



**MANLY COUNCIL**

# **Forty Baskets Coastline Management Plan**



Manly Council May 2004

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# 1 INTRODUCTION

## 1.1 Introduction to Coastline Management in Manly

This Forty Baskets Coastline Management Plan (CMP) has been prepared in response to legislative requirements and community issues in accordance with current best practice for the management of coastal and estuary foreshores.

This Coastline Management Plan is intended to be a strategic plan for the study area with a long-term time frame of 10-20 years (with appropriate revisions). Implementation of the Plan will involve considerable expenditure and therefore implementation must have regard to resource availability and to other priorities of Council and the other agencies identified in the Action Plan.

The plan was developed to define the type, nature and significance of coastal hazards of relevance to the Forty Baskets study area, to identify other issues relevant to management of the coastal area in general and to identify appropriate management options for each issue and hazard identified.

Both aquatic and terrestrial issues have been considered within the Plan to ensure holistic and sustainable management of these resources and environments. All land within the defined study area has been included, with a particular focus on community land and meeting requirements for public land management under the *Local Government Act 1993*. As a result this Coastline Management Plan also serves as the specific community land Plan of Management for those community lands located within the study area.

While Council does not have management responsibilities or jurisdiction for a number of the issues considered in this CMP, Council sought to liaise with relevant state government agencies responsible for each of those issues during the development of the CMP. It is noted that this Plan may not reflect the complete thoughts, ideas and perspectives of those agencies however Council will seek their endorsement of the Plan and their commitment to its implementation through a memorandum of understanding or similar.

## 1.2 Plan Objectives

The overall goal of the Forty Baskets Coastline Management Plan is to;

„develop a long-term management strategy to guide the sustainable management of the CMP’s study area now and in the future“.

The CMP also aims to meet the following objectives, to:

- meet requirements for community land management under the *Local Government Act 1993* and the *Crown Lands Act 1989*;
- produce a user friendly plan addressing management of impacts on the biophysical and social environments;
- define the area’s coastline hazards and identify appropriate management for the future;
- address the management of issues as identified through community consultation;
- identify clear and achievable management strategies to conserve and protect the natural and social environment and to address community expectations;
- conserve, restore and protect the terrestrial and aquatic environments within the Forty Baskets study area;
- identify a review process to monitor the success of the management options identified in the CMP;

- enable Council to renegotiate and/or enter into contracts, leases, licences, hire arrangements and other estates which relate to the development, maintenance or use of public land in accordance with this Plan's stated objectives;
- provide convenient access to all public open space areas including parks and reserves;
- provide for effective asset management, maintenance and improvement with regard to community land covered by this CMP.

Under the *Local Government Act 1993* a Plan of Management for Council owned community land must identify objectives of the Plan, including core objectives set out in the Act. The categorisation of community land within the CMP's study area is detailed in **section 2.2**. The categories which apply have the following core objectives as specified in that Act:

The core objectives for management of community land categorised as a **park** are:

- a) to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and
- b) to provide for passive recreational activities or pastimes and for the casual playing of games, and
- c) to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.

The core objectives for management of community land categorised as a **natural area** are:

- a) to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and
- b) to maintain the land, or that feature or habitat, in its natural state and setting, and
- c) to provide for the restoration and regeneration of the land, and
- d) to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and
- e) to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the *Threatened Species Conservation Act 1995* or the *Fisheries Management Act 1994*.

The core objectives for management of community land categorised as **foreshore** are:

- a) to maintain the foreshore as a transition area between the aquatic and the terrestrial environment, and to protect and enhance all functions associated with the foreshore's role as a transition area, and
- b) to facilitate the ecologically sustainable use of the foreshore, and to mitigate impact on the foreshore by community use.

### 1.3 Study Area

The study area used as a guide for the development of the Forty Baskets CMP is bounded to the west generally by Gourlay Avenue and New Street East, to the east by Sydney Harbour National Park and to the south by Beatty Street (**refer to Figures 1 & 2**).

It extends both seaward and landward from the shoreline and includes rocky intertidal platforms, a small sandy beach, grassed recreational areas, a swimming enclosure, bushland and residential land.

The study area includes Forty Baskets Beach, which is a small sand beach with a northeast orientation. It has views to Manly Wharf and can be accessed from Beatty Street, Wellings Reserve via Gourlay Avenue or from Sydney Harbour National Park via the Manly Scenic Walkway.

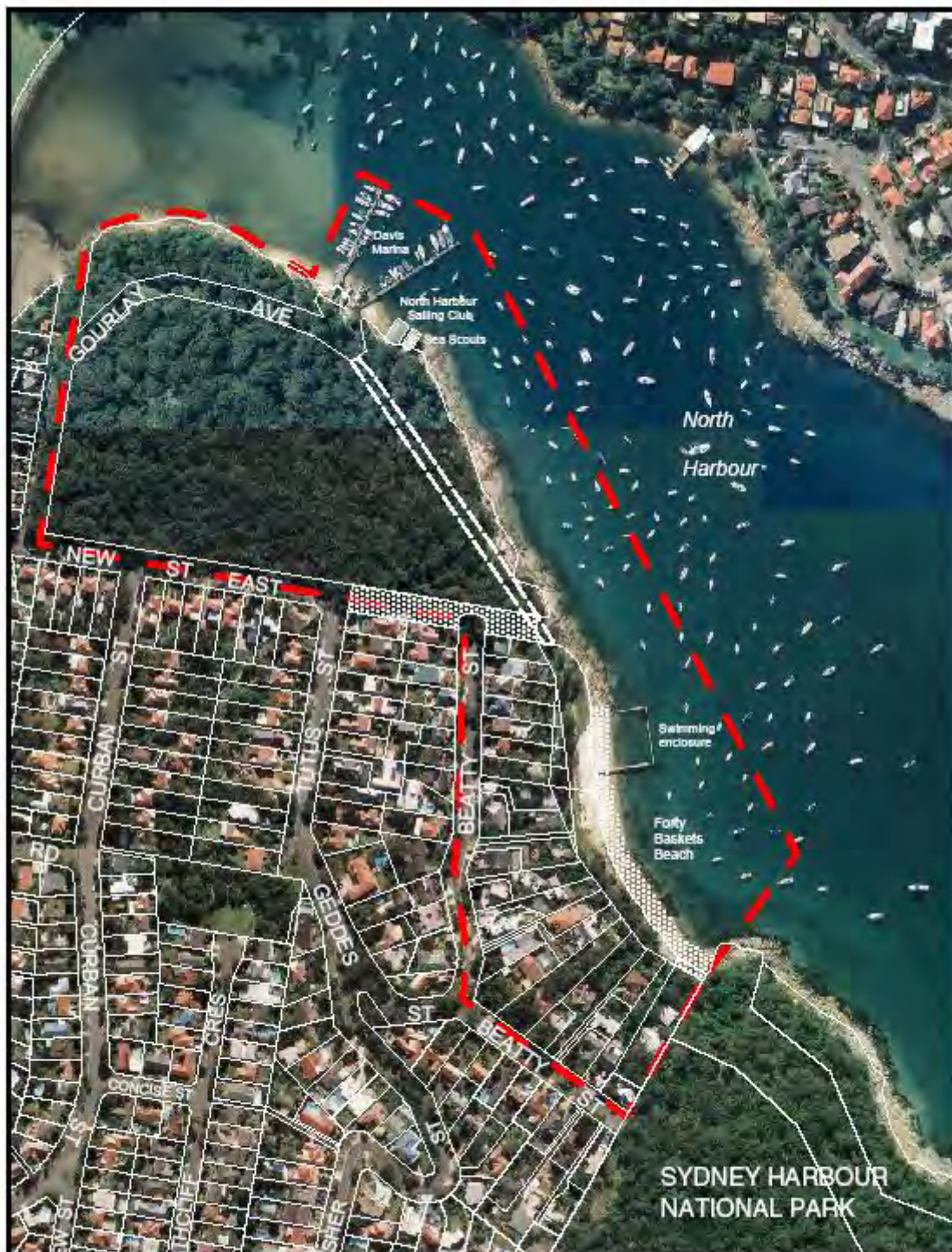
Two reserves are located within the study area; Wellings Reserve and Forty Baskets Reserve. Wellings Reserve is the largest of the bushland reserves managed by Council and covers an area of approximately 7.1 hectares. Forty Baskets Reserve covers an area of approximately 0.5 hectares and is located along the foreshore of the study area.

Forty Baskets Beach and Reserve are popular locations for both visitors and locals alike. The Manly Scenic Walkway, a 10km scenic harbour walking track extending from the Spit Bridge to Manly, directs large numbers of walkers along the length of the study area.

Land and aquatic areas outside the study area boundaries, which impact on the biophysical or social environment within the boundary, have also been considered in development of the CMP in order to establish holistic management strategies.

The study area of Forty Baskets extends to areas beyond the care and control of Manly Council. This is to provide a comprehensive approach to the identification and resolution of issues affecting the study area, including those that relate to the land-water interface. It will also provide an opportunity to bring together the various government agencies involved and through a whole of government approach identify strategies and actions for the future management of the area.





Scale: NTS Australian Map Grid 56 (AGD 86)  
 Maps updated and printed by Planning, Design & Environment Group Manly Council 2003

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Figure 1  
**Forty Baskets  
 CMP Study Area**



Whilst Manly Council is not responsible for all the areas identified in the study, implementation of the recommendations contained within the CMP will rely largely upon an integrated approach by the relevant key stakeholder agencies. It should be noted however, that Council is the main authority so the majority of the recommendations identified within the Plan will be the responsibility of Council.

## 1.4 Development of the Forty Baskets Coastline Management Plan

Development of the Forty Baskets CMP was undertaken to meet requirements for community land management under the *Local Government Act 1993*, and resultantly the CMP addresses legislative requirements with respect to **community land** within the study area. This CMP has also been developed in accordance with the coastal management system outlined in the State Government's Coastline Management Manual 1990 as current best practice for coastline management.

The Coastline Management Manual 1990 identifies the establishment of a Coastline Management Committee as the initial stage in the preparation of a Coastline Management Plan.

### 1.4.1 Committees

At the undertaking of this CMP a Coastline Management Committee had already been established in Manly. It was however agreed that a more site specific management committee should be established to guide the development of the Forty Baskets CMP.

The Forty Baskets Coastline Management Plan Steering Committee was established in August 2000 to guide the preparation of the CMP.

The specific roles of the Committee were to:

- Collectively ensure that the Forty Baskets CMP project fulfils project brief outcomes;
- Act individually as an initial point of contact and internal reference within respective organisations and agencies;
- Promote the Forty Baskets CMP project at all levels within respective organisations and agencies to maximise relevant input, participation, eventual endorsement and implementation;
- Facilitate timely exchange of necessary project information to enable project outcomes and milestones to be achieved;
- Contribute or facilitate the provision of specific knowledge and advice in areas of expertise relevant to the project;
- Ensure the integration of current policies, objectives and strategies of relevant organisations and agencies in the Forty Baskets CMP;
- Provide strategic direction to the project manager or consultant employed to prepare the Management Plan; and
- To the fullest extent possible ensure the CMP complements concurrent planning for the Aquatic Reserve and adjoining National Park.

The Committee comprised representatives from the following community organisations, local businesses and government agencies:

- Manly Council;
- Manly Environment Centre;
- Balgowlah Heights and North Harbour Precinct Community Forums;

- NSW Department of Infrastructure, Planning & Natural Resources (formerly DLWC);
- NSW Fisheries;
- NSW Waterways Authority;
- NSW Department of Infrastructure, Planning & Natural Resources (formerly PlanningNSW);
- NSW National Parks and Wildlife Service (now part of the Department of Environment & Conservation);
- Sydney Water;
- NSW Environmental Protection Authority (now part of the Department of Environment & Conservation); and
- Nature Conservation Council.

The Committee met at strategic milestones throughout the development of the Plan and provided information as requested by the project manager.

#### **1.4.2 Community Consultation**

Prior to the commencement of the Coastline Management Study (detailed below), Council undertook two rounds of community consultation. Both rounds of community consultation were widely publicised through the Precinct Community Forums, letter box drops and advertising material.

The first round of consultation undertaken in June 2001 involved a public BBQ at Forty Baskets Reserve. The community was requested to complete surveys and identify issues to be included in the CMP. The responses obtained from the first survey totaled 121 submissions, from which an initial issues report was prepared. The initial issues report was used by Council to develop a draft table of contents for the CMP and in the consideration of management responses for various issues identified.

The second round of consultation undertaken by Council in May 2002 was in the form of a survey. The second survey sought further detail into the issues identified in round one providing the opportunity for detailed comments to be submitted and considered.

Submissions from both rounds of consultation were considered in the development of the CMP.

Consultation with the Balgowlah Heights and North Harbour Precincts was undertaken through attendance at their precinct meetings and through written correspondence.

#### **1.4.3 Development of Coastline Management Study**

A coastline management study was undertaken to identify options relevant to the environmental planning and management of the study area. The study assessed the social, economic, aesthetic, recreational and ecological issues associated with land use along the coastline.

The management study aimed to consider all possible management options.

Components of the Management Study included:

- a literature review for all issues;
- site visits;
- community consultation through surveys, Committees and Precinct meetings;
- Coastline Hazard Definition Study;
- Natural Terrestrial Environment Assessment Study; and
- Landscape Study and initiation of the development of a Landscape Masterplan.

Relevant information obtained from the Management Study has been included in this Coastline Management Plan Supporting Document.

#### **1.4.4 Approval from Department of Lands**

As the study area includes Crown Land (Wellings Reserve and part of Forty Baskets Reserve), the Draft CMP was forwarded to the Department of Lands – Crown Lands Division for comment and endorsement for public exhibition. Following public exhibition and the inclusion of comments, the CMP **will be** forwarded to Council and the Department of Lands in accordance with the *Crown Lands Act 1989* for adoption.

#### **1.4.5 Plan Exhibition**

The draft Forty Baskets CMP was placed on public exhibition for comment from 10 November to 22 December 2003. Those comments obtained have been considered and integrated where appropriate into the amended plan for adoption.

#### **1.4.6 Public Hearing**

Section 40A of the *Local Government Act 1993* requires that Council hold a public hearing in respect of a proposed Plan of Management for community land where that proposed Plan categorises or alters the categorisation of community land.

As this Plan does not alter the categorisation of the land a public hearing was not required under the *Local Government Act 1993*.

#### **1.4.7 Adoption of the Plan**

Council has consider those submissions received from the public exhibition and appropriate changes have been made to the Plan. As the amendments made to the draft CMP were not substantial no further exhibition was deemed to be required. The document **will be** sent to Council followed by the Minister for Land, for adoption. Public notice of the CMP's adoption without further exhibition will be made.

## **1.5 Implementation, Review & Evaluation**

### **1.5.1 Implementation**

Whilst Manly Council is not responsible for all the areas and issues identified in the CMP Action Plan and Support Document, implementation of the recommendations contained in the CMP will rely heavily on an integrated approach by the relevant key stakeholder agencies, which have been involved in the CMP's development.

Manly Council will be seeking a memorandum of understanding / statement of intent or similar, signed by all responsible agencies to adopt and implement this CMP.

Implementation will be assisted by an Implementation Management Committee to be established and serviced by Council once the CMP has been adopted.

#### Education

This Plan acknowledges education as a key management tool and as a result a number of education recommendations have been identified to address issues covered by this CMP, refer to the Action Plan for the relevant recommendations. The Action Plan recognises the important role that education plays and the need to expand on current education programs, Starboard Right and Green and Bricks and Water.

Environmental education within Manly is guided by the Manly Sustainability Strategy (2002) and Council's Education for Sustainability Strategy. These documents have been consulted in the development of this CMP.

### **1.5.2 Review**

The Forty Baskets Coastline Management Plan **Action Plan** should be reviewed every two (2) years, or as required, to ensure that the CMP's strategies and priorities are kept up-to-date and to ensure that they reflect the views of the community and stakeholders.



The Forty Baskets Coastline Management Plan **Support Document** should be reviewed every five (5) years and updated on a needs basis.

### 1.5.3 Evaluation

Evaluation of the effectiveness of recommendations identified in the Action Plan should be undertaken to determine whether the vision (to be established), the Plan's objectives, performance targets and values have been achieved.

In order to evaluate the CMP, in particular the effectiveness of the Action Plan's management recommendations in achieving the Plan's objectives, it is essential that specific and measurable performance targets and indicators be established from the start. Therefore the initial implementation of the Plan shall involve the establishment of a set of indicators (performance measures), which can be used in the evaluation of the CMP. The indicators should be:

- simple;
- measurable;
- achievable;
- reliable; and
- timely.

Evaluation should be undertaken every 5 years, except where ongoing evaluation through frequent monitoring is required.

## 1.6 How to Use this Plan

The Forty Baskets Coastline Management Plan comprises two documents:

- The **Action Plan**: which identifies management recommendations, allocates management responsibilities and determines implementation priorities, and
- This **Support Document**: which provides the framework and background information required to prepare the management recommendations.

## 1.7 Planning Framework

An introduction to CMPs for Manly's coastline and harbour foreshores has been prepared as a separate and overarching document. That document is titled '**Coastline Management Plans: Introduction and Planning Frameworks**'. The introductory document describes the planning framework in which the CMPs were prepared and in which they will be implemented. The introductory document also outlines the management responsibilities of relevant government agencies.

## 1.8 Council's Corporate Plan & Budget

The Forty Baskets CMP is directly linked with Manly Council's Corporate Plan through the identified performance targets and management recommendations (strategies) identified. The management recommendations identified to achieve the agreed performance targets shall be integrated into Council's Corporate Plan to ensure that appropriate monetary and staff resources are allocated to achieve this CMP's performance targets.

## 1.9 Values

In making decisions about the future use and management of coastal and harbour foreshore lands and resources, it is important to gain an appreciation of the multiple values of the area. The following values reflect attributes or processes that are of importance to the community, and are the qualities on which the study area depends for its attractiveness, desirability, livability and use. These values were derived from the community consultation undertaken during the development of this CMP. The values are intended as **interim** values to be replaced as, during

the implementation, a vision for the Plan is developed followed by a series of evaluation indicators, which adequately reflect the values of the community and decision makers.

The following interim values have been identified for lands covered by this Plan:

- aesthetic values associated with a pleasant, appropriate and sustainable landscape character. For example the consultation process identified that the community values the low-key and more natural characteristics of the area, they enjoy in particular the beach, grass reserve and bush areas. Many people also valued the opportunity to undertake more active pursuits such as boating.
- physical values associated with the coastal/estuary foreshore and processes. For example residents and visitors value being able to access and experience the foreshore and associated views.
- biophysical values associated with the protection and improvement of aquatic and terrestrial natural environments. For example the consultation process identified that the community highly values the preservation of natural bushland, seagrass and threatened species.
- cultural values associated with the area's indigenous and non-indigenous heritage and the identification of significant Aboriginal sites. People value and want to learn about the area's history.
- values associated with the sustainable use and management of resources, lands and areas of the harbour. The consultation identified that the community would like to ensure that the area be used and managed in a way that will ensure that these values are preserved in the future.
- accessibility values associated with convenient access to all public areas. For example people value the ability for all people to access and enjoy the area.
- recreational and lifestyle values associated with a safe, healthy and enjoyable environment for all users, visitors and local residents. For example people value being able to enjoy the area knowing that it is safe and will not affect their health.
- values associated with effectively maintained infrastructure and services. For example people identify that well maintained facilities and services contribute to the value of the area as a recreational place, and contribute to maintaining biophysical and aesthetic values of the area.
- community involvement values associated with appropriate consultation. That is, people recognise the area as public land for the enjoyment of the local community and visitors and value being able to provide input into the future direction and management of the area.

## 2 LAND OWNERSHIP, ZONING & CATEGORISATION

### 2.1 Land Ownership

Ownership of and management responsibilities for the land and seabed within the study area is shared by a number of government authorities and Manly Council.

Ownership of land within this CMP's study area is identified in **Figure 3 – Forty Baskets Land Ownership map**. Land ownership of Forty Baskets Reserve is also described below.

#### Forty Baskets Reserve

Forty Baskets Reserve consists of both Crown and Council owned land, with the Crown Land representing by far the major land holding.

The Crown Reserve 500214, identified as Lot 1 to 3 DP925570, is dedicated for Public Recreation. The Reserve is approximately 200m in length with variable widths and extends from Sydney Harbour National Park at the southern end of Beatty Street to the unformed section of New Street in the north. The Reserve is managed by the 'Balgowlah Heights Public Recreation (R500214) Reserve Trust', which is controlled by Manly Council.

Council owned community land is made up of a number of wedge shaped land parcels adjacent and west of the Crown Reserve at Forty Baskets. These were created in DP350345, DP567843 and DP622591.

The wedge shape lot 4 DP567843 adjacent to the Crown Reserve and at the rear of 30A to 32 Beatty St was dedicated (i.e. at no cost to Council) as Public Reserve upon registration of the DP on 24 April 1974.

The triangular shaped lot 3 DP622591 adjacent to the Crown Reserve and at the rear of 28A Beatty St was also dedicated (at no cost to Council) as Public Reserve upon registration of the DP on 9 March 1982 (pers. comm. J. Suters).

Council owned operational land includes the public access from Beatty Street to Forty Baskets Reserve, at the southern end of the Reserve. This parcel is identified as DP9202.

#### Wellings Reserve

Wellings Reserve is Crown Reserve 83137, identified as Lot 7181 DP1053652. Care, Control and Management of the Reserve is devolved, in accordance with Section 48 of the *Local Government Act 1993*, on Manly Council.

##### 2.1.1 Crown Land Requirements

The *NSW Crown Lands Act 1989* governs the planning, management and use of Crown Land, including reservation or dedication for a public purpose, and leasing and licensing.

The Department of Lands, is the principal NSW Government agency responsible for managing state-owned land together with the Reserve Trusts appointed by the Minister.

The *Crown Lands Act 1989* provides for the reservation and dedication of Crown Land for a range of public purposes. When land is reserved or dedicated, management of the Reserve is mostly undertaken either by:

- the Department of Lands;
- a Reserve Trust; or
- local government councils, by devolvement under the *Local Government Act 1993*.

In the case where Council is appointed as Trustee or management is devolved to Council, Council has the ongoing responsibility to provide care, control and management of Crown Land in accordance with the *Crown Lands Act 1989*.



To ensure that Crown Land is managed for the benefit of the people of New South Wales, Council is required to have regard for the principles of Crown Land management. Crown Land must be used and managed in accordance with those principles under Section 11 of the *Crown Lands Act 1989*.

The principles of Crown Land management include:

- that environmental protection principles be observed in relation to the management and administration of Crown Land;
- that the natural resources of Crown Land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible;
- that public use and enjoyment of appropriate Crown Land be encouraged;
- that, where appropriate, multiple use of Crown Land be encouraged;
- that, where appropriate, Crown Land should be used and managed in such a way that both the land and its resources are sustained in perpetuity; and
- that Crown Land be occupied, used, sold, leased, licenced or otherwise dealt with in the best interests of the State consistent with the above principles;

The CMP will satisfy the *Crown Lands Act 1989* if the following points are addressed:

- The CMP and its outcomes must incorporate the principles for Crown Land management (listed above).
- In addition to incorporating the requirements of Section 36 of the *Local Government Act 1993*, the CMP must address any matters required by the Minister responsible for the *Crown Lands Act 1989* under Section 112 of the Act.
- Any proposed uses, developments and management practices must conform to the public purpose for the Reserve.
- The draft CMP is referred to the Department of Lands for comment prior to the public exhibition of the draft CMP.
- The draft CMP must be publicly exhibited, including a public notice in the NSW Government Gazette.
- Public submissions regarding the draft CMP are to be referred to both the Minister responsible for the *Crown Lands Act 1989* and Manly Council as Trust Manager for consideration by the Minister prior to adoption.
- Any alterations to the CMP by the Minister under Section 114 are made.
- Adoption of the CMP by the Minister responsible for the *Crown Lands Act 1989*.
- The Trust must follow the CMP, with all operations being in accordance with the Plan.

This CMP has been developed to meet these requirements.

## 2.2 Land Categorisation

### Categorisation of Council owned public land in the study area

Under the *Local Government Act 1993* a Council must classify Council owned public land as either „community“ or „operational“ land. This requirement does not apply to Crown Land.

Operational land has no special restrictions other than those that may apply to any piece of land, whereas community land is intended for public access and use and its use and management is strictly governed in accordance with an adopted plan of management.

