NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that of a meeting of **HARBOUR FORESHORES & COASTLINE MANAGEMENT ADVISORY COMMITTEE** will be held:

DATE: **TUESDAY 8 July 2014**

TIME: **From 4.00pm to 6.00pm – maximum 2 hours**

PLACE: **Councillors' Room, Manly Town Hall, 1 Belgrave Street, Manly**

COMMITTEE MEMBERS:

Councillors

Clr Heasman	Manly Council
Clr Bingham	Manly Council
Clr Griffin	Manly Council
Clr Pickering	Manly Council

Other Representatives

Raymond Mathieson	Community member
Carlo Bongarzoni	Community member
Ian Littlemore	Community member
Richard Hewitt	Community member
Rodney Childs	Community member
Vic Levett	Community member
Ross Thirmyn	Community member
Marc Manion	Manly SLSC
Daniel Duemmer	NSW Roads & maritime Services
Craig Susans	Queenscliff SLSC
Mark Moratti	Office of Environment & Heritage
Michael Treanor	NSW Parks & Wildlife Services (OEH)
Marcel Green	Dept. Primary Industries

Council Staff

Ed McPeake	Manager Environmental Programs
Jacqui McLeod	Senior Coastal Management Officer

All other Councillors are free to attend as observers and are invited to do so and to engage in discussions, but not in voting, on any matter before the Committee.

Stephen Clements
Deputy General Manager, Executive Manager, Landuse & Sustainability

Date: 8 July 2014

AGENDA

HARBOUR FORESHORES & COASTLINE MANAGEMENT COMMITTEE

MEETING TO BE HELD ON TUESDAY 8 July, 2014
AT 4.00PM – 6.00PM

Councillors' Room, Manly Town hall, 1 Belgrave Street Manly

ITEM 1 **Apologies and leave of absence**

ITEM 2 **Declarations of Interest – Pecuniary**
Non- Pecuniary

ITEM 3 **Confirmation of Minutes of Meeting 13 May 2014 and Matters Arising**

ITEM 4 **Report: Update on Estuary Management Program projects**

ITEM 5 **Report: Review of SCUBA Diving Licensing**

ITEM 6 **Updates and status on projects & reports**

ITEM 7 **General Business**

ITEM 8 **Date for Next Meeting: 9 September 2014**

MINUTES OF MEETING

HARBOUR FORESHORES & COASTLINE MANAGEMENT ADVISORY COMMITTEE

HELD TUESDAY 13th MAY 2014

NOTE: All minutes are subject to confirmation at a subsequent Council or Planning and Strategy Committee meeting.

PRESENT:

Councillors

Clr Adele Heasman	Manly Council (Co-Chair)
Clr Cathy Griffin	Manly Council (Co-Chair)
Clr Candy Bingham	Manly Council

Other Representatives

Ray Mathieson	Community Member
Carlo Bongarzoni	Community Member
Ian Littlemore	Community Member
Rodney Childs	Community Member
Richard Hewitt	Community Member
Ross Thirmyn	Community Member
Daniel Duemmer	NSW Roads & Maritime Services
Marcel Green	Department of Primary Industries (Fisheries)

Council Staff

Ed McPeake	Manager Environmental Programs
Jacqui McLeod	Senior Coastal Management Officer

TO THE MAYOR AND COUNCILLORS OF THE COUNCIL

The **Harbour Foreshores & Coastline Management Advisory Committee** met on 11th March 2014, to consider the matters referred to it and now provides the following advice to Council.

OPEN The meeting commenced at 4.06 pm

DRAFT

ITEM 1 APOLOGIES AND LEAVE OF ABSENCE **ACTION**

Clr Steve Pickering	Manly Council
Vic Levett	Community Member
Mark Moratti	Office of Environment and Heritage
Marcus Cahill	NSW Roads & Maritime Services
Lee Cooper	North Steyne Lifesaving Club
Craig Susans	Queenscliff SLSC
Marc Marion	Manly Life Saving Club
Paul Schuetrump	Department of Primary Industries

ITEM 2 DECLARATION OF INTEREST
Nil

ITEM 3 CONFIRMATION OF MINUTES
Previous minutes of 11th March 2014 were accepted.

MATTERS ARISING
The Committee discussed in detail General Business Item 7.2, being the RMS grant for the floating pontoon and jetty, under the Sydney Harbour Access Program, for which the Committee had previously agreed that the originally proposed location at Clontarf was no longer suitable. In particular, the Committee discussed the potential location at Little Manly, noting that Little Manly Precinct had voted unanimously for a boat pick-up and drop-off to be constructed along the western boundary of the Little Manly tidal pool. The issue of potential contamination of pool waters with boat fuel was raised. RMS advised that there would be minimal impacts. The Committee noted and acknowledged that Little Manly tidal pool area would not be suitable in some weather for boat pick-up and drop-off and that a floating pontoon would be unsuitable. The Committee discussed the alternative at Forty Baskets, being an all-weather location but not as accessible to Manly and that the pool walkway needed substantial upgrading for the purpose of boat pick-up and drop-off.

ITEM 4 Report: Proposed consultation and action plan for alternative location of public jetty/pontoon under Sharing Sydney Harbour Access Program

Following the discussion in the Matters Arising, the Committee further discussed alternative locations to Clontarf, including the Manly SEA LIFE sanctuary wharf; Silver Beach, down from Wellings Reserve, in between Davis Marina and Forty Baskets Beach; and south of Jump Rock, towards the old coal loading area. The Committee noted concerns over higher costs of some options, together with limited time remaining to complete the project, in line with requirements of the grant funding. Therefore, Little Manly was seen to be a good location, especially given the support from the precinct. The Committee resolved to adopt the proposed action plan, with amendments relating to consultation with Little Manly Precinct over the design and consultation to include Precincts.

DRAFT

Recommendation: **ACTION**

The Committee recommends to the General Manager that the action plan and basis for consultation, as amended be progressed as follows:

1. Prepare a draft design for the public walkway with boating access, to be completed by Council's Urban Services and consult with Little Manly Precinct (amended). **GM**
2. Prepare a press release about the project, noting that the initial Clontarf location is no longer favoured and that the Little Manly tidal pool is supported as an alternative location by the Little Manly Precinct.
3. Provide information on Council's website and invite comment and suggestions for other locations.
4. Consult with Precincts over the proposed Little Manly location and design (amended).
5. Hold a public meeting at Little Manly, inviting the broader community and conduct an information stand at Little Manly.
6. Determine the alternative location for the public jetty/pontoon.
7. Consult with Manly Scenic Walkway Committee.
8. Consult throughout the process with Roads and Maritime (specifically the local Boating Safety Officer and the Better Boating Program team) over the proposed alternative location of the pontoon, concept/detailed design of the pontoon and any funding issues that may arise.

ITEM 5 Report: Review of Coastal Management Action Plans

The Committee noted its appreciation in receiving the reports and in hard copy. The Committee also noted the substantial amount of work required in order to review the achievements and priorities and that it would need to be progressed over several months.

Comments on the action plans for North Harbour and Clontarf, included that there were many high level actions and routine maintenance actions, resulting in there being too many actions and making it difficult to measure progress. Also, there was confusion between land and water based actions. For North Harbour, it was seen that stormwater drainage should be a separate heading, these being key issues contributing to beach erosion and siltation. For Little Manly, it was noted that the plan needs complete review due to structural changes in access and use. It was agreed that the number of actions needs to be reduced to reflect key priorities for maintenance and infrastructure. In line with this, the Committee requested that the action plans be revised according to a template, with a reduced number of high level and routine actions and revised themes which will allow a more efficient review of key priorities.

The Committee reviewed the plans' context for development and implementation, essentially under the Environment component of the Community Strategic Plan which sets 10 year, 4 year and 1 year planning cycles that identify project initiatives for funding through Council budget, including the Environment Levy. Fisheries noted that the scope and priorities are also governed by State Government legislative requirements.

DRAFT

Committee members agreed to assist with the review of the action plans, as follows:

ACTION

1. Manly Ocean Beach Coastline Management Plan 2008 - CG
2. CabbageTree Bay Coastline Management Plan 2000 - CG
3. Little Manly Coastline Management Plan 2004 – RM/IL
4. Manly Cove Coastal Zone Management Plan 2011 – RM/IL
5. North Harbour Coastline Management Plan 2010 - RC
6. Forty Baskets Coastline Management Plan 2004 - RC
7. Clontarf/Bantry Bay Estuary Management Plan 2008 - CB

Recommendation:

The Committee recommends to the General Manager that:

1. JM to prepare a template and revise the action plans.
2. Committee Members to review the revised action plans, noting achievements, outstanding actions and top ten priorities for infrastructure and maintenance.
3. Precincts to be consulted over the revised actions.

Updates on progress to be provided at subsequent meetings.

ITEM 6 Updates and status on projects & reports

Nil

GENERAL BUSINESS

Items discussed included:

1. Boat Trailer Working Group Discussion report and options paper March 2013 – copies of the report were made available to Committee members who queried whether a subsequent report was available.
2. NSW Regional Boating Plans - it was noted that the initiative was addressing the issue of boat trailers and that the consultant could be invited to the next meeting to provide an update.
3. Jump Rock – the committee discussed whether a cost effective solution was available to reduce the safety risks.
4. Illegal boat storage at North Harbour – the committee asked for an update on progress of the issue. The progress to date was reported as follows:
    - Council rangers stickered the illegally stored dinghies & kayaks in mid November 2013 and again in mid December 2013, conducting audits of the number of dinghies & kayaks.
    - A press release was made around this time, in order to advise owners of the craft of the initiative and to encourage them to notify Council of the details of their boats and contact details to be recorded on a database; and to direct owners to Council's web site for further information which included a full brief on the initiative, reasons why the craft needed to be removed and answers to FAQs regarding Council's powers and the process for removal of the craft.
    - Letters were sent to the user groups, seeking their support for notifying any owners.
    - Since the first audit of 164 craft, 93 craft were remaining at the last audit conducted in late January 2014, following removal by owners.

DRAFT

- Council has not yet removed any craft and will be progressively removing the unseaworthy craft initially, then impounding the remaining craft.
- The database has about 20 owners on it who will be notified as time approaches for impounding craft so they have a final opportunity to remove them.
- Another press release will be made at the time that Council will commence removing the unseaworthy craft which is hoped will result in more owners removing their boats, thus minimising the burden on Council's resources for the disposal and impoundment of craft.

ACTION

5. Courtesy moorings – RMS advised that 7 potential locations for additional courtesy moorings in the Manly LGA had been identified and that consultation with the community would be commencing soon. RMS sought the Committee's support to commence consultation. The Committee indicated their support.

Recommendation:

The Committee recommends to the General Manager that:

GM

1. Determine if there is a subsequent report to the Boat Trailer Working Group Discussion report and options paper March 2013 and provide copies to Committee members.
2. Invite GHD consultant for the NSW Regional Boating Plans to next meeting.
3. Staff to put a proposal to the risk manager, regarding a cost effective solution to reducing the safety risks at Jump Rock.

ITEM 7 NEXT MEETING DATE:

Date: Tuesday 8th July 2014
Time: 4-6pm
Venue: Councillors Room – Town Hall – Manly Council

Meeting closed at 6.07pm

DRAFT

TO: Harbour Foreshore & Coastline Management Advisory Committee

MEETING DATE: **8 July 2014**

AUTHOR: Jacqui McLeod, Senior Coastal Management Officer

SUBJECT: Update on Estuary Management Program Projects

1. INTRODUCTION

This report is provided for information of the committee. It provides information in relation to progress of the Estuary Health Assessment and Estuary Hazards Study projects.

2. INFORMATION

Council is currently undertaking an Estuary Health Assessment and Estuary Hazards Study for Clontarf/Bantry Bay, jointly funded through the State Government's Estuary Management Program. An outline of progress of the projects is provided below.

Estuary Health Assessment

The Estuary Health Assessment is to include a description of the components of the estuarine ecosystem; the key biological, physical and chemical processes and interactions; and the key pressures impacting on estuarine processes and estuary health. It will also assess the status of the estuary health through monitoring of indicators, including phytoplankton biomass (chlorophyll *a*) and seagrass extent. The Estuary Health Assessment is a technical study for the planned Coastal Zone Management Plan for Clontarf/Bantry Bay.

An initial assessment of estuary health has been completed, being a report entitled 'Estuary Health Status and Pressures for Clontarf/Bantry Bay. The report is a desk top study which responds to Milestone 1 for the project, requiring tasks as follows:

- Review existing and related studies;
- Establish ecosystem health; and
- Identify existing & potential pressures affecting estuary health.

Council is also undertaking the work for Milestone 2. Water quality monitoring for the first 4 months of the 12 month program has been completed. It is intended that budget savings made under Milestone 1 and 2 will be diverted to seagrass mapping.

A copy of the report, including conclusions on current estuary condition and pressures and initial results from water quality monitoring is provided as Attachment 1.

Estuary Hazards Study

The Estuary Hazards Study will make assessment of beach erosion, shoreline recession, coastal inundation and cliff or slope instability. It will consider environmental, public safety, access and planning impacts including the possible loss of aquatic and riparian vegetation. The outcome will improve planning controls to avoid development in the hazard areas. The Estuary Hazards Study will include assessing the impacts of projected sea level rise on estuarine habitats, stormwater systems and public access and critical infrastructure using the NSW Government's guidelines. Other risks may include tsunami impacts. All properties in the area will be categorised for risk and responses. The Estuary Hazard Study will provide technical information for the planned Coastal Zone Management Plan for Clontarf/Bantry Bay Estuary (Middle Harbour).

A component of the Estuary Hazards Study will be undertaken by consultants, being the Estuary Hazards Risks and Management Options Assessment. The assessment is expected to be sufficient to inform the subsequent development of Emergency Action Subplans which Council will prepare. The consultant's component of work comprises the following tasks:

1. Review and identify coastal hazards risks from previous studies, particularly hazards including coastal erosion, coastal inundation, seawall failure, sediment processes and foreshore stability;
2. Undertake comprehensive geotechnical assessments of properties for cliff or slope stability;
3. Identify options for managing risks from coastal hazards, including temporary protection works; and
4. Categorise properties for risk and response.

Quotations were invited from a number of specialist coastal engineering and planning consultancies. Proposals were received and assessed and the appointment of the preferred consultant is in progress. The work is expected to be completed October/November 2014.

A copy of the Consultant's Brief, outlining the scope of work is attached for further information of the committee.

RECOMMENDATION:

That the Committee receive the report and note progress of the Estuary Health Assessment and Estuary Hazard Study projects, under the Estuary Management Program.

Harbour Foreshore & Coastline Management Committee

8 July 2014

ATTACHMENTS:

Draft Estuary Health Status & Pressure for Clontarf/Bantry Bay - Progress Report

Consultant's Brief - Estuary Hazards Risks and Management Options Assessment for Clontarf/Bantry Bay.

