and joint management agreements and bio-banking agreements under the *Threatened Species Act, 1995*, and any other legislation pertaining to the proposed activity.

Part 5 of the Act applies to proposed activities that are permissible without development consent under Part 4 of the EPA Act but require approval from a Minister or Public Authority, or is proposed to be carried out by a Minister or Public Authority (and Council is classified as a Public Authority).

Part 5 obliges the "determining authority" for the proposal to consider the environmental impact of any activity. A determining authority is the public authority which is required to approve an activity and can also be the public authority proposing to carry out the activity. For example, Council is permitted to undertake certain environmental management activities under SEPP (Infrastructure) 2007 without development consent, however may need to complete and environmental assessment under Part 5 of the EPA Act.

Part 5A (Development by the Crown) essentially provides a legislative regime for consideration of Development Applications made by, or for and on behalf of, the Crown.

The remaining parts of the EPA Act relate to: Part 6 – Implementation and Enforcement; Part 7 – Finance and Part 8 – Miscellaneous.

B.4.2 Draft Environment SEPP

The NSW Government is in the process of developing a new SEPP which will ensure the protection and management of the natural environment. The new Environment SEPP combine, repeal and replace the following:

- State Environmental
- Planning Policy No. 19—Bushland in Urban Areas
- State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011
- State Environmental Planning Policy No. 50—Canal Estate Development
- Greater Metropolitan Regional Environmental Plan No. 2—Georges River Catchment
- Sydney Regional Environmental Plan No. 20—Hawkesbury-Nepean River (No.2-1997)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- Willandra Lakes Regional Environmental Plan No. 1—World Heritage Property.

The purpose of the proposed SEPP Environment is to promote the protection and improvement of key environmental assets for their intrinsic value and the social and economic benefits they provide.

The SEPP (Environment) will have provisions set out under four parts, being:

- Catchments
- Waterways

- Bushland
- Protected Areas

It will incorporate revisions to current SEPPs to remove unnecessary or outdated policy, address emerging issues and locate provisions in the most appropriate level of the planning system. The proposed Environment SEPP will provide a consistent level of environmental protection to that which is currently delivered under the existing SEPPs.

B.4.3 Local Government Act 1993

The *Local Government Act 1993* (the LG Act) creates local governments and grants them the power to perform their functions, which involve management, development, protection, restoration, enhancement and conservation of the environment for the local government area. The functions of the local government are to be performed in a manner that are consistent with and promote the principles of ecologically sustainable development.

The service functions of local councils (defined in Chapter 6 of the LG Act) includes the classification, use and management of public land, including the objectives for management of the Community Land owned by Council (i.e. that is not Crown Land).

Plans of Management for Community Land need also to be prepared under Section 35 of the Act. Section 35 of the act provides that community land only be used in accordance with the plan of management applying to the parcel of community land; any law permitting the use of the land for a specified purpose or otherwise regulating the use of the land; and the provisions of Division 2 Chapter 6 of the Act.

Community land can be categorised into a range of categories under Section 36 of the Act, and each of these categories have their own core objectives specified under the Act. The categorisation of community lands is important as the Act requires Council to only grant a lease, licence or another estate (other than in respect of public utilities) for a purpose consistent with the core objectives of the category of that community land.

B.4.4 Crown Land Management Act 2016

The *Crown Land Management Act 2016* (the CLM Act) which commenced on 1 July 2018 implements reforms identified through a comprehensive review of Crown land management and follows almost six years of community engagement.

The objects of the CLM Act are to:

- *"provide for the ownership, use and management of the Crown land of New South Wales,*
- *provide clarity concerning the law applicable to Crown land,*
- *require environmental, social, cultural heritage and economic considerations to be considered in decision-making about Crown land,*
- *provide for the consistent, efficient, fair and transparent management of Crown land for the benefit of the people of New South Wales,*
- *facilitate the use of Crown land by the Aboriginal people of New South Wales because of the spiritual, social, cultural and economic importance of land to Aboriginal people and, where appropriate, to enable the co-management of dedicated or reserved Crown land,*

- *provide for the management of Crown land having regard to the principles of Crown land management".*

A key feature of the new CLM Act is the appointment of a Crown Land Commissioner with broad advisory and inquiry functions who will play a key role in maintaining transparency regarding Crown land management.

B.4.5 Fisheries Management Act 1994

The *Fisheries Management Act 1994* outlines legislation relating to the management of fishery resources in NSW. The aim of the *Fisheries Management Act 1994* is to conserve, develop and share the fishery resources of the State for the benefit of present and future generations.

The Act is divided into 10 parts and covers: fishery management strategies, general fisheries management, commercial share management fisheries, licensing and other commercial fisheries management, charter fishing management, co-operation with Commonwealth and other States in fisheries management, aquaculture management, protection of aquatic habitats, threatened species conservation, administration and enforcement.

The *Fisheries Management Act 1994* is administered by the Minister for Primary Industries.

B.4.6 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (the BC Act) commenced on 25 August 2017 with the intent to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act established a modern and integrated legislative framework for biodiversity conservation and repealed the previous *Threatened Species Conservation Act 1995*, the *Nature Conservation Trust Act 2001*, and the animal and plant provisions of the *National Parks and Wildlife Act 1974*. It is comprised of 14 parts including:

- Part 1: Preliminary
- Part 2: Protection of animals and plants
- Part 3: Areas of outstanding biodiversity value
- Part 4: Threatened species and threatened ecological communities
- Part 5: Investment Strategy and private land conservation agreements
- Part 6: Biodiversity offsets scheme
- Part 7: Biodiversity assessment and approvals under Planning Act
- Part 8: Biodiversity certification of land
- Part 9: Public consultation and public registers
- Part 10: Biodiversity Conservation Trust
- Part 11: Regulatory compliance mechanisms
- Part 12: Investigation powers
- Part 13: Criminal and civil proceedings
- Part 14: Miscellaneous

B.4.7 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is the NSW legislation in place to conserve the State's natural and cultural heritage, foster public

appreciation, understanding and enjoyment of NSW's natural and cultural heritage and manage any lands reserved for those purposes.

The NPW Act is the main piece of legislation for managing and protecting Aboriginal cultural heritage with Part 6 of the Act providing protection for Aboriginal objects and places. All Aboriginal sites in NSW are protected under the NPW and it is an offence to damage or destroy them (this includes collecting artefacts) without prior permission of the Director-General of the NSW DPIE.

B.4.8 Water Management Act 2000

The *Water Management Act 2000* (WM Act) establishes the principles and legislative framework governing water management in NSW. The WM Act aims to provide for the sustainable and integrated management of NSW water sources for the benefit of both present and future generations.

It includes requirements on water management planning, sharing, allocation and the use and the granting of access licences. The WM Act also defines what constitutes an offence. Examples of offences include taking water without an access licence, taking water for which there is no water allocation or contravening the terms and conditions of an access licence.