#### Community Land management requirements

Community land cannot be sold, exchanged or otherwise disposed of (except when adding the land to Crown Reserve or to a protected area under the *National Parks & Wildlife Act 1974*). Community land cannot be leased, licenced or any other estate granted over the land for more than 21 years.

Under section 36 of the *Local Government Act 1993*, a plan of management for community land must be prepared for the land and that plan must categorise the land. **This Coastline Management Plan serves as the Community Land Plan of Management for community lands within the study area.**

For community land that is not owned by Council the *Local Government Act 1993* requires that, where Council controls but does not own the land, the plan of management must:

- identify the owner of the land;
- state whether the land is subject to any trust estate, interest, dedication, condition, restriction or covenant; and
- state whether the use or management of the land is subject to any condition or restriction imposed by the owner.

#### Identification and categorisation of Community Land covered by this CMP

Community land covered by this plan is listed below and is shown in **Figure 3 – Forty Baskets Land Ownership** (areas marked as community land). All community land within the study area is categorised as **Natural Area - Foreshore** and **Park** in accordance with section 36 of the *Local Government Act 1993*. Possible categories identified in the Act include:

- a natural area;
- a sportsground;
- a park;
- an area of natural cultural significance; and/or
- general community use.

#### Identification of Operational Land covered by this CMP

While the *Local Government Act 1993* does not require a plan of management to be prepared for public land classified as 'operational', this CMP does apply to those lands and includes their management needs as they are within the study area.

Operational public lands owned by Manly Council include the public access way extending from Beatty Street to Forty Baskets Reserve between number 28 and 30 Beatty Street (refer to Figure 3).

## **2.3 Leases, Licences & Other Estates**

Leases and licences relevant to this CMP include the following:

- buildings/structures leased from Manly Council by Davis Marina;
- boat shed leased from Waterways Authority by Scouts Association (Sea Scouts);

- boat shed/ramp/platform leased from Waterways Authority by North Harbour Sailing Club;
- buildings/structures leased from Department of Lands by Davis Marina;
- wharf/pier facilities leased from Waterways Authority by Davis Marina;
- swimming enclosure leased from Waterways Authority by Manly Council; and
- any lease/licence from the Reserve Trust.

### **2.3.1 Leases, Licences & Other Estates Prohibited by this Plan**

This CMP prohibits leases, licences and other estates being granted for all those **community lands** covered by this Plan for the following:

- activities prohibited by the zoning of the land; or
- activities which are inconsistent with the objectives as described in Section 1.2 of this Plan.

### **2.3.2 Leases, Licences & Other Estates Permitted by this Plan**

The granting of a lease, licence, or other estate in respect of the **community land** to which this Plan applies is hereby expressly authorised for the following:

- for any purpose which the land was being used at the date that this Plan was adopted; and
- for any purpose prescribed by Section 46 of the *Local Government Act 1993*, or the regulation made thereunder.

The granting of leases, licences and other estates must be consistent with the objectives of this Plan, as described in Section 1.2.

A lease or licence for a term exceeding 5 years may be granted only by tender in accordance with Division 1 of Part 3 of the *Local Government Act 1993*, unless it is granted to a non-profit organisation.

Short-term casual licences, as allowed by Section 24 the *Local Government (General) Regulation 1999*, are expressly authorised with regard to those community lands covered by this Plan for the following purposes and/or events:

- community events;
- commercial photographic sessions;
- picnics, ceremonies and private celebrations such as weddings and family gatherings only where general public access is not affected; and
- filming for cinema or television.

Authorisation of short-term licences for the above listed purposes and/or events may only be granted if the use or occupation does not involve the erection of any building or structure of a permanent nature. A licence for the above mentioned purposes should generally not be issued if public access to the area will be affected for more than three (3) consecutive days (including weekends).

This Plan also expressly authorises the issuing of short-term casual licences granting the use of any existing road or fire trail on community land covered by this Plan for the following purposes:

- a) to transport building materials and equipment required in relation to building work to be carried out on land adjoining the community land, or
- b) to remove waste resulting from such work.

The following conditions must be met before such a licence may be granted:

- there must be no other suitable access to the site on which the building and/or landscaping works are to be undertaken;

- rehabilitation of the site must be to the site's condition prior to use by the licensee and will be at the expense of the licensee.
- a suitable licence agreement must be established prior to use of the community land by the licensee.

Consideration must be made to the impact of any activities listed above on critical habitat, or community land identified in a recovery plan of an endangered species, population or ecological community. For community lands covered by this Plan consideration should be given to the impact of the activity on the endangered population of little penguins and the vulnerable red-crowned toadlet. Where an unreasonable impact is identified the licence must not be granted.

Council must obtain permission from the Department of Lands prior to issuing licences with regards to Crown Land.

## 2.4 Land Zoning

The Manly Local Environmental Plan 1988 (LEP, 1988) was developed under the *Environmental Planning and Assessment Act 1979*. It establishes Council as the consent authority for all purposes of the Plan and is the main statutory control on development within Manly Local Government Area.

Manly's LEP (1988) details the zoning of land within the Manly Council area. It enables Council to make particular Development Control Plans regulating development in specific zones and to make provisions for exempt and complying development within Manly.

The LEP (1988) also identifies Items of Environmental Heritage, Environmentally Sensitive Areas, Foreshore Scenic Protection Areas and Acid Sulphate Soils.

The zones relevant to the Forty Baskets study area are shown in the **Figure 4 – Forty Baskets Land Zoning**, and the objectives of each zone is detailed below.

### 2.4.1 Open Space Zone (Zone 6):

Manly's LEP (1988) designates Wellings Reserve and Forty Baskets Reserve as Zone 6 - Open Space Zone.

*The objectives of Zone 6 are -*

- a) to ensure there is provision of adequate open space area to meet the needs of all residents and provide opportunities to enhance the total environmental quality of the Manly Council area;*
- b) to encourage a diversity of recreation activities suitable for youths and adults;*
- c) to identify, protect and conserve land which is environmentally sensitive, visually exposed to the Waters of Middle Harbour, North Harbour and the Pacific Ocean and of natural aesthetic significance at the water's edge;*
- d) to facilitate access to open areas, particularly along the foreshore, to achieve desired environmental, social and recreation benefits;*
- e) to conserve the landscape, particularly at the foreshore and visually exposed locations, while allowing recreational use of those areas; and*
- f) to identify areas which-*
  - (i) in the case of areas shown unhatched on the map are now used for open space purposes; and*
  - (ii) in the case of land shown hatched on the map are proposed for open space purposes.*

Within Zone 6 works for the purposes of landscaping, gardening or bushfire hazard reduction are permitted without development consent. Refer to Manly's LEP (1988) for uses requiring development consent and prohibited uses in addition to exempt and complying development.

#### **2.4.2 Residential Zone (Zone 2)**

The remainder of the land within the study area falls within the Residential Zone. Refer to Manly's LEP (1988) for details concerning the objectives of this zone, development consent requirements and prohibited development.

#### **2.4.3 Items of Environmental Heritage**

Several Canary Island Palm Trees (*Phoenix canariensis*) located in the Forty Baskets Beach Reserve are identified as Items of the Environmental Heritage under Landscape Items of Schedule 4 of Manly's LEP 1988. Wellings Reserve and the Harbour foreshore are also items within the Forty Baskets study area that are listed in Manly's LEP (1988) as Items of Environmental Heritage. The waterfall adjacent to the western boundary of the study area and the National Park adjacent the eastern boundary of the study area are also listed as Items of Environmental Heritage.

A number of clauses within Manly's LEP (1988) (refer particularly to clauses 18 and 19) control development of Items of Environmental Heritage and development in the vicinity of Items of Environmental Heritage. Any proposals for works in the vicinity of the items mentioned above must show consideration of these clauses in the development application to Council.

#### **2.4.4 Environmentally Sensitive Areas**

Manly's LEP (1988) (Amendment 34. Exempt and Complying Development) identifies Environmentally Sensitive Areas. These areas are parts of the Manly LGA where development or works are required to be sensitive to actual or potential environmental conditions. Development is not complying development if it is carried out within an Environmentally Sensitive Area. The whole of the study area falls within an Environmentally Sensitive Area. The area is of particular environmental sensitivity as it is in close proximity to the harbour, and due to the area's natural and historical significance.

#### **2.4.5 Foreshore Scenic Protection Area**

Manly's LEP (1988) designates the land within this Plan's study area as within the LGA's Foreshore Scenic Protection Area (refer to Manly LEP 1988 - Environmentally Sensitive Areas Map 4). Clause 17 of the LEP states that "the council shall not grant consent to the carrying out of development unless it is satisfied that the development will not have a detrimental effect on the amenity of the Foreshore Scenic Protection Area".

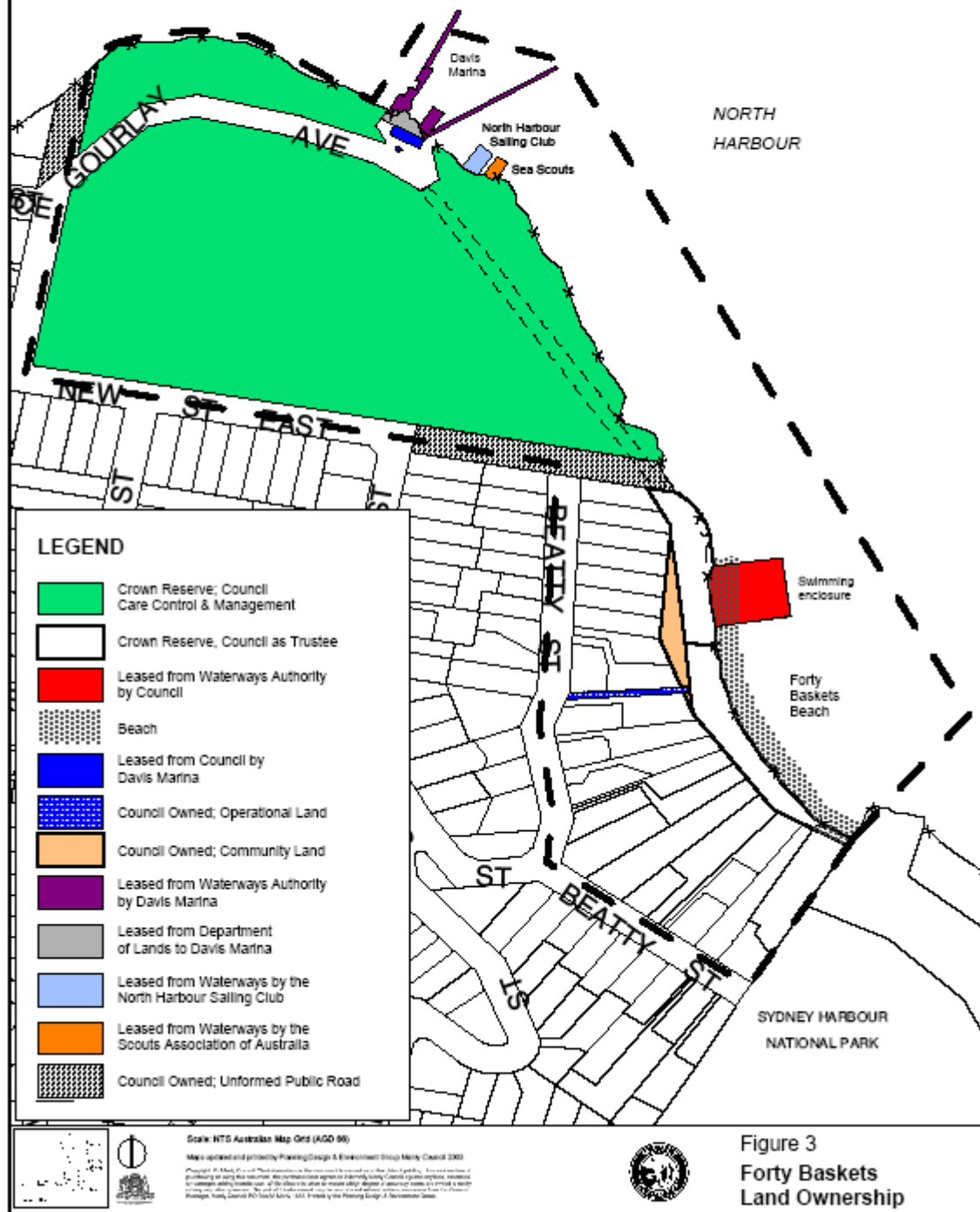
#### **2.4.6 Acid Sulphate Soils**

Land within the Forty Baskets study area is identified as Class 5 with regard to Acid Sulphate Soils as outlined in Manly's LEP (1988). The restrictions that apply to Class 5 land are only applicable if development works are going to occur within 500 metres of adjacent Class 1, 2, 3 or 4 land and will lower the water table by 1m in Class 1, 2, 3 or 4 land. North Harbour Reserve, located in close proximity to Wellings Reserve is identified as Class 2 land in Manly's LEP. Accordingly, development within the study area is subject to the provisions of Clause 33 of the LEP (Acid Sulphate Soils).

#### **2.4.7 Zoning of the Waterway**

The Sydney Regional Environmental Plan No 23 – Sydney and Middle Harbours aims to establish a consistent framework for the planning, development and management of the waterway and foreshores of the Harbour. The Policy establishes zones below mean high water mark in which certain development is permitted or prohibited. **The Policy zones Forty Baskets as „General Waterways“.** The objectives, and permitted and prohibited development of each zone are detailed in Manly's „Coastline Management Plans: Introduction & Planning Frameworks“.

Note Waterways Authority of NSW owns and controls aquatic land and water below mean high water mark





## 3 AQUATIC ISSUES

### 3.1 Aquatic Flora

The study area covered by this CMP includes the waters adjacent to Forty Baskets Beach, which form part of North Harbour.

Very few published studies have been undertaken to describe and assess the ecological characteristics of these waters. Those studies that have been undertaken are specific to assessing particular aspects of the marine environment or the impact of a particular activity on the area's aquatic ecology.

The lack of scientific data regarding the aquatic flora of this area represents a significant data gap, which is reflected in the management responses detailed for this section. However, it is important to note that the management of the area's marine ecology is primarily the responsibility of NSW Fisheries. Council's control over aquatic issues is therefore limited to the impact that the Local Government Area has on the marine environment.

#### 3.1.1 Aquatic Habitats & Flora

The Forty Baskets marine environment ranges from rocky intertidal zone to the waters of North Sydney Harbour. Sydney Harbour is an estuary, which is defined as a partially enclosed body of water connected to the ocean.

The intertidal zone extends to sandy shores along the foreshore of the study area between Wellings Reserve and the National Park. The area supports a variety of marine habitats, which are home to a diversity of marine species. The area's marine environment is rated as „highly sensitive“ by *The Coastal Resources Atlas for Oil Spills in Port Jackson* (EPA, 1994).

#### Habitats

The Department of Urban Affairs & Planning (now DIPNR) has documented terrestrial and aquatic ecological communities in and around Sydney Harbour and its tributaries. Two predominant aquatic communities were classified along the foreshore of the study area; „mixed rocky intertidal & sand“ and „sandy beaches“. The conservation status of these two ecological units is „high“ and „medium“ respectively. Refer to Figure 5.

**Figure 5. Conservation status of Ecological Communities in Forty Baskets (DUAP, 1999)**

Habitat	Description	Conservation Status
Mixed Rocky Intertidal & Sand	Also referred to as Mixed Sandy Intertidal and Rocky Platform	High
Sandy Beaches	Sandy Intertidal	Medium

#### 3.1.2 Seagrass

Council commissioned The Ecology Lab Pty Ltd to undertake a literature review of existing seagrass studies and to develop management options for seagrass beds in the study area. Refer to the Ecology Lab's seagrass report: *Manly Seagrass Review & Management Options for Forty Baskets* (Ecology Lab, 2003). Significant elements from the report have been included in the following section.

#### Importance of Seagrass:

Seagrass play an important role in marine ecosystems as they:

- stabilise sediments;
- provide important aquatic habitat for juvenile fish and invertebrates;



- support the growth and protection of recreational and commercially important fishing species, both juveniles and adults;
- recycle nutrients;
- maintain water quality; and
- provide food for fauna either directly or after being decomposed (eg: molluscs, sea urchins, some fish and water birds, sponges and hydroids).

As a result of these functions the management and protection of seagrass beds within the Forty Baskets study area is important to maintain the ecosystem's health and functioning.

The management and protection of seagrass beds in the Forty Baskets area was identified through the community consultation process as a significant issue to be addressed in the Forty Baskets Management Plan. The vast majority of submissions identified the need to increase the protection of seagrass.

Seagrass beds within the study area may also be important foraging grounds for Manly's endangered population of little penguins (*Eudyptula minor*). Current research by NPWS (now DEC) on the diet and foraging ecology of the population indicates that the penguins eat fish species such as sand sprat, anchovies and hardyhead which inhabit kelp and seagrass beds (NPWS, 2002). Critical habitat for the little penguin population was declared in 2002. While the study area does not fall within the area defined as critical habitat, it is immediately adjacent to penguin „potential habitat“ identified around the foreshore of Dobroyd Head (Sydney Harbour National Park).

#### Seagrass Species and Distribution:

Seagrass beds are found within the study area growing in shallow subtidal areas along the foreshore, in depths where sunlight is available for photosynthesis.

At least two (2) native species of seagrass have been identified by studies in the study area, these being:

- *Posidonia australis* (strapweed); and
- *Zostera capricorni* (eelgrass)

The Ecology Lab reviewed and assessed three existing studies of seagrass in the area. They found that although techniques used in each of the studies were different and would have evolved between the studies, which were undertaken between 1985 and 2002, comparisons indicate a significant loss of seagrass along the foreshore of the Forty Baskets study area (The Ecology Lab, 2003). Earlier studies also identified *Posidonia* beds between Davis Marina and Reef Beach, while more recent maps (NSW Fisheries, 2002) only indicated the presence of *Zostera* in the study area and significantly narrower seagrass beds.

Since the release of the Ecology Lab's report, the invasive and noxious marine seaweed species *Caulerpa taxifolia* has been identified within the study area and other areas of North Harbour. Its occurrence has been confirmed by community members and NSW Fisheries. The exact distribution of this species is currently unknown.

The most recent map available illustrating the distribution of seagrass in the area is shown in **Appendix B**. This mapping exercise was commissioned by the NSW Department of Transport and was undertaken by NSW Fisheries in 2002 with funding assistance from the *National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances*. The map has since been updated by NSW Fisheries to include *Caulerpa taxifolia* distributions.

#### Impacts on seagrass within the study area:

In general seagrass are negatively affected by a number of anthropogenic activities including reclamation, dredging, the construction of jetties, pontoons, wharves and ramps, water pollution, poor land management and some recreational activities.

The Ecology Lab's review and analysis (2003) identified the following likely impacts on seagrass beds within the Forty Baskets study area:

- Boating activities / Boat anchoring:

Forty Baskets is a popular boating area, with roughly 200 boats moored in addition to those anchored in the area on a summer weekend day. Boating activities are known to cause damage to seagrass through propeller scarring, swing moorings (with chains dragging across the sea floor) and boat anchoring.

Most of the moorings in Forty Baskets are swing moorings, with chains dragging across the seafloor damaging the seagrass beds within their range. Swing moorings result in bare patches within seagrass beds, however no information is presently available on the patchiness of seagrass in the Forty Baskets area. Some of the moorings located in the study area are positioned within 50m of the shoreline, possibly on or near seagrass beds (The Ecology Lab, 2003).

Waterways have advised that there are limits on the number of moorings per bay in Sydney Harbour and the current policy of Waterways is to ban the issuing of additional moorings.

A number of restrictions on boating activities presently apply in the study area, which are designed to assist in the protection of seagrass and to aid in providing a safe environment for user groups. Non-compliance with the regulations was identified as an issue for seagrass management in the Ecology Lab's report and has been addressed in this Plan's management recommendations.

The Ecology Lab found from their review of each of the studies that recreational boating and anchoring would be the most significant source of damage to seagrass beds in the study area. However, further studies would be required to assess the intensity of boating and the level of disturbance to seagrass in the study area as a result.

Since The Ecology Lab's study *Caulerpa taxifolia* has been found within the study area. This noxious weed species is easily spread by fragments becoming attached to boat motors, which then dislodge elsewhere, where they readily grow.

- Pollution:

Significant nutrient loading in the water (usually caused by stormwater pollution and sewage overflows) has been shown in most cases to negatively impact on seagrass. Increased nutrients act to enhance the growth of epiphytes that naturally grow on seagrass shoots, thereby reducing the ability of the seagrass to photosynthesize and grow. Whereas significantly low nutrient levels usually act to stunt seagrass growth (The Ecology Lab, 2003).

The study area is subject to urban stormwater run-off and there is evidence of sewage overflows. A number of stormwater drains discharge into the study area. No gross pollutant traps exist on any of these outlets however some stormwater pits do have litter baskets.

The northern end of Forty Baskets is likely to have a limited rate of tidal flushing compared to other parts of North Harbour and hence nutrients and pollutants are likely to accumulate and impact on seagrass growth and health (The Ecology Lab, 2003).

Further monitoring of water quality and its impacts on seagrass would be required to determine the effect and significance of pollution on seagrass within the study area, this should include a hydrology study to determine rates of flushing.

Little is presently known about the effects of contaminants such as PCBs, metals and chlorine on seagrass (The Ecology Lab, 2003). Contaminants such as these are discussed in **Section 3.6**, however their impact on the area's seagrass beds remains unknown.

- Marine Weed Species:

Since the release of The Ecology Lab's report (2003) the invasive and noxious marine seaweed *Caulerpa taxifolia* has been identified in the study area. *Caulerpa* can grow from small fragments accidentally carried by boats and other water craft (NSW Fisheries, 2001). *Caulerpa taxifolia* overruns and smothers existing native seagrass. It is a fast growing species usually found in warm tropical waters. The noxious seaweed has also been identified elsewhere in North Harbour, including Little Manly Cove.

- Recreational Fishing:

Little is known about the impact of recreational fishing on seagrass in the study area. However recreational fishing is likely to have a minimal impact on seagrass beds. Some possible impacts exist, these may include:

- damage due to bait digging in seagrass beds;
- littering, in particular of plastic bags and bait bags, fishing lines and hooks; and
- anchoring and propeller damage from fisher's boats.

Minimal commercial fishing operations utilise the study area and as a result commercial fishing is not likely to be an issue for seagrass in the area.

- Other impacts

Major impacts on the health and distribution of seagrass also include the loss of light, which inhibits the ability of seagrass to photosynthesize and siltation, which smothers seagrass and also reduces light availability.

Legislative framework for the management of seagrass:

The NSW *Fisheries Management Act 1994* sets out the management requirements associated with seagrass beds and provides specific protection for seagrass. The Act specifically prohibits any damage to seagrass unless a permit is held. Other legislation has aided in the protection of seagrass such as the *Protection of the Environment Operations Act 1997*, which prohibits the pollution of any waters unless a permit is held.

The Fish Habitat Protection Plan developed under the *Fisheries Management Act 1994* specifically addresses the protection of seagrass. Its primary objective is to "ensure there is no net loss of seagrass within the coastal and estuarine waters of NSW". The Protection Plan identifies a number of broad strategies for achieving this objective and the activities to which the Plan applies.

Management options for seagrass:

The Ecology Lab's report identifies a range of management options to protect seagrass within the Forty Baskets study area. These have been incorporated into the Forty Baskets CMP – Action Plan. It is important to note that the management of seagrass, as with all marine flora and fauna, is primarily the responsibility of NSW Fisheries. Council's control over the management of seagrass issues is therefore limited to management of the upper catchment terrestrial impacts such as stormwater pollution. Options that directly affect seagrass would therefore be implemented by NSW Fisheries or the NSW Waterways Authority.

Many of the factors impacting on seagrass operate throughout the whole of North Harbour. These management responses would therefore be more effectively implemented on a larger scale than localised to the waters off Forty Baskets.

### **3.1.3 Introduced Marine Species**

Marine species are introduced to new locations through human activities such as hull fouling, dry ballast and aquaculture, and by natural processes such as drifting logs and seaweed.

In 2003 *Caulerpa taxifolia* was identified in the waters off Forty Baskets Beach in addition to other locations within North Harbour.