Manly Council

Draft ESTUARY HEALTH STATUS & PRESSURES FOR CLONTARF/BANTRY BAY

Progress Report

June 2014

CONTENTS

1. INTRODUCTION

Manly Council is undertaking an Estuary Health Assessment for Clontarf/Bantry Bay that will ultimately inform a revision of the adopted Clontarf/Bantry Bay Estuary Management Plan 2008. The Estuary Health Assessment responds to an action in the current plan (AH5.1. Collate, analyse recent knowledge and study factors affecting degradation of ecologically important/critical habitats).

The Estuary Health Assessment is to include a description of the components of the estuarine ecosystem; the key biological, physical and chemical processes and interactions; and the key pressures impacting on estuarine processes and estuary health. It will also assess the status of the estuary health through monitoring of indicators, including phytoplankton biomass (chlorophyll *a*) and seagrass extent, following the *NSW Natural Resources Monitoring, Evaluation and Reporting Program – Assessing estuary ecosystem health: Sampling, data analysis and reporting protocols* (NSW MER Protocols). The Estuary Health Assessment is a technical study for the planned Coastal Zone Management Plan for Clontarf/Bantry Bay.

The ecosystems in the study area are highly fragmented and subject to pressures from development and high usage. The marine environment within the study area has a diverse range of habitats, including significant seagrass beds and large losses of seagrass beds have been reported. Other habitats include intertidal areas, rocky reefs and platforms, sandy beaches, mudflats, deep holes in the mud basin and artificial habitats including seawalls, jetties and pontoons. Bushland reserves occur in the terrestrial environment.

The Estuary Health Assessment is being undertaken according to the *Guidelines for preparing Coastal Zone Management Plans*, July 2013 (CZMP Guidelines). It is essentially an assessment of coastal ecosystem health, as described under Chapter 4 of the CZMP Guidelines and will respond to the minimum requirements for coastal ecosystems, with specific reference to estuary health management. The Estuary Health Assessment is also being undertaken in accordance with the NSW MER Protocols.

The overall Estuary Health Assessment project involves the following four Milestones:

1. Estuary Health Status & Pressures Identified.
2. Estuary Health Monitoring Program prepared and implemented – 6 months.
3. Estuary Health Monitoring Program – 12 months.
4. Draft & Final Estuary Health Assessment Study.

This report responds to Milestone 1 for the project, being a Progress report on Estuary Health Status & Pressures, requiring tasks as follows:

- Review existing and related studies;
- Establish ecosystem health; and
- Identify existing & potential pressures affecting estuary health.

The report provides context for the Estuary Health Assessment, with respect to NSW Government guidelines and previous investigations; outlines the objectives for the Estuary Health Assessment; describes the study area; reviews existing information sources; and presents the results of an initial assessment of estuary health and the existing & potential pressures affecting estuary health. Appropriate estuary pressure indicators are also identified, consistent with the *NSW Natural Resources Monitoring Evaluation and Reporting Program* and as relevant to Clontarf/Bantry Bay area. The

pressure indicators will support the condition assessments, as determined through the monitoring program and overall review of available information.

2. ESTUARY HEALTH ASSESSMENT OBJECTIVES

The objectives of the estuary health assessment are:

- To describe the components of the estuarine ecosystem, the key biological, physical and/or chemical processes and interactions.
- To investigate the key pressures and sources impacting on estuarine processes and estuary health, specific to Clontarf/Bantry Bay and consistent with the *Minimum requirements: coastal ecosystems*, under the State Government's *Guidelines for Preparing Coastal Zone Management Plans*, July 2013.
- To incorporate data and/or outcomes of modelling analysis from the Decision Support System of the State Government's *Sydney Harbour Catchment Water Quality Improvement Plan*, including the Pollutant Export and Ecological Response Models.
- To assess the status of estuary health with reference to existing information and additional empirical data on water quality monitoring indicators against targets and seagrass distribution, following the *NSW Natural Resources Monitoring Evaluation and Reporting Program*.
- To develop management options for responding to the specific estuary health pressures for Clontarf/Bantry Bay, in order to improve the health of the estuary.

3. STUDY AREA

The Estuary Health Assessment will address the portion of the Middle Harbour (part of the greater Port Jackson / Sydney Harbour) estuary and foreshore that corresponds with the Manly Local Government Area. The boundaries are Sydney Harbour National Park at the south-eastern extremity and Garigal National Park at the north-western extremity. The study area covers 350 hectares and has a perimeter of 11.5km, and takes in the suburbs of Balgowlah Heights, Clontarf and Seaforth. The study area boundary on the terrestrial side is the ridgeline, incorporating the associated sub-catchments that drain to the foreshore. On the aquatic side, the boundary extends approximately to the middle of the waterway.

The entire study area is covered within the Sydney Harbour Foreshores and Waterways Area, under the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.*

An aerial image showing the study area for Clontarf/Bantry Bay Estuary Health Assessment is presented in Figure 1, below.

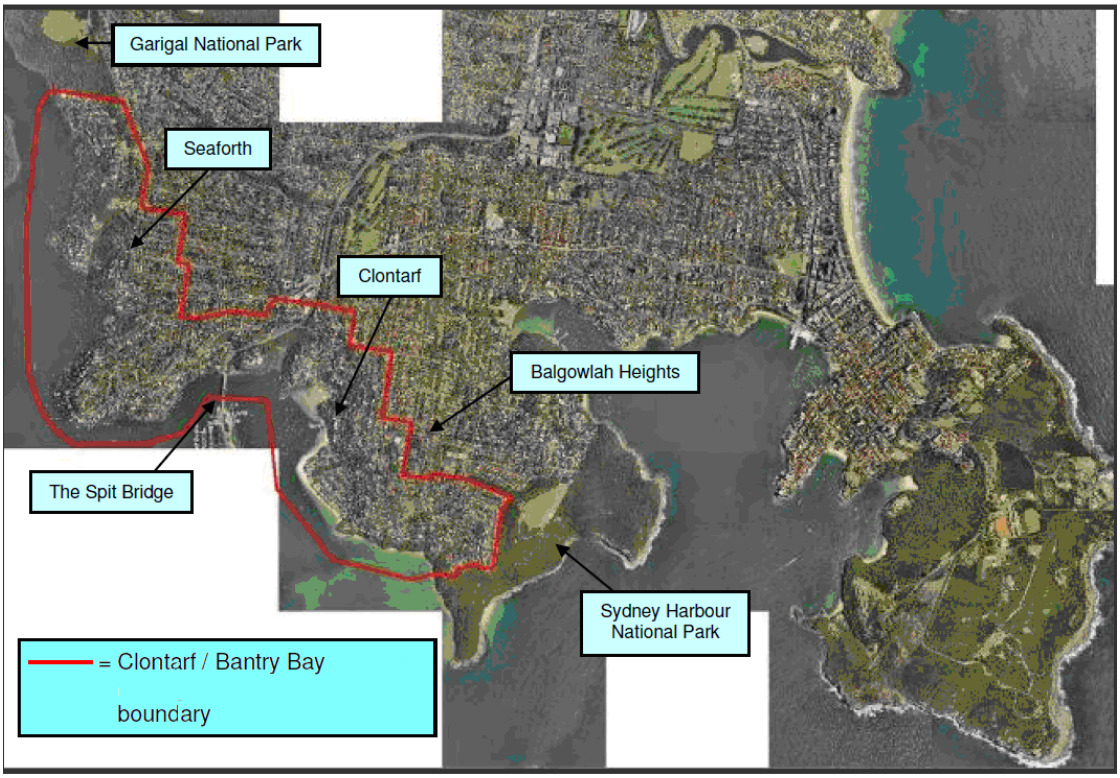


Figure 1: Study area for Clontarf/Bantry Bay Estuary Health Assessment.

The Clontarf/Bantry Bay estuary is regionally significant in its role as a habitat for native animals and plants and is also popular for recreation. The attraction of Clontarf/Bantry Bay is enhanced by its generally good water quality. This results in numerous primary and secondary contact recreational pursuits, including swimming, sailing, kayaking, diving, sail boarding, kite-surfing, water skiing and boat and shore fishing.

The ecosystems within the study area are highly fragmented and have signs of the many pressures placed on them through development and high usage.

The marine environment within the study area has a diverse range of habitats. There are significant seagrass beds within the study area: the largest bed is adjacent to Castle Rock Beach and reasonably large meadows exist at Clontarf and Sandy Bay. Compared to the past, large losses of seagrass have been reported. There are several relatively deep holes within the mud basin section that provide habitat, with the deepest located upstream of the Spit Bridge. The mud basin provides habitat for various species, including invertebrates such as worms and molluscs.

The intertidal area within the study area has a range of habitats including rocky reefs and platforms, sandy beaches and mudflats, a few remaining mangroves and artificial habitat including seawalls, jetties and pontoons.

The terrestrial environment within the study area has seen the largest change. Bushland reserves occur in a total 18.5 hectares and are scattered throughout the study area.

4. REVIEW OF EXISTING AND RELATED STUDIES

The following reports contain relevant existing information for Clontarf/Bantry Bay area that is updated from Council's Clontarf/Bantry Bay EMP. These documents formed the basis of the initial assessment of estuary health:

- *Guidelines for Preparing Coastal Zone Management Plans, Office of Environment and Heritage (July 2013).*
- *State of the Catchments 2010, Estuaries and coastal lakes Technical report series Monitoring, evaluation and reporting program: Assessing the condition of estuaries and coastal lake ecosystems in NSW.*
- *State of the Catchments 2010, Estuaries and Coastal Lakes, Hawkesbury-Nepean and Sydney Metropolitan Region.* All data on natural resource condition, pressures and management activity included in this SOC report, as well as the technical report, was collected up to January 2009.
- *NSW Natural Resources Monitoring, Evaluation and Reporting Strategy 2010-2015.*
- *Assessing estuary ecosystem health: Sampling, data analysis and reporting protocols. NSW Natural Resources Monitoring, Evaluation and Reporting Program (2013).*
- *Clontarf/Bantry Bay Data Compilation & Estuary Processes Study FINAL REPORT, Manly Council (August 2007).*
- *Clontarf/Bantry Bay Estuary Management Study FINAL REPORT, Manly Council (November 2007).*
- *Clontarf/Bantry Bay Estuary Management Plan Final Report, Manly Council (May 2008).*
- *Clontarf Sedimentary Processes and Foreshore Stability Study – Sedimentary Processes Report, Manly Council (February 2009).*
- *Clontarf Sedimentary Processes and Foreshore Stability Study – Foreshore Stability Report, Manly Council (February 2009).*
- *Identification of Coastal Hazard Risk Areas to Projected Sea Level Rise for the Manly Local Government Area (May 2012)*

4.1 COASTAL ZONE MANAGEMENT PLAN REQUIREMENTS

The Estuary Health Assessment is being driven by the planned review of Council's existing *Clontarf/Bantry Bay Estuary Management Plan 2008* (Clontarf/Bantry Bay EMP). The existing plan is outdated and needs to be reviewed in line with the new CZMP Guidelines, prepared under section 55D of the *Coastal Protection Act* 1979 and adopted by the Minister for the Environment. The CZMP guidelines specify the minimum requirements that are to be met when preparing a draft CZMP, in addition to the requirements in the Act.

The additional requirements in the CZMP Guidelines relate to coastal risk management, coastal ecosystems and community uses of the coastal zone. Concurrently with the Estuary Health Assessment, Manly Council is undertaking an Estuary Hazards Study, both of which will inform the planned review of Clontarf/Bantry Bay EMP.

Section 4 Coastal Ecosystem Health, of the CZMP Guidelines provides the primary guidance for the Estuary Health Assessment. It includes the following minimum requirements for coastal ecosystems, as relevant to the Clontarf/Bantry Bay area:

- A description of:
    - the health status of estuaries within the plan's area

  - the pressures affecting estuary health status and their relative magnitude
  - projected climate change impacts on estuary health, based on Council's adopted sea level rise projections or range of projections;
- Proposed actions in the implementation schedule to respond to estuary health pressures; and
- An estuarine monitoring program, consistent with the NSW Natural Resources Monitoring, Evaluation and Reporting (MER) Strategy.

The assessment of estuary health should be evaluated against applicable estuary health targets, including the NSW Government's Water Quality and River Flow Objectives.

Estuary health status

An initial assessment of estuary health should be based on existing information. This can include the State of the Catchments reports which describe the condition of and pressures acting on NSW estuaries and the National Land and Water Resources Audit 2002. Reports that contain relevant existing information for Clontarf/Bantry Bay area that is updated from Council's Clontarf/Bantry Bay EMP were used to inform the initial assessment of estuary health. These source documents are identified and reviewed in detail under Section 5.

Where limited, existing information can be supported with additional data such as through a targeted monitoring program. This is being undertaken by Council for the Clontarf/Bantry Bay area, in accordance with the NSW MER Program (see Section 2.3).

Estuary health pressures

Existing and potential pressures affecting estuary health should be identified. This includes identifying the relationship between the following:

- Water quality and estuary sediment quality;
- Flow conditions (particularly catchment inflows and tidal exchange) and sediment movement; and
- Estuarine biota (including aquatic and terrestrial habitats and species that are estuary dependent).

The assessment of pressures should identify the most significant pressures (or combination of pressures) currently affecting or likely to affect estuary health.

Potential pressures and sources are identified in the following table, as per the CZMP Guidelines.

Category	Potential pressures and sources
Water and sediment quality	Point sources of pollution (e.g. effluent, contaminated sites) Diffuse sources of pollution (e.g. urban stormwater, acid sulfate soils, bank or foreshore erosion, agricultural run-off, sewer overflows, septic tank effluent) Discharges from vessels Contaminated sediments
Flow conditions and sediment movement	Changes to catchment inflows (e.g. upstream withdrawals/diversions, river regulation, land clearing, urbanisation) Changes to tidal exchange, salinity regimes and inundation levels (e.g.

	altered entrance conditions for ICOLLs, berm status, entrance training works) Changes to tidal/flood flows across an estuary (e.g. due to culverts, flood gates or reclamation) Sea level rise and upward movement of water tables Changed sediment transport dynamics (e.g. due to dredging)
Estuarine biota	Changes to the extent and condition of seagrass, saltmarsh, mangroves, coastal wetlands, littoral rainforest and riparian vegetation Recreational and commercial fishing Outbreaks of aquatic weeds or pests

4.2 NSW GOVERNMENT'S WATER QUALITY AND RIVER FLOW OBJECTIVES

The NSW Water Quality Objectives are the agreed environmental values and long-term goals for NSW's surface waters. They set out:

- the community's values and uses for our rivers, creeks, estuaries and lakes (i.e. healthy aquatic life, water suitable for recreational activities like swimming and boating, and drinking water); and
- a range of water quality indicators to help us assess whether the current condition of our waterways supports those values and uses.

Water Quality Objectives have been agreed for Fresh and Estuarine surface waters and Marine Water Quality Objectives. The Objectives are consistent with the agreed national framework for assessing water quality set out in the ANZECC 2000 Guidelines. These guidelines provide an agreed framework to assess water quality in terms of whether the water is suitable for a range of environmental values (including human uses). The Water Quality Objectives provide environmental values for NSW waters and the ANZECC 2000 Guidelines provide the technical guidance to assess the water quality needed to protect those values.