B.4.9 Local Land Services Act 2013

The *Local Land Services Act* (LLS Act) commenced on 1 January 2014, establishing Local Land Services and paving the way for the 11 regional Local Land Services organisations to begin operating. The LLS Act repealed the *Rural Lands Protection Act 1998*, the *Rural Lands Protection Amendment Act 2008* and the *Catchment Management Authorities Act 2003*.

The LLS Act identifies Local Land Services *"programs and advisory services associated with agricultural production, biosecurity, natural resource management and emergency management, including programs and advisory services associated with the following:*

(a) agricultural production,

(b) biosecurity, including animal pest and disease and plant pest and disease prevention, management, control and eradication,

(c) preparedness, response and recovery for animal pest and disease and plant pest and disease emergencies and other emergencies impacting on primary production or animal health and safety,

(d) animal welfare,

(e) chemical residue prevention, management and control,

(f) natural resource management and planning,

(g) travelling stock reserves and stock watering places,

(h) control and movement of stock,

(i) related services and programs".

The LLS Act designates local decision making and priority setting to Local Land Services.

B.4.10 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the primary piece of legislation concerned with environmental protection in NSW and is administered by the NSW Environment Protection Authority (EPA). The POEO Act deals with the regulation and licensing of certain activities, issuing

of environmental protection notices and conducting environmental audits and investigations.

Councils have the power under the act to regulate non-scheduled activities through notices and enforcement. Specifically, the Council can issue a clean-up notice if a pollution incident has occurred. This can include water pollution, littering and dumping of waste.

B.4.11 Mining Act 1992

The *Mining Act 1992* makes provisions with respect to prospecting for and mining minerals. The objects of the Mining Act 1992 are to *"encourage and facilitate the discovery and development of mineral resources in New South Wales, having regard to the need to encourage ecologically sustainable development, and in particular*:

to recognise and foster the significant social and economic benefits to New South Wales that result from the efficient development of mineral resources, and

to provide an integrated framework for the effective regulation of authorisations for prospecting and mining operations, and

to provide a framework for compensation to landholders for loss or damage resulting from such operations, and

to ensure an appropriate return to the State from mineral resources, and

to require the payment of security to provide for the rehabilitation of mine sites, and

to ensure effective rehabilitation of disturbed land and water, and

to ensure mineral resources are identified and developed in ways that minimise impacts on the environment."

B.5 Review of Relevant Legislation and Policy

Table B-3 Eastern Beaches Governance: Relevant Legislation and Policy

Govt Level	Type	Legislation / Policy
Federal	Legislation	Australian Maritime Safety Authority Act 1990
Federal	Legislation	Environment Protection and Biodiversity Conservation Act 1999
Federal	Legislation	Protection of the Sea (Prevention of Pollution from Ships) Act 1983
Federal	Legislation	Water Act 2007
Federal	Legislation	Various Acts in relation to operations of Airport including: Curfews, Demand Management, Noise Leaves, CASA, biosecurity https://www.legislation.gov.au. (NB those listed below have some application to the Eastern Beaches) For example: • Aircraft Noise Regulations • Air Navigation Act 1920 • Air Navigation Regulations 2016 • International Air Services Commission Act 1992 • Aviation Transport Security Act 2004 • Aviation Transport Security Regulations 2005
Federal	Legislation	Maritime Transport and Offshore Facilities Security Act 2003 Maritime Transport and Offshore Facilities Security Regulations 2003
Federal	Legislation	Biosecurity Act 2015
Federal	Legislation	Telecommunications and Other Legislation Amendment (Protection of Submarine Cables and Other Measures) Act 2005
State	Legislation	Biodiversity Conservation Act 2016
State	Legislation	Catchment Management Authorities Act, 2003;
State	Legislation	Contaminated Land Management Act 1997

Govt Level	Type	Legislation / Policy
State	Legislation	Coastal Management Act 2016
State	Legislation	Crown Land Management Act 2016
State	Legislation	Greater Sydney Commission Act 2015
State	Legislation	Environmental Planning and Assessment Act 1979
State	Legislation	Fisheries Management Act 1994
State	Legislation	Heritage Act 1977
State	Legislation	Independent Pricing and Regulatory Tribunal Act 1992
State	Legislation	Local Government Act 1993
State	Legislation	Local Land Services Act 2013
State	Legislation	Marine Pollution Act 2012
State	Legislation	Maritime Services Act 1935
State	Legislation	National Parks and Wildlife Act 1974
State	Legislation	Natural Resources Commission Act 2003
State	Legislation	Ports and Maritime Administration Act 1995
State	Legislation	Protection of the Environment Administration Act 1991
State	Legislation	Protection of the Environment Operations Act 1997
State	Legislation	Public Health Act 2010
State	Legislation	Sydney Water Act 1994
State	Legislation	Transport Administration Act 1988
State	Legislation	Water Act 1912
State	Legislation	Water Industry Competition Act 2006
State	Legislation	Water Management Act 2000

Govt Level	Type	Legislation / Policy
State	Planning Instrument	Coastal Management SEPP
State	Planning Instrument	State and Regional Development SEPP
State	Planning Instrument	Sydney Regional Growth Centres SEPP
State	Planning Instrument	Urban Renewal SEPP
State	Planning Instrument	Infrastructure SEPP
State	Planning Instrument	State Significant Precinct SEPP
State	Planning Instrument	SEPP 33 – Hazardous and Offensive Development
State	Planning Instrument	SEPP (Infrastructure) 2007
State	Planning Instrument	Three Ports SEPP
State	Planning Instrument	Draft Environment SEPP
Regional	Planning strategy	A Metropolis of Three Cities
Regional	Planning strategy	Eastern City District Plan
Local	Planning Instrument	Local Environment Plans - all local council managing land within the Eastern Beaches CMP Study area
Local	Planning Instrument	Development Control Plans - made by all local council under their LEPs

Appendix C First Pass Risk Assessment Stakeholder Workshop Inputs

C.1 Methodology

The first pass risk assessment methodology for this Scoping Study was designed to provide an evaluation of current management arrangements and identify key knowledge gaps in managing the threats. Based on this information and other expert input, studies are designed for Stage 2 that target the high priority threats and focus on aspects of management and /or information that are needed to better treat the threat. That is, the current management arrangements and knowledge basis are investigated and evaluated for each known threat. When combined with the level of threat, this information provides a sound basis for identifying studies to be completed in Stage 2, or to make recommendations for those threats or potential management actions that should be investigated in Stage 3 and 4 of preparing the CMP.

The first pass risk assessment is different to the full-scale risk assessment that will be conducted in Stage 3 of preparing the CMP. A full-scale risk assessment involves detailed analysis of the likelihood and consequence of the risks, using a range of sources and data inputs. The likelihood and consequence are combined to derive the level of risk.