In response to the identification of *Caulerpa taxifolia* within North Harbour, NSW Fisheries have undertaken initial salt treatment work to contain the invasive species, however they have reported that isolated plants and small patches of *Caulerpa* may still exist in the area. Ongoing monitoring and maintenance of the weed along with the implementation of education programs targeting local boat and fishing enthusiasts will also assist in the management of this introduced species. Council will endeavor to work collaboratively with NSW Fisheries to develop and implement effective management strategies once they have been identified.

In 2001 the Sydney Ports Authority, with support from the Department of Transport NSW and the Australian Navy commissioned the Australian Museum Business Services (AMBS) to undertake baseline studies with the aim of documenting the occurrence of marine pest species in the port of Sydney Harbour. The survey was undertaken in 2001. None of the survey sites were located within North Harbour.

The AMBS report recommended that the Sydney Ports Authority undertake ongoing monitoring for introduced species every three (3) to five (5) years. The report also recommended that additional areas outside the immediate port should be included in the survey program (AMBS, 2001). Due to the regional importance of North Harbour's marine ecosystem, which has been acknowledged through the area's designation as an aquatic reserve, Council should liaise with the Sydney Ports Authority regarding the location of survey sites within the boundaries of the North Harbour Aquatic Reserve.

## 3.2 Aquatic Fauna

Very few published studies have been undertaken to describe and assess the fauna of the waters within the Forty Baskets study area. Those studies that have been undertaken are specific to assessing particular aspects of the marine environment or the impact of a particular activity on the area's aquatic ecology.

The lack of scientific data regarding the aquatic fauna of this area represents a significant data gap, which is reflected in the management actions detailed for this section. However, it is important to note that the management of the area's marine ecology is primarily the responsibility of NSW Fisheries. Council's control over aquatic issues is therefore limited to the impact that the Local Government Area (LGA) has on the marine environment.

### 3.2.1 Marine Threatened Species

One endangered population and one vulnerable species are presently located in the vicinity of the Forty Baskets study area. These are:

- the Little Penguin population (*Eudyptula minor*), and
- the Red-crowned Toadlet (refer to **Section 4.2.2**).

The Manly population of little penguins represents only a small percentage of the State's total population. However, the colony is of state significance as it represents the only breeding colony on the NSW mainland (NPWS, 2000). The colony of little penguins at Manly was listed as e New South Wales *Threatened Species Conservation Act* 1995 (TSC Act, 1995) on 31 January, 1997.

A Recovery Plan for the Little Penguin population has been prepared in accordance with the *NSW Threatened Species Conservation Act* 1995. The Recovery Plan for the Population of Little Penguins at Manly was approved in October 2000.

The colony at Manly is reported to have been active since the early 1850's. While the main habitat for Manly's little penguin population is around Manly Point and along the foreshore of Sydney Harbour National Park – North Head, individual penguins are occasionally seen foraging in the waters off Dobroyd Head-Grotto Point Reserve and in the vicinity of the Forty Baskets study area. For this reason the foreshore around Dobroyd Head-Grotto Point Reserve was identified as Potential Critical Habitat in the *Declaration of Critical Habitat for the*

*Endangered population of Little Penguins at Manly, 2002. Refer **Appendix C** - Little Penguin Critical Habitat Map.*

The little penguin population at Manly is considered endangered due to an extremely small number of individuals, its disjunction from other populations, its occurrence in Sydney Harbour and because its former range on the mainland has been reduced. The decline in little penguin numbers is mainly due to loss of suitable nesting habitat, predation by dogs, cats and foxes and human disturbance (NPWS, 2000).

Human activities both on land and in the water have the potential to impact on little penguins' nesting and feeding activities. Threats to little penguins include;

- human contact;
- noise and lighting from water and land based activities near penguin burrows;
- cars;
- exposure to oil and chemicals;
- litter;
- fishing line or hook entanglement;
- habitat removal;
- illegal dumping of garden waste over cliffs blocking penguin access to burrows;
- predation from cats, dog and foxes; and
- residential development.

Ideal penguin nesting habitat has been created along Manly's foreshore from rock falls due to erosion and weathering. Little penguins have been observed nesting under seaside homes, garages, under stairs, in woodpiles and beneath overhanging vegetation.

Careful management is essential for the penguins to survive and to co-exist with recreational and commercial user groups and property owners. Recommended management options as outlined in the Little Penguin Recovery Plan include:

- monitor the population and identify potential habitat in the area;
- threat management;
  - establish a mortality register
  - educate and provide advice to the community – to provide advice to residents on how to manage vegetation including lantana on their properties without threatening penguin habitat
  - erect appropriate signage – Penguin Signs and WPA signs
  - educate the community regarding responsible pet ownership and enforce the Companion Animals Act (MC, 1998)
  - undertake pest management in Sydney Harbour National Park
  - include the colony in planning for marine pollution management
  - enforce North Sydney Harbour waterway regulations (WA)
  - monitor fish stocks in Sydney Harbour and surrounds (NSW Fisheries)
- manage nesting habitat through appropriate bush regeneration and community education;

- continue the community outreach program;
- protect habitat of the little penguin population at Manly through the environment planning and assessment process;
- co-ordinate and support research into the ecology of the population ;
- convene a recovery team meeting to re-evaluate recovery plan priorities based upon information generated in the monitoring program described in Action 1;

To ensure holistic management of the endangered population of little penguins, and to comply with requirements of the TSC Act 1995, the performance criteria (target) and recovery actions outlined in the 'Endangered Population of Little Penguins (*Eudyptula minor*) at Manly Recovery Plan' have been incorporated into this CMP. As NPWS and Manly Council are the primary managers of little penguin habitat, a co-operative management approach must be adopted by both authorities to manage the population in accordance with the adopted Recovery Plan.

#### Critical Habitat Declaration and Implications for Management:

In December 2002, the Minister for the Environment declared Critical Habitat for Manly's endangered population of little penguins. The Declaration and Regulations came into effect on 1 January 2003.

Three areas were identified to which specific regulations apply. Refer to **Appendix C** - Little Penguin Critical Habitat Map. The area around the foreshore of Dobroyd Head-Grotto Point Reserve was identified in the declaration as „Potential Critical Habitat“. The regulations do not currently apply to this area however it has been earmarked as potential nesting and foraging grounds for the population.

In regard to statutory environmental assessment, Council, as a consent authority must give consideration to both the status of the little penguin colony as an endangered population in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act 1979), and the recent declaration of critical habitat in accordance with the *Threatened Species Conservation Act 1995* (TSC Act, 1995) in determining development applications or activities.

### **3.3 Conservation Management**

The main aim of designating protected areas is to protect fish habitats and biodiversity. Protected areas are generally categorised as aquatic reserves, marine parks, intertidal protected areas or fishing closures.

Forty Baskets Beach is located in North Sydney Harbour adjacent to the North (Sydney) Harbour Aquatic Reserve. The boundaries of the aquatic reserve do not currently include the waters of the Forty Baskets study area.

#### **3.3.1 North (Sydney) Harbour Aquatic Reserve**

The North (Sydney) Harbour Aquatic Reserve boundary is formed by a line between the headlands at North Head and Grotto Point and a line joining Little Manly Point, Manly Point, and the eastern end of Forty Baskets Beach. The reserve extends from the seabed at this outer boundary up to the mean high water mark (MHWM) between them and covers an area of approximately 250 hectares.

The objective of the reserve is to preserve biodiversity and examples of different marine habitat, protect endangered species, conserve nursery areas for economically important species and serve as an educational site to increase community awareness.

At the time that this CMP was adopted, NSW Fisheries had declared fourteen (14) aquatic reserves along the NSW coast.

#### North (Sydney) Harbour Aquatic Reserve Regulations:

- within the reserve, you can line fish for fish that have fins only.
- licensed commercial fishers are also permitted to set lobster pots and beach hauling is restricted to an area north of Cannae Point and east of a line from Cannae Point to Manly Point and is only permitted on weekdays.
- besides these activities, the collection or disturbance of marine life or habitat is prohibited, including collecting shellfish, pumping for worms, spearfishing and collecting dead or empty shells.

NSW Fisheries have identified a need to review current boundaries and principles of the Aquatic Reserve declaration and the development of the North (Sydney) Harbour Aquatic Reserve Management Plan.

Manly Council made a submission to NSW Fisheries regarding the development of the North (Sydney) Harbour Aquatic Reserve Management Plan.

The submission included a proposal to extend the existing boundaries of the Aquatic Reserve to include Little Manly Cove, Manly Cove and the waters of the Forty Baskets study area and amendments to the management arrangements for the NHAR.

Council's amendments to the management arrangements for the NHAR addressed the following:

- stringent conservation management;
- increased protection for seagrass beds;
- cessation of commercial fishing; and
- increased enforcement for recreational fishing.

### **3.3.2 Intertidal Protected Area**

In recent years, especially around Sydney and other metropolitan centres, the abundance of invertebrate animals in the intertidal zone has declined due to collection for use as food or bait. Organisms of particular concern found in intertidal areas include the octopus, cunjevoi and molluscs, which inhabit rocky shores, and pipis and cockles found along sandy and muddy shores.

Intertidal Protected Areas (IPAs) are in effect a fishing closure. The IPA protects all invertebrates (except rock lobster and abalone) from the mean high water mark to 10m seaward of mean low water mark. Fishing is permitted provided bait is brought from outside the protected area.

In July 1993, 14 intertidal protected areas (IPAs) were declared in the Sydney region. The whole of the foreshore of Sydney Harbour is an IPA, with the exception of the foreshores of North Harbour, from Manly Point around to the western end of Forty Baskets Beach.

## **3.4 User Groups**

A wide range of recreational activities are represented in the Forty Baskets study area. General recreational activities include both land and water based activities.

The most popular activities, which occur within the Forty Baskets study area include:

- |                         |                          |
|-------------------------|--------------------------|
| • picnicking;           | • commercial fishing;    |
| • sunbathing;           | • snorkeling and diving; |
| • recreational fishing; | • swimming;              |

- boating & other recreational water craft;
- other passive uses.
- walking; and

Both recreational and commercial SCUBA diving are popular activities undertaken at Forty Baskets. Commonly divers head south to Reef Beach and beyond the rockeries within the North Harbour Aquatic Reserve.

Forty Baskets is also a popular area for family outings. Many of the swimmers are young children who are supervised from the beach by their parents. A swimming enclosure adds to the safety of the area, providing an ideal swimming environment for all beach users.

Both commercial and recreational fishing is carried out within North Harbour however recreational fishing is far more prevalent in the Forty Baskets study area.

Recreational fishers commonly utilise the jetty that runs the length of the eastern perimeter of the swimming enclosure. Use of the jetty by recreational fishers was identified as a safety concern by those utilising the swimming enclosure in regard to fishing equipment, line entanglement and fishing debris.

Recreational fishers perceive the disruption of the water by those utilising the swimming enclosure as an annoyance when attempting to catch fish. As both activities are permitted within the study area conflicts are unlikely to be resolved by Council and it must be left to the discretion of users to be sensitive to the needs of others.

Community consultation undertaken by Council has highlighted the importance of the area's marine environment to both locals and visitors. Of particular concern to the community is the protection and management of:

- seagrass;
- the endangered population of little penguins and the vulnerable red-crowned toadlet;
- aquatic biodiversity and
- natural vegetation.

The community identified the following major threats to the area's aquatic ecology through the consultation process:

- stormwater pollution;
- boat moorings, anchors and motors;
- boat discharge;
- fishing; and
- the threat of marine weeds.

While protection of aquatic flora is imperative, the community has also identified the desire for continued use of the area for a variety of activities, which will undoubtedly cause some impact on the marine ecology of the study areas, especially over high use areas.

**Figure 8** identifies major user groups in the study area and the potential impact that each group may have on the biodiversity of the Forty Baskets marine environment. Various sources (including government departments, the community and libraries) were consulted for studies, which have assessed the impacts of particular user groups or activities on aquatic biodiversity. Although few studies have been undertaken, the following potential impacts have been identified. It is important to note that the impacts and issues associated with the identified user groups are not limited to those listed.

**Figure 8:** Potential Impacts & Issues Associated with Identified User Groups



User Groups	Potential Impact and Issues
SCUBA Diving	<ul style="list-style-type: none"> <li>• Damage to near-shore rock platforms and seagrass beds as a result of fin action.</li> <li>• Damage to sedentary sub-tidal organisms and disturbance of the natural food chain created by feeding larger fish.</li> </ul>
Recreational Fishing	<ul style="list-style-type: none"> <li>• Removal of demersal and pelagic species from the ecosystem.</li> <li>• Harvesting of intertidal organisms for bait or food.</li> <li>• Impacts associated with discharged bait packaging and plastic bags, entangled and snagged fishing lines and hooks and other wastes.</li> <li>• Bird strike – where birds collide with an outstretched fishing line.</li> <li>• Illegal removal of certain fish quantities, sizes and species.</li> <li>• Impacts of improper techniques for de-hooking and releasing unwanted fish.</li> </ul>
Commercial Fishing	<ul style="list-style-type: none"> <li>• Wastage associated with by-catch.</li> <li>• Removal of pelagic species.</li> <li>• Impacts associated with fishing gear such as nets and traps that has not been retrieved.</li> </ul>
Boating	<ul style="list-style-type: none"> <li>• Seabed and seagrass damage caused by dragging and/or retrieval of anchors and swing moorings.</li> <li>• Seagrass damage resulting from motoring over/through shallow areas.</li> <li>• Impacts of fuel and/or sewage discharge into the water.</li> <li>• Littering.</li> <li>• Pollution resulting from the illegal cleaning of boat motors in non-contained areas.</li> <li>• Foreshore erosion as a result of wake and propeller wash.</li> <li>• Noise, smoke and odours generated by vessels.</li> <li>• Spread of aquatic weeds such as <i>Caulerpa taxifolia</i>.</li> </ul>
Beach goers/Picnickers and other Passive Beach Users	<ul style="list-style-type: none"> <li>• Littering.</li> <li>• Beach combing ie: removal of shells and other organisms from rock pools and platforms, disturbing habitats, turning over rocks and exposing sensitive creatures, treading on creatures.</li> <li>• Impacts of sunscreens on water quality and aquatic organisms.</li> </ul>
Dog Walkers	<ul style="list-style-type: none"> <li>• Water pollution through deposition of faeces.</li> <li>• Disturbance of threatened populations and species.</li> <li>• Threats to biodiversity such as attacks on native fauna.</li> </ul>

### 3.5 Estuarine/Coastal Hydrodynamics

Little is known about the specific hydrodynamics of the Forty Baskets study area. However it is evident that due to identified coastal processes the beach is largely a closed system and the waters are moderately flushed.

The hydrodynamics of the study area, in terms of wave climates and water levels, are discussed further in **Section 3.12**.

Obtaining further information regarding the hydrodynamics of this area is presently a low priority for Council. Hydrodynamic data would only be necessary where it forms baseline information for other studies such as determining movement of sediments as a baseline to investigating beach nourishment or determining the impacts of the Local Government Area's input to harbour pollution on marine ecosystems.

A greater understanding of the hydrodynamic environment in the study area would assist in the development of future management decisions.

### 3.6 Sediment Processes

Although no detailed coastal/estuary processes study has been undertaken for the Forty Baskets study area, some analysis of the present sediment budget was undertaken as part of the Forty Baskets Coastline Hazard Definition Study (Patterson Britton and Partners 2003). The Coastline Hazard Definition Study identified that the embayment is largely a closed sediment system based on the following factors:

- Forty Baskets Beach has rock platforms that extend about 400 m along the neighbouring foreshores at both ends of the beach and is generally protected from direct ocean swell and large wind waves, hence it is unlikely there is any significant littoral sand supply or loss;
- Forty Baskets Beach is truncated by a grassed berm along its full length and as there is no dune system there is consequently no significant loss or gain of sand across the back beach boundary;
- The results of photogrammetric analysis of historical vertical aerial photography indicate that there has been generally only minor changes in beach volume over the period 1961 to 1998

(Patterson Britton and Partners, 2003).

The primary beach dynamic is therefore thought to be sand moving generally offshore during storm activity and onshore in calmer weather.

Refer to the Forty Baskets Coastline Hazard Definition Study Report (Patterson Britton and Partners, 2003) for further information.

#### 3.6.1 Sediment types

Herbert (1983) identified clean sand with <10% mud immediately off the shoreline of the Forty Baskets study area.

Herbert classified the sediment further offshore as muddy sand (10-50% mud). Refer to Herbert's sediment map in **Appendix D**.

This is supported by Birch and Taylor (2000) who established that the north western cove of North Harbour comprises a deep (5-10m) mud basin containing greater than 50% mud. The basin is surrounded by steep margins and a shallow sandy (greater than 90% sand) bay head beach (refer Figure 3 of **Appendix E**). „Fine detritus brought into the cove by the drain at the head of the bay, is reworked in the shallow bay-head area and accumulates in the deep central basin. A small steep fluvial delta occupies the upper part of the bay" (Birch & Taylor, 2000).

#### 3.6.2 Sediment Quality

Sediments are increasingly being used to monitor the aquatic environment as they integrate contaminants such as heavy and trace metals, organic and other contaminants over time.

Sediments are able to provide information on contaminant source, accumulation and dispersion (Birch & Taylor 2000).

Sediment quality guidelines have been published as part of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000).

#### Trace Metals:

Birch and Matthai (2000) note that the receiving waters of Sydney Harbour receive trace metals from natural estuarine discharge as well as from anthropogenic sources such as coastal and deepwater ocean sewage outfalls and off-shore dumping of dredged harbour sediments.

It is well known that marine sediments contain records of contaminants, such as trace metals, that have been discharged into the marine environment. The level of contaminants recorded depends on the hydrodynamic environment and how effective it is at dispersing those contaminants. Concentrations of trace metals are likely to be influenced (in the upper 10cm of sediment) by mud content, bioturbation and physical resuspension.

Birch and Matthai (2000) found that trace metal and TOC (Total Organic Carbon) concentrations decreased seawards, thereby indicating a significant contribution from land-based activities. They also stated that in Sydney's case higher concentrations of trace metals were unlikely to be due to natural enrichment processes.

#### Heavy Metals:

Birch and Taylor (1999) claim that general drainage from the larger surrounding catchments (stormwater), leachate from reclaimed lands and atmospheric contributions (contributed by cars and industry emitting heavy metals into the atmosphere) are major sources of heavy metal contaminants in Sydney Harbour.

Stormwater input from smaller catchments and sewage overflows in general within the harbour contribute significantly to nutrients and bacteria in the water, however Birch and Taylor (1999) found an absence of additional heavy metals adjacent to sewage overflow and stormwater facilities (in smaller catchments). As a result Birch and Taylor concluded that sewage overflows, and for smaller catchments stormwater, are not a significant factor in contributing to the presence of heavy metal contaminants.

They identified that the highest concentrations of heavy metals in sediments occur at the headwaters of embayments and tributaries in the estuary.

#### Polycyclic Aromatic Hydrocarbons (PAHs):

PAHs form from a variety of sources, mainly involving both natural and man-made combustion such as combustion of fossil fuels, coal gasification and liquification processes, waste incineration, production of coke and bushfires.

PAHs, because of their nature, may accumulate to high concentrations in sediments.

The spatial distribution of PAHs resulting from tests undertaken in Sydney Harbour suggests that they predominantly derive from urban run-off (McCready et al, 2000), which is suggested by a general increase in PAH concentrations towards the bay ends, similar to heavy metal distributions found by Birch and Taylor (1999). McCready et al found that wind also played a significant factor in the distribution of PAHs, and as a result PAHs are often found in locations far removed from their likely sources (refer to **Appendix F**).

In McCready's study 124 sample locations were used across Sydney Harbour including 6 in North Harbour. Comparing results of this study with PAH guidelines from the US indicated that most of the sites studied within Sydney Harbour have levels of PAHs that are expected to occasionally or frequently result in adverse biological effects (McCready et al, 2000). McCready et al note that PAHs are not the only source of contamination and that combining the PAH data with results of all metallic and organic contamination concentrations would afford a more accurate representation of potential impact on benthic biota.

### Organic Contaminants:

Organic contaminants have been identified as major contributors to degradation of the marine environment.

The aim of Birch and Taylor's study (2000) was "to determine the sediment size with which a range of organic contaminants (Chlordane, HCB, Lindane, Heptachlor, Aldrin, H-epoxide, DDT, DDD, DDE) are associated." They used the north western part of North Harbour (refer Figure 1 of **Appendix F**) as their study area.

Birch and Taylor established that North Harbour comprises a deep (5-10m) mud basin containing greater than 50% mud. The basin is surrounded by steep margins and a shallow sandy (greater than 90% sand) bay head beach (refer Figure 3 of **Appendix F**). "Fine detritus brought into the cove by the drain at the head of the bay, is reworked in the shallow bay-head area and accumulates in the deep central basin. A small steep fluvial delta occupies the upper part of the bay" (Birch & Taylor, 2000).

To gain a more accurate understanding of sediment contamination, variable grain size of sediments need to be considered. Birch & Taylor state that usually finer grained sediments are associated with higher organic contaminants. Grain size can influence organic contaminant concentrations probably more so than proximity to the contaminant source (Birch & Taylor 2000).

The above statements were supported by Birch and Taylor's study undertaken of North Harbour, which indicated (based on bulk sediment) that the distribution of organic contaminants is highest in the central mud basin (where the finer grained sediments are located), and decreases towards the margins of the basin and the mouth of the bay (as the sediment grains become larger and more sandy) (refer Figure 3c of **Appendix F**). However once the factor of sediment size was removed from the equation, it was found that contaminant distribution was highest at the head of the inlet and decreased moving towards the outer bay (refer figure 3d of **Appendix F**). This pattern strongly indicates that the stormwater outlet illustrated in Figure 3a of **Appendix F** is the source of the organic contaminants. Birch and Taylor also concluded that it is unlikely that the Marina contributes significantly to the concentration of organic contaminants in the cove.

### **3.6.3 Sediment Movement / Transport**

Sediment movement is a natural process that is influenced by wave action, tidal prisms, current patterns and winds. Storm events are also a significant factor in moving sand and sediments. The sediment system above the water for example on our beaches and sediment inputs from terrestrial areas further up the catchment is integrally connected with sediments below the water and as a result it is important to gain an understanding of sand movements (and the processes that cause sediment movements) both above and below the water.

Little study has been undertaken on sediment movement and current strengths within the waters off Forty Baskets. A Coastline Hazard Definition Study undertaken by Patterson Britton & Partners on behalf of Manly Council addresses issues including beach erosion and shoreline recession, refer to **Section 3.12** for further information. This study assesses photogrammetry from a number of different dates. The photogrammetry however is limited to data above the level of 0 mAHD, which is approximately mean sea level. As a result the study does not address sand movement within the cove's total sediment system, which would require further study into wave and current patterns and sediment movement in that part of the system below the water.

The natural process of sediment movement is sometimes viewed in a negative light as beaches are lost or sand encroaches into adjacent parks and properties where originally dunes would have been present. These „negative“ effects have been „managed“ along the NSW Coast and estuaries with breakwaters, groynes, seawalls, beach nourishment measures and the like.

### **3.6.4 Sand Migration**

Few studies have been undertaken on sediment movement and current strengths within the Forty Baskets study area. Wave action and tide fluctuations may induce local currents. Where the channel is narrow the tidal currents increase with velocity. "This is particularly noticeable at

Balls Head with an ebb tide of 2 knots and a flow tide of 1.5 knots, whereas tidal flow

From observation of the few aerial photographs available it is difficult to determine the movement, if any, of sand at the beach and along the seawalls.

Further research would be required to establish whether longshore transport of sediment occurs. This process is directly influenced by a number of factors such as tidal and longshore currents and wave attack. It is envisaged that field studies would be required to measure and determine the magnitude of such processes.

Information regarding marine sediment type, quality and transport is presently a low priority for Council as independent information. Data would really only be necessary where it forms baseline information for another study for example determining impacts of the Local Government Area's input to harbour pollution on marine ecosystems or as a baseline study to assist in investigation of beach nourishment.

## 3.7 Fisheries & Fishing

### 3.7.1 Recreational Fishing

Forty Baskets is a popular ground for recreational fishers. The pier adjacent to Forty Baskets swimming enclosure is often occupied by recreational fishers. Serious line fishing in the area is done very early in the morning or after dark.

No data exists identifying the number of recreational fishers in North Harbour.

Consultation during the development of the Coastline Management Plan highlighted the community's concern over the improper use of the area by recreational fishers. As a result the community has requested that all rules and regulations that apply to recreational fishers be rigorously enforced.

Issues concerning the impact of recreational fishing on intertidal marine life were identified in the consultation process. Further education and patrol of prohibited activities may be required to raise awareness of the impacts of recreational fishing on the marine environment.