The River Flow Objectives are the agreed high-level goals for surface water flow management. They identify the key elements of the flow regime that protect river health and water quality for ecosystems and human uses.

These Objectives are consistent with, and complementary to statewide targets developed by the Natural Resources Commission (NRC) for managing natural resources. These take into account the community's established values and goals for natural resources, including those for water. Catchment Action Plans include regional targets consistent with the statewide standard and targets prepared by the NRC. For each catchment, the standards and targets provide a framework to guide work towards more long-term goals, such as the Water Quality Objectives.

4.3 NSW NATURAL RESOURCES MER STRATEGY

The MER Strategy was developed in accordance with the state-wide NRM targets and is consistent with the *Standard for Quality Natural Resource Management* 2005. The approach to MER adopted in the MER Strategy is aligned with the Evaluation

Framework for CMA Natural Resource Management 2009 and the Australian Government Natural Resource Management Monitoring, Evaluation, Reporting and Improvement Framework 2009. The NSW Government has set a state-wide natural resource management target for estuaries that 'By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems'.

The Technical Report for the MER Program on *Assessing the condition of estuaries and coastal lake ecosystems in NSW* describes the scientific methodology used to generate the State of the Catchment 2010 Reports on the condition of estuaries in NSW and the pressures influencing their condition. A number of condition indicators were adopted focusing on the health of estuarine biota, as the health of plants and animals reflects the combined effect of pressures acting on the ecosystem. Indicators used were phytoplankton (micro-algae) biomass measured as chlorophyll *a*; seagrass, mangrove and saltmarsh extent; and fish communities. Turbidity, as a measure of water clarity, was also reported as this has a direct bearing on the biota. The field protocols used are based on those developed for the indicators adopted under the National Land and Water Resources Audit. Those protocols have then been adapted to the needs and designs of the Estuary MER program sampling.

Data collected for the State of the Catchments Report 2010 for Hawkesbury-Nepean and Sydney Metropolitan provides an initial baseline of estuary condition and pressure against which future change can be assessed and will assist in effective reporting against the state-wide estuaries target.

Council is undertaking a monitoring program to collect additional information on estuary health which is guided by the sampling, data analysis and reporting protocols of the *NSW Natural Resources Monitoring, Evaluation and Reporting Program 2013.* The focus of monitoring is the collection of data from five sites on a monthly basis, for analysis of chlorophyll *a* and turbidity which are the key replicable indicators of estuary health in the short term. Seagrass mapping will also be undertaken, in order to provide a baseline for longer term monitoring. Assessment of fish assemblage may be undertaken at a later date.

The NSW Natural Resources MER Strategy tracks progress against the statewide resource condition targets set by the NRC. The Statewide resource condition target for estuaries and coastal lakes is:

By 2015 there is an improvement in the condition of estuaries and coastal lake ecosystems.

Sampling, data analysis and reporting protocols

The protocols provide a standardised approach to estuary ecosystem health monitoring, analysis and reporting in NSW. It is based on best practice and provides for consistency at a range of scales, comparison of assessments and scientific validity in reporting results. The monitoring program also provides the basis on which to determine appropriate management actions, monitoring the effectiveness of management and contributing to the ongoing adaptive management of estuaries and their catchments. The protocols should be used by Councils receiving grants from the Estuary Management Program to carry out estuary ecosystem health assessments.

Condition indicators

Monitoring focuses on estuarine biology to determine condition in preference to stressors and pressures which are the external factors that cause changes in condition. Pressure assessments can also be completed, based on a range of indicators where data sets are available.

As part of the MER Program, core estuary condition indicators are monitored. The mix of indicator groups adopted represents elements of the structure, function and composition of estuarine ecosystems and includes:

Eutrophication –

- microalgal abundance as pelagic chlorophyll *a**
- macroalgal abundance

Habitat availability -

- extent of seagrass*
- extent of mangroves
- extent of saltmarsh
- water claritiy indicated by turbidity*

Fish assemblages –

- species diversity and composition
- species abundance
- nursery function
- trophic integrity

(The condition indicators being measured for the Clontarf/Bantry Bay Estuary Health Assessment are shown above, with an asterisk.)

Short-term response

Measurement of chlorophyll *a* and turbidity is determined to be the most effective measure of the short-term response of estuary ecosystem health in response to a range of likely pressures and their management. This is the focus for the estuary ecosystem health monitoring.

Chlorophyll *a* indicates the amount of microscopic algae or phytoplankton growing in the water. Excessive input of nutrients from catchments can lead to algal blooms and detrimental effects on estuarine plants and animals. Turbidity is a measure of light scattered by suspended particles such as sediment, algae and dissolved material in the water which affect its colour or murkiness. Turbidity can increase from sediment inflows, shoreline erosion and increased microscopic algae

Longer-term response

Estuarine macrophytes (including seagrass, mangroves and saltmarsh) and fish assemblages provide a longer term integration of estuary ecosystem health status. Seagrasses are aquatic flowering plants that form meadows near shore. They are highly productive, providing nursery and foraging habitat (for fish, crustaceans and molluscs), bind sediment against erosion and help regulate nutrient cycling. They are very sensitive to changes in water clarity.

Being the main macrophyte community, seagrass mapping is being undertaken in accordance with the MER standard, involving air photo interpretation and orthorectifying images to create preliminary maps, followed by field validation. Polygons are noted for presence/absence of seagrass.

Change in seagrass presence is measured against baseline and subsequent surveys. The extent to which historical mapping of seagrass is sufficient to form a baseline is to be determined in Council's seagrass mapping project, being conducted in Spring 2014. Seagrass depth limit is an additional suggested indicator and will also be measured.

Trigger values

To assess the health or condition of an estuary requires the determination of reference or baseline conditions against which data can be compared. Compliance against trigger values is used to assess the status of an indicator, being the condition indicators chlorophyll *a* and turbidity. Depending on the level and frequency of exceedence, exceeding the values should 'trigger' further investigation of a management action. The degree of compliance with a trigger value is also measured and condition is scored along a gradient from very good to very poor.

The initial estuary health assessment considers compliance of condition indicators against trigger values as determined for Clontarf/Bantry Bay from existing information, including the MER Program reporting on resource condition in 2010 through the State of the Catchment Report for Hawkesbury-Nepean and Sydney Metropolitan regions.

Pressure indicators

Pressures refer to human activities influencing the environment. A range of pressure indicators was identified in order to support condition assessments in the *State of the Catchments Report 2010*. These have been assessed for the initial estuary health assessment in Section 5.1. The range of pressure indicators is shown below (those pressure indicators with the strongest links to relevant condition indicators for the Clontarf/Bantry Bay Estuary Health Assessment are denoted with an asterisk):

- *Land use/Cleared land (increased sediment, nutrient and organic loads)
- Population
- *Sediment loads (reduced estuary water quality)
- *Nutrient loads (increased algal growth, reduction in water clarity)
- Freshwater flow/Catchment run-off (increased foreshore erosion)
- *Disturbed habitat/Foreshore structures, such as seawalls and jetties
- Tidal flow
- Fishing

Landuse/Cleared land for agriculture, residential and industrial development is a major pressure and is known to result in increased inputs to eroded sediments, nutrients and organic material into an estuary.

Population density of people residing in a catchment is a general measure of pressure placed on an estuary. Effects can include increased pollution loads in stormwater and sewage overflows, disturbance of foreshore vegetation, litter and general degradation of the environment.

Sediment loads are generated by soil erosion in catchments disturbed by human activity as well as shoreline erosion. Coarser sediment settles out in nearshore areas while finer suspended sediment fills bays and reduces water clarity.

Nutrient loads are also associated with catchment disturbance as well as fertiliser application, effluent discharges and urban stormwater. Excess nutrients can lead to blooms of algae and changes to ecosystems.

Freshwater flow into estuaries affects salinity levels, aquatic plant distributions, migration and spawning of aquatic animals and fish communities. These ecosystem characteristics are all modified by catchment clearing which increases the frequency and intensity of rainfall run-off, causing changes in quantity and timing of important ecologically significant freshwater inflows to the estuary, catchment erosion and pollutants in run-off.

Disturbed habitat can arise from removal of foreshore vegetation, placement of foreshore structures such as seawalls, jetties and moorings and the presence of the invasive seaweed *Caulerpa taxifolia*.

Tidal flow can be obstructed by shoreline structures and can affect salinity levels, tidal ranges and flushing and have associated ecological effects.

Fishing by recreational and commercial fishers removed finfish and shellfish from the estuarine ecosystem. Disturbance of habitats by boats, gear and people can also be associated.

Additional pressure indicators that can be assessed, with strong links to condition indicators and in consideration of available data include the following:

- Soil erosion potential (potential reduction in estuary water clarity)
- Riverine geomorphic condition (bed and bank stability and erosion)
- Dredging (generates fine sediment plumes, removes aquatic habitat)
- Sea level rise (inundates nearshore vegetation and changes light regime)

5. INITIAL ASSESSMENT OF ESTUARY HEALTH STATUS

The initial assessment of estuary health status was based on a review of existing information, as per documents listed under Section 4. This involved a review of previously assessed estuary health, as reported in the Clontarf/Bantry Bay Estuary Management Plan 2008. Additional work undertaken since this time has contributed to the initial assessment of estuary health. This includes work undertaken by Manly Council such as the Clontarf Sedimentary Processes and Foreshore Stability Study 2009. Other information for the initial assessment of estuary health has been obtained from the NSW State of the Catchments Reports 2010.

5.1 PREVIOUSLY ASSESSED ESTUARY HEALTH

Estuary health was assessed for Clontarf/Bantry Bay during 2007 and 2008 which included a review of all studies previously undertaken. The *Clontarf/Bantry Bay Estuary Management Plan* 2008 (Clontarf/Bantry Bay EMP) and supporting documents, including the *Clontarf/Bantry Bay Estuary Processes and Data Compilation Study (*2007a) and *Clontarf/Bantry Bay Estuary Management Study* (2007b) and formed the basis of information available on previously assessed estuary health.

The Clontarf/Bantry Bay EMP noted that overall, the ecosystems within the study area were highly fragmented and had signs of the many pressures placed on them through development and high usage.

Previously assessed estuary condition and estuary health pressures are summarized below.

Estuary condition

Under the MER Program, the core estuary condition indicators are applied in order to measure eutrophication, habitat availability and fish assemblages. The assessments previously undertaken for estuary health are described below. In 2007-08, the Clontarf/Bantry Bay Data Compilation & Estuary Processes Study reported that the ecosystems in the area were highly fragmented.

Eutrophication

Eutrophication is a response to the nutrient load on the ecosystem which can be measured by the response in biological production. The two measures are microalgal abundance (such as phytoplankton) and macroalgal abundance.

Microalgal abundance as pelagic chlorophyll *a*

There has been no previous assessment of micro-algal abundance in Clontarf/Bantry Bay.

Macroalgal abundance

The Clontarf/Bantry Bay EMP reported the presence of many types of algae (eg- red, green, brown) inhabiting the intertidal zone and providing a food source for the many grazing invertebrates. Rocky areas were known to contain patches of kelp beds which provide vertical underwater structure and much valuable habitat, as well as a source of food for certain marine species.

Habitat availability

The marine environment of Clontarf/Bantry Bay has a diverse range of habitats. The intertidal area within the study area has rocky reefs and platforms, sandy beaches and mudflats, a few remaining mangroves and artificial habitat including seawalls, jetties and pontoons. The entire foreshore of the study area is protected as Intertidal Protected Area (IPA). Numerous types of invertebrates, such as worms, crabs and molluscs, can be found in the sediment. A total of 62 species are known to be present in or directly adjacent to (and hence expected to also be in) the area. The majority of these species are invertebrates. The Little Penguin is often sighted within the area but no information was available on its nesting place. It was known to feed in the estuary during the day and nest on land during the night.

Extent of seagrass

There are significant seagrass beds within the study area: the largest bed is adjacent to Castle Rock Beach where the tidal delta provides a large shallow sandy bottom. Reasonably large seagrass beds exist at Clontarf and Sandy Bay. Various isolated patches occur around the shallow foreshores of the upper half of the area. The Clontarf/Bantry Bay EMP noted that compared to the past, large losses of seagrass have been reported.

Extent of mangroves

There is only one small pocket of mangroves in Powderhulk Bay and a few individual mangroves within the rea, at Pickering Point and Fisher Bay.

Extent of saltmarsh

No salt marsh has been identified.

Water clarity indicated by turbidity

No previous assessments of water clarity nor measurements of turbidity were carried out for the Clontarf/Bantry Bay EMP.

Fish assemblages

Information on fish assemblages was mainly inferred from studies across greater Sydney harbour. An aquatic survey was undertaken for Clontarf Marina which was repeated five times over a six year period for species sighted at two different locations, being under the Clontarf Marina structures and in the adjacent sandy habitats. As such, the list cannot be considered definitive. Other habitat types not sampled are very important to fish, including rocky reefs and seagrass beds.

Species diversity and composition

Over 570 species of fish have been recorded in greater Sydney Harbour and it is likely that a large proportion of these are also present within the Clontarf/Bantry Bay area. The list includes 3 endangered, 5 vulnerable and 18 protected species.

Species abundance
Only presence/absence information has been recorded for fish species for two restricted habitat areas, being the structures under Clontarf Marina and the adjacent sandy habitat.

Nursery function
Nursery function has not been previously assessed.

Trophic integrity
Trophic integrity was not previously measured.

Estuary health pressures
Estuary health pressures may originate from any part of the greater Sydney Harbour catchment. Previously assessed estuary health pressures under the Clontarf/Bantry Bay EMP are discussed below, with reference to the estuary health pressures indicators as adopted by the MER program. The *Clontarf/Bantry Bay Data Compilation & Estuary Processes Study 2007* reported that the ecosystems in the area show signs of many pressures placed on them through development and high usage.

Land use/Cleared land (increased sediment, nutrient and organic loads)
Landuse was assessed as predominantly residential development (65.5%), followed by road surfaces (22.0%) and open spaces and parks (10.2%). This equates to a Cleared land pressure rating of 'High', being 39-69% cleared land.

Population
The population of the study area was reported to be 5,873 as recorded for the 2001 census. No data were reported on population density. At that time, it was reported that 50% of all visitors heading towards Manly and the northern beaches arrived by car, crossing The Spit bridge and often made brief stopovers. Manly LGA received six million visitors annually at this time, of which 75-88% were day visitors attracted to beaches, marine activities and the ferry ride.

Sediment loads (reduced estuary water quality)
Total sediment load was estimated at 128,000 kg/year of sediment. Four Gross Pollutant Traps had been installed in the Clontarf/Bantry Bay catchment.