The first pass risk assessment does consider both consequence and likelihood in determining the level of threat. However, this is simplified in recognition that there may be gaps in data that preclude a full scale, separate analysis of consequence and likelihood at this early stage of preparing a CMP. In determining the level of risk in the first pass assessment, likelihood and consequence are considered intrinsically, and the risk is given a ranking of high, medium or low.

The first pass risk assessment process was as follows, with the scales used illustrated in Table C-1.

(1) Assess the level of risk from known threats as high, medium or low, considering intrinsically the likelihood and consequence of the threat.

(2) Assess the future trajectory of the risk (as high, medium or low) taking into account future pressures such as population growth, tourism, urban development and climate change and considering intrinsically the likelihood and consequence of the threat in future.

(3) Determine an overall level of risk as high, medium or low, considering current and future risk.

(4) Assess the adequacy and effectiveness of existing management arrangements (i.e. controls, actions and governance) as adequate, moderate or inadequate by considering to what degree the action(s) may reduce or mitigate the risk (i.e. the ‘residual risk’ after management actions is accounted for). The assessment of management also considers governance complexity for each management theme (e.g. single vs multi Council and/or stakeholder governance).

(5) Consider the suitability of existing data as adequate, moderate or inadequate to support the management of the risk now and into the future, considering the temporal and spatial extent of existing information and data.

(6) The combination of level of risk, adequacy of management arrangements and adequacy of data to support management of the threat, and why, is used to develop further studies. The studies are considered in terms of their priority (high, medium, and low) for completion in Stage 2 to support preparation of the CMP. That is, some studies are essential to preparation of the CMP, and other studies are identified through the first pass risk assessment as potentially essential to management of the coastline but may not be needed to develop the

CMP. These studies are still documented and are recommended for consideration in Stage 3 as actions to go into the CMP.

Table C-1 Scales used in the First Pass Risk Assessment

Assessment	Scale		
Current Risk *(based on existing threats)*	**High**	**Medium**	**Low**
Future Risk *(based on projected threats)*	**High**	**Medium**	**Low**
Overall Level of Risk *(combination of current and future threat)*	**High**	**Medium**	**Low**
Adequacy of Existing Management Arrangements*	**Inadequate**	**Moderate**	**Adequate**
Suitability of Existing Data **	**Inadequate**	**Moderate**	**Adequate**
Recommended CMP Studies *(for further CMP Stages)*	**High Priority**	**Medium Priority**	**Low Priority**

** Defined based on input to the first-pass risk assessment workshop.*

*** Defined based on expert judgement with 'Adequate' considered to be only for issues with data up to date and full coverage over the study area; 'Moderate', only partial information available and/or not up to date; 'Inadequate', when information is inexistent, outdated or not covering the study area.*

C.2 Attendees

Table C-2 Visioning and Risk Assessment Workshop

Attendee	Name	Position	Organisation
1	Karen Harper	Environment/Sustainability	Woollahra Municipal Council
2	Anne White	Strategic Planning	Woollahra Municipal Council
3	Tessa Pentony	Open Space and Recreation	Woollahra Municipal Council
4	Sam McGuinness	Environment/Sustainability	Waverley Council
5	Suzanne Dunford	Sustainability Resilience	Waverley Council
6	Jaime Hogan	Strategic Planning	Waverley Council
7	Lucas Atkinson	Coastal Risk	Waverley Council
8	Corey Fox	Sustainable Water Coord	Waverley Council
9	Ros Picard	Engineering, Asset Management	Waverley Council
10	Sue Stevens	Bushcare Coordinator	Waverley Council
11	Fleur Mellor	Heritage Planner	Waverley Council
12	Jason Rider	Stormwater Engineer / Coastal	Randwick City Council
13	Bruno Pelucca		Randwick City Council
14	Sebastien Le Coustumer	Flood Planning	Randwick City Council
15	Duncan Scott	Public Safety and Aquatic Services	Randwick City Council
16	Kerry Colquhoun	Coordinator Open Space Assets	Randwick City Council
17	Clare Baggott	Risk Co-ordinator	Randwick City Council
18	Mark Moratti	Senior Water Floodplains & Coast Officer	DPIE (EES)
19	Paul Harper	Coast and Estuary Officer	DPIE (Crown Lands)
20	Ben Khan	Area Manager	NPWS

Attendee	Name	Position	Organisation
22	Rod Kerr	Service Planning Lead	Sydney Water
23	Frank Inglese	Operations and Compliance	RMS Maritime Division
24	Sarah Conacher	Fisheries Manager	DPI (Fisheries)
25	Josi Hollywood	Fisheries Manager	DPI (Fisheries)
26	Meredith Campney	Manager	DPIE (Beachwatch)
27	Davena Bond	Coast and Estuary officer	DPIE (EES)
28	Mark Ninness	Planning and Sustainability	Port Authority of NSW
29	Greg Ross	President	Friends of Waverley Cemetery
30	Sandra Ricklefs	Coordinator Sydney, Operations & Compliance Maritime	Greater Sydney - RMS
31	Lynda Newman	President, Randwick City Tourism	Randwick City Tourism
32	Claire Bettington	Treasurer	Friends of Malabar Headland
33	Brent Jackson	President	Bondi Surf Club
34	Geoff Withycombe	Senior Principal – Environment	BMT (Facilitator)
35	Ainslie Downes	Environmental Consultant	BMT (Facilitator)
36	Enwee Linford	Senior Project Engineer	RMS
37	Michael Stacey	Contaminated Land Consultant	Jacobs (Representing Commonwealth)
38	Bronwyn Englaro	Senior Sustainability Officer	Randwick City Council

C.3 Activity 1: Visioning

One word to describe the Eastern Beaches Coastline (ranked by workshop votes):

- Sustainable - 8
- Biodiverse - 4
- Iconic - 3
- Unique - 3
- Healthy - 3
- Connected - 2
- Culture - 2
- Beaches - 1
- Beautiful - 1

- Destination - 1
- Explorable - 1
- Complex - 1
- Urbanised
- Vibrant
- Safe
- Global
- Active
- Timeless
- Thriving
- Precious
- Exciting
- Busy
- Geology
- Heritage
- Scenic
- Diverse
- Escape
- Diversity

C.4 Activity 2: Values

C.4.1 Environmental

Environmental values (ranked by workshop votes):

(1) Biodiversity – 9

- Biodiversity and bio abundance
- Environment too precious to lose. Must spend money on proper management and continuous stewardship of the land
- Protecting biodiversity on rock platforms
- Biodiversity
- Maintaining biodiversity
- Diversity – bio
- Biodiversity
- Terrestrial and aquatic connections
- Biodiverse