Other issues identified during the consultation process included:

- the perceived reduction in fish stocks in the area as a result of recreational fishers taking undersized fish,
- the impact of recreational fishers on intertidal marine life through the collection of shellfish for bait and visitors to the area collecting shellfish for culinary purposes, and
- concerns over non-compliant use of the area by fishers.

No official studies have been undertaken to identify the impacts of recreational fishing on fish stocks of the area. Whether estuarine fish stocks across NSW have declined in recent decades is ultimately unknown. The commonly held view amongst recreational fishers is that individual angler catches have decreased (NSW Fisheries, 2002).

#### Recreational Fishing Regulations

Licensed line fishing is permitted. Fisheries specify legal bag and size limits for saltwater species under *the NSW Fisheries Management Act 1994*. Detailed information on bag and size limits along with fishing licence requirements and regulations are provided by NSW Fisheries through various educational mediums including pamphlets and via the internet.

The majority of Sydney Harbour is an Intertidal Protected Area (IPA) therefore bait collection is banned except on the foreshore from Manly Point to the western end of Forty Baskets Beach (NSW Fisheries). The taking, injuring, interfering, disturbing or destroying of fish or aquatic vegetation is strictly prohibited.

Spear fishing is prohibited within the study area. A Recreational Fishers Licence must be carried by law when spearfishing, hand lining, hand gathering, trapping and bait collection and prawn netting. Some exemptions do exist.

Increased education and patrol of fishing activities within the study area may be required to raise awareness of the impacts of prohibited activities, prevent damage caused to the intertidal marine life, alleviate concerns over perceived reductions in fish stock and encourage compliance with fishing regulations.

### **3.7.2 Commercial Fishing**

Community consultation undertaken by Manly Council in 2001, found that the majority of respondents were opposed to commercial fishing being permitted within the study area. The following reasons were submitted by those opposed to commercial fishing:

- depletion of fish stock; and
- damage caused to seabed flora such as seagrass.

Currently there are 3 types of commercial fishing activities permitted in the North Harbour area;

- haul netting – only in Spring Cove
- lobster traps – 2 licences (of which only one operates)
- general fishing – 3 licences

Licences are issued long-term. Hauling does not occur within the study area and commercial fishing is considered to have little impact within the waters of Forty Baskets (GIS Environ. Consult, 2003a).

NSW Fisheries will be preparing environmental impact statements and management strategies for each of the major commercial fisheries in NSW. To date Fisheries have prepared the General Estuary Fisheries Management Strategy and Environmental Impact Statement. The strategy aims to ensure the general estuary fisheries of NSW, are managed sustainably. Fishery management strategies outline the management goals, objectives and strategies for achieving the objectives, performance indicators and the monitoring programs that apply to a fishery. Fishery Management Strategies include information about the background, operation, current status and vision for future management of fisheries, as well as the regulated management plan.

It is recommended that council provide input into the development of Fisheries Management Strategies that apply to the Forty Baskets study area and North Harbour as a whole. This is likely to be achieved by providing comment on draft Fisheries Management Strategies.

It is important to note in this CMP, that management of fishery resources and the marine environment in North Harbour is not a direct responsibility of Council. This management responsibility and jurisdiction belongs to NSW Fisheries.

Council made a submission to NSW Fisheries regarding the development of a North (Sydney) Harbour Aquatic Reserve Management Plan, in accordance with a Council resolution from the 14 May 2001 Service Planning and Commissioning Council meeting. Among other recommendations Council recommended to Fisheries that not only should the Aquatic Reserve boundary be extended to include all marine areas north of a line between Grotto Point and Quarantine Head but also that the regulations be changed to prohibit commercial fishing within that area. Council will continue to respond to consultation undertaken by NSW Fisheries regarding the development of a Management Plan for the Aquatic Reserve.

### **3.7.3 Fishing Closures & Exclusion Zones**

Prohibited and Restricted Fishing and Collecting:

Part 2 (8-14) of the *NSW Fisheries Management Act 1994* allows for the declaration of „fishing closures“. These closures may be for a particular area, time or methods or combination of all three.

Prohibited or restricted fishing and collecting in Sydney Harbour includes the following:

- octopus must not be taken from rock platforms in Sydney Harbour;
- the whole of the harbour foreshore (except the area between the western edge of Forty Baskets Beach and Manly Point in North Harbour) is an Intertidal Protected Area (IPA). This protects all intertidal invertebrates from collection or harvesting;
- general NSW saltwater restrictions on size and number of fish and invertebrates apply;
- protected species may not be fished;
- any crabs carrying ova (eggs) can not be taken and must be released if caught;
- a ban on the collection of abalone.

A number of other fishing closures apply to the area under Section 8 of the *Fisheries Management Act 1994*. These can be viewed on the NSW Fisheries website.

### **3.8 Maritime Operations**

The Sydney Ports Corporation was created to control shipping movements and port communication services. The corporation maintains port facilities, protects and enhances the port environment, collects charges on port facilities and cargoes, and leases port land.

Sydney Ports has responsibility for both Sydney Harbour and Botany Bay and for 90km of the NSW coastline, for three miles out to sea.

Sydney Harbour's commercial wharves are located less than 10km from bluewater shipping lanes. The port is linked to road and rail networks servicing NSW and Australia, and is a destination for international trade and cruising ships. The port therefore handles a wide range of vessels and cargoes. As a result there are a number of safety and environmental issues associated with the maritime operations of Sydney Harbour that require management. These include ballast water and marine pest management, incident (including spills) management and water traffic safety. These are discussed below.

#### **3.8.1 Incident Management – Spills and other incidents**

The Sydney Ports Corporation is responsible for investigating incidents involving trading ships on Sydney Harbour.

Of particular significance to this Coastline Management Plan, is the Corporation's responsibility for addressing all „on water“ oil, chemical or other spill incidents within its jurisdiction, including Sydney Harbour. This includes not only emergency response and clean-up but also investigations into the causes of on-water spills.

Sydney Ports maintains a 24 hour response capability for any incident within its jurisdiction. Residents, port users and the general community can contact Sydney Ports at any time to report an environmental incident, from harbour pollution to noise. The number is 9296 4000.

A Coastal Resource Atlas for Oil Spills in Port Jackson was developed by the NSW Environment Protection Authority (EPA) and the Australian Maritime Safety Authority in 1994 at the request of the NSW State Committee of Advice to the National Plan to Combat Pollution of the Sea by Oil. The Atlas was developed as an advisory document and was designed to complement existing plans/manuals for dealing with oil spills in general.

The document details and maps environmentally sensitive areas of the Harbour and includes recommendations to minimise the impact of a spill. The coastal resources are divided into four categories of sensitivity including extreme, high, moderate and low. In the case of an oil spill, the first priority is to protect the extreme and high sensitivity areas.

While Council is not responsible for, or capable of, responding to on-water incidents, it is important for council rangers to be aware of who is responsible in the case that Council received notification of an incident.

### **3.8.2 Ballast Water and Marine Pest Management**

The Sydney Ports Corporation is not responsible for establishing or regulating processes for ballast water management. This responsibility lies with the Commonwealth Department of Agriculture, Fisheries and Forestry Australia (AFFA), through the Australian Quarantine and Inspection Service (AQIS), which is the lead agency in Australia for the management of ballast water of international vessels. Sydney Ports is however responsible for complying with the requirements and protocols established by international and national bodies such as AFFA.

There are mandatory ballast water management arrangements for international shipping.

The National Introduced Marine Pests Corporation Group (NIMPCG) is responsible for the development of a National System for the prevention and Management of Marine Pest Incursions.

All major Australian Ports have been required to undertake baseline surveys to establish whether or not marine pests are present. A survey commissioned by the Sydney Ports Corporation and Transport NSW was undertaken in 2001.

Since the discovery of *Caulerpa taxifolia* in areas of Sydney Harbour, it is important that the role of the maritime industry in the spread of this noxious species be closely monitored. Further information regarding the presence of *Caulerpa taxifolia* within the study area is provided in section 3.1.3.

### **3.8.3 Water Traffic Safety and Management**

Sydney Port's major navigation and shipping responsibilities are outlined in the functions of its Ports Safety Operating Licence issued by the NSW Government. Sydney Ports Coordinates shipping movements within Sydney Harbour.

Safety functions of Sydney Ports include the maintenance of channel and berthing box depths, provision of navigation aids and port communications.

## **3.9 Boating**

The embayment of the Forty Baskets study area offers a safe harbour for recreational and commercial boating and watercraft use during adverse weather conditions. Forty Baskets is used as both a temporary and permanent anchorage and mooring site for recreational watercraft and also as a launching site.

The study area includes three boating facilities at the end of Gourlay Avenue: North Harbour Sailing Club, Davis Marina and the Sea Scouts.

Wind surfing, canoeing, kayaking, out rigging and surfboat activities are conducted in the vicinity of the Forty Baskets study area. The use of personal watercrafts (PWCs), including jet skis, in Sydney Harbour (including the study area) was prohibited in September 2001.

In recognition of growing concern over the adverse impacts of marina development on the biophysical environment, the working draft SREP 32 proposes a moratorium on the development of any new marinas in Sydney Harbour, except on four (4) designated sites identified as appropriate for marinas related to the working harbour's facilities. The moratorium allows for the completion of the Boat Storage Strategy presently being prepared by Waterways Authority and DIPNR (formerly Planning NSW). None of the four (4) marina sites identified are located along Manly's foreshores.



### 3.9.1 Davis Marina (recreational boating facilities / storage facilities)

Davis Marina was highlighted as a major issue for consideration in the development of the Forty Baskets Management Plan. The community considered the marina important because it is one of only a small number of public access points for watercraft in Sydney Harbour.

Issues associated with the Marina identified through the community consultation process included:

- safety;
- maintenance;
- access;
- overcrowding of the facilities during peak periods;
- planning for future use of the boating facilities; and
- water pollution.

Both Balgowlah Heights and North Harbour Precincts raised concerns regarding an increase in the marina's capacity and the resulting impacts on noise, traffic and parking. It is important to note however that there is limited room for expansion of the marina in its present location. Parking is already limited in the area and concerns are being raised by both boat users and residents in relation to parking competition. An increase in the use of the area for boating would bring additional traffic to the area, increase safety issues and raise tensions over parking availability. Cars with trailers create further concerns. The precincts also identified issues associated with potential water pollution from the marina slipway and owner maintenance work as issues to be addressed in this CMP.

Access and parking issues associated with the marina are considered in more detail in **Section 4.10**. Water pollution from boats is addressed in **Section 3.10.4**.

Davis Marina is located at the western end of the study area. It offers many services and facilities for resident and visiting craft. The marina consists of two fixed jetties with a total of 28 berths extending off either side, there are two slipways.

The marina supplies and maintains the mooring lines, lighting, power and water on the jetties.

Fifty-one (51) conventional swing moorings are licenced to Davis Marina by Waterways. These moorings are regularly checked and maintained by Davis Marina.

Part of the western jetty consists of work berths for maintenance and repair of boats. Shallow water at low tide which restricts access, lack of pontoon access and safety issues were identified by Davis Marina as issues associated with the use of this section of the jetty for boat maintenance work.

Fuel bowzers are located at the end of the western jetty for refueling as well as pick up and drop off. A dinghy pontoon is also provided at the marina.

Davis Marina have a waste removal contract with Council and have established a Pollution Prevention Plan, which they are presently working towards. Waste facilities at the marina include 1 large skip bin and segregated recycling facilities for marina patrons. The skip bin is also utilised by the community for general waste and disposal of dog wastes.

Disabled access to boating activities is not available at Davis Marina however, it is provided at the Manly Yacht Club located in Manly Cove. There is presently no disabled parking in the Forty Baskets study area.

Parking in the vicinity of Davis Marina consists of twenty seven (27) 90<sup>0</sup> angled parking bays at the end of Gourlay Avenue. An access ramp of steep gradient extends down to the marina

however it is restrictive in terms of the number of vehicles it can cater for and the turning capability of the vehicles. Refer to **Section 4.9** and **Section 4.10** for more detail.

### **3.9.2 Boat Storage**

Boat storage facilities at Forty Baskets consists of private swing moorings and commercial moorings licenced by Manly Boatshed and Davis Marina Pty Ltd. All moorings, which number in the order of 202 moorings, are licenced from the Waterways Authority. Forty Baskets has proven to be a popular mooring location, offering protected, calm waters sheltered for harsh weather conditions.

At the time that this CMP was prepared, the DIPNR and the NSW Waterways Authority were working together towards the development of a boat storage strategy in collaboration with the boating industry. The Strategy will aim to ensure that the needs of recreational and commercial boating are catered for whilst protecting the beauty and health of the Harbour (Sharing Sydney Harbour Regional Action Plan update January 2003).

### **3.9.3 Dinghies**

Dinghy storage was identified as an issue to be addressed in the development of this CMP.

Historically dinghies have been stored along the foreshore of Wellings Reserve between Davis Marina and Forty Baskets Reserve. They also occupy the eastern end of Forty Baskets Reserve foreshore.

Many consider the presence of dinghies on the beach as contributory to the fishing village atmosphere of Forty Baskets. However, many are of the opinion that dinghies should be removed from the foreshore, stored and the area to which they occupy restricted.

The extensive number and random storage of dinghies and other boats along the foreshore of the study area impact on the aesthetic and environmental nature of the area. Many of the dinghies are disused, chained to trees in bushland areas and scattered along the study area's foreshore causing erosion as boat owners access these areas and presenting a safety concern.

Council does not provide alternate dinghy storage facilities at Forty Baskets. Investigations into the installation of storage facilities should be undertaken the aim of which would be to;

- restrict dinghy storage to certain designated areas,
- prevent degradation of the foreshore from current storage methods,
- address safety concerns associated with the scattering of dinghies in close proximity of the beach,
- remove dinghies from the study area that have not been utilised within the last 12 months,
- improve visual amenity of the beach and study area, and
- develop a system for the registration of dinghies.

Currently, it is against Council regulations to store dinghies on the beach and those found to be stored on the beach will be impounded by Council rangers. It is also against Council regulations to store dinghies east of the swimming enclosure however, they can be stored along the foreshore of the study area in the vicinity of Davis Marina.

If a dinghy or other type of watercraft is found to be stored in prohibited areas it is classified as an „abandoned article“. If the „abandoned article“ is not removed within 21 days of marking, Council will impound it. These regulations are enforced annually.

The presence of dinghies along the foreshore of the Forty Baskets study area was addressed in a Natural Environment Assessment undertaken by GIS Environmental Consultants in 2003. The assessment found that damage was being caused to tree bark and numerous informal

tracks have been formed due to inappropriate dinghy storage and access. It was recommended that alternate dinghy storage be designed such as chain loops or copper posts in designated areas. It was also recommended that chaining boats to trees and dragging them through the bush should be prohibited.

It is recommended that dinghy storage for a maximum number of dinghies (to be determined at a later date) be provided where prior „written permission“ has been obtained by the boat owner from Council (as owner and/or manager of the land). Written permission would be subject to an agreement between Council and the boat owner. The agreement would state that storage is subject to a „boat storage fee“ charged per annum, that only the designated boat storage areas may be used, and that Council accepts no liability or responsibility for what happens to stored boats and therefore the boat owners would be required to sign a release form.

It is proposed that a maximum number of dinghies be agreed to and that storage and written permission be provided for that number. Craft larger than dinghies such as small yachts and catamarans should not be granted boat storage permission. A waiting list may be required.

Should the boat storage area be located on Council owned community land and a boat storage fee proposed, Council's Finance Department would need to be notified in advance in order to include the boat storage fee in the Corporate Management Plan under section 404 of the *Local Government Act 1993*.

Should the boat storage area be located on lands subject to the *Crown Land Act 1989*, this proposal would need to be signed off by the Minister responsible for that Act. A separate fund for the boat storage fees may be required.

In determining dinghy storage arrangements in the area, Council should also consult with Davis Marina who have indicated that they would give consideration to a possible alternative proposal involving the Marina building, maintaining and administering a dinghy storage facility for use by those using moorings licensed directly from Waterways. This option should be explored in light of the space limitations within the reserve areas.

#### **3.9.4 Mooring and Anchoring**

There are a number of private moorings and one emergency mooring located in the Forty Baskets embayment. All moorings are licenced by the Waterways Authority. Moored boats are usually accessed by dinghies that are stored in the area.

Moorings in Forty Baskets encourage boats across shallow areas where seagrass grow. Boat propellers act like harvesters on seagrass resulting in significant damage and dislodgment of seagrass plants and other aquatic flora. Boat anchorage can have a similar effect on aquatic flora. Forty Baskets has a number of seagrass beds which are important as a nursery for angling species, to bind the sea floor and improve water quality. Much of the seagrass in Sydney Harbour has already been lost through the effects of water pollution, foreshore development and the recreational use of our waterways ( ).

The Waterways Authority is currently trialing seagrass friendly moorings in an attempt to minimise the impact of boating on seagrass beds and the aquatic environment. NSW Fisheries is also undertaking an inventory of seagrass in NSW which, once completed, will be included in Waterways" boating maps to assist boats in the avoidance of areas where significant seagrass beds exist and to identify ideal areas for mooring.

In 1992 an ICAC report set limits on the number of moorings permitted within each bay and cove in Sydney Harbour. The number of moorings along Manly's coastline is presently within the limits set by the report (The Ecology Lab, 2003). Waterways has adopted a policy that prohibits the issuing of any further moorings.

#### **3.9.5 Personal Water Craft's (PWCs)**

The use of personal water crafts (PWCs), including jet skis, in the vicinity of the embayment and North Harbour was prohibited in September 2001 however, their use still remains an area of concern to local residents. Safety and noise are the issues of greatest concern relating to the continued use of PWCs.

Windsurfing, canoeing, kayaking, outriggering and surfboat activities are conducted in the vicinity of the Forty Baskets study area.

### 3.9.6 Waterway Zones

There is a four (4) knot speed limit for all waters in the Forty Baskets embayment extending 100 metres off shore from the MHW. Assigned by the Waterways Authority the designated 4-knot zones assist with the protection of seagrass beds and address safety concerns of passive foreshore user groups.

„No Wash“ zones are designated by the Waterways Authority to reduce bank erosion caused by boat wash. Signs are displayed along the foreshore of all „No Wash“ zones. None of the existing „No Wash“ zones are located within the study area.

The community identified non-compliance of the 4-knot speed zones as an issue. Non-compliance is associated with increased noise and wash and unsafe conditions for other passive recreational users.

### 3.9.7 Starboard - Right & Green Education Program, Manly Council

Council's Manly Environment Centre (MEC) has designed and is implementing a community education program, Starboard – Right and Green, tailored to marine user groups. The education program is funded by Manly Council's Environment Levy. The main aim is to *“reduce boating impact on the marine environment”*.

The overall purpose of the program is to improve the quality of the marine environment (ie. the water quality and habitat) in and around the Manly LGA.

*Starboard – Right and Green* focuses on the pollution of Middle and North Sydney Harbour caused by recreational boat users, marinas and slipways.

## 3.10 Water Quality

The existing water quality in Forty Baskets is generally of high standard, although during periods of heavy rainfall, stormwater significantly reduces water quality.

One of the greatest influences of aquatic pollution in the waters adjacent the Forty Baskets study area is heavy rain and strong southerly winds. Heavy rain increases stormwater run off into Sydney Harbour, this pollution is then carried by southerly currents and winds across Manly Cove and around to Forty Baskets.

The Forty Baskets swimming enclosure is one of the sites of the EPA Harbourwatch Program. This program involves routine monitoring and reporting of bacterial levels, in order to determine water quality at Sydney recreational sites.

Two types of indicator organisms (faecal coliforms and enterococci) are used to measure recreational water quality as recommended by National Health & Medical Research Council (NHMRC) and the Australian and New Zealand Environment & Conservation Council (ANZECC). Enterococci may be a better indicator of pollution in marine waters, due to their tolerance of high temperatures and salt concentrations (EPA, 2002).

With the exception of two summer seasons, faecal coliform levels have complied with the guidelines over the last five years. Enterococci levels complied 100% of the time in both the summer and winter season (EPA, 2002).

In the Forty Baskets study area high faecal coliform levels are occasionally recorded after more than 10mm of rain in 24 hours. Enterococci levels increase with increased rainfall and frequently exceed the median guidelines after only 5 mm of rain in 24 hours (EPA, 2002).

Water quality is affected by a combination of human activities and environmental factors. Factors such as rainfall, catchment characteristics, tidal flush rate, sunshine (UV) and surf dynamics can significantly alter bacterial levels between sites (EPA, 2002).

### 3.10.1 Catchment Characteristics

The Forty Baskets study area is part of the North Harbour Catchment, which includes the harbour foreshore of Manly and Dobroyd Head, extending to the western side of North Head. About 70% of this catchment is densely developed with the remaining 30% comprised of bushland (EPA, 2002). The North Harbour Catchment is one of the cleanest on the northern beaches, with the lowest annual pollutant loads.

Six stormwater outlets and one creek discharge into the study area. Four of the outlets discharge into Wellings Reserve and the other two discharge onto Forty Baskets Beach. The creek discharges at the eastern end of Forty Baskets Beach, outside the eastern boundary of the study area. Refer to **Appendix G – Stormwater Outlets** (GIS, 2002).

The catchment is of various grades and its flow is orientated towards North (Sydney) Harbour.

Within the Forty Baskets study area there are nine drainage inlet pits of which eight currently have pit inserts.

#### Stormwater Drainage

There are two trunk line drainage lines, which convey stormwater run-off from the surrounding streets of Balgowlah Heights and out into North Harbour. Both outlets are on the Northeast facing shores of Forty Baskets Reserve.

#### Sub-Catchment FO-02

In this sub-catchment stormwater is collected from the streets of Fisher, Jellicoe and Beatty Street, by kerb side inlets. The line starts at the upstream end of Fisher Street, running parallel with Fisher then heads down the natural depression intersecting perpendicular through the middle of Beatty Street. The starting pipe size upstream consists of 300mm diameter pipes and increases in size downstream to the existing outlet with a 525mm diameter pipe. Litter baskets have been installed in the kerb side inlets of all of the above mentioned streets.

#### Sub-Catchment FO-01

This sub-catchment has two distinct branch lines, which collect stormwater from Geddes Street and also from the lower end of Fisher Street intersection. The other branch line collects water from the northern length of Beatty Street. Both branch lines start with 300mm diameter pipes and increase in size to 450mm diameter. The branch lines join together just before the outlet into a 750mm diameter pipe located on the north-east shore.

### 3.10.2 Stormwater

Stormwater is considered to have a significant impact on water quality in the Forty Baskets study area (EPA, 2002). High total suspended solids (TSS) in stormwater runoff from the neighbouring urban areas reduces water quality and may cause damage to aquatic flora due to increased smothering. Increased nutrient loads in stormwater is also linked to adverse effects on aquatic flora and fauna (Connell Wagner Pty Ltd, 1999).

The main stormwater pollutants and their potential sources within the Forty Baskets study area include:

- sediment from disturbed construction sites;
- organic matter from trees and lawn mowing. Organic matter may release nutrients into the water during decomposition and deplete oxygen supplies in the water column. Lawn clippings washed into stormwater drains either deliberately or by runoff may contain petroleum residue;
- phosphorous and pathogens contained within dog faeces is a significant contributor to increased nutrient and pathogen loads;
- oils, grease and surfactants from roadways and residential properties;

- fertilisers, pesticides and chemicals from building sites, gardens, parks and maintenance of natural bushland areas; and
- litter from boats and people utilising the beach and reserve.

GIS Environmental Consultants (GIS Environ. Consult. 2003a) undertook an assessment of the impacts of stormwater in the study area. They found that during peak flow, sediment, litter, debris, nutrients, oils, grease, bacteria and weed seeds may be discharged directly into both the aquatic and terrestrial environment. Outlets which discharge into the bushland of Wellings Reserve are having minimal impact on the surrounding environment due to current bush regeneration efforts however, discharge from the outlets has been observed to support the growth and spread of weeds.

It was identified that the most sustainable manner in which increased water quality standards could be achieved was to mobilise the community and industry to implement control of pollutants at their source before they entered the stormwater system. As such, priority actions to be implemented include:

- the elimination of pollutants;
- education – training people to change their habits and behaviour; and
- enforcement of appropriate actions through the implementation of regulations.