Nutrient loads (increased algal growth, reduction in water clarity)
Mathematical modelling of pollutant loads was undertaken, incorporating known parameters of the system. Stormwater pollutant loads were modelled on known water quality information for an adjacent comparable catchment in Manly LGA. Loads of pollutants in the estuary have been estimated at 2250 kg/year of total nitrogen; 260 kg/year of total phosphorus; 180kg/year of copper; 230 kg/year of lead; and 490 kg/year of zinc. There were five known sewer overflow locations within the Clontarf/Bantry Bay area. Swimming baths at Clontarf , Gurnery Crescent and Sangrado were sampled as part of the Harbourwatch program, in order to measure compliance with *faecal colliform* guidelines. Clontarf pool had the highest level of compliance, followed by Gurney Crescent and Sangrado.

Freshwater flow/Catchment run-off (increased foreshore erosion)
The area is not fed by any permanent creeks. However various water courses provide freshwater inflows during and after rain and the many other catchments throughout Middle Harbour provide significant freshwater flows into the system. The Clontarf/Bantry Bay EMP reported that there are six stormwater catchments draining the area at that time, through 16.03 km of artificial drainage networks. The relatively narrow and steep topography meant that nearly all of the major stormwater pipes extended right to Middle Harbour and discharged either onto the foreshore of directly into the estuary. In periods of wet weather, the estuary became stratified with the more buoyant fresh water sitting

as a thin layer on the surface of the salt water. This stratification process aided in the rapid transportation of pollutants from their upstream source to the lower parts of the estuary where tidal flushing aided in dispersal of the pollutants.

Groundwater close to the surface was known to be localised throughout the Middle Harbour catchment, due to the presence of rock at shallow depth in most areas. The major aquifer class in the area is consolidated porous rocks containing limited quantities of groundwater. However along the foreshores there occurs the aquifer termed 'unconsolidated sediments'. This aquifer contains significant groundwater resources with a well defined water table that is responsive to recharge events and even tidal influences in some cases. Groundwater was being abstracted in 2008 at the rate of 1.64 megalitres at a depth of 6.1m for irrigation of Clontarf Reserve. Many private properties were also abstracting groundwater. This had the potential to allow saline intrusion into the aquifer.

Disturbed habitat/Foreshore structures, such as seawalls and jetties

The Clontarf/Bantry Bay EMP noted that foreshore development has been extensive. The first and major foreshore development in the study area occurred with the construction of The Spit Bridge in 1924 which was replaced by the existing bridge in 1958. Other developments prior to this included the first punt operation in 1849, ferry operation in 1880 and tram services in 1900.

Seawalls, both public and private, existed along the foreshore throughout the study area. The total length of seawalls was 2.4 kms, approximating 46% of the foreshore length. This equated to a pressure level of 'Very high'. Whilst seawalls provide protection for properties, they may have environmental impacts including replacement of sandy shores and loss of habitat, as well as restricting tidal movements and energy dissipation, leading to higher erosion potential.

There were tidal swimming enclosures at Clontarf Reserve, Gurney Crescent and Sangrado Street, Seaforth. Other developments along the foreshore included Clontarf Marina and the Manly Scenic Walkway. Public access to the foreshore was available at seven key points.

There were sailing and yacht clubs providing boating facilities and contributing to estuary use through a number of events including racing, training etc. The Clontarf/Bantry Bay area was used extensively by a variety of vessels, particularly between Castle Rock Beach and Seaforth Bluff. This section of the waterway is the only access between greater Sydney Harbour and upper Middle harbour. Boat generated waves over time can cause foreshore erosion and weaken seawalls. Boating can also impact on water quality via spills, anit-foul paints and littering. A no wash zone was in place between Clontarf Point and Seaforth Bluff. An eight knot limit was also in place between Clontarf Point and d'Albora Marina (Mosman side of The Spit bridge). The Clontarf area contained a number of swing moorings which can cause damage to seagrass beds, although they were located in deeper water beyond the limit of seagrass beds. Ad hoc boat storage has been a problem at a number of locations which causes impacts on foreshore vegetation.

Other practices and activities undertaken that cause habitat disturbance include beach raking which has been carried out daily on Clontarf Beach, in order to capture litter and other gross pollutants. Beach raking has the potential to impact on invertebrates, living within the sandy sediments. Dog walking was allowed off-leash at Seaforth Oval and occurred unofficially at Sandy Bay and can impact on shore birds.

A survey of 120 participants of the local community showed that the main recreational uses of the estuary were for walking, swimming, boating and passive recreation, followed by kayaking, fishing, walking dogs and sunbathing.

Tidal flow

The estuary within the study area exhibits semidiurnal tidal characteristics, with two high and two low tides each day. Wind waves generated in Middle Harbour are generally less than 0.1m in height. Flushing times for the various parts of the estuary are estimated to be approximately:

- Less than one day up to Castle Rock Beach
- One to five days from Castle Rock to Seaforth Bluff
- Five to ten days from Seaforth Bluff to Bantry Bay

Ocean swell waves penetrate lower Middle Harbour through the heads of Sydney Harbour and undergo severe refraction and diffraction. The only place in the study area that is subject to waves from a consistent direction is the lower half (Castle Rock Beach to Sandy Bay), where ocean swell waves run along the shore. Sediment has been observed to move along the shore in the same direction, providing possible evidence of a longshore current.

Significant storm events affecting the Middle Harbour area are known to have occurred in 1893, 1923, 1974 and 2007. The 1974 storm reported wall collapse near Middle Harbour Yacht Club and minor beach erosion at the Spit and Clontarf. The tsunami in 1960 had a maximum run-up of 1.7 m which swept away a strip 100 yards by 60 yards wide from Clontarf Reserve Point Park.

Fishing

Commercial fishing had been banned within Sydney Harbour at the time of the Clontarf/Bantry Bay EMP, including the Clontarf/Bantry Bay area. No data on recreational fishing pressure specific to Clontarf/Bantry Bay was available for this time.

Soil erosion potential (potential reduction in estuary water clarity)

The Clontarf/Bantry Bay EMP notes that due to the highly urbanised catchment, stormwater erosion has the highest potential for causing soil erosion, due to the accelerated erosion that occurs as a result of the concentration of stormwater flows through artificial drainage networks. It was also noted that the end of pipe is often surrounded by soft surface material such as soil or sand which is easily eroded by the large volumes of high velocity rainwater during a storm.

Riverine geomorphic condition (bed and bank stability and erosion)

Erosion in the area was known to occur along beaches, in front of stormwater outlets, along ad hoc access tracks and where foreshore protection structures such as seawalls were collapsing. Beach erosion had been experienced at four sections of Clontarf Beach and Sandy Bay with varying degrees of severity and fluctuations over time. Significant erosion occurred at Clontarf Beach in 1960 as a result of a tsunami. Accelerated erosion occurred as a result of the concentration of stormwater flows through artificial drainage networks. The Clontarf Swimming area regularly experienced siltation. The area was known to be susceptible to slope and cliff instability, with a large landslip having occurred at Seaforth Crescent in 1956.

Dredging (generates fine sediment plumes, removes aquatic habitat)

Dredging of Clontarf swimming baths has been undertaken, due to the baths lying directly in the path of the sand transport corridor between the tidal delta and Sandy Bay and disrupting the natural flow of sand and leading to siltation within the pool area. The impacts on aquatic habitats of generating a sediment plume from dredging were not

assessed but could be expected to have been localised and short term, being restricted to a relatively small area within the baths enclosure.

Sea level rise (inundates nearshore vegetation and changes light regime)

The Clontarf/Bantry Bay EMP notes that the low lying areas of the foreshore are more likely to be impacted by sea level rise and associated coastal hazards, including erosion and inundation. The potential ecological impacts, such as inundation of nearshore vegetation such as seagrass beds were not investigated.

5.2 CURRENT ESTUARY CONDITION

The State of the Catchments Report 2010 Hawkesbury-Nepean and Sydney Metropolitan regions reported on estuary health, including Condition and Pressures. Results for the Clontarf/Bantry Bay area were included in that for *Middle Harbour Creek.*

Condition indicators were scored relative to a reference or least impaired condition. Scoring classes were based on a five-colour scale representing the extent of deviation from the reference condition, as follows:

- Very good
- Good
- Fair
- Poor
- Very poor

Where sufficient data were available, an estuary condition index was calculated by averaging the unweighted individual scores for each condition indicator and applying expert opinion to test whether the results appeared to be reasonable.

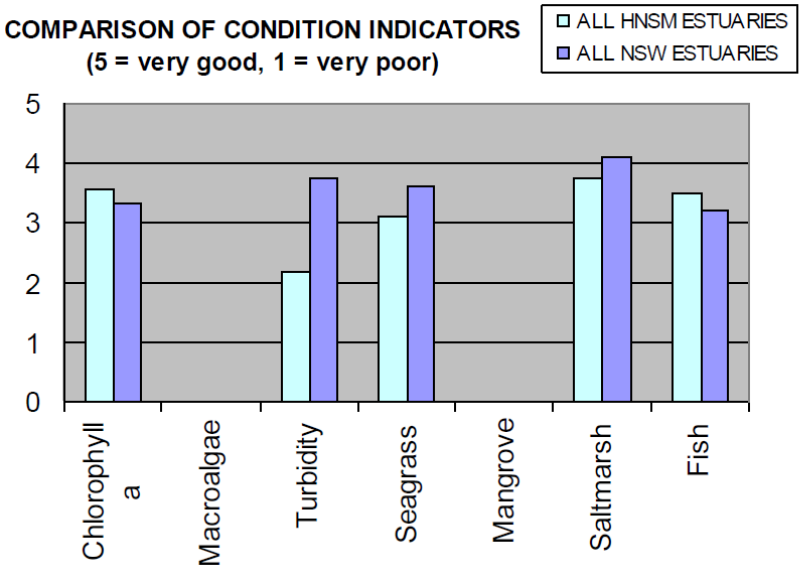
The only available data for Middle Harbour Creek was in relation to chlorophyll *a*. The condition score for chlorophyll *a* was 'Very good' although this was rated with low confidence. There was insufficient additional data on other condition indicators, in order to calculate an estuary index. The results on condition indicators for Middle Harbour Creek are shown in the following table:

Estuary	**CONDITION INDEX**	**Indicator**							**CONFIDENCE**
		Chlorophyll *a*	Macroalgae	Turbidity	Seagrass	Mangrove	Saltmarsh	Fish	
Middle Harbour Creek									L

Estuary Condition				
5	4	3	2	1
Very good	Good	Fair	Poor	Very poor

The overall condition of Hawkesbury-Nepean and Sydney Metropolitan regions compared to all NSW estuaries showed higher rating of conditions with respect to both chlorophyll *a* and fish. Condition indicators for turbidity and seagrass showed lower overall quality Hawkesbury-Nepean and Sydney Metropolitan regions compared to NSW

estuaries overall. The comparison of condition indicators for Hawkesbury-Nepean and Sydney Metropolitan regions against all NSW estuaries is shown in the following table:



Anecdotal evidence of the presence of seagrass beds was not available. The small number of mangroves persists in the upper part of the Contarf/Bantry Bay area, in Powderhulk Bay and Fisher Bay. No saltmarsh was noted during field observations.

5.3 COMPLIANCE WITH TRIGGER VALUES

MER Program trigger values for condition indicators for Clontarf/Bantry Bay estuary are appropriate as follows:

Estuary class	Trigger values	
	Chlorophyll *a* (ug/L)	**Turbidity (NTU)**
Lake/drowned river valley	3.6	5.7

The appropriate Worst Expected Value from the MER Program is shown below:

Estuary class	Worst Expected Value	
	Chlorophyll *a* (ug/L)	**Turbidity (NTU)**
Lake	30	20

Results of water quality monitoring for the first three months of the 12 month monitoring program showed the following results for the five zones. Values represent averages of integrated samples.

Condition indicator	Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Chlorophyll *a* (ug/L)	April 2014	1.5	1.2	1.6	3.7	3.7
	May 2014	3.0	2.5	1.5	1.4	1.7
	June 2014	1.9	1.9	1.8	2.5	2.3

Turbidity (NTU)	April 2014	0.2	0	0	1.4	24.4
	May 2014	6.8	1.3	1.8	6.0	2.7
	June 2014	2.9	0	0	0	0

Results for chlorophyll *a* showed that all values were well below the trigger value of 3.6 ug/L and only slightly exceeded the trigger value for Zones 4 and 5 in the lower part of the estuary in April 2014. It is reasonable to expect relatively higher values for chlorophyll *a*, following the end of the productive season over Spring/Summer.

Turbidity values from water quality monitoring during the months of April, May and June 2014 were generally well below the trigger value.

Trigger values for turbidity were exceeded in April 2014 at Zone 5 for which a value of 24.4 NTU was recorded. This exceeded both the trigger value of 5.7 NTU and the Worst Expected Value of 20 NTU. It should be noted that the turbidity values recorded over the depth profile at this time ranged from 0.6 to 10.2 NTU, indicating considerable variability of turbidity within the zone. Turbidity values only slightly exceeded the trigger value at Zone 1 and Zone 4 in May 2014.

5.4 CURRENT AND POTENTIAL ESTUARY HEALTH PRESSURES

The State of the Catchments Report 2010 reported a total of eight indicators of estuary pressure. Pressures for Middle Harbour Creek are shown in the following table.

Estuary	**PRESSURE INDEX**	**Pressure Indicator**								**CONFIDENCE**
Middle Harbour Creek		Cleared land	Population	Sediment load	Nutrient load	Freshwater flow	Disturbed habitat	Tidal flow	Fishing	
	3.1									H

Pressure				
5	4	3	2	1
Very low	Low	Moderate	High	Very high

Explanations of data sources for each of the pressures are given below.

Cleared land

Landuse mapping over the period 2005-2010 was used to determine the percentage of cleared land. The Cleared land pressure rating of 'High' represents 39-69% cleared land.

Population

Population data for Middle Harbour Creek was taken from the 2006 census. The Population pressure rating of 'Very high' represents >264 people/km2. More recent data on population levels and densities for Manly are reported from the 2011 Census. Two reporting areas encompass the study area, being Balgowlah-Clontarf and Seaforth. In 2011, the population for Balgowlah-Clontarf area was 4,982 persons, with a population density of 1,950 per sq.km. For Seaforth, the population was 6,726 persons, with a

density of 2,180 per sq.km. It was not possible to determine change in population and density for earlier years for these particular areas, given the lack of available data from the previous assessment. The Population pressure rating of 'Very high' is representative for both Middle Harbour Creek and the Clontarf/Bantry Bay area.

Sediment load

Hydrology models of rainfall run-off for the estuary catchment were used to estimate the quantity of sediment exported on an annual basis and the percentage increase in total suspended solids compared to a fully forested undisturbed catchment was calculated. The Sediment load pressure rating of 'High' represents an increase of 80-600%.

Total sediment load was estimated at 128,000 kg/year of sediment in 2008. With there being no change to the length of the artificial drainage network, therefore no change to the area of catchment drained and volume of stormwater, it is implied that there would be not change to sediment load since 2008. No more Gross Pollutant Traps (GPTs) have been installed since the number recorded in 2008 so there are 4 GPTs remaining in the Clontarf/Bantry Bay catchment.