(2) Water Quality – 6

- Improving water quality
- Clean water
- Water quality
- Water quality
- Clean water
- Water quality

(3) Marine Protection – 5

- Marine life
- Marine life
- Whales / marine life

(4) Coastline Conservation – 4

- Protecting our iconic coastal geology and not allowing development to intrude on this
- Shark habitat
- Bringing back the cray weed
- Marine protected areas
- Protecting marine vegetation
- Generational conservation
- Beautiful sandy beaches
- Protect our shores
- Geology
- Landscape

(5) Management – 2

- Environmental sustainability
- Sustainability
- Sustainable

(6) People – 2

- Education
- Collaboration
- Human health = environmental health
- Renewal
- Untouched
- Climate change and adaptation
- Changing impacts

C.4.2 Social

Social values (ranked by workshop votes):

(1) Recreation – 8

- Inexperienced ocean swimmers
- Surf lifesaving and nippers
- Places to relax and enjoy
- Spending time with family
- Place to live and recreate
- Make memories

(2) Culture and Events – 6

- Heritage
- Respectful of heritage and culture
- Multi-cultural
- Cultural
- Multi-cultural
- First Australian culture

- First nation acknowledgement
- Connect to Aboriginal culture
- Beach culture
- Beachside culture
- Café lifestyle
- Iconic Aussie culture

(3) Wellbeing – 4

- Wellbeing
- Suicide prevention
- Health and wellbeing

(4) Community – 4

- Local communities
- Resilience
- Ageing community
- Climate change adaptation
- Community
- Strong local communities

(5) Open space – 2

- Recreation open space
- Open space
- No more development without more open space

(6) Equity and Access – 1

- Inclusive
- For everybody
- Community access to all the coastline
- Equity and access
- Health environment
- Access
- Equality of access
- Accessibility
- Good public access to beaches and foreshore (walks)

C.4.3 Economic

Economic values (ranked by workshop votes):

(1) Tourism – 10

- International tourism
- Tourist destinations
- Promote tourism

- Vibrant tourist attraction
- Tourism
- Visitors
- Attractive (tourism)
- Tourism
- Mange the tourism sites i.e. manage the people
- Sustainable tourism
- Tourism

(2) Access to funding – 7

- High amenity value
- Balance
- Worth saving
- Balance tourism with environment

(3) Affordability, Accessibility, Inclusivity - 4

- Accessibility
- Sustainable
- Accessible economically
- Sustainable events

(4) Business – 4

- Opportunity
- Dense hospitality zone
- Supporting small/local business
- Local business
- Supports local business
- Opportunities

(5) Events – 1

- Beachside culture, festivals and events
- Recreational destination
- Events

C.5 Activity 3: Coastal Hazard FPRA

C.5.1 Coastal Inundation and Tidal Inundation

Table C-3 First Pass Risk Assessment Workshop Outcomes: Coastal Inundation and Tidal Inundation

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc, eg:	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
(d) coastal inundation / (e) tidal inundation **WAVERLEY LGA**	Bondi: North Bondi Surf Club, Pavilion and amenities, pits and pipes	Low (different for specific amenities e.g. skate park)	• Coastal risk management policy	Policy – Coastal Risk Management Policy Planning Controls – Bondi Plan of Management Conservation priorities - consideration	Adequate: Current policy is potentially adequate in the medium to long term.	Sea level rise will exacerbate inundation risk and also impact erosion rates	Adequate: Information – assessment of projected frequency and intensity of future storm events. Legislation / Policy	
	Tamarama: Kiosk, playground, amenities, pits and pipes	Medium		Tamarama Plan of Management	Adequate: Legislation / Policy Regional scale (place based) policy regarding SLP could be useful for CMP planning and implementation	Sea level rise will exacerbate inundation risk and also impact erosion rates	Adequate: A combined sea level rise policy will definitely be required to management future risk.	
	Bronte: surf club, Bronte pool, amenities, GPT, pits and pipes	High		Bronte Plan of Management	Adequate	Sea level rise will exacerbate inundation risk and also impact erosion rates	Adequate: State Gov should invest and publish project climate related risk information so council can follow and integrate into local scale management actions	
	Ramsgate and North Bondi Residential – GPT	High – due to wave action		Planning / Development Controls – DCP controls for affected residences	Adequate: Information Planning Controls	Sea level rise will exacerbate inundation risk and also impact erosion rates	Not Adequate: Information Planning Controls	More information needed
	Bondi Icebergs – pool and tenants	High		Bondi Plan of Management DCP controls for the property managed by a Trust but no management actions outlined and tenants probably unaware	Adequate: Planning Controls	Sea level rise will exacerbate inundation risk and also impact erosion rates	Adequate: Information Planning Controls	Stormwater impacts following inundation could exacerbate these risks → localised flooding risk if stormwater infrastructure is impacted by inundation
(d) coastal inundation / (e) tidal inundation **RANDWICK LGA**	Bunnerary Canal – tidal causes Botany Road flooding (State Road)	Low	• Nil	Legislation / Policy – Infrastructure SEPP – Public authority on public land Planning / Development Controls – Plans of Management → Parks Physical Works – maintenance				

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc, eg:	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
				Other: Reactive / complaints				
	Possible erosion / risks at ocean pools – rocks and debris washed in	Low	• Nil	Legislation / Policy – Asset management register / plans				
	South Maroubra drain / landfill – King high tide			Legislation / Policy – flooding / freeboard requirements under DCP	Risk from flooding of catchment is far greater so this is management via floodplain risk management study	Possible increase in storm surges and less frequent	Not Adequate: Planning Controls Coordination Further studies on storm surges	Review of planning controls. Specific studies on hot spots
	Possible impact on low lying infrastructure	Low						
(d) coastal inundation / (e) tidal inundation **WOOLAHRA LGA**								

C.5.2 Beach Erosion and Shoreline Recession

Table C-4 First Pass Risk Assessment Workshop Outcomes: F.4.2 Beach Erosion and Shoreline Recession