A range of actions were identified to implement this approach. It was also noted that it will take a number of years before these actions translate into quantifiable improvements in runoff water quality. Therefore, a range of treatment measures were recommended to prevent further degradation of the environment in the short term.

The Northern Beaches Stormwater Management Plan is another strategy aimed at facilitating co-ordinated management of stormwater within the catchment to maximise ecological sustainability and the social economic benefits of sound stormwater management practice.

The objective of the Plan is to achieve the identified high priority environment values, which are categorised into ecological values, social values and economic values.

The recommended stormwater management measures for the Forty Baskets study area conform with the Northern Beaches Stormwater Management Plan in that they recommend a range of source control measures which are supported in the short term by treatment measures.

### **3.10.3 Sewage**

Sewage has been identified as being of major concern to residents of Forty Baskets. It has been reported by residents that there has been sewage overflows into the stormwater system and subsequently run off into North (Sydney) Harbour.

Impacts of sewer overflows on biota in the Forty Baskets study area have not, to date, been assessed. Impacts would be difficult to detect due to the distance of Forty Baskets from any large, local sewer overflow. However, a general increase in nutrient levels in the water column throughout Sydney Harbour increases epiphytic growth on seagrass and increases algal growth in rocky intertidal

Eutrophication can result from sewage discharge in the study area. Nutrient enrichment can lead not only to enhanced phytoplankton growth, but also to enhanced growth of macroscopic and microscopic algae on seagrass. This may result in a decline in the seagrass beds due to competition for space and light

Residents have also identified the contribution that visiting boats make to sewage pollution in the study area, especially on weekends and public holidays. The requirement for boats to have sewage holding tanks with pump-out facilities needs to be pursued with Waterways.

#### **3.10.4 Boating Pollution**

The community has raised its concerns over the continued dumping of sewage and other wastes directly into Forty Baskets embayment by some boat users. Additionally direct pollution from the marina slipways and boat owner maintenance work are concerns that were raised by the community which are to be addressed in the development of this CMP. It is important to note here that Davis Marina has implemented a number of pollution reduction initiatives to ensure that the marina meets industry standards and legislative requirements.

Passenger carrying commercial vessels and houseboats are now required to install holding tanks to prevent the discharge of raw sewage and certain areas are to be declared „no-discharge“ zones for treated sewage (Waterways Authority, 2002). Pump-out facilities are to be used for all non-treated sewage.

The Waterways Authority recently implemented a state-wide strategy to manage sewage pollution from vessels in all NSW waters.

Management of water pollution issues attributed to by boats and boating activities have been incorporated into Council's community education programs such as Starboard Right & Green.

### **3.11 Air Quality & Noise**

#### **3.11.1 Air Quality**

Having no formal boundaries, air pollution is subject to prevailing weather conditions and atmospheric circulation. The Metropolitan Air Quality Study (MAQS) demonstrated that overnight and early morning summer land breezes carry air borne pollutants out to sea. The afternoon sea breezes carry this pollution back on shore, over Manly, and concentrate it in the Sydney Basin.

Management of air quality issues is best dealt with at a regional level. Manly Council continues to implement the Manly Greenhouse Challenge Program. One of the objectives of the program is to reduce green house gas emissions and improve air quality.

On a local level issues such as the use of wood fire heaters during winter and illegal backyard burning activities were identified in the community consultation process along with the emission of foul odours from the amenities block located on the western side of Forty Baskets Reserve.

#### **3.11.2 Noise**

When sound is offensive and undesirable to the listener, it is regarded as noise pollution. There are three different undesirable effects of noise – amenity, health and communication.

Noise pollution within the Forty Baskets study area was attributed to by:

- boats/water crafts
- rubbish removal trucks
- private parties
- public entertainment

Noise not only impacts on residents and visitors of the area, but it can also significantly impact on wildlife.

Noise emissions from all vessels within NSW are regulated under the *Protection of the Environment Operations Act 1997*. This legislation identifies „offensive noise“ rather than specifying specific noise levels. The Waterways Authority also offers general noise guidelines for different boating vessels.

Charter vessels operating with an amplified music system are required to comply with a Code of Conduct which states that offensive noise will not be emitted from any charter vessel at any time and specifies operating guidelines for different time periods of the day.

Similar to that of boats, noise emission from private residences is also regulated. In the event that noise complaints are conveyed to Council, warnings and infringement notices may be issued to offenders.

During the consultation process it was identified that noise from boats is usually temporary, minimal and limited to daytime. It is far less than the noise from private residences, the occasional group gathering at Forty Baskets Reserve and garbage trucks. The issue of noise at Forty Baskets needs to be looked at in perspective and not brought home to an occasional boat.

### **3.12 Coastline Hazards**

Patterson Britton and Partners were commissioned to undertake a Coastline Hazard Definition Study for the Forty Baskets study area to identify coastal processes and define coastline hazards. The study was undertaken in accordance with the NSW State Government's Coastline Management Manual 1990 and the 1988 Coastal Hazards Policy.

This section of the CMP is a summary of the technical details of the Coastline Hazard Definition Study. However, this section should not be used in isolation, and should be implemented with close reference to the Forty Baskets Coastline Hazard Definition Study report by PBP (PB&P, 2003).

The study involved the assessment of the coastline hazards potentially affecting the study area, including:

- beach erosion;
- shoreline recession;
- sand drift;
- coastal inundation;
- stormwater erosion;
- slope and cliff instability; and
- climate change.

#### **3.12.1 Coastal Processes**

The Coastline Hazard Definition Study identifies and defines the following coastal processes for the Forty Baskets area:

- storms;
- elevated water levels;
- wave climate;
- sediment budgets;
- storm demand;
- longer term sand movement; and
- aeolian sand movement.

Further information on each of these processes is provided in the Forty Baskets Coastline Hazard Definition Study (PB&P, 2003).



### 3.12.2 Coastline Hazards

The study identified that the most significant hazards in the study area are beach erosion and shoreline recession, slope and cliff instability and climate change. Hazards that were assessed and identified as relatively insignificant hazards for the Forty Baskets area include sand drift, coastal inundation and stormwater erosion (PB&P 2003).

Each of the coastal hazards assessed in PB&P report are briefly described below, refer to the Forty Baskets Coastline Hazard Definition Study (PB&P, 2003) for further detail.

#### Beach Erosion and Recession

Beach erosion is the removal of sand from a beach, usually during a storm event. Shoreline recession is the „progressive landward shift in the average long-term position of the coastline' (PBP 2003), it is a longer-term process than beach erosion.

Forty Baskets Beach is subject to erosion during severe storm events. The Coastline Hazards study identified that Forty Baskets Beach is also experiencing some minor longer-term sand loss (recession). The recession is likely to be due to sand, which is eroded from the beach during severe storm events, not being reworked back onshore during calmer conditions. The sand is unlikely to be reworked due to the sheltered aspect of the study area.

PBP (2003) conservatively predicts that longer-term sand loss will increase over time due to sea level rise caused by the Enhanced Greenhouse Effect. The predicted loss in beach width over the next 20 to 50 years is in the order of 3 to 7m (taking into consideration sediment loss in severe storms and the Greenhouse sea level rise). The current width of the beach is approximately 15 to 20m.

#### Slope and Cliff Instability

„Slope and cliff instability hazards refer to the possible structural incompetence of these features and associated potential problems with the foundations of buildings, seawalls and other coastal works" (NSW Government, 1990).

The study area's foreshore is characterised by sandstone cliff faces and a fairly flat wave cut platform below. The Geotechnical assessment undertaken as part of the coastline hazard study by Jeffrey and Katauskas (J&K, 2003) identified evidence of detached blocks, wind erosion, honeycomb weathering and sub-vertical jointing along the cliff line.

A number of slope and cliff instability hazards were identified through the geotechnical analysis undertaken as part of the study area. The hazards have been caused mainly by the jointing of the rocks in addition to undercutting erosion from wave action. Slope and cliff instability was assessed based on „risk to property" and „risk to life". The potential geotechnical hazards are summarised briefly below and detailed in the Jeffrey and Katauskas (J&K, 2003) assessment (refer PB&P, 2003). Item locations are shown in figure number 1 of the J&K report.

A number of the report's recommendations have identified potential stabilisation works, which may involve erecting such structures as concrete or masonry piers. Prior to any such works being undertaken it is important to evaluate the impact of those structures on the area's heritage, amenity and physical environments. These impacts should be carefully weighed against the level of risk in order to determine whether the works and their impacts are justified before proceeding.

#### Summary of Potential Geotechnical Hazards and Associated Risks

**Figure 9.** Summary of Potential Geotechnical Hazards within the Forty Baskets study area.

[Note: Figure 9. is a summary table, for further action consult the Forty Baskets Coastline Hazards Definition Study (PB&P, 2003)].

Item	Potential Geotechnical Hazard	Risk to Property	Risk to Life
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Item 2	Collapse of overhang feature	N/A	Tolerable / unacceptable.
Item 5	Regression of earth slide into footpath above, and buried pipe adjacent to path.	Low to Moderate	Tolerable / Acceptable
Item 6	Collapse of overhang	N/A	Acceptable
Item 13	Potential earth slide of presumed fill slope.	Very Low to Low	N/A
Items 14 & 15	Vertical excavation faces along the cliff top path.	N/A	Unacceptable

### Climate Change

It is widely accepted in the scientific community that there are rising concentrations of greenhouse gases in the atmosphere causing the Enhanced Greenhouse Effect. Climate modeling also indicates that global warming as a result of the Enhanced Greenhouse Effect will result in rises in the sea level, as well as altering coastal processes.

The estimates of accelerated sea level rise are published by the Intergovernmental Panel on Climate Change (IPCC), these predictions are adopted by the State Government. The present figures predict a 0.19m rise over a 50 year planning period, and 0.47m over a 100 year period (relative to 2001 sea levels).

Other potential impacts of the Enhanced Greenhouse Effect include an increase in the frequency and intensity of storms.

Climate change has the potential to impact on and enhance other coastline hazards such as coastal inundation and slope and cliff instability. However it is difficult to predict the exact effects of climate change on other coastline hazards and as a result it is important to monitor shoreline behaviour, trends in climate change predictions and the coastline hazards identified.

### Sand Drift

Sand drift is a result of aeolian (wind) movement of beach sediment, usually controlled through the presence of a vegetated sand dune (PB&P, 2003).

Sand drift was identified as a relatively insignificant hazard due to the presence of the seawall and a well grassed berm, which restrict the landward movement of the beach sand by aeolian processes.

### Coastal Inundation

„Coastal inundation is the flooding of coastal lands by ocean waters, which is generally caused by large waves and elevated water levels associated with severe storms“ (PBP 2003). The Coastline Hazard Definition study identified coastal inundation as a relatively insignificant hazard within the study area due to its rare occurrence also because any runup would therefore fold over the crest of the seawall or grass berm and flow overland as sheet or bore flow.

### Stormwater Erosion

Major stormwater runoff events can cause significant erosion to beaches onto which stormwater outlets discharge. The stormwater erosion hazard was identified as relatively insignificant by the Coastline Hazard Definition study as the stormwater outlets in the study area discharge onto rocky areas rather than the sandy beach (PB&P, 2003).

### 3.13 Seawall

The seawall at the northern end of Forty Baskets Beach was constructed in the early to mid 1900's. The seawall extends approximately 100m and varies in height from 0.5m at the southern end to 1.6m midway along its length, to 1m at the northern end. The seawall supports a grassed park located at the northern end of Forty Baskets Beach. The park generally slopes upwards between 4 and 8 degrees. The southern third of the seawall is of sandstone block construction with some section of the face cement rendered. The northern length of the seawall is of concrete construction. The crest of the seawall has a width of 0.3m in the sandstone section and 0.4m in the concrete section and the crest level is at approximately 1.5m AHD (PB&P, 2003).

In the past the seawall has undergone storm damage and has required repair work. Local accounts indicate that part of the seawall was damaged during the 1974 storms. The combination of wave action and elevated water levels was believed to have „washed away“ a 20m section of wall that has not since been replaced (Wierzbicki, 2000).

In 2003, Manly Council commissioned Patterson Britton & Partners (PB&P) to undertake a Hazard Definition Study of the Forty Baskets Area. A component of the Study was to assess the stability of the Forty Baskets Seawall. The following assessment is an excerpt from the report:

*The seawall has suffered the effects of sulfate attack on the concrete, overtopping during storm events, undermining of the toe, backfill loss, outflanking and weathering.*

*The sandstone block section of the seawall was generally in fair condition, however some cracking (to 5mm) and spalling of render was observed. The remaining northern length of the seawall was generally in poor condition. The face of the wall was highly weathered, most of the render had eroded off exposing sandstone gravel and cobble aggregate. In some areas of the seawall, generally mid-height and at the base of the wall, small „wedges“ of concrete had broken out from the face.*

*Beach sands extend up to the face of the sandstone seawall and the southern end of the concrete seawall. The remainder of the concrete seawall is founded on a sandstone wave cut platform located within the intertidal zone. The exposed sandstone platform has been eroded into „blocky“ plan shapes due to weathering along its predominately joint set orientated as (bearing) 020° to 200° and along the orthogonal joint set. Where the seawall spans across weathered, open joints, the concrete extends down past the surface of the wave cut platform, to at least the top of the sandy infill.*

*Towards the northern end of the seawall, there was 100mm diameter PVC drain pipe coming through the wall about 400mm below the crest. Apparent „recent“ backfill had been placed behind the seawall in the vicinity of the pipe.*

*The area of seawall in the vicinity of the drain pipe appears to have been constructed in two lifts. The concrete in the lower portion of the seawall is more weathered than the upper portion. The lower portion has been constructed between two detached sandstone blocks that are resting on the wave cut platform. Recently packed concrete has been placed at the base of the southern detached block where it may have been undercut above the wave cut platform.*

*There are numerous erosion holes identified in the wall with depths of up to 0.9m (horizontally) from the face of the seawall. Internal erosion behind the seawall appeared to be occurring through some of these erosion holes. The upper portion of the seawall also contains several vertical and diagonal cracks generally up to 10mm wide. At one location, the crack was 40mm wide, where the upper portion of seawall had rotated about its base by 5° from vertical.*

*Two „recent“ concrete underpins have been constructed at the northern end of the seawall to support the upper portion of the wall. The southern-most underpin is 3.6m long and 1.25m high. The northern-most underpin is 2.4m long and 1.2m high. Both underpins are 300 to 400mm wide at the base and 100 to 150mm wide at the top. The*

*northern-most underpin has been constructed below the 40mm wide crack referred to earlier.*

#### *Risk Assessment*

*The concrete portion of the Forty Baskets seawall is in poor condition and the potential collapse of the seawall is considered to be a hazard. A qualitative assessment of the risk to property was carried out based on the Landslide risk management Concepts & Guidelines (AGS, 2000). The likelihood of the seawall collapse was assessed as „possible“ and the assessed consequences were „minor to medium“. These ratings combine to give a risk to property of „low to moderate“ to „moderate“, which was considered tolerable to acceptable.*

*A risk to life assessment was not carried out as the expected occupancy of the area immediately behind and in front of the seawall would be low. Furthermore, it was expected there would be some warning before collapse resulting in a greater likelihood of evacuation of the area (PB&P, 2003).*

Though it is likely that the concrete seawall has been in its present condition for some time and that there would be warning signs before any collapse, it was recommended that the seawall be regularly inspected for signs of movement, at intervals of no greater than six months, and also after heavy rainfall. Monitoring should occur following significant storm wave activity.

Given the features identified, it was recommended that in the longer term the concrete length of seawall be stabilised or reconstructed, particularly at its northern end to avoid further escalation of risk. Prior to carrying out stabilisation or reconstruction works, further geotechnical investigation including test pits should be undertaken to determine the seawall geometry and backfill materials.

If movement of the wall occurs prior to stabilisation/reconstruction, it is recommended that a safety barrier/fence be placed at least 2m behind the wall together with signage warning people walking on the wave cut platform.

While the existing sandstone block seawall is in fair condition, this seawall should be monitored jointly with the length of concrete seawall.

## 4 TERRESTRIAL ISSUES

### 4.1 Terrestrial Flora

#### 4.1.1 Flora/Vegetation Characteristics

The Forty Baskets study area consists of both native and highly modified vegetation communities and habitats. The study area is significant in that it is adjacent to Sydney Harbour National Park, which supports largely vegetated areas, and that it is a highly urbanised and popular part of Manly. Given its location, the management of the area is important for both the viability of communities remaining in the study area and also for the implications it may have on the long-term management of the vegetation.

Within the study area the main bushland is Wellings Reserve. Located on the western side of the study area it covers an area of 7.1 hectares. Forty Baskets Reserve is a much smaller reserve (0.5 ha) located along the foreshore of the study area between Wellings Reserve and the National Park.

The flora of the natural bushland in the study area was surveyed by GIS Environmental Consultants in 2003. Refer to *Natural Environment Assessment & Recommendations for the Coastal Management Plan: Forty Baskets* (GIS Environ. Consult. 2003a) report for more detail. A total of 214 species of flora were recorded: 170 species were native and 44 species were weed species. Refer to **Appendix H** for a full species list. This high level of diversity reflects the high quality vegetation, evidence of disturbance and the variety of environments in the area.

Almost all of the bushland within the LGA is Sydney Sandstone Gully Forest vegetation communities with Coastal woodland adjacent to the foreshore. The vegetation communities consist of three subunits: 10ar(i) Woodland/Low woodland *Corymbia gummifera* – *Eucalyptus punctata* – *Eucalyptus haemastoma*; 10ag(i) Open forest / Woodland *Angophora costata* – *Corymbia gummifera*; 10ag(a) Coastal Banksia woodland.

These classifications are mostly based on the vegetation communities defined by Benson & Howell (1994) for their 1:100,000 map sheets of Sydney region and sub groups defined by Skelton et al 2003. A description of each vegetation community is provided in **Appendix I**.

The Development Control Plan for Sydney Regional Environmental Plan No.22 – Parramatta River and Sydney Regional Environmental Plan No.23 – Sydney and Middle Harbours (DUAP, 1998) provides a broad classification and distribution of ecological communities and landscape characteristics of Sydney Harbour and more specifically, the Forty Baskets study area.

The Plan identifies four major terrestrial ecological communities in the Forty Baskets study area. The communities are identified in **Table 10**.

**Table 10.** Conservation Value of Ecological Communities (DUAP 1998)

Ecological Unit	Type	Conservation Status
Woodland	Terrestrial	Medium
Urban Development with Scattered Trees	Terrestrial	Low
Mixed Rock Intertidal & Sand	Aquatic	High
Seagrass	Aquatic	High

The Plan classifies Sydney Harbour Foreshore into eight (8) landscape character types and provides a Statement of Character and Intent and Performance Criteria. The Forty Baskets study area is classified as Landscape Character 6.

### Forty Baskets Reserve

Forty Baskets Reserve consists of cleared grassy areas that are of high recreational value in addition to some larger trees. The bushland area of Forty Baskets Reserve is 0.16 hectares in size. The total area of the reserve including the cleared grassed area is approximately 0.5 hectares.

The vegetation in this reserve is predominantly Sydney Sandstone Gully Forest 10ag(i). A narrow strip of *Casuarina glauca* – *Baumea juncea* coastal community 4a(iv) occurs on the eastern edge of the bushland. The resilience of the vegetation is categorised as medium/low. The vegetation is currently in good condition with low weed density, however, the bushland area is very small in size and the present state has only been reached as a result of considerable bush regeneration and weed eradication (GIS Environ. Consult. 2003b).

Several Canary Island Palm Trees (*phoenix canariensis*) are located on the grassed area of the reserve and are listed by Manly Council as Items of Environmental Heritage. A number of smaller trees are also found within the reserve. Despite the small size of the reserve it is potential SEPP 19 bushland due to the characteristic nature of the vegetation, its scenic value and ease of access to the community.

The main threats to this reserve are weed infestation and high recreational use predominantly from walkers utilising the Manly Scenic Walkway. It is evident that encroachment has occurred along the western edge of the reserve where the bushland borders residential properties (GIS Environ. Consult. 2003b).

### Wellings Reserve

Wellings Reserve is located on the foreshore of Balgowlah Heights on the western side of the study area. It is the largest bushland reserve managed by Manly Council covering an area of 7.08 hectares.

The vegetation communities of Wellings Reserve consist of;

- 10a(i) Sydney Sandstone Ridgetop Woodland - (*Corymbia gummifers* – *Eucalyptus punctata* – *Eucalyptus haemastoma*);
- 10ag(i) Sydney Sandstone Gully Forest – (*Angophora costata*); and
- 10ag(a) Coastal Banksia – a narrow strip of foreshore vegetation that merges indistinctly with Gully Forest.

The bushland consists of open woodland with a diverse healthy canopy, understory and ground layer. Scattered weeds occur throughout most of the reserve, particularly along the track edges and reserve boundaries. The health of the native vegetation throughout most of the reserve is excellent and the bushland is consistent with the definition of SEPP 19 bushland (GIS Environ. Consult. 2003b).

The resilience of the vegetation is categorised as high. Weed density varies throughout this bushland however the majority of the reserve contains high value bushland habitat that has been responding well to bush regeneration.

The main threats to this bushland include: the establishment of weeds, fragmentation, the establishment of informal tracks that damage the bushland, water erosion and the dumping of garden refuse. Urban development along the southern and western boundaries of the reserve has also put pressure on the bushland (GIS Environ. Consult., 2003b).

Managing urban and natural bushland is necessary to ensure the retention of ecological values of the area, particularly the conservation of native vegetation communities and biodiversity. The major threats and issues that need to be carefully managed to achieve this objective include weed control, adequate fire management, bushland rehabilitation, protection of threatened and regionally significant flora species and communities, and intentional damage to vegetation (for instance picking wildflowers, encroachment, trampling of vegetation).

#### 4.1.2 Weeds

In 2003 Council commissioned GIS Environmental Consultants to undertake a Natural Environment Assessment of the Forty Baskets Study Area. The scope of works included the identification of all flora species including weed species. Weed species present in the study area are identified in **Appendix H**. The following information is an excerpt from the assessment:

*Nine species of noxious weeds have been identified within the study area. Category 2 & 3 weeds Lantana, Rhus and Crofton Weed / Mistflower need to be fully removed. Other noxious weeds such as Cassia / Senna, Cotoneaster, Ochna / Mickey Mouse plant, narrow-leaved rivet, Fishbone Fern, Morning Glory also should be removed and/or prevented from spreading. Weed density is low for most of Wellings Reserve except for the small patches in the western and southern edges of the study area and in areas adjacent to encroachment. Weed density is high for the grassed area of Forty Baskets Reserve (GIS Environ. Consult. 2003a).*

Noxious Weeds are plants that have been listed under the *Noxious Weeds Act 1993* (NW Act) because of their detrimental impact on agriculture, waterways, human health or the environment. Under the *NW Act 1993* and Regulations, land owners are required to follow different control actions depending on the weed category the weed species falls under. These controls are outlined in the Act.

Manly Council's Noxious Weeds Project was initiated in 1998. The project aims to identify noxious weeds on both public and private land and encourage effective removal and control. Emphasis is placed on compliance with the NW Act through education rather than enforcement. It is important for Council to control weeds on public land to prevent their spread and also to encourage a co-operative response from residents.

Noxious weeds identified in the Forty Baskets study area must be controlled and indirect impacts to native bushland and erosion should be minimised. Weed control methods to be used will be appropriate for each noxious weed species and adhere to the local control authority's directions. Weeds should be removed as part of a noxious weeds eradication or bush regeneration program.

#### 4.1.3 Bush Regeneration

Many of our bushland remnants have been impacted upon through the development of urban areas within the Manly LGA. In response to this, Council continues to undertake bush regeneration work which is essential to maintain and re-establish healthy vegetation and quality habitat in the area.

Council's bushland team undertakes bush regeneration within Wellings Reserve on a regular basis. A significant amount of work is being focused on the foreshore areas near Gourlay Avenue, and at the rear of houses near Tutus Street. Signs informing the public of bush regeneration work are posted in strategic positions around the study area.

Under Council's volunteer Bushcare Program, there are two volunteer sites within the study area. One site is located at Gourlay Avenue, whilst the second site is located at the southern end of Forty Baskets Reserve.