Nutrient load

Algal growth in estuaries is generally limited by the supply of nitrogen, so total nitrogen is used as a measure of nutrient load increase. The percentage increase in total nitrogen inputs compared to a fully forested catchment was calculated to be 150-400%, giving a Nutrient load pressure rating of 'High'.

The Sydney Harbour Beachwatch Annual Beach Suitability Grade is currently 'poor' for Gurney Crescent baths and 'fair' for Clontarf baths, with a warning of potential for faecal contamination after rain for both locations. This is similar to previous assessments in 2008. No further information is available with respect to any change in number or locations of sewer overflow points, for which there were five in 2008.

Freshwater flow

The pressure rating of 'Moderate' represents a 12-22% increase in catchment run-off over a fully forested undisturbed catchment. Groundwater is still being extracted from a number of public and private bores within the area. Investigations conducted into groundwater extraction for Clontarf Coastal Sands in 2012 showed that the current recharge is 30ML/yr, comprising 15ML/yr Recharge Reserved and a Long term average annual extraction limit (LTAAEL) of 15 ML/yr. Total current entitlements of 27 ML/yr exceed the LTAAEL of the aquifer.

Disturbed habitat

The presence of foreshore structures was assessed according to the length of estuary perimeter occupied by foreshore structures. The rating of 'Very low' was applied for the whole of Middle Harbour Creek. However, for Clontarf/Bantry Bay, given that approximately 65% of the 2.5km length of foreshore is occupied by seawalls, the corresponding pressure score is 'Very high'. There has been no change to the length of foreshore impacted by seawalls since the last assessment conducted for the Clontarf/Bantry Bay EMP conducted in 2008. There has also been minimal change to the length of the artificial drainage network which remains at 16.03 kms. Beach raking continues to be undertaken but less frequently than previously, based on an as needs basis generally between 1-3 times per week. Ecological benefits of less beach raking need to be considered on balance against the benefits of litter removal.

Additional development has taken place along the foreshore since the previous assessment and includes a public jetty/pontoon at Pickering Point and a formal dinghy and kayak storage area at Sandy Bay. An upgrade to Clontarf Marina has recently been

approved that will involve the removal of 41 swing moorings (with 18 swing moorings retained), demolition of the existing 25 vessel berth marina and construction of a new marina containing 64 berths and associated infrastructure. The upgraded marina will result in freeing up of the waterway, at the same time as providing for increased boating use, with environmental protection requirements being in place.

Dog walking continues to be allowed off-leash at Seaforth Oval and on a leash in Clontarf Reserve. The estuary is still used actively for walking, swimming, boating, sailing, kayaking, fishing and passive recreation. There has been no change to the public access points to the foreshore since 2008.

Tidal flow

The presence of training walls designed to keep an estuary entrance open was used as a pressure measure. The Tidal Flow pressure rating of 'Very low' represents the absence of training walls.

Fishing

The pressure rating of 'Very low' reflects very low commercial fishing pressure which is based on annual commercial fish catch data, being 0-2 tonnes per annum. Commercial fishing remains prohibited in Clontarf/Bantry Bay. There is no available information on recreational fishing pressure for Middle Harbour.

Soil erosion potential (potential reduction in estuary water clarity)

There is ongoing potential for reduction in estuary water clarity, as a result of land-based sediment flows associated with soil erosion. The key potential sources of input are stormwater flows from existing stormwater outlets, following rain events. Water quality monitoring results for the first three months of the 12 month monitoring program have shown high levels of water clarity and low turbidity. Water clarity measured by Secchi depth ranged from 2-4m in the lower parts of the estuary and 5-6m in the upper parts of the estuary. However, these measurements were obtained in dry weather conditions and would need to be repeated after rainfall events, in order to obtain an indication of reduction in estuary water clarity caused by soil erosion.

Riverine geomorphic condition (bed and bank stability and erosion)

A study of sedimentary processes for Clontarf was conducted in 2009. The photogrammetric survey indicated that there has been continual shoreline change since 1961 within the study area. Along the southern shoreline areas between Clontarf Point and the Clontarf spit to the west of Clontarf Reserve, sediment transport and shoreline change is largely controlled by swell wave processes. To the north of the Clontarf spit, whilst swell and local sea waves continue to transport sand to the north, boating activities and stormwater flows into the embayments cause a more complex sediment transport outcome which has a higher inter-annual variation compared to the swell dominated southern areas. The numerical modelling indicated that tidal currents are generally very low along the whole study area; well below the threshold of movement for fine to medium size sand material. Swell waves decrease in height significantly to the north of the Clontarf spit which results in the potential for long-term shoreline progradation near the Clontarf spit. Since 1961, this feature has continually prograded to the north-west as sand accumulates on the western side.

Shoreline recession rates for the area due to sediment loss were calculated as part of the investigation of coastal hazards associated with sea level rise. They were derived from information in previous studies and verified through analysis of long term changes in sediment volumes (photogrammetric analysis). The amount of sediment transported offshore by tidal action is known as storm demand, expressed as a volume of sediment per metre length of shoreline. The storm demand for Clontarf has been estimated to be

10 m3/m. An ongoing underlying recession rate due to sediment loss was only attributed for Clontarf South, being 0.10m/yr.

Dredging (generates fine sediment plumes, removes aquatic habitat)

Maintenance dredging of the Clontarf swimming enclosure has been undertaken n a regular basis, but only to a limited extent in order to allow the baths to be more usable in the summer season. Dredging is subject to a dredge spoil management plan, in order to protect known seagrass beds in the area. The dredged sand has also provided a benefit, having been used for beach nourishment along the foreshore which has allowed Manly Scenic Walkway to follow a beach path at high tide.

Sea level rise (inundates nearshore vegetation and changes light regime)

The potential impacts of sea level rise on nearshore vegetation have not been investigated to date. Manly Council has investigated the potential for coastal hazards, such as erosion and inundation in relation to projected sea level rise. This information will form the basis for assessing potential impacts on estuarine habitats, as part of Council's Estuary Hazards Study.

6. CONCLUSIONS ON ESTUARY HEALTH STATUS

Current estuary health for Clontarf/Bantry Bay has been assessed through available literature, principally from data for Middle Harbour Creek, under the State of the Catchments Report 2010. The initial results of water quality monitoring for the first three months of the 12 month monitoring program have also provided input to the initial assessment of estuary health.

6.1 ESTUARY CONDITION

Previously assessed estuary condition

Little quantitative data was available previously for the key indicators of estuary condition, in order to allow a comparison with what is known about current estuary health.

There has been no previous assessment of micro-algal abundance to date that is specific to Clontarf/Bantry Bay. A qualitative assessment of macroalgal abundance was previously undertaken, noting the presence of red, green and brown algae in the intertidal zone. The Clontarf/Bantry Bay EMP reported that there were significant seagrass beds within the study area and made reference to historical mapping, noting that compared to the past, large losses of seagrass had occurred. Only small and isolated numbers of mangroves existed and there were no areas of saltmarsh.

No previous assessments of water clarity nor measurements of turbidity were carried out. Information on fish assemblages was mainly inferred from studies across greater Sydney harbour. Only presence/absence information was recorded for fish species and only for two restricted habitat areas, being the structures under Clontarf Marina and the adjacent sandy habitat. Nursery function and trophic integrity were not previously assessed.

Current estuary condition

The State of the Catchments Report 2010 Hawkesbury-Nepean and Sydney Metropolitan regions reported on estuary health, including Condition and Pressures. Results for the Clontarf/Bantry Bay area were included in that for *Middle Harbour Creek.*

The only available data for Middle Harbour Creek was in relation to chlorophyll *a*. The condition score for chlorophyll *a* was 'Very good' although this was rated with low confidence. There was insufficient additional data on other condition indicators, in order to calculate an estuary index.

In relation to the current assessment of estuary health, anecdotal evidence of the presence of seagrass beds was not available. The small number of mangroves persists in the upper part of the Contarf/Bantry Bay area, in Powderhulk Bay and Fisher Bay. No saltmarsh was noted during recent field observations.

Water quality monitoring was completed for the first three months of the 12 month monitoring program in April, May and June 2014. Results for chlorophyll *a* showed that all values were well below the trigger value of 3.6 ug/L and only slightly exceeded the trigger value for Zones 4 and 5 in the lower part of the estuary in April 2014. It is reasonable to expect relatively higher values for chlorophyll *a*, following the end of the productive season over Spring/Summer. Turbidity values from water quality monitoring during the months of April, May and June 2014 were generally well below the trigger value.

Further assessments will be undertaken where more specific data for the estuary condition can be obtained, particularly through Council's water quality monitoring program and seagrass mapping to be undertaken as part of the Estuary Health Assessment. This work in conjunction with the consideration of estuary pressures will guide development of management options.

6.2 ESTUARY PRESSURES

Previously assessed estuary pressures

The *Clontarf/Bantry Bay Data Compilation & Estuary Processes Study 2007* reported that the ecosystems in the area were highly fragmented with signs of many pressures placed on them through development and high usage. It also noted that estuary health pressures may originate from any part of the greater Sydney Harbour catchment.

The landuse has been predominantly residential development for many years and has a pressure rating of 'High'. Only 10% of the area is represented by open space and parks. The population for the area, as available from the 2001 census was 5,978. No data were reported on population density. Sediment and nutrient loads were modeled and estimated determined for sediment load to be 128,000 kg per year. Estimates were also obtained for total nitrogen, total phosphorus, copper, lead and zinc in kg per year that can provide for a basis of comparison into the future. There are six stormwater catchments draining the Clontarf/Bantry Bay area and 16.03 km of artificial drainage networks. In 2008, groundwater was being extracted at the rate of 1.64 megalitres at a depth of 6.1m for irrigation of Clontarf Reserve. Many private properties were extracting groundwater,with potential for saline intrusion into the aquifer.

The Clontarf/Bantry Bay area generally has had a highly developed and urbanized catchment since early last century. Key foreshore structures include The Spit Bridge and a relatively high proportion of the length of the foreshore is supported by seawalls which account for 46% of the foreshore. Other foreshore structures include swimming baths, marina and sailing clubs and boat moorings. A range of recreational activities continue to be undertaken, including walking, swimming, boating, kayaking and swimming.

The estuary is tidal, with flushing times ranging from less than a day in the lower part of the estuary, up to ten days around Bantry Bay. Fishing pressure was determined to be 'very low', due to the banning of commercial fishing, although no estimates of

recreational fishing pressure were included in the assessment. There has been potential for foreshore erosion to occur as a result of concentrated stormwater flows and storm generated waves, as evident on a number of occasions in the past.

Current estuary pressures

The State of the Catchments Report 2010 provided up to date information on the estuary pressures affecting Middle Harbour, from which inferences could be made for the Clontarf/Bantry Bay area.

The highest pressures on the estuary remain those from the catchment as a result of the population level and the disturbance to habitat along the foreshore and inshore areas from various structures and uses. Some additional foreshore structures have also been developed, including a public jetty and pontoon at Pickering Point and dinghy and kayak storage facilities at Sandy Bay. An upgrade to Clontarf marina has recently been approved which will provide for a larger number of boats, although consolidated within a smaller area through the removal of swing moorings.The ratings for population and disturbed habitat pressures remain as 'Very high'. Cleared land, sediment load and nutrient load have also been re-assessed as to the level of their current impact which remains the same as that previously assessed, being 'High'.

The results of water quality monitoring over the first three months of the 12 month monitoring program have shown that there is water clarity is very good. Although measurements were taken in the absence of recent rainfall and need to be repeated following a rainfall event.

Numerical modeling of tidal currents was undertaken in 2009, since the previous assessments supporting the Clontarf/Bantry Bay EMP. The modeling showed that tidal currents are generally very low along the whole area and below the threshold of movement of fine to medium grade material, implying there would be low impact on bed and bank stability. However, more recent modeling of potential coastal hazards associated with sea level rise has shown that shoreline recession could occur at the southern end of Clontarf. The potential impacts of sea level rise on nearshore vegetation will be assessed in consideration of the potential for coastal hazards, such as erosion and inundation against projected sea level rise for which Council undertook modelling in 2012. This will form part of a concurrent Estuary Hazards Study being undertaken by Council.

A comparison of previously assessed estuary pressures against current estuary pressures is presented in the following table:

Estuary	**PRESSURE INDEX**	**Pressure Indicator**								**CONFIDENCE**
Clontarf/ Bantry Bay		Cleared land	Population	Sediment load	Nutrient load	Freshwater flow	Disturbed habitat	Tidal flow	Fishing	
2008										
2014									?	

5	4	3	2	1
Very low	Low	Moderate	High	Very high

The comparison of currently available data on estuary health pressures with previously assessed estuary health pressures indicates that all pressures on estuary health essentially remain the same for the Clontarf/Bantry Bay area.

Further assessments will be undertaken where more specific data for the estuary pressures can be obtained. This work in conjunction with the consideration of estuary condition will guide development of management options.

7. REFERENCES

Department of Environment, Climate Change and Water (2010) *NSW Natural Resources Monitoring, Evaluation and Reporting Strategy 2010-2015.*

Department of Environment, Climate Change and Water (November 2010) *State of the Catchments 2010, Estuaries and Coastal Lakes, Hawkesbury-Nepean and Sydney Metropolitan Region.*

Manly Council (2013) *Regional Groundwater Resource Investigations – Manly, Warringah and Pittwater Local Government Areas.* WRL Technical Report 2012/12.

Manly Council (May 2012) *Identification of Coastal Hazard Risk Areas to Projected Sea Level Rise for the Manly Local Government Area.* WRL Technical Report 2011/19.

Manly Council (February 2009a) *Clontarf Sedimentary Processes and Foreshore Stability Study – Sedimentary Processes Report.*

Manly Council (February 2009b) *Clontarf Sedimentary Processes and Foreshore Stability Study – Foreshore Stability Report.*

Manly Council (May 2008) *Clontarf/Bantry Bay Estuary Management Plan Final Report.*

Manly Council (November 2007) *Clontarf/Bantry Bay Estuary Management Study FINAL REPORT.*

Manly Council (August 2007) *Clontarf/Bantry Bay Data Compilation & Estuary Processes Study FINAL REPORT.*

Office of Environment and Heritage (July 2013) *Guidelines for Preparing Coastal Zone Management Plans.*

Office of Environment and Heritage (March 2013) *Assessing estuary ecosystem health: Sampling, data analysis and reporting protocols. NSW Natural Resources Monitoring, Evaluation and Reporting Program.*

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Manly Council

CONSULTANT'S BRIEF

ESTUARY HAZARDS RISKS AND MANAGEMENT OPTIONS ASSESSMENT FOR CLONTARF/BANTRY BAY

April 2014

CONTENTS

1. INTRODUCTION

Manly Council is undertaking an Estuary Hazards Study for Clontarf/Bantry Bay that will ultimately inform a revision of the adopted Clontarf/Bantry Bay Estuary Management Plan 2008 (Clontarf/Bantry Bay EMP).