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc, eg:	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
(a) beach erosion and (b) shoreline recession **WAVERLEY LGA**	Bronte Erosion Hotspot (Beach sand)	Medium		Occasionally more sand around (don't import)	Not Adequate: Expensive and reactive response! Room for improvement in terms of financial effectiveness	Risk increasing due to population growth and climate change because consequences of more people on the beach	Not Adequate: $ Information Legislation / Policy e.g. for sand nourishment Coordination – plans of management could be strengthened	
	Mackenzies Beach (sand)	N/A		Nil				
	Bondi Bronte Seawall and Tamarama	High for Bronte High for Tama Medium and rising for others	• Bronte Seawall Study	Planning / Development Controls – Bondi Beach Conservation Management Plans Physical works – maintenance and capital works as required. Likely that all sea walls will need to be upgraded → $$$ → currently reactive management	Not Adequate: Planning Controls – managing public benefits (amenity) for all risk	Yes – deterioration of existing structures and increasing erosion due to sea level rise is likely to affect stability. Also increasing use and visitation.		Note: Had to close coast walk post event once – potential risk to life not managed
	Bondi Beach (sand erosion)	High risk to amenity But medium to low concern	• Worley Parsons Technical Report	Moving sand around – yet to invest in nourishment	Not Adequate: $ (220K post ECL) Potential action for CMP would see scraping policy (including triggers and guidelines)	Risk increasing due to population growth and climate change because consequences of more people on the beach	Not Adequate: $ Information (more needed) Legislation / Policy e.g. for sand nourishment Coordination – plans of management could be strengthened	
(a) beach erosion and (b) shoreline recession **RANDWICK LGA**	South Maroubra – NE Swell, grading of sand North Maroubra – Bedrock exposed, drain blocked with sand Middle of Beach – sand overtops promenade, McKeon Street	Medium	• No data on sand movement • Reactive Management	Physical works – risk assessment / technical study for projects Other – maintenance post event, reactive, project based.	Not Adequate: People - understanding Information / knowledge	Worse – climate change, sea level rise, population growth and development pressures	Not Adequate: People (involvement) Information (baseline data) Other – project based past approach is reactive, proactive approach needed.	

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc, eg:	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
	Coogee – infrastructure damage: promenade, lifeguard office, SLSC gym damage	High	• Nil	Physical works – post event restoration works, like for like replacement.	Not Adequate: Information Planning Controls	Worse – exposure increased population and restoration as per existing	Not Adequate: Information Proactive approach needed	
	Botany (Yarra) Bay Frontage 1974 Wharf and Paragon Restaurant	High – severity	• Nil (anecdotal)	Physical works – maintain vegetation Other – sand removal sailing club, reactive	Not Adequate: Information Other – no private land affected	Worse – part of Botany Bay system which has current issues which is likely to get worse. Cruise terminal – impacts and erosion	Not Adequate: Information Project based information / assessment.	New infrastructure risks/pressure on the natural systems
(a) beach erosion and (b) shoreline recession **WOOLAHRA LGA**	Disruption to natural sediment transport e.g. groynes (Frenchmans)	Low	• Within Embayment (low sediment transport) • EIS for Port expansion	Legislation / Policy – FM Act, MEM Act, EPA Act	Sometimes – low impact			
	Congwong Beach – natural dune and headlands. Removal of Bitou Bush / weeds, Encourage native dune species, Prevent public access to dunes = more resilient beach/sand system, reduce impacts from storms	Medium	• No formal studies • NPWS site monitoring / photo points • Bush regeneration reports	Planning / Development Controls – NPWS Act Other: Plan of Management Kamay Botany Bay NP	Adequate: $ People Additional funding needed to continue vegetation planting to stop erosion	Will increase with climate change and increased storm events Ongoing programs (need to improve compliance, signs etc)	Adequate: $ Information	Applies to other beaches where we are replacing exotics with natives with expectation it will be more effective.
	Congwong Beach – impacts for stormwater flows (increased kerb / gutter in catchment)	Medium	• Randwick Council? • NPWS have no formal studies only photos	Planning / Development Controls – NPWS Act Other: Plan of Management Kamay Botany Bay NP Increase flow due to impervious catchment causing increased erosion	Not Adequate: $ Planning Controls Need co-ordinated catchment approach to address increased velocity of water		Not Adequate: $ Planning Controls Coordination	Need to increase education of natural systems. Need to build resilience of assets to increase longevity (erosion)
	Build up of sand in stormwater assets/roads/paths etc.	Medium	• Council maintenance, individual councils will have data • Fisheries permits for dredging	Legislation / Policy – Local Government Act Physical works – Reactive / dredging removal, maintenance program	Not Adequate: Reactive element works but not long-term solution	Yes – important to maintenance schedules. Upgrade assets	Not Adequate: $ People Information Planning Controls	

C.5.3 Coastal Cliff or Slope Instability

Table C-5 First Pass Risk Assessment Workshop Outcomes: Coastal Cliff or Slope Instability

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc.	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
(e) Coastal Cliff or Slope Instability **WAVERLEY LGA**	Ben Buckler	Medium	• Coastal Hazard Vulnerability Study	Legislation / Policy – Coastal risk management policy Development Controls – DCP property owner risk assessment Other – ongoing monitoring (scope for improvement)		Likely that erosion will increase over time impacting stability	Not Adequate	Risks to private property likely to increase, high consequence
	Dover Height to Vaucluse	High to Very High		Legislation / Policy – Coastal risk management policy Development Controls – DCP property owner risk assessment Other – ongoing monitoring (scope for improvement)		Likely that erosion will increase over time impacting stability	Not Adequate	Risks to publicly owned land
	Coastal Walk	High (risk to amenity)		Not much – scope for improvement. Should build back better. 2016 replacement of coastal walk were replaced like for like		Worse with Increased use and visitation	Not Adequate	Not planning for future risks
	Cemetery	High		Planning / Development Controls – Plan of Management Physical works – recent major works		Worse with Increased use and visitation	Not Adequate	Contamination risks
(e) Coastal Cliff or Slope Instability **RANDWICK LGA**	Clovelly Headland	Medium	• Geotechnical Report • Armouring work completed	Physical works – armouring of headland completed	Adequate	Potential increase risk of instability due to increase frequency of major storm events	Other – monitoring of cliff stability	Potential notation on Planning Certificate (as per Waverly Council)
	Lurline Bay South Coogee - private property	High	• Geotechnical report associated with coastal walkway • Feasibility study – detailed wave action	Physical works – planning / detailed design for coastal walk	Other – ongoing investigations	Potential increase risk of instability due to increase frequency of major storm events	Other – monitoring of cliff stability	
	Gordons Bay Southern side - private property	High	• Restoration works • Piling / stabilisation – associated reports	Legislation / Policy – geotechnical investigations for Das Physical works – piling and reinforcement completed	Adequate	Potential increase risk of instability due to increase frequency of major storm events	Other – monitoring of cliff stability	Stricter planning control e.g. pools
	Malabar headland – landfill end of Fishermans Road Slope instability – northern end	Low / Medium	• Contamination / geotechnical • Remediation plan	Physical works – planned but not completed due to risks to Sydney Water assets			Other – monitoring of cliff stability	Stricter geotechnical study and investigation
	Little Bay Landfill material deposited on beach	Low / Medium		Other – Crown Land Plan of Management				