In 2003 Council commissioned an assessment of all bushland reserves within the Local Government Area (refer GIS Environ. Consult. 2003b). The aim of the assessment was to survey all bushland reserves and develop recommendations for their future management. The following information is an excerpt from the assessment:

*Extensive regeneration work undertaken within Wellings Reserve has proven beneficial and achieved good results. Further work is highly recommended.*

*Bush regeneration work occurring at Forty Baskets Reserve is also having a positive impact on the area. A lot of mulch has been spread around the site, and logs have been pegged onto the bank to assist with soil stabilisation following weed removal. There are some areas where the understory is now very sparse following weed removal, and care should be taken to maintain adequate understory for both fauna habitat and sediment*

*stability. Several local native species have been planted within the reserve that are not ideally suited to this vegetation type (eg. Kunzea ambigua, Cyathea cooperi, and Banksia serrata). Also, it appears that bush regenerators may have been cutting the native vine Cissus hyperglauca out of the trees, and this should be addressed to prevent further mistakes occurring (GIS Environ. Consult. 2003b).*

#### **4.1.4 Bushfire Issues & Management**

In 2003 GIS Environmental Consultants undertook an assessment of all bushland areas within the LGA. For each reserve the fire history was determined. The following section outlines findings for both Wellings and Forty Baskets Reserve.

##### Wellings Reserve

*The lack of different age classes in the vegetation indicates that there has not been a fire through this bushland for a very long time, perhaps as long as 30 years. The lack of fire throughout the reserve has been assisting species such as Pittosporum undulatum, Cissus hyperglauca, Glochidium ferdinandi and Livistonia australis to become more prevalent and invade the sclerophyllus communities.*

##### Forty Baskets Reserve

*It is difficult to estimate the inter-fire interval, but there is definitely no sign of recent fire and it is likely to be as much as 30 years since fire passed through this bushland.*

Other than the above assessment, limited detailed studies have been undertaken with regards to fire history and fire regimes within the area. As a result it is important that further, more detailed, investigations be undertaken to assist in the establishment of an appropriate fire regime to be implemented in the area.

The general aims of implementing an appropriate fire regime for all vegetation types within the Forty Baskets study area is to maintain the structural components of vegetation in order to conserve the natural biodiversity of the area.

The proximity of these bushland areas to residential properties must be considered in the development and implementation of appropriate fire regimes. Council is required to appropriately respond to complaints regarding bushfire hazards associated with land under its ownership, care, control and management.

The NSW Rural Fire Service and PlanningNSW released a Planning for Protection Bushfire Guide in 2001, which provides management authorities and the community with guidance to effective bushfire protection strategies and planning considerations in order to protect human life and property.

## **4.2 Terrestrial Fauna**

### **4.2.1 Fauna Characteristics**

Fragmentation, clearance and degradation of native vegetation in the Forty Baskets study area have reduced habitat value for native fauna. However, remaining bushland around Wellings Reserve and along the Scenic Walkway still provides important habitat for a wide range of fauna species including the red-crowned toadlet which is currently listed as vulnerable on the *Threatened Species Conservation Act 1995*.

The fauna of the natural bushland of the study area was surveyed by GIS Environmental Consultants in 2003. The survey found that 4 native amphibian species, 33 birds (2 introduced), 4 mammals (2 introduced) and 8 species of native reptiles can be found in the area. Refer to **Appendix K** for full species list.

The introduction of non-native, feral and domestic fauna to the Forty Baskets area has significantly impacted upon native fauna populations. Introduced pests including cats, rats, dogs and some bird species such as the common (Indian) mynah (*Acridotheres tristis*) and common starling (*Sturnus vulgaris*) have resulted in a decline in the native fauna of the area. These



species have increased predation on native fauna, as well as increase competition for available resources. Two native bird species, the pied currawong (*Strepera graculina*) and noisy miner (*Manorina melanocephala*) have built up in large numbers in recent years and prey upon or aggressively out-compete other native bird species.

Harmful impacts on fauna can be reduced by extending and creating new habitat for wildlife, managing the habitat properly through weed control programs and implementation of appropriate bushfire management regimes, implementation of feral animal control programs, and monitoring fauna populations to evaluate the success of wildlife and habitat management programs.

Council having commissioned GIS Environmental Consultants to undertake a Flora and Fauna Review of the study area has identified the range of species that inhabit the Forty Baskets study area. Based on this identification appropriate management can be determined and implemented.

#### **4.2.2 Threatened Populations**

One endangered population and one vulnerable species occur in the vicinity of the Forty Baskets study area. These are:

- the Red-crowned Toadlet, and
- the Little Penguin population (*Eudyptula minor*) (refer to Section 3.2.1).

##### Red-crowned Toadlets

The red-crowned toadlet (*Pseudophryne australis*), is listed as Vulnerable on Schedule 2 of the NSW *Threatened Species Conservation Act 1995*. It has been documented to occur in the central part of Wellings Reserve (Stauber & Thumm, 2000).

Breeding sites for this amphibian species are usually located along minor non-perennial creek lines and drainage lines running from the summit of sandstone ridges or in seepage areas on sandstone slopes (Ehmann, 1997). Clay layers are frequently present in the sandstone at the breeding sites, with large quantities of leaf litter. When not breeding, individuals are likely to be found under logs and rocks away from drainage lines.

The diet of the red-crowned toadlet is thought to consist predominantly of ants and termites supplemented by other insects (Wotherspoon 1998). The tadpoles feed in water on algae and plant material. The water bodies in which tadpoles develop are usually small puddles and successful development is dependant on water availability.

The original reasons for its listing by the NSW Scientific Committee were:

*Population reduced; distribution suspected to be reduced; threatening processes severe; ecological specialist (Lunney, 2000).*

Major threats to this species include:

- bush rock removal;
- expanding urbanisation resulting in loss and/or degradation of habitat;
- disease;
- water pollution; and
- changed hydrology regimes.

Within the Forty Baskets study area the major threat to the red-crowned toadlet is habitat degradation. Future modification to the natural bushland in Wellings Reserve needs to be ecologically assessed prior to action. The number of individuals in the red-crowned toadlet population should be monitored annually using calls after rain in summer.

The red-crowned toadlet has restricted distribution, known from a relatively small area of mid-eastern NSW. The species has undergone declines and has disappeared from significant areas of its former distribution in northern and southern Sydney.

Recommended management options as identified in NPWS Information Sheet for the red-crowned toadlet include:

- prevention of habitat loss;
- development and implementation of fire management plans with an appropriate fire regime for known areas of habitat;
- active prevention of bushrock removal;
- education;
- strategies to reduce stormwater runoff from urban areas;
- development of erosion and sediment control measures; and
- development of a recovery plan.

#### **4.2.3 Introduced Animals**

Introduced animals such as cats and rabbits are found in bushland areas of Forty Baskets. Pigeons are also known to nest in the area. Foxes are found in the adjacent National Park and many forage in the study area. These animals can contribute significantly to the decline of native species through direct predation or competition for resources.

Appropriate trapping or control programs need to be implemented in bushland areas, especially in and around the Reserve and National Park. Domestic pet owners need to be educated and encouraged to appropriately restrain pets by keeping them on leads when in public spaces and keeping them indoors at night.

### **4.3 Manly Scenic Walkway**

The Manly Scenic Walkway is a scenic harbour walking track between Manly and the Spit Bridge. Covering a total distance of 10km, there are a number of entrance points along the track that allows one to choose any of seven shorter sections of the walk. The Manly Scenic Walkway (MSW) extends the length of the study area from Sydney Harbour National Park through to Wellings Reserve. It is a highly utilised foreshore walk, which directs large numbers of pedestrians through the study area.

Issues associated with the MSW that were identified in the consultation process included; inadequate access to and the maintenance of the bush track. Also, due to the track's high utilisation, which directs large numbers of pedestrians across Forty Baskets Reserve, significant erosion of the reserve has occurred resulting in an unformed dirt track. While many patrons of the reserve maintain that the reserve should remain natural and relatively free from hard infrastructure, suggestions have been made to install a hard path, similar to other sections of the MSW across the length of the reserve. The path would join the access road at the western end of the reserve and extend to Sydney Harbour National Park at the eastern end of the reserve. By encouraging use of the path erosion of the reserve would be reduced.

Another issue related to the MSW that was identified throughout the consultation process was pedestrian safety at the end of Gourlay Avenue between the car park and the Marina. As there is no designated path along this part of the MSW, pedestrians are directed up the access ramp and along the road (Gourlay Avenue). Concerns have been raised over the lack of vehicular and pedestrian visibility, which presents a safety concern. Signage notifying users of shared pedestrian / vehicular access should be installed.

#### **4.3.1 Draft Manly Scenic Walkway Plan of Management**

Council is currently in the process of drafting a Plan of Management for the Manly Scenic Walkway as community land under the *Local Government Act 1993* and the *Crown Lands Act 1989*. The draft Plan aims to provide guidelines for effective use, maintenance and development of the Manly Scenic Walkway that follows harbour foreshores from the Spit Bridge at Seaforth to East Esplanade at Manly.

In the case that the Draft Manly Scenic Walkway Plan of Management (PoM) is adopted, the PoM will have a direct relationship with a number of Manly's CMPs. Once adopted the Manly Scenic Walkway PoM will prevail in the case of any inconsistency with Manly's CMP's (and only to the extent of the inconsistency).

#### **4.3.2 MSW Signage**

Small directional signs mark the length of the Manly Scenic Walkway. Signs are strategically placed throughout the National Park, along Beatty Street, throughout Forty Baskets Reserve and along Gourlay Avenue. A sign located at the eastern end of Forty Baskets Reserve advises patrons of an alternate route appropriate for dog passage as dogs are prohibited in the National Park.

An interpretive structure providing both written and pictorial information about the MSW is located in Forty Baskets Reserve. The structure includes information about the time required to undertake the walk and difficulty ratings of the seven shorter walks that constitute the MSW.

All management recommendations associated with the MSW must involve consultation with the Manly Scenic Walkway Committee. The Committee's role is to advise Council on all matters relating to the care, control and management of the MSW, including Reef Beach. The MSW Committee was consulted throughout the development of the Landscape Masterplan for Forty Baskets Reserve.

### **4.4 Landscape Masterplan**

As part of the development of this Plan, Council commissioned consultant services to develop a Landscape Masterplan for Forty Baskets Reserve. While the Landscape Masterplan is being developed in association with this Plan, it was decided that the Landscape Masterplan should be moved for adoption after the adoption of the CMP. The Landscape Masterplan, once adopted will be attached at appendix L to this Plan. The objectives of the Landscape Masterplan are to:

- produce a landscape concept with specific aims which are tailored around balancing coastal, bushland and heritage values with community and recreational demands, developed from issues identified in consultation and strategies developed by Council;
- maintain Council values and commitments;
- determine a strategy for upgrading Forty Baskets Reserve, focusing on enhancing the intrinsic value and character and maximising their role as an integral component of surrounding significant features, sites and ecosystems; and
- reinforce and reinterpret the form, scale and character of the existing setting.

In addition to the above objectives, specific issues that were to be addressed in the development of the Forty Baskets Landscape Masterplan included:

- ensure that all landscaping works are sensitive to habitat requirements of the endangered population of little penguins and vulnerable red-crowned toadlet species;
- ensure that Forty Baskets Reserve, the adjoining beach and Manly Scenic Walkway are considered when developing management recommendations;
- address issues identified from community consultation;

- removal of encroachments onto public land;
- ensure planting options consider view maintenance with respect to surrounding private properties; and
- ensure any proposed landscape modifications are sensitive to both indigenous and non-indigenous heritage of the area.

The Landscape Masterplan will seek to retain and enhance the charm and spatial and environmental qualities of the study area, while upgrading the potential for mixed-use recreation in, throughout and adjacent to the study area.

Specific issues identified in the consultation process that will be addressed in the development of the Forty Baskets Landscape Masterplan include:

- lighting at Forty Baskets Reserve and along the pathway to Wellings Reserve;
- lighting of access paths;
- installation of a footpath across Forty Baskets Reserve - the absence of a walking path and the high utilisation of the MSW has resulted in significant erosion across the reserve;
- upgrade of swings;
- resurfacing under and around swing sets to avoid erosion and address safety concerns;
- view maintenance – use low or sparse shrubs;
- BBQ facilities;
- access to and around Forty Baskets Beach and Reserve;
- dinghy storage;
- vegetation and aesthetics at Forty Baskets Reserve.

#### Significant Trees

While the protection of heritage listed trees is currently catered for by existing legislation, there are a number of significant trees to which no current legislation or regulations offer protection. These should be identified to ensure their future management.

#### Turf Management

Turf management issues associated with the grassed areas within the study area include the presence of bindies and the excessive wearing of area along the foreshore of the Forty Baskets Reserve. Council usually sprays to control the bindi problem. It is recommended that spraying be undertaken at an appropriate time during the year and that Council investigate alternate methods, other than spraying, to control the presence of bindies. In determining the most appropriate means of control, consideration must be given to the fact that the study area falls within the Environmentally Sensitive Area as defined in Manly's LEP (1988).

## **4.5 View Maintenance**

Another issue identified from the community consultation process that was of concern to residents of Forty Baskets was that of view maintenance. Whilst Council does not have any specific plans on view maintenance, two documents do make reference to views and view sharing. These include Manly Council's Tree Preservation Order (2001) and Manly Council's Residential DCP 2001.

The Tree Preservation Order 2001 aims to maintain attractiveness, appeal and amenity of the Manly Local Government area by preserving healthy trees in recognition of the value and importance of trees held by the community.

A property owner or managing agent must complete an application to Council for removal or pruning more than 10 percent of a tree. If a person seeks permission to remove or prune a tree from a neighbouring property, permission must first be obtained from the owner of the tree prior to an application being lodged.

When assessing an application to remove a tree, Council will consider the following:

- condition of the tree with respect to health and age;
- necessity for removal or pruning in order to construct improvements to the property, the subject of a development application;
- effect of erosion – soil retention and diversion of increased flow of surface water;
- number of trees and effect on the amenity of the area;
- number of healthy trees an area of land will support; and
- habitat for fauna.

When pruning trees for views, the following procedure is followed:

- pruning will only be approved if it will not be detrimental to the health of a tree;
- evidence must be provided to show that the present owner (not the previous owner) had a view of the harbour or ocean, lagoon or other water body;
- approval will be granted only if 75 percent of a view has been lost from a single location selected by the owner i.e. balcony, living room etc.
- a maximum of 10 percent of a tree's foliage can be pruned; and
- all tree pruning for a view on Council land is paid for by the applicant, before work is undertaken.

Manly Council recognises the importance of maintaining bushland for biodiversity, habitat, heritage, education and scientific purposes and does not allow view pruning in urban bushland areas protected by State Environmental Planning Policy No.19 (SEPP 19).

From a planning perspective, the TPO seems an equitable and reasonable way to resolve conflicts relating to obstructed or reduced views from tree planting/growth. It is a policy which applies to trees in both the public and private realm, and one which will prune/remove trees where it can be demonstrated that views have been unreasonably reduced.

## **4.6 Conservation Management**

### **4.6.1 Companion Animals**

Local government has traditionally been the organisation responsible for regulating the keeping of companion animals - cats and dogs. This has generally involved ensuring that the rights of both pet owners and non-pet owners are satisfied, and the imposition of one upon the other is within reasonable limits.

The *Companion Animals Act 1998* includes provisions to reduce the impact of domestic animals on native flora and fauna and prevent degradation of the natural environment. The Act allows for the designation of wildlife protection areas and appropriate controls in other areas.

Issues associated with companion animals that were identified in the community consultation process include their impact on endangered species, safety, pollution and amenity.

#### **4.6.2 Local Companion Animal Management Plan**

Under the *Companion Animals Act 1998* Council has adopted and is implementing a Local Companion Animal Management Plan. The plan applies to the whole Manly LGA, including the Forty Baskets study area.

The scope of the Management Plan is to integrate the developing expertise in companion animal management around Australia to produce a program of action to be undertaken by Council, providing a balance in community amenity, animal welfare and environmental preservation.

Relevant issues include those prescribed under legislation as well as the generally understood notion of socially responsible pet ownership.

#### **4.6.3 On/Off Leash Areas**

Council's Local Companion Animal Management Plan recognises the need to provide facilities for dog owners to exercise their dogs freely, but under controlled conditions to minimise interference with the general public. Council seeks to enhance the opportunity for dog owners to enjoy the companionship of their animal to the fullest extent but also to maintain the amenity and quality of the Manly environment. This is partly achieved through the provision of on-leash and off-leash areas.

As part of the *Companion Animals Act, 1998*, Council is required to have at least one off-leash area within the Manly LGA.

Council, at the Service, Planning & Commissioning committee meeting of 28 February 1998, resolved that dogs are permitted to be exercised off leash on public reserves with the exception of a number of reserves.

In the study area the following applies:

- no dogs allowed on beaches;
- no dogs allowed in swimming enclosures;
- no dogs allowed in any national park; and
- dogs are permitted off leash if they are under control of a competent person by means of a leash, cord or chain in North Harbour Reserve and Forty Baskets Reserve (with the exception of any sandy beach areas).
- dogs are permitted off leash except within 10 metres of playing equipment and cooking facilities.

Council's rangers enforce these conditions through regular patrols. The majority of dog owners observed do comply with Council's regulations and only occasional incidents are reported within the area.

Companion animal provisions are also outlined in Council's Policy for Parks and Bushland.

## **4.7 Geodiversity**

### **4.7.1 Acid Sulphate Soils**

Marine and estuarine sediments have the potential to contain acid sulphate soils.

Planning for acid sulphate soils is addressed by Manly Council's LEP 1988. Map 5 of the LEP categorises Manly's soils from 1 to 5 (with class 5 soils having the least potential to be acid sulphate soils and the least impact if disturbed).

Land within the Forty Baskets study area is identified as Class 5 Acid Sulphate Soils with Class 2 lands adjoining the western boundary in North Harbour Reserve. The acid sulphate soil

provisions apply to the study area because the study area is within 500 metres of adjacent Class 1, 2, 3 or 4 land.

The working draft SEPP 32 (clauses 19 and 43 and schedule 6) also contains planning provisions for works that are likely to disturb acid sulphate soils. The REP's provisions are based on the Acid Sulphate Soils Model LEP and the Acid Sulphate Soil Planning Maps prepared by DIPNR.

#### **4.7.2 Geology & Soils**

The sandstone and clays of the Sydney Basin were deposited as sediments during Permian and Triassic times, 275 to 180 million years ago. About 90 million years ago, the Sydney Basin was uplifted and erosion of the softer top layers began, exposing the lower beds of sandstone. Sydney Harbour was once a valley formed by stream erosion and subsequently inundated when sea level rose by about 100 metres at the end of the last Ice Age. Since that time the harbour has been gradually filling with deposits of mud, sand and silt.

The soils of the study site are a result of weathering of the Hawkesbury and Narrabeen sandstone bedrock marine deposition and Aboriginal deposition. The soils of the upper part of the study area are low in nutrients (nitrogen and phosphorus), low in water holding capacity, friable, poorly constructed and highly susceptible to erosion. These landscapes are Hawkesbury Colluvial (ha), GyMEA Erosional (gy) and Lambert Erosional (la). Mapping of the 1:100 000 map sheet by the Soil Conservation Service of NSW (now the Department of Sustainable Natural Resources) in 1989 identified three basic soil landscapes (GIS Environ. 2003a).

##### Hawkesbury Colluvial (ha)

These soils occur on the majority of the terrestrial part of the study area covering approximately 85%. These soils are characterised by shallow, discontinuous lithosols / siliceous sands associated with rock outcrops, earthy sands, yellow earths and some yellow podzolic soils on inside of benches and along joints and fractures, localised yellow and red podzolic soils on associated with shale lenses, siliceous sands and secondary yellow earths along drainage lines. General limitations include extreme soil erosion hazards, mass movement (rock fall) hazard, steep slopes, rock outcrops, shallow, stony highly permeable soil and low soil.

##### GyMEA Erosional (gy)

These soils occur on the northwest corner of the study area covering approximately 10%. These soils are characterised by shallow to moderately deep yellow earths and earthy sands on crests and inside of benches, shallow siliceous sands on leading edges of benches, localised gleyed podzolic soils on shale lenses, shallow to moderately deep siliceous sands and leached sand along drainage lines (Chapman & Murphy, 1989). General limitations include localised steep slopes, high soil erosion hazard, rock outcrop, shallow highly permeable soils and very low soil fertility.

##### Lambert Erosional (la)

These shallow soils occur in the southwest corner of Wellings Reserve covering approximately 5% of the study area. These soils are characterised by discontinuous earthy sands and yellow earths on crests and inside of benches, shallow siliceous sands / lithosols on leading edges, shallow to moderately deep leached sands, grey earths and gleyed podzolic soils in poorly drained areas and localised yellow podzolic soils associated with shale lenses (Chapman & Murphy, 1989). Limitations include very high soil erosion hazard, rock outcrop, seasonally perched water tables, shallow, highly permeable soil and very low soil fertility (GIS Environ. 2003a).

## 4.8 Heritage

### 4.8.1 Indigenous Heritage

When the First Fleet arrived in Sydney in January 1788 the Aboriginal population, estimated to be approximately 1,500, lived in small groups (clans) scattered around the harbour and Cumberland region.

The natural environment of the Forty Baskets study area would have been well suited to occupation by Aboriginal people. The area was rich in resources and the variety of plant and animal species, both terrestrial and aquatic would have been highly utilised by Aboriginal people.

Dennis Foley, an Aboriginal descendent of the Gai-marigal Aboriginal people of northern Sydney recently documented his cultural history and explained the social traditions of the Gai-marigal clan – the „traditional“ owners of northern Sydney. The following information is derived from his recent publication: „Repossession of our Spirit“ (Foley, 2001).

Foley documented the original occupants of the northern Sydney region as the people of the Gai-marigal clan. This clan was comprised of six major indigenous family groups. The Gatlay family group was associated with the Manly LGA and consisted of two smaller groups: the Boregal and Gorualgal people, refer to **Appendix M**.

It is important to note however, that while the Gai-marigal clan occupied the northern Sydney region, the Metropolitan Local Aboriginal Land Council states that there are no known traditional Aboriginal owners of the North Shore peninsular (MLALC, 2003).

Every seaside beach was believed to contain midden areas, as did the populated bays on the harbour foreshore. These bays included that of the Forty Baskets area, in which middens can be found today, for example the grassed area of Forty Baskets Reserve. Historically, skeletal remains of Aboriginal descendents are recorded as having been removed from Forty Baskets“ midden. Some artifacts recovered from the Forty Baskets study area have been taken to the Mining & Geological Museum. Other remains are held by the University of Sydney and the Australian Museum. Foley documented the last skeletal remains as having been removed from Forty Baskets in the 1970“s.

An article in the Manly Daily recorded that: In the late 1980“s relics and remains were found by two local men „...which included engravings, hand stencils inside a rock shelter, a midden and the remains of several Aboriginals.“ (MD, 1997). Eighteen rock carvings have been found on the land adjacent to Forty Baskets Reserve, which is now Sydney Harbour National Park.

Much of the evidence of indigenous occupation and lifestyle has been lost due to extensive land modification and urban development since European arrival. However, some artifacts still exist in the surrounding National Park (refer to **Appendix N** – Aboriginal and European Heritage Sites (EPA, 1994) and **Appendix O** – Aboriginal Sites: North Harbour Aboriginal Relic Sites (DUAP, 1988)).

#### Indigenous Community Consultation

Aboriginal community consultation and participation forms a vital component of the assessment, management and conservation of indigenous heritage. Members of the local Aboriginal community should be kept informed of issues and developments within Forty Baskets and be invited to comment and discuss the appropriate resolution of issues.

Indigenous heritage and its associated values incorporates but is not limited to the places, items and events associated with Australia“s pre-colonial past. There may be places within Forty Baskets that hold value in association with contemporary activities or events and people in the recent past, or the natural environment of the study area. As such, the Aboriginal community may wish to be involved in the design and implementation of management strategies for Forty Baskets which are not strictly related to issues regarding sites or „relics“.



Accordingly, the Metropolitan LALC and Manly Council's Manly Aboriginal & Torres Strait Island Committee should be informed of any proposed developments or management strategies within the Forty Baskets study area. They should be invited to participate or comment on the design and strategy of mitigation measures and management strategies developed for the Forty Baskets study area and its unique resources.

#### Indigenous Heritage – Management

Despite the lack of archaeological evidence in the Forty Baskets study area it is important to acknowledge the area's indigenous history and reinstate this history and ongoing significance into the values and identity of Forty Baskets. The indigenous history and heritage of Forty Baskets may be more explicitly acknowledged through educational awareness. Interpretive signage and information leaflets developed specifically for the area could incorporate references to indigenous history and heritage values.