The proposed project is a high priority action in the Council adopted Clontarf/Bantry Bay EMP (*Action HR1. Identify existing and potential hazards and establish mitigation measures*). The Estuary Hazards Study will make assessment of beach erosion, shoreline recession, coastal inundation and cliff or slope instability. It will consider environmental, public safety, access and planning impacts including the possible loss of aquatic and riparian vegetation. The outcome will improve planning controls to avoid development in the hazard areas.

The Estuary Hazards Study will include assessing the impacts of projected sea level rise on estuarine habitats, stormwater systems and public access and critical infrastructure using the NSW Government's guidelines. Other risks may include tsunami impacts. All properties in the area will be categorised for risk and responses.

The Estuary Hazard Study will provide technical information for the planned Coastal Zone Management Plan for Clontarf/Bantry Bay Estuary (Middle Harbour). The revised Clontarf/Bantry Bay EMP will follow the new *Guidelines for preparing Coastal Zone Management Plans*, as published in July 2013 (CZMP Guidelines) and adopted by the Minister for Environment under section 55D of the *Coastal Protection Act* 1979.

The Estuary Hazards Study will essentially respond to the requirements for assessing and managing coastal risks, as described under *Chapter 3 Coastal risk management* of the CZMP Guidelines.

Council is seeking the services of a consultant to assist with a component of work for the Estuary Hazards Study, in undertaking an Estuary Hazards Risks & Management Options Assessment. The assessment is expected to be sufficient to inform the subsequent development of Emergency Action Subplans which Council will prepare. The component of work comprises the following tasks:

1. Review and identify coastal hazards risks from previous studies, particularly hazards including coastal erosion, coastal inundation, seawall failure, sediment processes and foreshore stability;
2. Undertake comprehensive geotechnical assessments of properties for cliff or slope stability;
3. Identify options for managing risks from coastal hazards, including temporary protection works; and
4. Categorise properties for risk and response.

This Consultant's Brief describes the study area, sets out assessment objectives, lists existing studies to be reviewed and describes the detailed tasks for the Estuary Hazards Risks & Management Options Assessment.

Consultants are invited to respond with a quotation to complete the Estuary Hazards Risks & Management Options Assessment by Monday 19 May 2014.

2. STUDY AREA

The Estuary Hazards Study and Estuary Hazards Risks & Management Options Assessment both address the portion of the Middle Harbour (part of the greater Port Jackson / Sydney Harbour) estuary and foreshore that corresponds with the Manly Local Government Area. The boundaries are Sydney Harbour National Park at the south-eastern extremity and Garigal National Park at the north-western extremity. The study area covers 350 hectares and has a perimeter of 11.5km, and takes in the suburbs of Balgowlah Heights, Clontarf and Seaforth. The study area boundary on the terrestrial side is the ridgeline, incorporating the associated sub-catchments that drain to the foreshore. On the aquatic side, the boundary extends approximately to the middle of the waterway.

The entire study area is covered within the Sydney Harbour Foreshores and Waterways Area, under the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.*

An aerial image showing the study area for Clontarf/Bantry Bay Estuary Hazard Study and Estuary Hazards Risks & Management Options Assessment is presented in Figure 1, below.

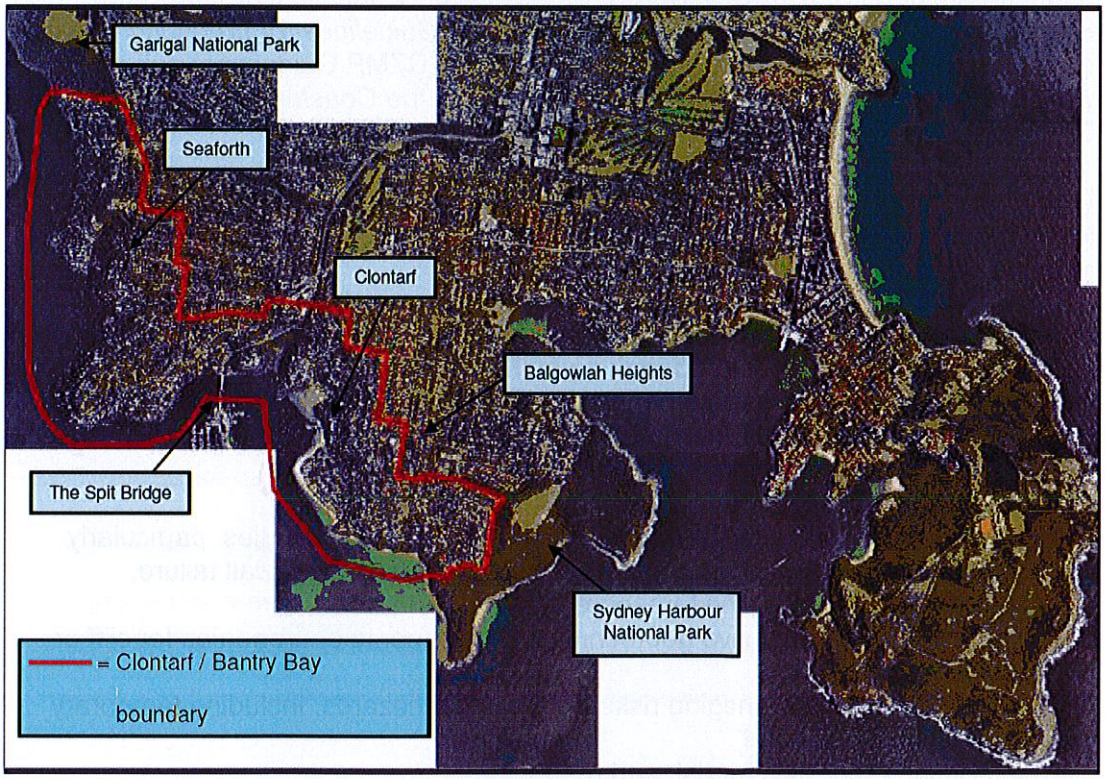

Figure 1: Study area for Clontarf/Bantry Bay Estuary Hazards Study.

The Clontarf/Bantry Bay estuary is regionally significant in its role as a habitat for native animals and plants and is also popular for recreation. The attraction of Clontarf/Bantry Bay is enhanced by its generally good water quality. This results in numerous primary and secondary contact recreational pursuits, including swimming, sailing, kayaking, diving, sail boarding, kite-surfing, water skiing and boat and shore fishing.

The area is subject to a number of physical processes, including erosion, sediment transport and impacts from storms. Erosion in the study area occurs along beaches, in front of stormwater outlets, along ad hoc access tracks, and where foreshore protection structures such as seawalls are collapsing. Beach erosion has been experienced at four sections of Clontarf Beach and Sandy Bay with varying degrees of severity, and fluctuations over time. Accelerated erosion occurs as a result of the concentration of stormwater flows through artificial drainage networks. The study area, especially the Clontarf swimming area, also regularly experiences siltation. The study area is susceptible to cliff or slope instability, with a large landslip having occurred at Seaforth Crescent in 1956. Boat generated waves over time can cause foreshore erosion and weaken sea walls.

From the Spit Bridge to the north western extremity of the study area, the foreshore is predominantly stable rock, with estuarine mud on the sea floor. This area is beyond the normal limit of ocean waves, and is reasonably deep, therefore creating a relatively stable sedimentary environment.

However, the lower reaches of the study area from Castle Rock Beach to the Spit Bridge, consist largely of unstable sandy shores, with a mixture of marine sand and estuarine mud on the sea floor. The estuary in this section consists of both a shallow sand bar and a deep channel. The marina at Clontarf lies directly in the path of the sand transport corridor between the tidal delta and Sandy Bay. The beach profile appears to have been modified from its natural state, due to the irregular shape of the shoreline between Clontarf Reserve and Sandy Bay. The large sand flat of Sandy Bay transforms into a narrow beach with a steep drop-off on either side of Clontarf Marina, and then back into a sand flat to the south of the marina. There are many forces impacting on this part of the estuary, creating a complex system.

Significant storm events affecting the Middle Harbour area are known to have occurred in April 1893, June 1923 and May-June 1974. The study area experienced the impact of a tsunami on May 22, 1960 when a strip 90 x 55 metres wide was swept away from Clontarf Reserve Point Park. The 1974 storm reported wall collapse near Middle Harbour Yacht Club and minor beach erosion at the Spit and Clontarf. The study area experienced waves and high winds from a recent storm on June 9-10, 2007 which resulted in a cruiser washing ashore at Clontarf but with no serious erosion.

3. ASSESSMENT OBJECTIVES

The following Coastal Management Principles, as per the CZMP Guidelines should underpin the Estuary Hazards Risks & Management Options Assessment:

Principle 1: Consider the objects of the *Coastal Protection Act 1979* and the goals, objectives and principles of the *NSW Coastal Policy 1997.*

Principle 2: Optimise links between plans relating to the management of the coastal zone.

Principle 3: Involve the community in decision-making and make coastal information publicly available.

Principle 4: Base decisions on the best available information and reasonable practice; acknowledge the interrelationship between catchment, estuarine and coastal processes; adopt a continuous improvement management approach.

Principle 5: The priority for public expenditure is for public benefit; public expenditure should cost-effectively achieve the best practical long-term outcomes.

Principle 6: Adopt a risk management approach to managing risks to public safety and assets; adopt a risk management hierarchy involving avoiding risks where feasible and mitigation where risks cannot be reasonably avoided; adopt interim actions to manage high risks while long-term options are implemented.

Principle 7: Adopt an adaptive risk management approach if risks are expected to increase over time, or to accommodate uncertainty in risk predictions.

Principle 8: Maintain the condition of high value coastal ecosystems; rehabilitate priority degraded coastal ecosystems.

Principle 9: Maintain and improve safe public access to beaches and headlands consistent with the goals of the NSW Coastal Policy.

Principle 10: Support recreational activities consistent with the goals of the NSW Coastal Policy.

The objectives for the Estuary Hazards Risks & Management Options Assessment are:

- To develop sufficient understanding of the coastal hazards risks and management options, in order to reduce the risk of damage to existing development as a result of beach erosion, shoreline recession, sedimentary processes and cliff or slope instability to an acceptable level;
- To develop sufficient understanding to ensure the effects of beach erosion, sedimentary processes and shoreline recession do not adversely impact upon beach amenity;
- To ensure any protective works minimise impact upon beach amenity and access and where practical, improve existing amenity and access;
- To take into account the potential for future climate change to affect the magnitude of coastline hazards; and
- To reduce to an acceptable level, the risk to property and risk to life as a result of cliff or slope instability.

4. SCOPE OF THE WORK

The scope of work has four key activities, described in the following subsections.

4.1 REVIEW AND IDENTIFY COASTAL HAZARDS RISKS

➢ REVIEW EXISTING AND RELATED STUDIES

Manly Council has undertaken a number of relevant previous studies which need to be reviewed, in order to ensure that the Estuary Hazards Risks & Management Options Assessment is not repetitive and builds on the previous work. Electronic copies of the relevant Manly Council reports will be provided to the consultant. An overview of the previous studies is provided below.

- ***Clontarf / Bantry Bay Estuary Management Plan (EMP) 2008***
  The EMP was built on an Estuary Processes Study (2007) and an Estuary Management Study (2007). The EMP addresses the following ten broad based key issues, derived from community consultations with associated management actions:
  - Water quality & pollution

- Aquatic/intertidal habitat conservation & management
- Bushland/terrestrial habitat conservation & management
- Sedimentation & beach erosion
- Hazards & risks including climate change
- Estuary use and access
- Foreshore infrastructure & facilities
- Heritage conservation

- ***Clontarf Sedimentary Processes and Foreshore Stability Study 2009***
  The purpose of the study was to investigate the sedimentary processes within the Clontarf/Bantry Bay region and to assess the stability of shoreline structures along Council land within the study area. As part of the Foreshore Stability Study, a detailed shoreline survey and geotechnical investigation was undertaken. A comprehensive sedimentary processes study, with a focus on sediment transport and shoreline change processes was undertaken for the shoreline in the Clontarf area, between Clontarf Point and Sandy Bay and included management options.

- ***Identification of Coastal Hazard Risk Areas to Projected Sea Level Rise for the Manly Local Government Area 2012 (Coastal Hazard Risk Areas Report)***
  This study looked into coastal hazards and risk areas, with particular reference to sea level rise, including for Clontarf/Bantry Bay. The work involved the following:
  - Field survey of existing coastal protection works - visual assessment and engineering characterisation of coastal protection works (seawalls); no detailed stability assessment was undertaken.
  - Definition of coastal erosion hazard lines for present day conditions, 2050 and 2100 planning periods – modelling showed that in the event of seawall failure, erosion will progress inland and potentially impact a large number of private and public properties and infrastructure.
  - Definition of coastal inundation levels for the 1, 50 and 100 year average recurrence interval storm events for present day, 2050 and 2100 planning periods - current shoreline location including allowance for the then NSW Government sea level rise benchmarks were assessed; inundation due to elevated water levels (including storm surge and wave setup) will potentially affect areas located away from the foreshore as well as beachfront properties.
  - Vulnerability assessment of existing assets to erosion and inundation - Clontarf will be impacted by the erosion and recession hazard for the 2100 planning horizon, where seawalls are in place and in the event of seawall failure (see Table 1, Figure 1). Properties in both Clontarf and Seaforth are at risk of inundation, both present and future (See Table 2, Figure 2).
  - Recommendations for coastal risk management options - mapping of erosion and inundation indicates the importance of seawalls in preserving existing development and assets at their present locations; in many locations seawalls will require substantial upgrading or replacement but other management measures may also be appropriate.