Coastal Hazard / LGA	Known Hot Spots / Locations	Broadly, what is the level of risk? High / Medium / Low or N/A	What data / reports etc do you have about this risk? For specific locations / issues, entire LGA etc.	How do you currently manage this risk? For specific locations / issues, entire LGA etc.	Are the management action(s) effective / adequate? Why?	Will the risk get better or worse in future? (Please specify) Why? E.g. due to climate change, population growth, development pressures, trade gateway etc	Will existing management actions be adequate to manage the risk in future? What else is needed to manage the future risk?	Comments
(e) Coastal Cliff or Slope Instability **WOOLAHRA LGA**	South Head Cliff instability / Gap Park (risk to walk track recreation/access and public safety)	Medium	• Geotechnical reports (NPWS 2016), (Council 2015)	Legislation – NPWS Act (safe setbacks, descaling report/policy, fencing prioritisation, signage, website info), LG Act, risk framework internal	Adequate: $ Planning Controls Further works required / increase demand for access and accessibility	Yes will continue – actively manage and monitor	Adequate $ People	
	Damage to cultural heritage (indigenous and European)	Medium	• AHIMS, Conservation Management Plans, Heritage register, DA process	Legislation / Planning Controls – Plans of Management, NPWS Act, LG Act, Heritage Act – Dunbar Head Lighthouse	Not Adequate – in regards to the risk of slope instability etc. needs more information and interpretation	Original sites will be lost, potential for interpretation	Not Adequate: $ People Information Coordination (land councils)	
	Defence assets / other assets i.e. navigational assets (Port Authority) (operational infrastructure not simply heritage)	Medium	• Unknown	Legislation – Ports Authority Act, Federal Government?	Unknown – assume setbacks	Yes, will continue (potentially exacerbate)		Potentially run this past them for more info. Federal and land council
	Rock fishing access / recreation boating access (Malabar boat ramp)	Medium	• Recreational fishers survey reports • RLSS Stat Reports • Consultative recreational fishers groups	LGA Randwick and North Beaches – Rock fishing Compliance management by NSW Police, Fisheries, Rangers Local Gov Act – rock fishing safety FMA Act – rec fishing access	Not Adequate” $ People	Worse – climate change?		
	Risk taking behaviour (selfie taking) and self-harm	Medium / High	• Setbacks and fencing • Alarms, phones, removed / setback walking track. walking track designed with self-harm in mind (inclusion of destinations) • Reporting (lifeline)	Risk Policy, NGOs, Parks, Manuals, fencing standards and walking track design.	Yes, its effective, but not sure it reduces self-harm	Yes, will continue. Actively monitored and managed	Adequate: $ People Information	
	Vaucluse / Diamond Bay Outfalls	Low	• Adhoc condition assessments. Faults have been reported by local residents	Repair based on condition assessment. Dry month flows are being intercepted and diverted to Bondi STP	Not Adequate $ People	Better – dry weather 90% of time being diverted to Bondi STP		Blockage of outfall due to rock/asset failure could result in ongoing discharge to harbour.

C.5.4 Other Issues

Table C-6 First Pass Risk Assessment Workshop Outcomes: Other Issues

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
Coastal Development	Adverse social, economic or environmental outcomes (including biodiversity loss) due to coastal development	Medium High	• Botany Bay • Frenchmans Bay / Yarra Bay • All Areas • Ferry / cruise terminal • Urbanisation • Hard surfaces • Less public access through development • Little Bay • Hanging Swamps, South Coogee Golf Courses	• FM Act • EPA Act • Planning Approvals etc. • Plans of Management • LEPs • DCPs • DA Assessment SEPPs	Adequate Short term	Inadequate	No real understanding of overall impact. More information on major projects.	Yes Population pressures Climate Change Changes in planning regime	No (short term) Yes, subject to review	$ Legislation / Policy Planning Controls Coordination	
Coastal Development	Hazard impacts resulting from poorly sited coastal developments	Medium	• Loss of houses • Loss of life • Coastal walk • Reserves • Little Bay • Passenger Terminal • Yarra Bay	• DA Assessment • Monitoring • LEPs • DCPs • SEPPs	Adequate		More info on major transport projects	Yes Population pressures More facilities	Yes, subject to review	Legislation / Policy Planning Controls Coordination	
Biodiversity / Habitat Disturbance	Habitat disturbance / impacts due to recreation activities (e.g. boating, fishing, bush / beach walking, dog walking etc.)	High	• Rock platforms • Intertidal zones • Malabar Headland • Congwong Beach • Cape Banks marine area • Gordons Bay	• Bronte-Coogee Aquatic Reserve • Magic Point – Grey Nurse Sharks • Fisheries day limits • IPA's • Dog exclusion zones • Cape Banks Aquatic Reserve • Management Plans	Inadequate $ Information Legislation / Policy Coordination	Inadequate	Baseline biodiversity mapping Lack of compliance Lack of penalties Lack of information / mapping on habitat	Yes Population increase (more people and dogs!) and habitat destruction	No	People Coordination Plans of Management for Aquatic Reserves	

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
				• Enforcement							
Biodiversity / Habitat Disturbance	Invasive vegetation species, pests and feral animals impacting on habitat and biodiversity (e.g. foxes, dogs, cats, bitou bush)	High	• All • National Park, open space and reserves	• Policy • Management Plans • DA Conditions	Inadequate $ Information		Lack of information / mapping on habitat	Yes Fox population not currently managed	No	$ Information Coordination	
Biodiversity / Habitat Disturbance	Illegal removal of vegetation by residents (for personal gains / views)	Medium / High	• All (except Woollahra) • Bronte • South Coogee	• Fines • DA Conditions	Adequate			Yes Smaller lot sizes, difficult to manage and enforce	No	Legislation / Policy Planning Controls Coordination	
Other (Added by Workshop Attendees)	Climate Change impact of this on biodiversity	High	• All – loss of biodiversity due to habitat modification			Inadequate	Unknown adaptive capacity	Yes	No	$ People Information Legislation / Policy Planning Controls Coordination Other	
Recreation Use and Amenity	Insufficient facilities and accessways to meet demand	Medium / High – completing available open space, range of types of activities increases, pressure to commercialise	• Coogee Beach • Maroubra Beach • Coastal Walkway • Water based activities increased • North Bondi	• Plans of Managements • Legislation • Policy • Capital Works Program • Government grants • Infrastructure	Inadequate $	Inadequate – Randwick Moderate – Waverley Adequate	User survey	Yes Increased Population Accessibility	No	$ People Budged, Multi-use, Asset management	
Recreation Use and Amenity	Conflicts between other user groups on / in the beaches	High – busy areas. Med / Low – quiet areas User groups = private v public Range of activities	• Water-based – kite surfers, lots of contention • Popular events at Coogee, Maroubra • Malabar Headland • Shooting range, walkers, horse	• Internal policies – Commercial fitness • RMS guidelines • Police, rangers, lifeguards • Public education • Usage control management plans	Inadequate Adequate	Complaint based / reactive = inadequate Adequate		Yes Increased Population More competition uses	No	$ People Coordination Budget	• Increasing • Safety Manage expectations