The involvement of the local indigenous community should be sought in the research and development of any interpretive signage or information documents. Stories, events or individuals associated with the indigenous history of Forty Baskets may be recorded in early historical text or in the oral histories or written records held by the local indigenous community. Materials and items associated with the indigenous people who lived and visited the area can be found at the Australian Museum. These could provide a source of information relating to indigenous history prior to or during the early stages of colonial settlement. Local indigenous people may have memories or experiences which they may wish to share, which may help to reaffirm the indigenous history, values and contentions of Forty Baskets.

The requirements of the Commonwealth *Native Title Act 1993* must be followed when managing a Crown Reserve where it has not been established that any native title interest that may have existed in the land has been lawfully extinguished. Native Title must be considered at the preparation of a Development Application for any proposal that may impact Native Title. At the time that this Plan was developed Council confirmed with NSW Native Title Services, that, at that time no registered Native Title Applicants existed with the Manly LGA.

Due to the area's Aboriginal Heritage it is imperative that any proposed landscaping works have consideration of the area's indigenous, and non-indigenous, heritage and historical features. A comprehensive assessment should be undertaken in the development of the landscape masterplan.

#### **4.8.2 Non-Indigenous Heritage**

The name Forty Baskets is believed to have originated when in 1875 a group of fishermen caught forty baskets of fish in the embayment off Forty Baskets Beach to feed a contingent of soldiers at Quarantine Station, who had just returned from war in Sudan.

In 1834 the first land grants were awarded for European development in the area. However houses were not built until 1887. "Commonwealth Land at Dobroyd Head was reserved for defence purposes in 1887, and in 1912, Grotto Point Recreation Reserve was dedicated" (McCune, 1987). It was Forty Baskets' isolation from the main urban area of Sydney that kept the population to a minimum.

Original and private subdivisions and estates were dedicated between 1920 – 1929 but it was not until the mid 1940's that land was cleared along Forty Baskets for development. Around this time seven (7) blocks of unbuilt foreshore private land became the centre of attention.

Local residents voted for the land to be resumed for recreational purposes. Council opposed this as it was going to cost 3000 pounds to purchase from the owners. Petitions were submitted and the local residents urged Council to buy back the land. An agreement was finally reached between Council and the land owners, and Council resumed ownership of the water-front portion (50 foot) of the private land and classified it as reserve – Forty Baskets Reserve.

Since the early pioneer days Forty Baskets Beach has become an important recreational area with many people enjoying the harbour frontage and views. It is an important component of the

Manly Scenic Walkway and it provides a safe and popular swimming area for the residents and visitors alike.

The natural environment continues to be important to Forty Baskets with the stand of natural regenerated vegetation in Wellings Reserve and its scenic views of the harbour.

#### Non-Indigenous Heritage Management

Retention and enhancement of the environmental integrity of the Forty Baskets study area was an important management recommendation identified in the community consultation process. An integral part of this environment is also its cultural heritage value.

The bush regeneration program within the study area continues to enhance the sense of historical continuity.

#### **4.8.3 Governing Policies & Strategies**

##### **Sydney Regional Environment Plan No 23 : Sydney & Middle Harbour Foreshores (Heritage Items)**

Sydney Regional Environment Plan identifies development controls for Heritage Items listed in Schedules 5 of the SREP.

##### **Sydney Regional Environment Plan 32 – Sydney Harbour Catchment**

The draft SREP 32 (clauses 60 to 69) essentially does not change the heritage items or provisions identified in SREP 23. These are shown in the draft SREP 32 Foreshores and Waterways Heritage Map and are described in Schedule 7 of the draft SREP. They remain the same as those described above. When any planned developments or changes are likely to impact on those heritage items listed above, SREP 32 should be consulted prior to works going ahead.

##### **Items of Environmental Heritage – Manly Council's LEP 1988**

Several Canary Island Palm Trees (*Phoenix canariensis*) located in the Forty Baskets Beach Reserve are identified as Items of the Environmental Heritage under Landscape Items of Schedule 4 of Manly's LEP 1988. Wellings Reserve and the Harbour foreshore are also items within the Forty Baskets study area that are listed in Manly's LEP (1988) as Items of Environmental Heritage. The waterfall adjacent to the western boundary of the study area and the National Park adjacent the eastern boundary of the study area are also listed as Items of Environmental Heritage.

A number of clauses within Manly's LEP (1988) (refer particularly to clauses 18 and 19) control development of Items of Environmental Heritage and development in the vicinity of Items of Environmental Heritage. Any proposals for works in the vicinity of the items mentioned above must show consideration of these clauses in the development application to Council.

## **4.9 Access**

Providing adequate access to and within public areas of the Manly LGA is performed under the guidelines of the Manly Access DCP.

The aims and objectives of the Access DCP (MMC, 1996) are:

- to provide an environment which is accessible to all people, including those with disabilities;
- all community members have the right to full access to participate in all aspects of community life; and
- policies should aim to ensure Manly becomes accessible to all people regardless of abilities / disabilities.

An accessible community is defined as one where transport systems, physical environments, communication systems, political, cultural, bureaucratic, corporate, social institutions and employment practices are open and available to all including those with disabilities – providing those with disabilities the same opportunity, rights and responsibilities enjoyed by others.

Key objectives of the Access DCP that are relevant to the Forty Baskets study area are:

- to ensure access throughout the pedestrian network in the Council area including footpaths, through-site links, public arcades, overpasses and underpasses; and
- to provide convenient access to all public open space including parks, reserves, malls, plazas and squares.

Having regard to Council's Policy and Australian Standards AS1428.2, Council seeks to improve the accessibility of public open space and facilities by addressing matters such as signage, ramps, parking and toilet facilities.

Discussions with Council's Access Officer suggested that currently the study area is not particularly accessible. Steep stairs leading from Beatty Street to Forty Baskets Reserve are not regularly maintained and are not accessible by the aged or disabled. Lack of lighting in the vicinity of the stairs and along the service road from Gourlay Avenue limits usage of the study area at night. There is no disabled parking within the study area. Disabled access from the bottom of the access ramp in Gourlay Avenue is limited to electric wheelchairs only because it is of a grade unsuitable for self propelled wheel chairs. Access to the beach, swimming enclosure and amenities block is extremely limited if provided at all. The study area is located in a fairly isolated spot however, there is potential to be able to provide greater access without the need for a large amount of work.

Access to Forty Baskets Reserve is via five possible routes (refer to **Figure 11 – Access Routes**):

1. Gourlay Avenue, Balgowlah Heights

Access from Gourlay Avenue cul-de-sac is via a service/access road with a locked boom gate, through Wellings Reserve down into Forty Baskets Reserve. This access route forms part of the Manly Scenic Walkway and follows the line of the foreshore.

2. Beatty Street, Balgowlah Heights – Northern end of the road

Access from the Northern end of Beatty Street is via a natural stone stepped walkway, which directs walkers to the western end of Forty Baskets Reserve.

3. Beatty Street, Balgowlah Heights – Midway, Eastern roadway side

A concrete stepped public right of way walkway exists between residence No. 28 and No. 30 Beatty Street. The access way directs walkers to the eastern end of Forty Baskets Reserve.

4. Corner of Tutus Street and New Street East, Balgowlah Heights

Access from the corner of Tutus Street and New Street East is via a concrete and stone stepped walkway that links to the northern end of Beatty Street which in turn directs walkers to the western end of Forty Baskets Reserve.

5. Sydney Harbour National Park – The Manly Scenic Walkway directs pedestrians from the Sydney Harbour National Park to the eastern end of Forty Baskets Reserve.

Based on the community consultation process, access was identified as a significant issue to be addresses in the development of this CMP. Specific issues included:

- lack of adequate parking during peak periods ie. weekends;
- competition between resident and visitors for on-street parking;

- illegal parking on the nature strip in Gourlay Avenue;
- parking in the vicinity of the marina;
- lack of disabled and aged access;
- maintaining the balance between access and overuse;
- the installation of accessible toilet facilities – include the provision of an accessible toilet and access to the amenities block; and
- re-grading and resurfacing of service road to provide more suitable disabled access from Gourlay Avenue to Forty Baskets Reserve and Beach. The existing service road is graded at >1:12. This is adequate only for electric wheelchairs. It is too steep for self propelled wheel chairs and the aged (recommended grade required is 1:14).

#### **4.9.1 Disabled & Aged Access**

Disabled and aged access within the Forty Baskets study area is limited. Of the five (5) access ways that currently exist, only limited disabled and aged access is provided for via Gourlay Avenue.

At the end of Gourlay Avenue is a steep service/access ramp, which from the top is of a gradient too steep to be accessed by disabled or aged persons. An asphalt service road then leads to Forty Baskets Reserve. This road is of adequate grade to provide access for the elderly and electric wheelchairs. A locked boom gate at the bottom of the service/access ramp restricts access of unauthorised vehicles. The National Parks & Wildlife Service, Council's Maintenance Team and Council's Rangers have access to Forty Baskets Reserve via the boom gate. There is adequate turning space for a vehicle to drive down the access/service ramp, drop off and turn around. Parking in the vicinity of the boom gate is prohibited.

There are no accessible toilets within the study area however, Council will be refurbishing the existing amenities block to also cater for the aged and disabled.

Council's Access Policy (MMC, 1996) aims for the progressive improvement in accessibility of all facilities operated by Council. Provisions for disabled parking spaces in Gourlay Avenue was suggested as a management recommendation in the community consultation process as none currently exists in close proximity to the beach.

#### **4.9.2 Pedestrian access**

Pedestrian access is available from all five of the above listed access ways. The Manly Scenic Walkway, a highly utilised scenic foreshore walk extending from The Spit to Manly, directs large numbers of pedestrians from the National Park across Forty Baskets Reserve and through Wellings Reserve.

Pedestrian access from Gourlay Avenue is provided for via a service road. The service road is approximately 300m of asphalt surface with gradients easily accommodated by able-bodied pedestrians.

Discussions with Council's Access Officer determined that pedestrian access within the study area is adequate.

There are currently a number of properties fronting Forty Baskets Reserve with direct access to the reserve and beach.

#### **4.9.3 Vehicular Access**

Vehicular access within the vicinity of the study area is provided for in Gourlay Avenue, Beatty Street or near the intersection of Tutus Street and New Street East. A short walk is required from all the vehicular access points to get to Forty Baskets Reserve and Beach. No vehicular access, with the exception of authorised vehicles, is provided for directly into Forty Baskets Reserve or Beach.

There is a dedicated parking area located at the eastern end of Gourlay Avenue and limited indented parking bays at the intersection of Tutus Street and New Street East. Pedestrian access from Gourlay Avenue is then provided for via a service road, which extends approximately 300m to Forty Baskets Reserve.

Parking on Crown Reserve must directly relate to the use of that Crown Land.

A locked boom gate at the bottom of the service/access ramp in Gourlay Avenue restricts access to authorised vehicles only. NPWS, Council's Maintenance Team and Council Rangers have access to Forty Baskets Reserve via the boom gate.

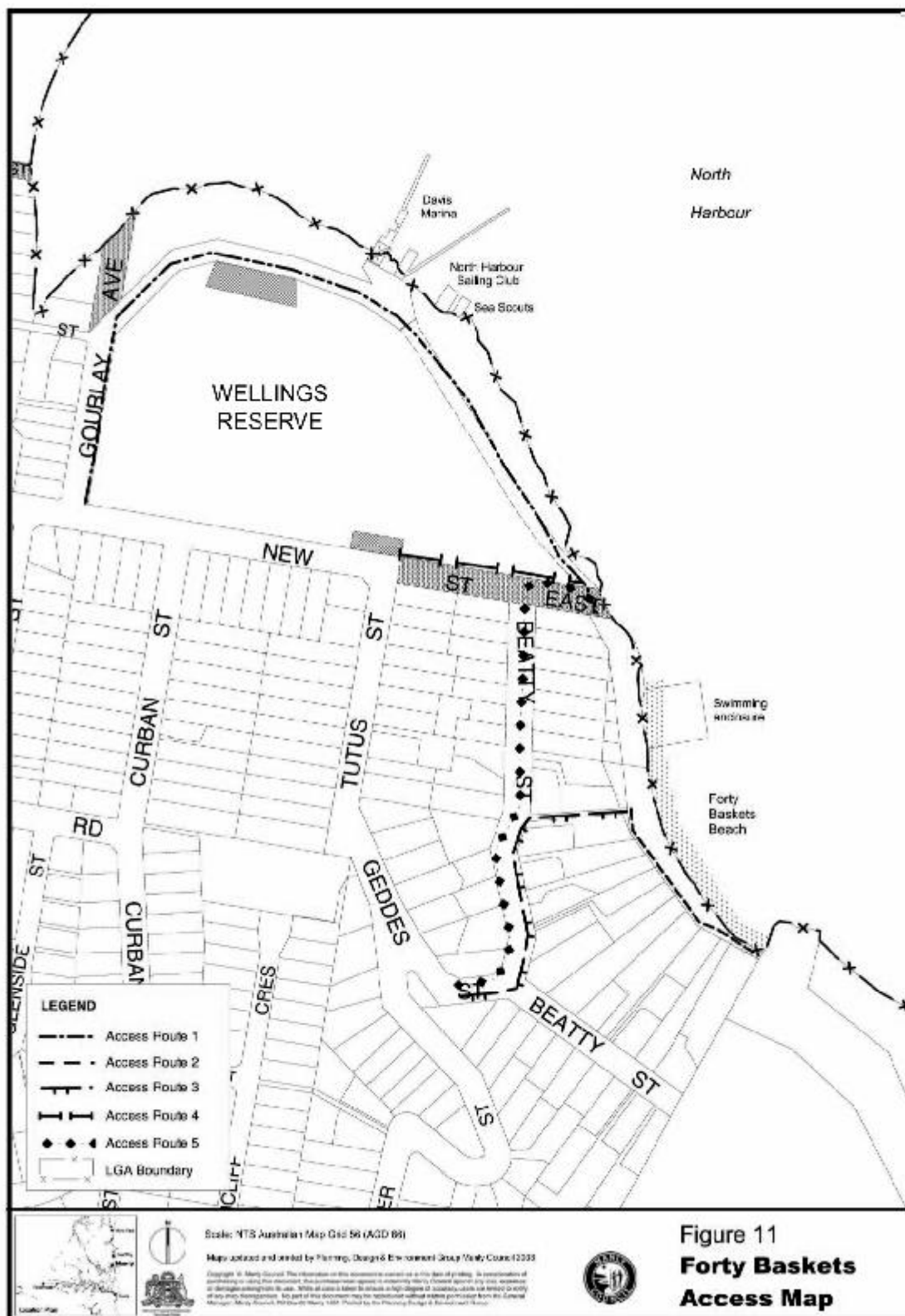
It appears that access for vehicles and the available car-parking situation adequately meet the needs of the area. The limited parking in the vicinity of the study area is seen as a „natural“ means of limiting visitor numbers. In contrast to this point of view, a number of residents have been concerned about the lack of available parking and resident/visitor competition for on-street parking in Beatty Street during peak periods. Council aims to ensure that there is a balance between both points of view. Refer to **Section 4.10** for more detail.

#### **4.9.4 Public Transport**

With the exception of taxis, public transport does not operate directly to any of the Forty Baskets access points. The nearest bus stop is located at the northern end of Curban Street.

#### **4.9.5 Boating access**

Access to Davis Marina, the 14ft Skiff Club and the Sea Scout's is all via Gourlay Avenue. Refer to **Section 4.10** for more detail.



## **4.10 Traffic Management**

### **4.10.1 General**

Vehicular access exists at three locations within the study area. Parking availability in the vicinity of Forty Baskets Reserve is generally limited to Gourlay Avenue. Twenty-seven (27) 90° angle car parking bays are located on the southern side of Gourlay Avenue. The cul-de-sac end of Gourlay Avenue which lies directly adjacent to Davis Marina is often used for parking (2-6 cars regularly use this area for parking). A further thirteen (13) on-street parallel parking spaces exist adjacent to housing in Gourlay Avenue between the angled parking area and New Street. Vehicles also parallel park on the grassed nature strip opposite the angled parking area. There is adequate space adjacent to the standard parking area for motorists to undertake a u-turn maneuver without the need to drive down the access ramp to the cul-de-sac.

The access point adjacent to the intersection of Tutus Street and New Street East offers parking for three vehicles. A „No Standing“ parking restriction exists directly adjacent to the indented parking area to assist safe passage for vehicles at this location. On-street residential parking can be found on Tutus Street approximately 50 m south of New Street East.

Within Beatty Street unrestricted parking exists on the eastern side just south of the cul-de-sac. Due to a narrow road width, Council installed a „No Parking“ restriction on the western side of Beatty Street to allow for the safe passage of vehicles in and out of the street whilst retaining parking on the eastern side of the street.

### **4.10.2 Capacity, Safety and Maneuverability Issues**

Ensuring the efficient use of existing parking areas adjacent to the reserve is a crucial way of determining the capacity and usability of these areas. Line marking of parking bays and implementation of time restrictions to address vehicle turnover would assist in increasing parking efficiency.

Parking currently occurs in the cul-de-sac end of Gourlay Avenue, with up to 8 vehicles utilising this cul-de-sac for parking. The current signage in the cul-de-sac allows vehicles to park in this area, often hindering the maneuverability of other vehicles attempting to utilise the turning circle. A further assessment, incorporating suitable vehicle turning paths and consultation with the community, Davis Marina and the Sea Scouts Water Base is necessary to determine the most appropriate parking arrangement for the subject area.

Council has received requests for the installation of a disabled parking space and/or loading zone adjacent to Davis Marina in Gourlay Avenue. A report was forwarded to the Manly Traffic Committee on the matter. An investigation by council staff revealed that it would be unsuitable to install a disabled parking space in this area due to steep grades and non-compliance with Australian Standard 1748.1. As loading/unloading activities were found to be isolated to the area adjacent Davis Marina it was considered unnecessary to implement designated loading zones.

The initial design of Gourlay Avenue, incorporating the 90° angled parking area, did not cater for parallel parking on the northern side of the road. Under the relevant Australian Standard, the road width at this location is not sufficient to allow parallel parking opposite the 90° angled parking area. As a result vehicles often park on the grassed area or „nature strip“ on the northern side of Gourlay Avenue which is directly adjacent to the cliff edge. Parking of vehicles on an unformed section of road (in this instance the nature strip) is illegal under the Australian Road Rules. In addition, parking of vehicles at this location may cause erosion of the nearby cliff face. Management of parking in this area will require the attention of Council Rangers.

The road width of Gourlay Avenue is approximately 5.5m. There are 13 available on street parallel parking spaces at this location. Due to the narrow road width, two way flow of vehicles is hindered when vehicles are parked in the available parallel parking spaces. Inspections have revealed that these parking spaces are rarely used to capacity, in which case the parked vehicles do not cause a problem.

An increase in utilisation of parking to service the study area would see increased car turnover at the parking area adjacent to the intersection of Tutus Street and New Street East. The location of this parking area, adjacent to a right angle road bend and near a road crest presents a safety concern for vehicles reversing out of the bay area. Visibility and the available sight distance is considerably restricted. An appropriate assessment of available sight lines should be carried out by Council to determine whether the area is suitable for visitor parking. Upgrade works and suitable restriction on this area may be an appropriate measure in this case.

It was noted that at the time of inspection unrestricted on-street parking located at the southern end of Beatty Street is already at a high demand. It appears that the available parking is utilised primarily by local residents. Should an elevated number of visitors be attending the reserve, residents may be forced to compete for the subject parking area. A parking study of this area to assess the availability of both on and off street parking spaces should be undertaken to determine if residents have sufficient parking within their properties or whether the subject on street parking spaces should be allocated to residents only.

Future increase in demand for the parking areas within the study area may require the implementation of different treatments to address the issues mentioned in the previous section. The warrant and extent of such treatments should be assessed through a suitable parking study of the area, appropriate community consultation and environmental impact assessment.

## **4.11 Infrastructure**

### **4.11.1 BBQ**

The BBQ facility in the vicinity of Forty Baskets Reserve are located on the south-western side of the park. The BBQ facility consists of a single burner atop a solid brick working/serving bench. The BBQ is electric and its use is free of charge.

Throughout the consultation process over-utilisation of the BBQ facilities at Forty Baskets Reserve was identified as an issue to be addressed in the development of this management plan. During summer this has reportedly resulted in the utilisation of portable BBQs by patrons on both the reserve and beach.

Another issue that was identified in the consultation process was that of general maintenance. Manly Council is responsible for the maintenance of such facilities however maintenance work is undertaken on a needs basis when community members report such issues to Council.

### **4.11.2 Shelter**

With the exception of the amenities block, no man-made structures exist within the study area to provide shelter to patrons. However, the natural/planted tree canopy provides some shelter and shade. A small open-sided shelter did exist in the vicinity of the playground however, it was demolished in the early 1990s.

Throughout the consultation process the issue of inadequate shading of recreational areas including the play equipment, BBQ facilities and seating was identified as an issue. It was suggested that shelters, sympathetic to the natural environment should be installed within the study area however, in contrast to this, the installation of hard infrastructure was not favoured by those wanting to maintain the undeveloped aspect of the area.

The issue of installing hard infrastructure shelters within the Forty Baskets study area was considered in the Natural Environment Assessment undertaken as part of the development of this Plan. Consideration was also given to the fact that the area most utilised, being Forty Baskets Reserve, is some distance to parking areas and patrons of the area do not have somewhere to shelter in the event that they are caught „off guard“ by bad weather.

As per recommendations outlined in the above mentioned assessment it was noted that the additional provision of shading within the study area would have little direct affect on flora and fauna provided that no suitable habitat is disturbed or removed during construction. If artificial shade structures are constructed, it was recommended that additional runoff from the increase in hard structures be addressed.



Any hard infrastructure installed within the study area should be sympathetic to the natural environment and consider maintenance of views of properties adjoining the reserve.

The provision of shelters was considered in the development of the Forty Baskets Landscape Masterplan. Community feedback indicated that the shelters were not desirable.

#### **4.11.3 Amenities/Toilet Block**

An amenity block located on the western edge of Forty Baskets Reserve services the whole of the study area. The existing facilities consist of separate male and female sections each with toilets, a shower and wash basin. Issues associated with the amenity block such as condition, leakages, the emission of foul odours and access have been identified as issues of concern by both the community and Council. The facilities are not adequate to provide for the disabled.

With the adoption of a new standard of finishes and fixtures for public toilets in Manly, Council undertook a Public Toilet Conditions Assessment in March 2002. Based on the assessment it became necessary for Council to list all facilities within the local government area in order of priority for refurbishment works. Primary emphasis was placed on two factors:

1. basic minimum standards of cleanliness and hygiene, and
2. efficient utilisation of water and other resources.

This has led to the classification of the facilities into broad categories.

The Forty Baskets amenities block was categorised as „facilities to be maintained in present condition awaiting demolition and/or rebuilding“.

In preparing the conditions report major structural changes were omitted. Instead, attention was focused on structural soundness of the facility, clean and bright finishes and user satisfaction. Also the frequency and number of users was considered in determining the order of priority. The aim was to attain a basic minimum and uniform standard for facilities across Manly in a span of four years.

Refurbishment works will be based on the following recommendations:

- install accessible toilet facilities
- install access ramp on the eastern side of the amenities block (opposite that of the existing ramp) to a grade of 1:14
- modify privacy shelters at the entrance of the toilets to address safety and disabled access issues
- resurface the ground suitable for chair access
- install path around the front perimeter of the amenities block to improve access
- remove steps into the facilities
- resurface walls - rendered on the outside and tiled on the inside
- replace all fittings and fixtures with standard water saving devices
- tile amenities block floor
- connect basin and shower discharge to the sewer line
- ensure the new facilities are vandal proof

#### **4.11.4 Playground**

Playground facilities currently exist in the Forty Baskets study area, consisting of a single swing set consisting of a standard swinging seat and an infant seat. The swing set is located on the western side of Forty Baskets Reserve.

A number of issues associated with the playground facilities were identified in the consultation process. Issues were primarily associated with safety, the upgrading of facilities and insufficient facilities to cater for user needs.

Manly Council undertook an assessment of all playground facilities within the local government area. The aim of this study was to determine what facilities currently exist, to conduct a safety assessment, determine actions required to address any identified issues and determine a priority rating for all playgrounds within the LGA.

In preparing the assessment report attention was focused on safety, structural soundness of the facility and user satisfaction.