Table 1. Indicative Assets Potentially Impacted by Erosion and Recession

Area	Asset	Seawall			Seawall Failure		
		Present	2050	2100	Present	2050	2100
Clontarf	Houses/Buildings	0	0	3	18	18	19
	Pumping Station	0	0	0	0	0	0
	Sewer Mains	yes	yes	yes	yes	yes	yes
	Water Mains	no	no	no	no	no	no
	Stormwater lines	yes	yes	yes	yes	yes	yes
	Pools/Encl.	yes	yes	yes	yes	yes	yes
	Roads	yes	yes	yes	yes	yes	yes

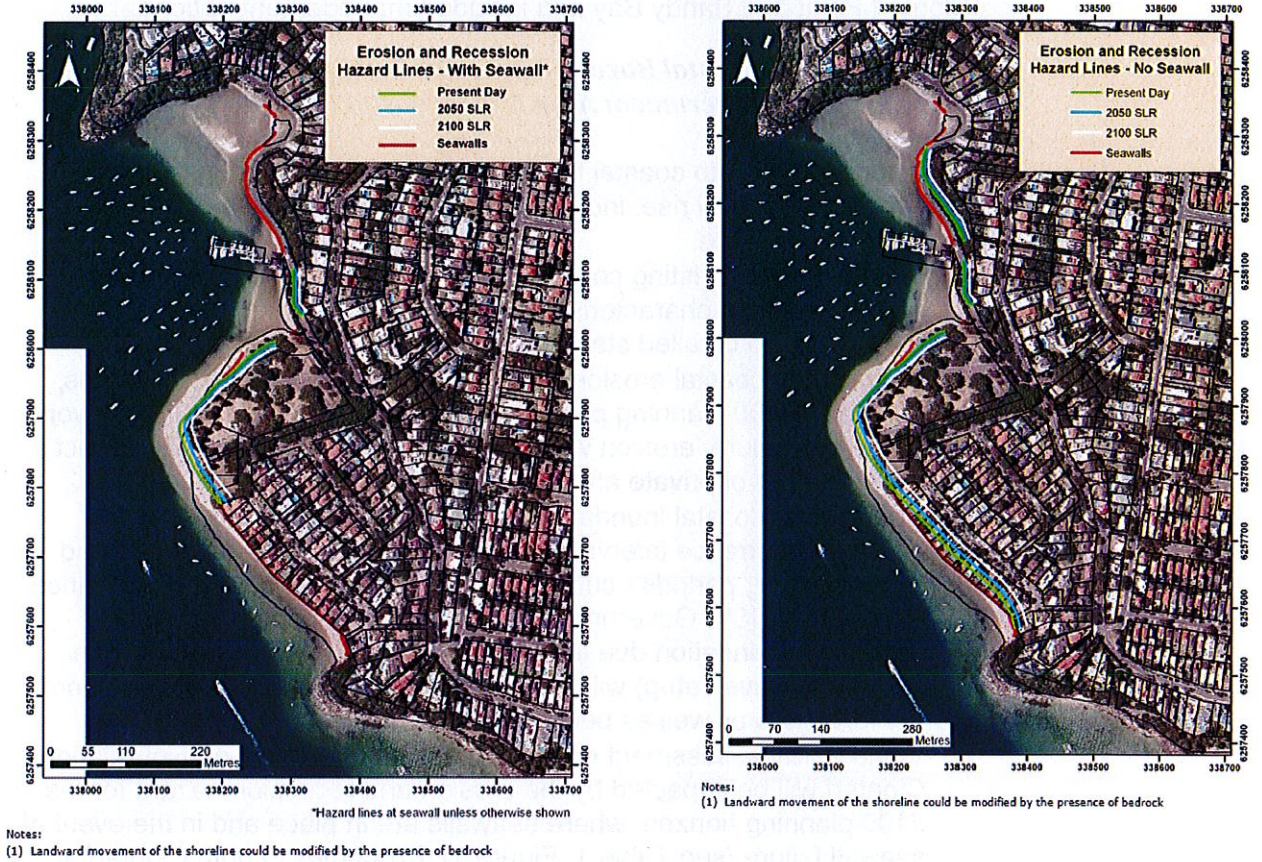

Figure 1. Clontarf Coastal Erosion Hazard Lines with seawalls in place (left) and in the event of seawall failure (right)

Table 2. Indicative Assets Potentially Impacted by Inundation

Area	Asset	100 yr ARI (1%AEP)			50 yr ARI (2%AEP)			1 yr ARI (63%AEP)		
		2012	2050	2100	2012	2050	2100	2012	2050	2100
[4]Seaforth	Properties	2	6	8	3	5	5	0	1	1
Clontarf	Properties	5	20	46	2	16	40	0	8	33

Note (4) several private boatsheds will potentially be impacted by inundation

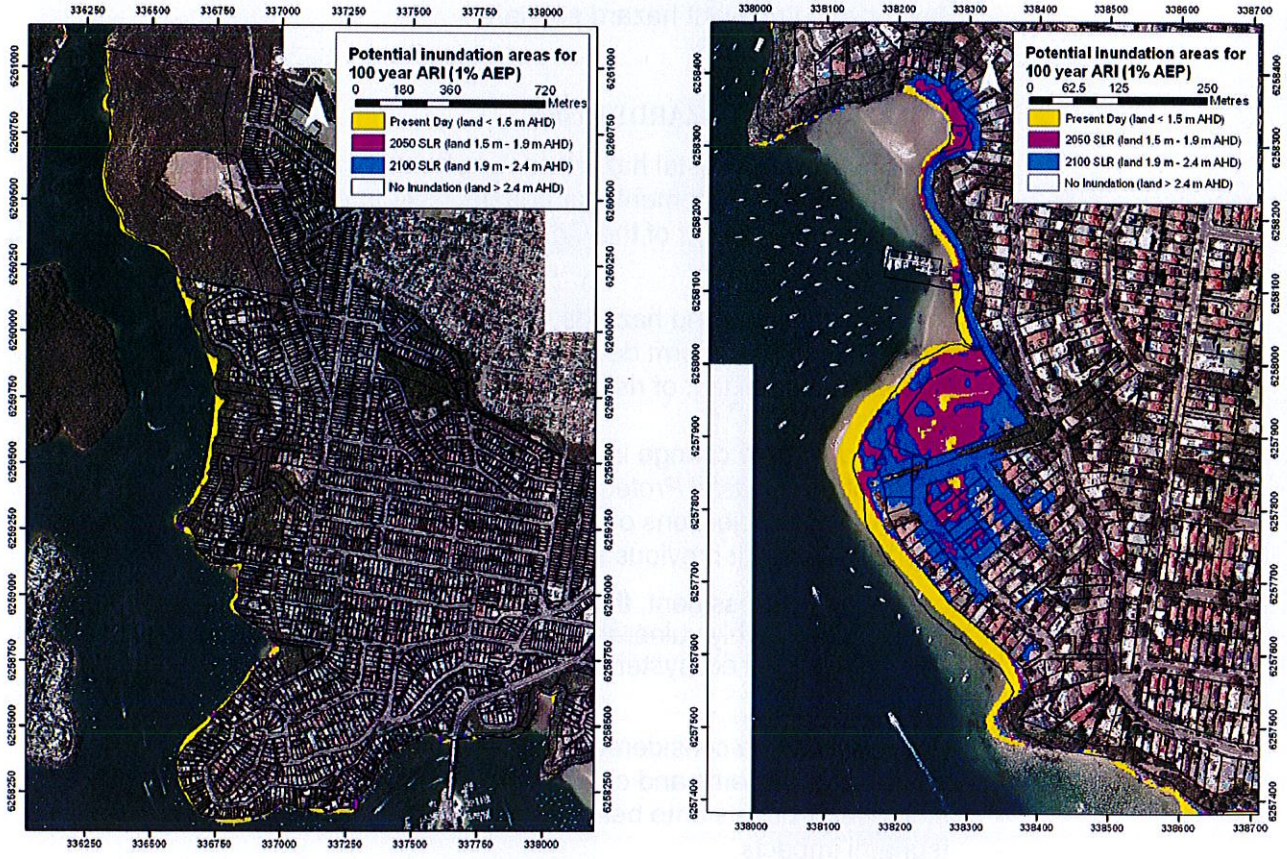

Figure 2. Coastal Inundation Zones (incl. wave and wind setup) for Seaforth (left) and Clontarf (right)

- ***Manly LGA Seawall risk assessment and plan for priority upgrade/replacement 2012***
  This study followed on from Council's Coastal Hazard Risk Areas report. The study established a priority order for the upgrade and/or replacement of the publicly owned seawalls located within the Manly LGA, including Clontarf/Bantry Bay. It was based on a risk assessment combining coastal and geotechnical hazards for each seawall.

- ***Identification of properties at risk from erosion and inundation in the Manly LGA (Addendum Report)***
  This study also followed on from Council's Coastal Hazard Risk Areas report. The study documented the methodology and assumptions used to prepare estimates of properties potentially subject to coastal hazards ie. erosion and inundation hazards and identified individual properties potentially at risk from erosion and inundation, including Clontarf/ Bantry Bay for each relevant hazard scenario.

➢ IDENTIFY COASTAL HAZARDS RISKS

The identification of coastal hazards risks should be consistent with the relevant minimum requirements for coastal risks in a CZMP, under *Section 3. Coastal risk management* of the CZMP Guidelines, as follows:

- a description of:
- coastal processes and hazards within Clontarf/Bantry Bay, to a level of detail sufficient to inform decision-making;
- the nature and extent of risks to public safety and built assets from coastal hazards;
- projected climate change impacts on risks from coastal hazards (section 55C(f) of the *Coastal Protection Act 1979*), based on Council's adopted sea level rise projections or range of projections and with reference to Council's relevant previous studies.

In a preliminary assessment, the ecosystems of the study area are considered to be highly vulnerable to the impacts of climate change. It is believed that natural ecosystems have low resilience to the effects of climate change.

- Other risks to be considered should include:
- stormwater systems and critical infrastructure
- stormwater outlets onto beaches
- tsunami impacts
- impacts on estuarine habitats, such as possible loss of aquatic and riparian vegetation

➢ PREPARE A RISK ASSESSMENT

The coastal hazards risks assessment should address the types of hazards and associated minimum assessment criteria, as listed in *Section 3.2 Risks from coastal hazards*, in the CZMP Guidelines, as relevant to the estuary*:

- Shoreline recession
- Coastal inundation
- Coastal cliff or slope stability
- Tidal inundation
- Estuary foreshore erosion

*The risks of seawall failure should also be included.

As per the CZMP Guidelines, the extent of areas subject to the particular coastal hazards listed above should be represented on a map. The consultant is to overlay a map of estuarine habitats, areas of ecological significance and public assets on a climate change impact area map, define vulnerable ecosystems and assets and confirm by on-site inspections.

The assessment should include a table for each hazard, indicating the number and type of buildings (e.g. residential, commercial and community) and significant infrastructure within each hazard area. The table information should be sourced from Council's Coastal Hazards Risk Areas report, as a minimum.

The table information should be built upon, in order to assess the relative risks associated with these hazards, based on likelihood and consequences and provide for a risk assessment.

The outcomes of the risk assessment should inform the areas and/or properties for which comprehensive geotechnical assessments are required. The risk assessment should identify the impacts from coastal hazards which will need to be considered in determining the management options. Impacts to be assessed include impacts on estuarine habitats, stormwater systems, public access and critical infrastructure.

➢ PREPARE A PROPERTY LEVEL COASTAL HAZARDS RISK ASSESSMENT

Individual properties subject to risks from coastal erosion and inundation are identified in Council's Addendum Report to the Coastal Hazard Risk Areas Report. The consultant should also review properties subject to landslip, as identified in Council's Development Control Plan.

Additional specific property level information and geotechnical risks (identified through geotechnical assessments outlined below) should be used to assess the relative risks associated with these hazards. A property level risk assessment should be prepared, including assessment of likelihood and consequence for each property.

Additional relevant property level information should be investigated, with appropriate property level risk assessment criteria being determined. The criteria should include, as a minimum:

- Extent and depth of inundation
- Risk from flooding associated with stormwater*
- Depth of water table
- Asset characterisation and location on the property

*Note: This information is to be sourced from the Manly LGA flood study, in progress and as available.

4.2 UNDERTAKE COMPREHENSIVE GEOTECHNICAL ASSESSMENTS

Council has identified a number of areas as being subject or potentially subject to geotechnical hazards within the study area, including unstable rock faces and areas prone to landslip.

The consultant is to undertake a geotechnical study for specific sections of foreshore areas, including a review of previous studies where cliff or slope instability is indicated, in order to identify and prioritise risks and to provide for establishing risk based management options. Risks associated with environmental, public safety and access should be distinguished. There are a number of privately owned seawalls in the study area. The geotechnical assessment should assess these seawalls only to the extent to which sea wall failure could result in any environmental, public safety or public access risks.

The assessments are to be undertaken for both public areas and individual private properties, as appropriate and should quantify the geotechnical risks for existing, 50 year and 100 year planning horizons within a risk-based framework. The consultant is required to undertake consultation with individual property owners. Council will provide the initial point of contact. The investigation should be carried out generally in accordance with the National Landslide Risk Management Framework for Australia (Australian Geomechanics Society 2007) and should encompass, but not be limited to:

- A review of existing data including photogrammetry
- Site inspection
- Site investigation
- Geological mapping
- Identification of failure mechanisms
- Analysis of Factors of Safety
- Projections of future behaviour
- Sensitivity/risk analysis.

The results of the geotechnical assessments should be incorporated in the property level coastal hazards risk assessment, described above and presented on the hazards risk map(s).

4.3 IDENTIFY OPTIONS FOR MANAGING RISKS FROM COASTAL HAZARDS

The options for managing risks from coastal hazards should be consistent with the relevant minimum requirements for coastal risks in a CZMP, under *Section 3. Coastal risk management* of the CZMP Guidelines, including as follows:

- proposed actions to manage current and projected future risks from coastal hazards, with particular reference to managing the highest risks;
- suitable locations for coastal protection works, temporary or otherwise that could be funded by Council, public authority and/or private landowners;
- any site-specific requirements for landowner temporary and/or permanent coastal protection works; and
- proposed emergency actions to be carried out during periods of beach erosion such as coastal protection works for property or asset protection, other than matters that would be dealt with in any plan made under the *State Emergency and Rescue Management Act 1989* relating to emergency.

The general approach to managing risks from coastal hazards is set out in the CZMP Guidelines, as follows:

- Management of high public safety risks takes priority over risks to built assets.
- If risks from a hazard are low, maintain this level of risk through appropriate land-use, development approval and infrastructure planning decisions.
- If the risks from a hazard are high, then -
    - avoid further development in the area or ensure the development can accommodate the hazard, including any likely increase in the severity of the hazard over time (e.g. due to projected sea level rise);
    - ensure appropriate emergency management arrangements are in place; and
    - consider works to reduce risk levels, focusing on the highest risks.

The requirements for any coastal or flood protection works should consider any adverse impacts from the works, including increased off-site erosion or flood levels, reduced beach access and environmental impacts.

The potential for works to address more than one hazard should be considered (e.g. coastal protection works may address both erosion and recession, and flood mitigation works may address both coastal and stormwater related inundation).

Where the height of an existing seawall is inadequate for wave overtopping/inundation the consultant is to prioritise which seawalls may benefit from being raised.

Potential options for managing risks from coastal hazards are listed in *Table 3. Potential options for managing risks from coastal hazards* of the CZMP Guidelines.

The consultant is to develop adaptive measures to prevent further damage to critical ecosystems and public assets of the study area. The management options should also cover planning impacts and propose improved planning controls as relevant.

The management options are to be presented respectively for hazard areas and/or individual properties as appropriate and should also be clearly identified as risk mitigations associated with the specific hazard area and/or property risks. The management options are to be sufficient to form the basis of Emergency Action Subplans, as per the CZMP Guidelines and the *Coastal zone management guide note – Emergency action subplans* which will subsequently be developed by Council.

4.4 CATEGORISE PROPERTIES FOR RISK AND RESPONSE

CZMPs are to categorise all private property subject to coastal hazards according to the degree of the hazard and in the case of hazards due to erosion and recession, the category of Council's intended response to managing the risks to the property. Hazard vulnerability categories, according to whether the property is in a current, 2050 or 2100 hazard area are to be presented for each property. Coastal hazard response categories are to be determined for each property at risk, according to the intended public authority response.

Details of the risk and response categories to be assigned to private property are shown in *Section 3.2.4 Property risk and response categories* of the CZMP Guidelines. The risk and response categories for each property are to be presented in a table.