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
			riding, golf courses • Kite surfing, swimmers, surfers								
Recreation Use and Amenity	Poorly maintained or located recreational facilities and beach access points / loss of public access (either by private development or Government area closures)	Low – Waverley Medium – Randwick Medium	• Along Eastern Beaches Coastal Walkway • Difficult to get access across residential areas • La Perouse Headland • South Head, Camp Cove • Lurline Bay (access)	• Concept designs for walkway • Community consultation • Capital works • Management plans	Inadequate $ Coordination	Waverley – adequate Randwick – Moderate e.g. out of date Policies		Yes Increased Population More capital funding	No	$ People Information	• Changes depending on land tenure • Use patterns change
Water Quality	Poor water quality in the ocean due to runoff from coastal / urban development (stormwater)	Medium – Waverley and Randwick Medium / High	• Malabar – poor water quality • South Maroubra • Coogee Beach • Rock Pool • Stormwater runoff all beaches	• Community feedback • Capital works • Beachwatch • Public education • Planning controls	Inadequate (depends on location) Adequate	Adequate		Yes Increased Population No with proper management and infrastructure	Possibly Yes	$ People Information Better infrastructure, more onus on developers	• Rising expectations • 24/7/365
Water Quality	Sewage effluent and septic runoff	High – Randwick Low / Medium – Waverley High	• Malabar treatment plant • Diamond Bay – raw sewage • Overflows – all beaches	• Beachwatch • Working with Sydney Water investigating cross connections • Diamond Head diversion to Bondi Ocean outfall	Inadequate	Inadequate, lack of transparency	To be discussed with Sydney Water	Yes Increased Population No should be able to be managed	No		• Rising expectations • 24/7/365
Water Quality	Sediment contamination (toxicants)	Medium	• Malabar headland – South Maroubra • Little Bay from hospital site	• Site audits for DAs	Inadequate Information		Lack of data	Yes Increased Population Possibly as extent of contaminated sites not fully know.	?	$ People Information Coordination	• Rising expectations • 24/7/365

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
			• Congwong beach increased sediment beach								
Pollution and Waste	Reduced amenity and environmental impacts from litter, microplastics / plastics, pesticides / herbicides, solid waste and marine debris	High Stormwater, solid waste and litter	• Sydney Water • All stormwater outlets e.g. North and South Maroubra GPTs bypass • Coogee very bad • Raw effluent at Vaucluse and Dover Heights • Bypass of effluent at Malabar WWTP • Diamond Bay various sewer overflows	• Risk based framework for water quality • Refresh Diamond Bay (Sydney Water) • GPTs • Upgrades and changes to WWTP / Pollution licences • Legacy landfill sites • GPTs	Inadequate $ Legislation / Policy Planning Controls Coordination	Knowledge of contaminated sites Information adequate but not utilised	Inadequate info about plastics General public are not engaged / educated Street litter around RCL not effective clearly	Yes More people, more pollution Worse, increasing population and aging assets	No Infrastructure isn't Management has potential	$ People Legislation / Policy Coordination Community ownership	• $ to clean up legacy landfills • Smart city / innovation
Engagement, Governance and Compliance	A lack of community awareness and engagement with the coastal environment and its management	Low High – lack of community awareness	• Involve all • Loss of beach • Entire coastline	• Not that we know of	Inadequate Low priority (not high risk)	Knowledge of sea level rise at a local level Info present but not utilised	Awareness / sessions	No Engagement will increase as impacts increase		Information	
Engagement, Governance and Compliance	Inadequate, inefficient, over- or under- regulation, governance and management of the coastal environment	Medium High	• Lack of coordination • Building in Geotech hazard areas (Lurline Bay, Dover Heights, Vaucluse) • Entire coastline	• Waverley Coastal Risk Management Policy • Good policy • Poor compliance, too broad	Inadequate Policy / regulation is adequate Compliance inadequate	Policy / regulation is adequate	More detailed geotech studies. Timeframe – short term. Nee to define. This is reactive. Lack of ownership				
Engagement, Governance and Compliance	Impacts resulting from lack of compliance with regulations and compliance effort (by users) or lack of enforcement success (from authorities)	High Difficult enforcement, lack of long-term strategy	• Fisheries non-compliance • Entire coastline	• Fisheries Act • EPA and MEM Act • Good policy • Poor compliance, too broad	$ People Coordination Resourcing	Policy / regulation is adequate		Building in the coastal front and non-compliance with future requirements	Coordination Resourcing		

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
Engagement, Governance and Compliance	Ownership and responsibility of the study area / intergovernmental coordination	Low – Medium Medium – existing communications-actions unknown)	• Water quality is across areas and there is a lack of ownership and shared responsibility. • Port Authority – who coordinates? • Entire coastline	• DCPs • LEPs • POEO Act • Between councils – Yes • State / federal – not so much	Inadequate Between councils – adequate State / federal – inadequate	Coastal Council group Reactive with others	Need to scope the catchment limit where the pollution sources? Catchment water quality strategy				• Water quality – lack of coordination • Botany Bay – lack of coordination. CMP should be Botany Bay wide.
Cultural Heritage	Aboriginal culture not being recognised and preserved; including values and sites	High Medium – incomplete registration, increased visitation risks, adequate processes in place, can often get 'lost' with other issues, lack of documentation of culture and history	• Coastal Walk – Vaucluse to Yarra Bay • Whole coast along coastal walk • Bushlands, national parks, undeveloped areas	• Site signage • Heritage register • Education • Further research on First Nation sites of value • National Parks Act • Legislation • LEP, DCPs • AHIMS • Groups – LALC	Inadequate $ People Information Coordination	No Info adequate	Mapping required based on research e.g. midden sites, carvings Management of tourism Reliability of information and identification of sites	No Increased acknowledgement is becoming apparent in community Yes Loss of local knowledge, increase in tourism, population, usage, development	Yes No Lacks formal arrangements / Interaction with local indigenous community	People Coordination	• Requires comment and input by First Nation elders in the LGA. Land Council input. • Review how we interact with LALCs
Cultural Heritage	Community not valuing culture and heritage generally	Medium Low – can be conflicts between parties but generally community does value the heritage, some poor maintenance	• Everywhere development takes place • More than developers don't appreciate heritage • Most of coast • HCAs	• DCP • Heritage Council • Development proposals • Legislation – Heritage LEP • CMPs • Community consultation and precinct groups • Historical societies	Inadequate Adequate People Information Legislation / Policy Planning Controls Coordination	Adequate	Constantly changing community needs continual education of what is appropriate. We don't know community sentiment. Recent/update through our CSP. Specific issues.	Changing demographics and population pressure may exacerbate risk Unlikely Development pressures causing people to protect heritage	No Yes	$ People Legislation / Policy Planning Controls Coordination	• Education required • Room to include significant trees