4.5 PUBLIC EXHIBITION (OPTIONAL)

Under Section 4.2 the consultant is required to undertake landowner consultation of the hazards facing their properties and possible planning controls and management options.

At this stage it is not clear if the draft Estuary Hazards Risk and Management Options Assessment report will be placed on public exhibition or involve further landowner consultation before finalising. Nor is it clear of the role of the consultant in any exhibition process. Should the services of the consultant be required during the public exhibition, Council will negotiate the cost with the consultant.

5. PROJECT TIMETABLE AND COMPLETION

Timeframe for the project is as follows:

- **Project commencement date – 26 May 2014 or as per date of contract.**
- **Project completion date - 15 October 2014.**

The deliverables are two draft reports and one final report, according to the delivery schedule outlined in the table below.

Part	Deliverable	Due Date
Part 1	First Draft Report – Coastal hazards risks and preliminary property level risk assessment.	1 Aug 2014
Part 2	Second Draft Report – Revised property level risk assessment, incorporating geotechnical assessment results; potential options for managing risks.	1 Sep 2014
Part 3	Final Report – incorporating property risk and response categories.	1 Oct 2014

6. REPORTING REQUIREMENTS

Council will require colour copies of both draft and final reports, including two hard copies of draft reports and five bound copies of the final report, in addition to electronic copies suitable for document printing. Pages are to be A4 where relevant to ensure ease of printing.

7. COUNCIL CONTACT OFFICER

Jacqui McLeod, Senior Coastal Management Officer
Ph: (02) 9976 1522
Fax: (02) 9976 1400
Jacqui.mcleod@manly.nsw.gov.au

8. TENDER QUOTATION

The consultant is required to submit a quotation by **COB 19 May 2014** by completing the Tender Quotation Form at the end of this document, together with information on the following:

1. Previous relevant project experience.
2. Nominated personnel, including details of their roles for the project and previous experience.
3. Methodology.
4. Evidence of public liability and professional indemnity insurance.

TENDER QUOTATION FORM

CONTRACT : Clontarf/Bantry Bay Ecosystem Health & Pressures Management Study

CONTRACT NO. **CONTRACT NUMBER**

TENDERER: .....

OF: .....

TELEPHONE ..... **FAX:** .....

ACN: ..... **ABN:** .....

I/We the undersigned, do hereby tender to carry out the Works in the abovementioned Contract in accordance with the Specifications, Contract Documents, Plans and Annexures for the tendered Lump Sum.

TENDERED PRICE:	**PART 1**	**$** .....
	PART 2	**$** .....
	PART 3	**$** .....
	SUB TOTAL	**$** .....
	GST	**$** .....
	TOTAL	**$** .....

SIGNATURE OF TENDERER: .....

WITNESS: .....

DATED: This ..... day of ..... 20.....

TO: Harbour Foreshore & Coastline Management Advisory Committee

MEETING DATE: **8 July 2014**

AUTHOR: Helen Lever, Manager Administration

SUBJECT: Review of Scuba Diving Licensing

1. INTRODUCTION

This report is provided for consideration of the committee. It provides information in relation to the review of Scuba Diving Licensing in Manly.

2. INFORMATION

In June 1988 Manly Council resolved, after a number of reports recommending self regulation and other options failed, to introduce a licensing system for the operators of dive schools operating from commercial premises within he Manly Local Government Area (LGA) and "*..consideration be given to others outside the area".*

The subject resolution in 1988 also referred to a license fee being applied and terms and conditions of those licenses being specified in order to better manage the public space (e.g. beach, reserves and parking) impacted by the operation of such businesses.

At some point after this resolution an upper limit of five operators was determined and these operators are approved to take their clients to particular locations being Shelly Beach, Little Manly and Fairlight Beach. The operators are to be registered, hold suitable public liability insurance, ideally operate from a shop front and pay a (Council resolved) license fee.
Council supports local businesses where it is able / appropriate.

The Administration area of Council runs the licensing process including collecting applications, obtaining and checking insurance details, providing operators with signage and invoicing / billing.

Purpose built "Diver platforms" are provides by Council at Shelly and Little Manly beaches as designated places for the licensed diving schools to congregate and place their equipment on during dives.

It is generally thought that the approach taken since the 1988 resolution is still valid / has merit as the upper limit of 5 operators provides Council with some control over the space and business operators and assists in maintaining the balance between structured and passive use of the beach and harbour foreshore areas.

Documents that further detail Council's approach to this area of business include the Terms and Conditions of SCUBA licenses, the application form and the internal procedures document which outlines the annual issuing process conducted by the team who have carriage of same. All these are included as attachments to this report.

RECOMMENDATION:

This report recommends that the Committee endorse and General Manager approves the recommendation to maintain the current system of issuing and management of licences for

SCUBA Dive operators in the Manly LGA and advertise for a suitable operator via an expression of interest to fill the current single vacancy for a dive school.

Harbour Foreshore & Coastline Management Committee

Attachments

1. Current Terms and Conditions of SCUBA licenses in the Manly Local Government Area
2. Current Licence Application Form

Attachment 1

1. Current Terms and Conditions of SCUBA licenses

THE LICENSEE hereby agreed:

1. To operate a Scuba Diving Operation personally with the assistance of suitably accredited employees and will not sublease or transfer the Licence without the consent of Council.
2. To pay to Council an amount per annum payable in advance (quarterly if requested), such amount to be increased annually by the monetary equivalent of the annual percentage increase in the Consumer Price Index or as determined by Council.
3. The licence shall be subject to annual renewal as at 31 March of each year.
4. To have the Scuba Diving Operation supervised at all times by competent adult persons appropriately qualified in Scuba Instruction.
5. Not to erect any advertising signs or structure on any road or reserve.
6. To keep all equipment in working condition and properly maintained in accordance with industry standards.
7. To indemnify Council by way of Public Liability Insurance Policy in the joint names of the Licensee and Council for $10,000,000 against any claims arising out of the operation of the Licensee's Scuba Diving Operation activities. The Licensee shall produce such policy and/or a certificate of currency with Council's interest noted thereon to the Council prior to the Council executing this agreement and thereafter when and as often as the Council may require.
8. The Licensee shall comply with all directions from Council's authorised officers as to location of equipment on roads and reserves so as not to interfere unnecessarily with overall beach management and general public use thereof.
9. The Licensee shall not conduct commercial diving operations at Fairy Bower Beach at the intersection of Marina Parade and Bower Lane on Saturday's, Sundays and public holidays, but rather utilise the other agreed locations such as Shelly Beach and Fairlight Beach on these days. No objection is raised to classes being conducted at this location on Mondays to Friday (public holidays excepted) providing courtesy is exercised in the parking, loading and unloading of vehicles.
10. Any litter or waste matter arising from the exercising of the rights under the licence to be removed and disposed of in a proper manner by the Licensee.
11. The Licensee shall control the use of the equipment used in association with the Scuba Diving Operation activities in such a manner so as not to constitute a nuisance to members of the public or beach users and shall do all things practical to ensure that all persons being supervised by operators behave in a proper, reasonable manner so as not cause offence, injury or inconvenience to the general public or other beach users. Operators must utilise the dive corralling platforms where provided at Cabbage Tree Bay, Little Manly and Fairlight (planned).
12. The Council reserves the right to cancel the licence at any time should Council in its absolute discretion be of the opinion that the Scuba Dive Operation activity is not being conducted in accordance with the terms of the agreement and in such circumstance Council will give the licensee 60 days notice in writing of its intention to cancel the licence and no claim for damage or compensation will be due to the Licensee by reason of such action.
13. To provide Council with details regarding the proprietors of the Scuba Dive Operation, its employees and an address for service of Notices. (It should be noted that a licence will only be issued to a legal entity being an individual or registered company.)
14. a. That the Licensee be issued with a key to provide motor vehicle access through the boom rail but no further than the turning cycle at Shelly Beach for the sole purpose of delivering and retrieving dive equipment, said motor vehicle at all other times to be parked outside the boom gate in the appropriate parking area.

    b. That a refundable deposit be paid prior to issue of the boom rail key.

    c. The key will be subject to immediate return to Council and will not be reissued if any evidence exists that the Licensee has used the key for any other purpose than as outlined in part (a) of this section.
15. All dive activities (by both Instructors and clients) must conform with existing Department of Primary Industry legislation for the protection of Manly's marine environment. Any breach of such legislation may result in the cancellation of the Dive Operators Licensing Agreement. All divers are to be briefed on permissible and non-permissible activities within Cabbage Tree Bay Aquatic Reserve.
16. All licensed dive operators are required to undertake/be involved in Code of Conduct training seminars to be run each year by NSW Department & Climate Change, NSW Department of Primary Industries (Fisheries) and Council.

Manly Council
Council Offices 1 Belgrave Street Manly
PO Box 82 MANLY NSW 1655 AUSTRALIA
DX 9205 Manly www.manly.nsw.gov.au
Phone 02 9976 1500 Fax 02 9976 1400
Email: records@manly.nsw.gov.au

APPLICATION – FOR SCUBA DIVING LICENCE

Corporate Services
ABN 43 662 868 065

APPLICANT DETAILS

Business Trading Name: _____

Proprietor/s or Company Entity: _____

ACN: _____ ABN: _____

Business Trading Address: _____

_____ Postcode: _____

Postal Address: _____

_____ Postcode: _____

Contact Name/s: _____

Phone No. (daytime): _____ (mobile): _____

NOTE:

1. Two signs displaying Council's logo and the words "Licensed Dive School" and a number will be provided upon completion of the licence agreement. These signs will identify you as current licensee and must be displayed whilst operating from Council owned land.
2. A copy of Public Liability Insurance to the value of at least $10 million is to be attached to this Application Form. The required endorsement noting Manly Council's respective rights and interests and indemnifying Manly Council is to be shown on the policy.

DECLARATION

I/we apply for a Scuba Diving Licence. I/We have read and understood and will abide by all conditions and requirements detailed in the Scuba Diving Licence Agreement.

I enclose in support of my application the following:

- Payment of the annual licence fee (as per Council's Fees & Charges).
- Payment of a refundable deposit (as per Council';s Fees & Charges) if option on Shelly Beach is taken.
- A copy of my current Public Liability Insurance Policy to the value of at $10 million. The required endorsement noting Manly Council's respective rights and interests and indemnifying Manly Council is shown on the policy.

Applicants Signature: _____ Date: _____

OFFICE USE

Debtor No. _____

Bond Type Code: 55

Fee paid: $

Date: _____

Approved / refused: _____

Receipt No: _____

Customer Service Officer: _____

SCUBA DIVING LICENCE - SAMPLE ONLY

AGREEMENT MADE THIS …… day of …… between the MANLY COUNCIL hereinafter called the Council on the one part and …… …… (hereinafter called the Licensee of the other part). WHEREAS the Licensee has agreed to certain terms and conditions as set out hereunder and Council has agreed to grant a Licence to the Licensee, a Scuba Diving Operation which conducts a commercial operation on land within the Municipality coming under Council's control and regulations.

THE LICENSEE hereby agrees:

1. To operate a Scuba Diving Operation personally with the assistance of employees and will not sublease or transfer the Licence without the consent of Council.
2. To pay to Council an amount (Annual licence fee - as per Council's Fees & Charges), inclusive of GST and payable in advance, such amount to be increased annually by the monetary equivalent of the annual percentage increase in the Consumer Price Index or as determined by council.
3. The licence shall be subject to annual renewal as at 31 December of each year.
4. To have the Scuba Diving Operation supervised at all times by competent adult persons appropriately qualified in Scuba Instruction.
5. Not to erect any advertising signs or structure on any road or reserve.
6. To keep all equipment in working condition and properly maintained in accordance with industry standards.
7. To indemnify Council by way of Public Liability Insurance Policy in the joint names of the Licensee and Council for $10,000,000 against any claims arising out of the operation of the Licensee's Scuba Diving Operation activities. The Licensee shall produce such policy and/or a certificate of currency with Council's interest noted thereon to the Council prior to the Council executing this agreement and thereafter when and as often as the Council may require.
8. The Licensee shall comply with all directions from Council's authorised servants as to location of equipment on roads and reserves so as not to interfere unnecessarily with overall beach management and general public use thereof.
9. The Licensee shall not conduct commercial diving operations at Fairy Bower Beach at the intersection of Marina Parade and Bower Lane on Saturday's, Sundays and public holidays, but rather utilise the other agreed locations such as Shelly Beach and Fairlight Beach on these days. No objection is raised to classes being conducted at this location on Mondays to Friday (public holidays excepted) providing courtesy is exercised in the parking, loading and unloading of vehicles.
10. Any litter or waste matter arising from the exercising of the rights under the licence to be removed and disposed of in a proper manner by the Licensee.
11. The Licensee shall control the use of the equipment used in association with the Scuba Diving Operation activities in such a manner so as not to constitute a nuisance to members of the public or beach users and shall do all things practical to ensure that all persons being supervised by operators behave in a proper, reasonable manner so as not cause offence, injury or inconvenience to the general public or other beach users.
12. The Council reserves the right to cancel the licence at any time should Council in its absolute discretion be of the opinion that the Scuba Dive Operation activity is not being conducted in accordance with the terms of the agreement and in such circumstance Council will give the licensee 60 days notice in writing of its intention to cancel the licence and no claim for damage or compensation will be due to the Licensee by reason of such action.

13. That in absence of a licence the operation of a commercial activity in the form of a Scuba Diving Operation from Council Reserve is in contravention of the Local Government Act and Ordinance and renders the Scuba Dive Operation liable to a penalty in accordance with the Act.

14. To provide Council with details regarding the proprietors of the Scuba Dive Operation, its employees and an address for service of Notices. (It should be noted that a licence will only be issued to a legal entity being an individual or registered company.)

15. a. That the Licensee be issued with a key to provide motor vehicle access through the boom rail but no further than the turning cycle at Shelly Beach for the sole purpose of delivering and retrieving dive equipment, said motor vehicle at all other times to be parked outside the boom gate in the appropriate parking area.

    b. That a refundable deposit (as per Council's Fees & Charges) be paid prior to issue of the boom rail key.

    c. the key will be subject to immediate return to Council and will not be reissued if any evidence exists that the Licensee has used the key for any other purpose than as outlined in part (a) of this section.

16. All dive activities (by both Instructors and clients) must conform with existing Department of Primary Industry legislation for the protection of Manly's marine environment. Any breach of such legislation may result in the cancellation of the Dive Operators Licensing Agreement. All divers to be briefed on permissible and non-permissible activities within Cabbage Tree Bay Aquatic Reserve.

IN WITNESS whereof the parties hereto have executed this Deed the day and year hereinbefore written.

THE LICENCE AGREEMENT IS HEREBY)

Approved by the Manager Administration under) _____

General Managers Delegated Authority) _____

) _____

Helen Lever

Manager Administration

Date: _____

THE COMMON SEAL of)

was hereunto affixed) _____

by authority if the Board of Directors) _____

Director

And in the presence of:) _____

Secretary