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
Fishing	Recreational fishers exceeding bag limits	Medium – High Mainly Randwick and lack of compliance	• Along coastal rock shelf • Estuaries • Bays etc. • Abalone, Rock lobster • Randwick	• Penalties • Fishery patrols • Fisheries • Signage • Ethnic Awareness • Dive groups • Community education	Adequate $ and People – more resources always needed Inadequate People Coordination Compliance	Info adequate	Resources to watch need to regulate. Compliance is key issue	As population grows risk increases Likely Bag limits likely to get smaller, population will increase Unlikely as less fish!	No	Signage Coordination	• Education • Need more compliance and safety • Not always about educating locals, many fishers come from other areas
Fishing	Overfishing by commercial fishers	Low – Medium Dumping by-catch and washing up on other pools and beaches	• Sector is mindful of its own sustainability • Malabar, Maroubra and Little Bay	• Vessels regulated by Commonwealth • Otherwise state regulated	Adequate Inadequate $ Coordination	Adequate Moderate	Unknown how often this happens	As population grows risk increases. Commercial fishing yields may be impacted by increased population. Potentially	Potentially not No	$ Information Coordination	• Commercial fisheries have their own regulations
Industrial Activities	Industrial activity impacts on land and water habitat (including industrial discharges)	Medium Low – Waverley and Woollahra Med / High – Randwick Sewage, STP and Port	• Foreshore in harbour • Eastern suburbs • Botany ground water contamination including Orica • Oil spill / truck incidents • Three Ports SEPP – legacy contamination	• POEO Act • Combat agency or hazmat • NSW Maritime • EPA • Three Ports SEPP • CLM Act • Technical Studies	Adequate Planning Controls Coordination More resources always needed	Adequate	Resources to match need to regulate. Usually State agencies	Yes Sea level rise will impact Unlikely to increase Improvements in technology	Hazmat activities Yes	$ Information Legislation / Policy Planning Controls	• Unlikely that land will increase
Other (Added by Workshop Attendees)	Dumping and land clearing	Medium / High Landfill, illegal dumping, contamination Bitou Bush weed part of this issues, erosion control	• Randwick • National Parks	• SEPP 55 • Process of remediating	Inadequate $ Information Legislation / Policy Planning Controls Coordination	Inadequate	Money Data Info Knowledge Treatment methods	Potentially In terms of conversion to residential. Change of use and exposure to contamination	No	$ Information Legislation / Policy Planning Controls Coordination	• Need to reduce public health risks of building and construction sites.

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
		Visual amenity and health									
Shipping	Commercial vessels	Medium Eco issues – fuel spill, ballast Groundings, capsizing Environmental, heritage	• Port Botany • South Head to Yarra Bay • Ballast water biosecurity risk • Containers – feral bees, ants etc. • Fuel and oil spills • Coastal erosion from vessels • Killing whales • Cruise ships • Shipwrecks	• Policy and compliance docs in place • Legislation • MARPOL • Env Plan for Commercial Vessels • Sydney Ports • POEO Act	Adequate $ People Information Legislation / Policy Planning Controls Coordination	Adequate Government well aware		Yes Increased shipping and aging of the fleet Possibly Changing demographic, relocation of infrastructure i.e. close Sydney Harbour commercially	Yes	People Information Legislation / Policy Planning Controls Coordination	• Emissions from fleet
Shipping	Dredging and harbour maintenance (& offshore spoil dumping)	High (dredging) Medium – Low (changes in beach, navigation issues. Eco – changes to habitat)	• Port Botany • South Head to Yarra Bay	• 3 Ports SEPP • POEO Act • EPA involved	Adequate People Information Legislation / Policy Planning Controls Coordination	Adequate		Development projects e.g. Cruise Terminal Botany – Increasing pressure and usage	No Yes	People Information Legislation / Policy Planning Controls Coordination	• 2007 EIS Submission – Port Authority
Public Safety	Wildlife interactions (e.g. shark bite, jellyfish, boat striking a whale)	Medium (Low risk / high impact) High (rock fishing) Low-Medium	• Swimming • Recreational areas • South Head to Yarra Bay	• Signage • Patrols • Alerts • Tagging • Netting • Smart drum lines • Information and education	Adequate	Adequate	Needs further information regarding changing migratory patterns and climate change	Yes Change in marine environment. Eco conditions improving greater numbers. Control measure revised.	No Yes	People Information Legislation / Policy Planning Controls	• Climate change introducing new species to the area • Complete change in mindset on precautionary principle
Public Safety	Seafood contamination	Low Medium – High Spear fishing off VDB cliff face outfalls	• Off VDB outfalls	• Health regulations • Harvesting conditions • Safe food regulations	Inadequate $ Information Planning Controls	Inadequate Adequate	Inadequate resources to prevent contaminant source	Yes If population increases No	No Yes	$ Information Legislation / Policy	• Microplastic contamination • Political mindset

Issues (Theme)	Threat	What is the level of risk in your opinion? High - Medium - Low	What locations are affected? (geographical area/sector/assets/ ecosystems)	What management arrangements are in place to manage this risk? E.g. Policy (Local / Regional / State) - On ground works - Structure – Resources	Are the management action(s) adequate? Why?	Is existing information about the risk Adequate / Moderate / Inadequate?	What are the key gaps in information / data / knowledge? (Please explain)	Will the threat get worse in future? How? (Population pressure, climate change, trade gateway, etc)	Are the existing management arrangements adequate to manage the threat in future? (Yes / No)	What else is needed to manage this risk now or in the future?	Comments
				• Quality control • Signage • Promoting DVB discharge	Adequate			More stringent quality control methods in place		Education / Awareness	
Public Safety	Other water pollution affecting human health and safety (toxic algal blooms, bacteria, etc.)	High Sewer / Stormwater Medium – High Ocean swimming of VDB cliff face outfalls, Dry weather (choke) and wet weather overflows	• After storm events • Off VDB outfalls • All recreational beaches	• Coast watch • Signage • Alerts • Beachwatch • Education and signage • Pamphlets • General advisory “No Swimming”	Inadequate $ Information Real time information / live data Adequate People Information Planning Controls Coordination	Inadequate Adequate	Lag time in alerts Live data	Yes If population increases Sydney Water to continue to maintain its assets so conditions don’t deteriorate	No Yes	People Information Legislation / Policy Coordination Education / Awareness	• Microplastic contamination • Political mindset
Other (Added by Workshop Attendees)	Construction Sites (sediment)	Med – Low	• Waterside construction	• Booms and sediment traps • “Get the site right”	Adequate People Information Planning Controls	Adequate		Yes Increase of construction around waterways			

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