Findings from the report noted that there were safety issues that needed to be addressed. Management recommendations included:

- replacing the swing bearings;
- replacing the large link hanging chains with a smaller link chain;
- relocation of the drinking fountain from inside the fall area; and
- installing „soft fall“ under the equipment.

No recommendations were made to replace the existing facilities with more expansive play equipment.

Based on the community consultation process and discussions held with Council's Park's Management Coordinator it was identified that while the playground facilities at Forty Baskets should be modernised and upgraded in terms of safety, the facilities should remain „simple“ in order to maintain the undeveloped aspect of the area.

More expansive play equipment consisting of an asphalt basketball area, children's bike path, swing set and climbing frame can be found in close proximity to the Forty Baskets study area at North Harbour Reserve. North Harbour Reserve is significantly larger in area and the equipment is designed to cater for greater patronage. The facilities at North Harbour can be accessed from the study area via a 5-10 minute walk along the Manly Scenic Walkway.

#### **4.11.5 Lighting**

Requests have been submitted to Council to install lighting within Forty Baskets Reserve at the base of the access path from Beatty Street and in the vicinity of the BBQ facilities. Requests have also been made to install lighting along the Manly Scenic Walkway between Forty Baskets Reserve and Wellings Reserve.

In April 2002, Council's Environmental Planner and Manly Police's Crime Prevention & Safety Officer undertook a visual inspection of the Forty Baskets study area to assess the current lighting situation. Manly Police also undertook a data search to determine if any crime reports had been made for the Forty Baskets area over the last 3 years.

Based on the review process the following outcomes were determined:

- improved lighting should be installed inside the amenities block;
- additional lighting should not be installed within the Forty Baskets study area as it would encourage night use, potentially attract undesirable persons and encourage „hooliganism“;

- should Council choose to install additional lighting it should be in the form of sensor lighting and only be installed in appropriate locations throughout the study area; and
- while crime associated with vehicles parked in Gourlay Avenue was identified as an issue of concern by the community no incidents had been reported to Manly Police over the past 3 years.

#### **4.11.6 Steps**

Issues related to the steps, which currently provide access to Forty Baskets Reserve and Beach from Beatty Street have been of concern to local residents and visitors of Forty Baskets for some time.

Council continually addresses the maintenance of stairs located in the Forty Baskets study area to ensure compliance with Manly Council's Development Control Plan for Access and to ensure the safety of visitors and residents of the area.

Steps located along access route 3 (refer to **Figure 11**) are more manicured stairs providing access to the eastern side of Forty Baskets Reserve. Stairs at access route 2 (refer to **Figure 11**) at the end of Beatty street are seemingly more treacherous, providing access to the western side of Forty Baskets Reserve adjacent to the amenities block.

Based on consultation with Council's Access Officer and Infrastructure & Services Engineer the following recommendations were made with regard to access and maintenance of stairs:

- access in the Forty Baskets study area needs to be addressed;
- stairs in the vicinity of Forty Baskets Reserve require maintenance;
- colour contrasting edges along the tread of stairs would provide for people with sight impairments;
- vegetation along access routes 2, 3 & 4 should be regularly cut back.

#### **4.11.7 Kiosk**

No kiosk facilities currently exist at Forty Baskets Reserve however a general store located at North Harbour Reserve is only a short distance from Forty Baskets Reserve.

While requests have been made to Council to install kiosk facilities at Forty Baskets Reserve, the majority of submissions received throughout the consultation process were opposed to the installation of such infrastructure. Attempts to establish a kiosk in the past have failed due to low patronage. In the event that an outlet is proposed the Food and Beverage Policy for Crown Lands should be consulted and requirements of that Policy are to be met.

Due to the undeveloped nature of the area, the Reserves' relatively low utilisation rate and the majority of the community feedback being opposed to the installation of kiosk facilities at Forty Baskets Reserve, no further investigation will be undertaken into the matter.

#### **4.11.8 Swimming Enclosure**

Clarity of water combined with a relatively safe, sheltered and shallow harbour provides an ideal snorkeling and swimming environment at Forty Baskets Beach. The Forty Baskets swimming enclosure adds to the safety of this environment.

The swimming enclosure is a fixed structure comprised of vertical metal bars and a timber jetty. The jetty is located on the eastern perimeter and is highly utilised by fishers, small boat owners and passive recreational users.

Consultation revealed that the community is primarily concerned with safety issues in relation to the swimming enclosure and its patrons. Within the enclosure there are large patches of macro algae (mostly *Eckonia rackata*) living semi-attached to the sand substrata. The community identified its presence as an amenity issue and have requested its removal.

Encrustations (epibiota) visible on both the bars and pilings at low tide is comprised of marine animals and plants (including oysters, barnacles, limpets and algae). The community identified its presence as both an amenity and safety issue.

A number of the bars along the perimeter of the swimming enclosure are in poor condition with parts rusted away and held upright only by the encrustation on neighbouring bars. Manual removal of the encrustations has been undertaken in the past, probably at similar time intervals as repair works on the bars and jetty.

A „No Dive“ sign exists in proximity to the swimming enclosure. The sign is faded and should be replaced. It is recommended that this sign be updated to include the Code of Conduct for use of the swimming enclosure. Warning signs informing visitors of the presence of sharp marine organisms inhabiting the perimeter of the enclosure should be installed.

The presence of encrustations of oysters and other marine life can prove hazardous to the safety of the community and thus must be managed appropriately. However, consideration must be given to the fact that these ecosystems are important to the survival of many marine organisms and thus must be treated accordingly.

Marine structures, such as pilings and fixed swimming enclosures, provide artificial habitat for many marine plants and animals. There is limited scientific understanding of how the habitat provided by urban structures relates to the ecology of a system and how urban structures effect the composition of subtidal communities (Glasby 1999, Connell 2000). The epibiotic presence on the bars and pilings of the swimming enclosure are a potentially valuable resource and further studies should be undertaken to determine their role.

Chemical removal of the encrustations inhabiting the bars and pilings of the Forty Baskets swimming enclosure can prove hazardous due to the detrimental impacts it can have on the surrounding marine environment. Investigations of long-term antifouling techniques should be undertaken. Regular manual removal, without chemical assistance, is a sustainable alternative, which should be undertaken when it is determined that removal must take place due to excessive safety concerns.

## **4.12 Interpretation & Signage**

For the most part, existing signage in Forty Baskets is both of an instructional and educational nature. Current signage in the vicinity of Forty Baskets Reserve, along Forty Baskets Beach and in the vicinity of the scenic walkway informs patrons of the area of how one must behave whilst visiting the beach or utilising the amenities. This type of signage is broadly classified as conduct or ordinance signs and also advises visitors and patrons of the area of fines associated with non-compliance or disobeying given instructions. These signs are strategically and prominently placed however they are considered obtrusive in nature and lack the appeal required to encourage their reading and compliance.

Additionally, an interpretive structure located in Forty Baskets Reserve is of an educational nature providing both written and pictorial information about the Manly Scenic Walkway. This interpretive structure outlines the time and difficulty rating of the seven shorter walks that constitute the Manly Scenic Walkway.

One of the most often raised issues associated to interpretation and signage in Forty Baskets is the number of (at least 13) and different types of signs. There are currently four different designs of Council „Conduct in Reserve“ signs and two different types of „Dog Prohibition“ signs. Whilst the intention of these signs to inform the public of their responsibilities is understood, it is interpreted that the current situation suggests an ad-hoc approach to management of the area.

One of the major factors contributing to the ad-hoc appearance of signage in the area is that organisational bodies other than that of Manly Council are currently able to install signage as they deem necessary. The contrasting presentation, design and structure of these signs has resulted in a juxtaposition of signs throughout the Forty Baskets study area.

During the development of the Forty Baskets CMP, Council undertook an inventory of signs located within the study area. The aim of the inventory was to:

- identify existing signs within the study area;
- evaluate the information they provide;
- investigate the feasibility of consolidating information onto fewer signs in a format consistent with Council's updated signage specifications;
- identify signs for removal; and
- identify signage gaps.

Based on the signage inventory it was found that the majority of signs in the Forty Baskets study area convey outdated information and do not comply with Council's current signage specifications. The information conveyed on some signs often contradicts others.

Since the installation of the majority of signs found within the Forty Baskets study area, Council has developed specific design specifications for signs installed within the LGA in order to create a generic format of appearance and presentation. Accordingly, by standardising signage within the LGA they are more easily recognised, more logically formatted and more easily interpreted.

The following signs are currently located within the Forty Baskets study area:

- 4 X „Conduct in Reserve“ signs (of different designs)
- 1 X Aquatic Reserve Sign
- 3 X „Dogs Prohibited“ signs (two different designs, one severely faded)
- 1 X „Bushland Reserve Rubbish Dumping“ sign
- 1 X „Bushland Volunteers“ sign
- 1 X „Manly Scenic Walkway“ interpretive panel
- 1 X „Pollution Warning“ sign
- 1 X „Lifesaving“ sign

Recommendations for Interpretation and signage within the Forty Baskets study area are included in the Forty Baskets CMP: Action Plan.

#### **4.13 Safety & Crime Prevention**

Based on consultation undertaken during the development of the Forty Baskets CMP, crime was not identified as an issue of major concern. Safety issues directly related to community wellbeing were on the other hand more prevalent. Specific safety issues included, but were not limited to, boat speed and activity in close proximity to the beach/swimming enclosure, off-leash dangerous dogs in the reserve area frequented by children and the lack of lighting in the vicinity of the amenities block, access routes and Forty Baskets Reserve.

Concerns were also identified with regard to pedestrian safety in the vicinity of the marina/access ramp. Due to the slope of the ramp, poor visibility created a dangerous environment for pedestrians.

To gain greater perspective on crime and safety issues within the Forty Baskets study area inspections were undertaken by Council's Environmental Planner and Manly Police's Crime Prevention & Safety Officer. The following observations/resolutions were made:

- Forty Baskets study area was far enough away from the Manly CBD not to attract unwanted persons and activities;

- improved lighting should be installed inside the amenities block (refer to Section 4.11.5);
- additional lighting should not be installed within the Forty Baskets study area as it would encourage night use, potentially attract undesirable persons and encourage „hooliganism“;
- should Council choose to install additional lighting it should be in the form of sensor lighting and only be installed in appropriate locations throughout the study area;
- the playground was sufficient distance away from the amenities block thereby preventing/discouraging loitering;
- pathways and access routes were fairly clear of vegetation;
- thinning of the vegetation around the amenities block would increase visibility thereby increasing patron safety;
- the formation of a local „capable guardians group“ or community watch group consisting of local residents who overlook Forty Baskets Reserve would increase patrons safety and discourage unwanted behavior;
- while crime associated with vehicles parked in Gourlay Avenue was identified as an issue of concern by the community no incidents had been reported to Manly Police over the past 3 years.

Issues relating to boating safety were also identified in the consultation process. A core objective for the Waterways Authority is to promote safety on all navigable waters. Waterways is responsible for educating users on boating safety through the issue of licences, educational programs and by establishing and promoting user groups, licensing commercial vessels and operators, maintaining navigation aids and signs, and licensing on-water events.

Waterways produces a Safe Boating Handbook NSW, which details safety and environment protection legislation effective in NSW.

For safety and natural resource conservation reasons a 4 Knot zone is in place for waters up to 100metres offshore of Forty Baskets and Manly’s foreshore.

## 4.14 Waste Management

There are a range of bins provided by Council at Forty Baskets Reserve for disposal of waste produced by the various activities undertaken in this area. Council maintains and services all bins in the area. Beach cleaning is also undertaken by Council on a regular basis.

No dog tidy bins exist at Forty Baskets Reserve. This will be addressed in the Forty Baskets Landscape Masterplan. A small bin (120L) exists adjacent to the playground area fixed to a metal post. The post is able to store two bins however only one is presently available.

### 4.14.1 Litter

Litter, both from harbour based activities and land based activities presents a continuing issue for the environmental management of the Forty Baskets study area. Due to the high level of human activity on the harbour and surrounding urban areas, undesirably large amounts of litter accumulates on harbour beaches.

Litter is of concern because it:

- reduces the aesthetic appeal of public places including streets, parks and waterways;
- can affect aquatic life directly (through physical harm) and indirectly through its impacts on water quality;
- can decrease oxygen levels when it decays in water;
- can cause blockages of the drainage system and flooding;

- can be dangerous to people, particularly when it involves items such as broken glass, needles and syringes;
- may be a fire hazard (lit cigarettes being thrown from vehicles); and
- costs the community significant amounts of money to clean up each year (EPA , 2000).

Identified sources of litter in the Forty Baskets study area include:

- food/drink containers, cigarette butts, paper, plastic bags etc, carelessly/intentionally deposited or left behind unawares after picnics, barbecues and general usage of the area;
- rubbish thrown from vehicles;
- boat users dumping litter while moored around the Forty Baskets embayment;
- illegal dumping of rubbish;
- organic litter accumulating in roadside gutters;
- building sites without adequate litter controls;
- full bins allowing litter to blow away;
- uncollected dog faeces;
- waste material washed onto the beaches from outside sources;

Litter is an issue in both the aquatic and terrestrial environment of the Forty Baskets study area. The table below identifies where litter is of concern in both these environments in the study area.

<b>Aquatic Environment</b>	<b>Terrestrial Environment</b>
<ul style="list-style-type: none"> <li>• Litter floating in the water, tangled in aquatic plant life;</li> <li>• Litter accumulation on foreshore rocks.</li> </ul>	<ul style="list-style-type: none"> <li>• Litter accumulation on the beach</li> <li>• Litter deposited in vegetated areas, gardens, grassed areas;</li> <li>• Litter deposited around public use areas;</li> <li>• Litter accumulation in road gutters (including organic material).</li> </ul>

An article in the Manly Daily on 15 August 2000 stated that Clean Up Australia Day 2000 saw “Between 30 and 40 scuba divers from the Underwater Research Group collect 30 bags of rubbish on Sunday morning” in the North Harbour Aquatic Reserve.

#### **4.14.2 Policy**

There are a number of Government and Council policies that address the issue of litter and are relevant to the Forty Baskets Coastline Management Plan. These include Council’s Corporate Plan (2002/03), Manly Sustainability Strategy (2002) and the Sydney Regional Coastal Management Strategy (1998).

Council has addressed the management of litter in the Forty Baskets study area through:

- education;
- whole of Council litter awareness/ education programs;
- education initiatives addressing specific litter issues i.e. removal of dog faeces;

- signage advising of appropriate behaviour and penalties;
- compliance / regular patrols of the area by Council's rangers enforcing littering laws and regulations;
- infrastructure management;
- provision and servicing of litter bins and dog tidy bins;
- beach raking;
- reserve cleaning and maintenance; and
- street sweeping.

Council has adopted a „*Litter Avoidance Strategy*“ to provide a plan to address litter in the Manly LGA. A litter forum was held where community, business and government stakeholders were invited to present their perspectives on litter. As a result Council was able to determine community expectations for litter management and formulate a litter strategy.



## **5 ADMINISTRATIVE MANAGEMENT**

In order to successfully implement the recommendations of this CMP it will be necessary to record the level of agreement amongst the various stakeholders to the recommendations made and their commitment to implementing these. This is particularly important to those stakeholders charged with responsibility of implementing particular actions. Whilst it is understood that total agreement may not be immediately achievable, given the conflict amongst some groups regarding management of the area, it is recommended that the various stakeholders be requested to review those actions which fall within their legislative delegations and record their agreement to implementation. Similarly, any concerns of the stakeholders regarding the recommendation/actions should be indicated and negotiated with Council.

In the past Council has set up individual Implementation Management Committees focusing on small areas such as Forty Baskets. This set up has proven to be time consuming and quite narrow in focus. It is therefore recommended that only one committee be serviced by Council for the implementation of Manly's Coastline Management Plans.

## 6 CONCLUSION

The information in this Support Document provides the basis of the recommendations made for environmental management of Forty Baskets. Broad recommendations are outlined for each management issue, however these are taken a step further in the accompanying Action Plan which will be used by the Implementation Management Committee putting the recommendations into action.

The recommendations are tabulated in the CMP: Action Plan, which also includes additional information to assist in action implementation. Additional information includes:

- Further actions which may be required in order to implement the recommendation;
- The identification of the government agencies, authorities or organisations responsible for implementing a recommendation;
- A list of possible funding sources or collaboration agencies; and recommendations in a range of categories, giving a priority ranking based on the need, potential funding availability and resource availability.

This study of Forty Baskets extends to areas beyond the care and control of Manly Council. While Manly Council is not responsible for all the areas identified in the study area, implementation of the recommendations within the Management Plan and Supporting Document relies largely upon an integrated approach by the relevant key stakeholder agencies. This includes, but is not limited to NSW Fisheries, Department of Infrastructure Planning & Natural Resources, Sydney Ports Corporation, Waterways Authority, National Parks & Wildlife Authority and the Environment Protection Authority(both now part of the DEC).

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## 8 APPENDICES

Appendix A	Process for the development of Coastline Management Plans (Source: Manly Council 2003)
Appendix B	Distribution of Seagrass, North Harbour (Deaprtment of Transport & NSW Fisheries 2003)
Appendix C	Little Penguin Critical Habitat map (NPWS, 2003)
Appendix D	Estuarine Sediments in Sydney Harbour (Herbert, 1983)
Appendix E	The Analysis of Organic Contaminants in Estuarine Sediments (Birch & Taylor, 2000)
Appendix F	The Distribution of Polycyclic Aromatic Hydrocarbons in Surficial Sediments of Sydney Harbour (McCready et al, 2000)
Appendix G	Location of Stormwater Outlets in Manly Council's Bushland Reserves (Skelton et al, 2002)
Appendix H	Flora Species List for Bushland Reserves within Forty Baskets Study Area (GIS Environmental Consultants, 2003a)
Appendix I	Vegetation Communities (GIS Environmental Consultants, 2003a)
Appendix J	Species Suitable for Planting in Forty Baskets Study Area (GIS Environmental Consultants, 2003a)
Appendix K	Fauna Species list for Bushland Reserves within Forty Baskets Study Area (GIS Environmental Consultants, 2003a)
Appendix L	Landscape Masterplan (to be inserted)
Appendix M	Clans of the Northern Sydney Region (Foley, 2001)
Appendix N	Aboriginal and European Heritage Sites, National Parks, State Recreation Areas, Nature Reserves and Aquatic Reserves in Port Jackson (EPA, 1994)
Appendix O	Aboriginal Sites North Harbour - Aboriginal Relic Sites GAYMAI Tribal Group (DUAP, 1998)

***Process for the development of Coastline Management Plans***  
(in accordance with the NSW Government Coastline Management Manual 1990 and the Local Government Act 1993)

***Process under NSW Government  
Coastline Management Manual 1990***

***Local Government Act 1993  
Requirements.***

***Minimum Requirements under the Act:***

- Categorise the land in accordance with s.36(4) and (5)
- Detail objectives for the management of the land
- Specify performance targets
- Specify the means of achieving the objectives and targets
- Specify how achievement of the objectives and performance targets is to be assessed

***For plans that are specific to one area of land made after 1 January 1999, the plan must also:***

- Describe the condition and use of the land and buildings on the land as at adoption
- State the purpose for which the land will be allowed to be used, and the scale and intensity of the use

***Additional Matters as outlined in the Local Government Act 1993***

***Where the Council controls but does not own the land the plan must:***

- Identify the owner of the land
- State whether the land is subject to any trust, estate, interest, dedication, condition, restriction or covenant
- State whether the use or management of the land is subject to any condition or restriction imposed by the owner
- Include any provisions that may properly be required by the person who owns the land
- Not contain provisions inconsistent with the owner's requirements

***Establish Coastline Management Committee and Coastline Management Plan Steering Committee***



***Coastline Management Study***

- Undertake a Coastline Hazard Definition Study
- Address social issues – access, recreation use, visual features etc.
- Land ownership and planning controls
- Terrestrial and aquatic environments
- Management options.



***Draft Coastline Management Plan***

- Support Document
- Action Plan that describes the recommendations for management of the coastline



***Draft Coastline Management Plan Exhibition***

- Public exhibition
- Government authorities



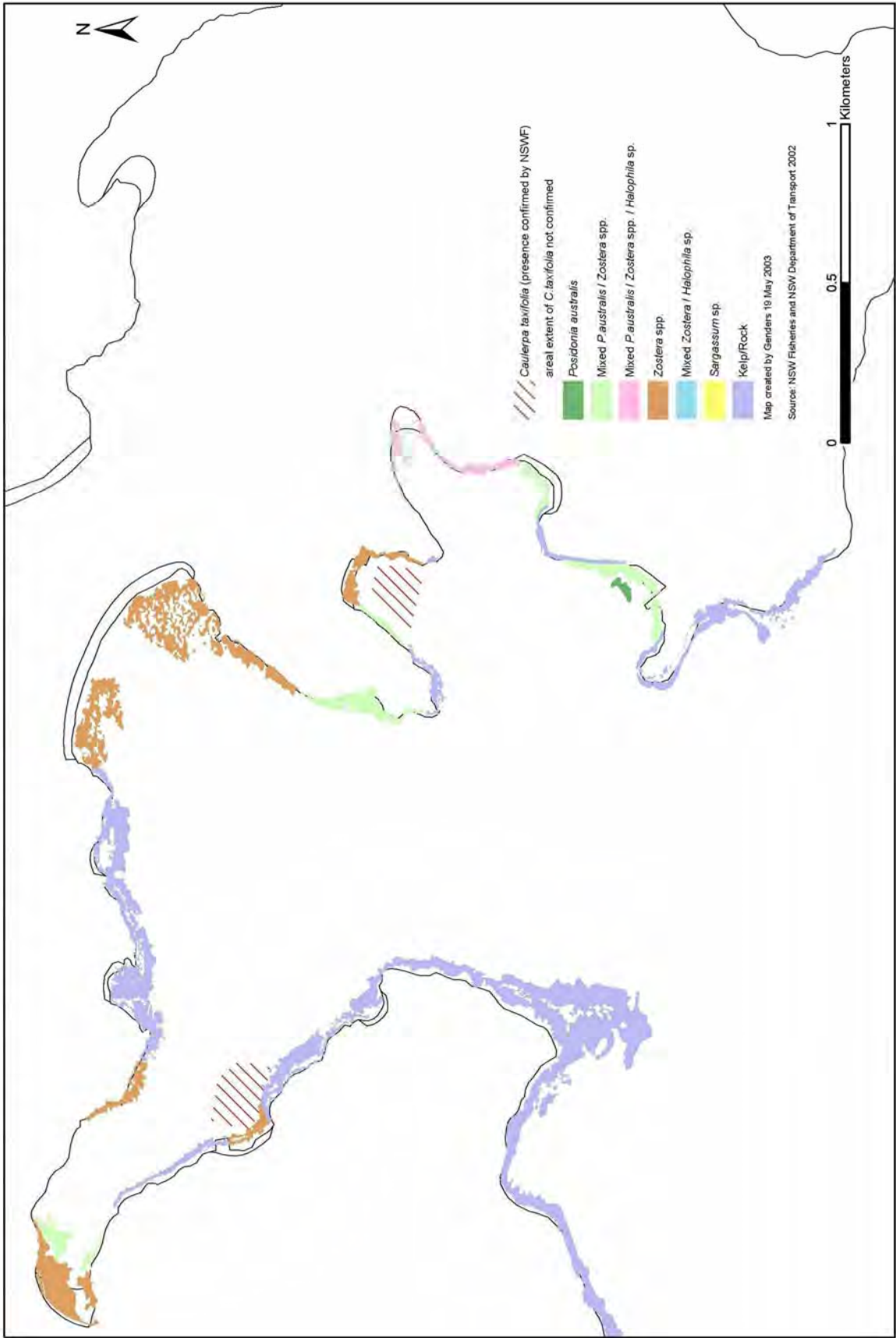
***Coastline Management Plan Adoption & Implementation***



***Coastline Management Plan Review & Evaluation***



Distribution of *Caulerpa taxifolia* at Little Manly and Forty Baskets, Port Jackson





This map is intended as a guide only. For exact descriptions of critical habitat area boundaries please refer to the Little Penguin population in Sydney's North Harbour critical habitat declaration, located on the NPWS (DEC) website.



## LEGEND

- Critical habitat area A  
Restrictions 50 metres  
No anchoring 1 July to 28 February
- Restrictions 50 metres  
No anchoring all year around
- Critical habitat area B
- Potential critical habitat  
no restriction  
(Includes areas at Dobroyd Head)



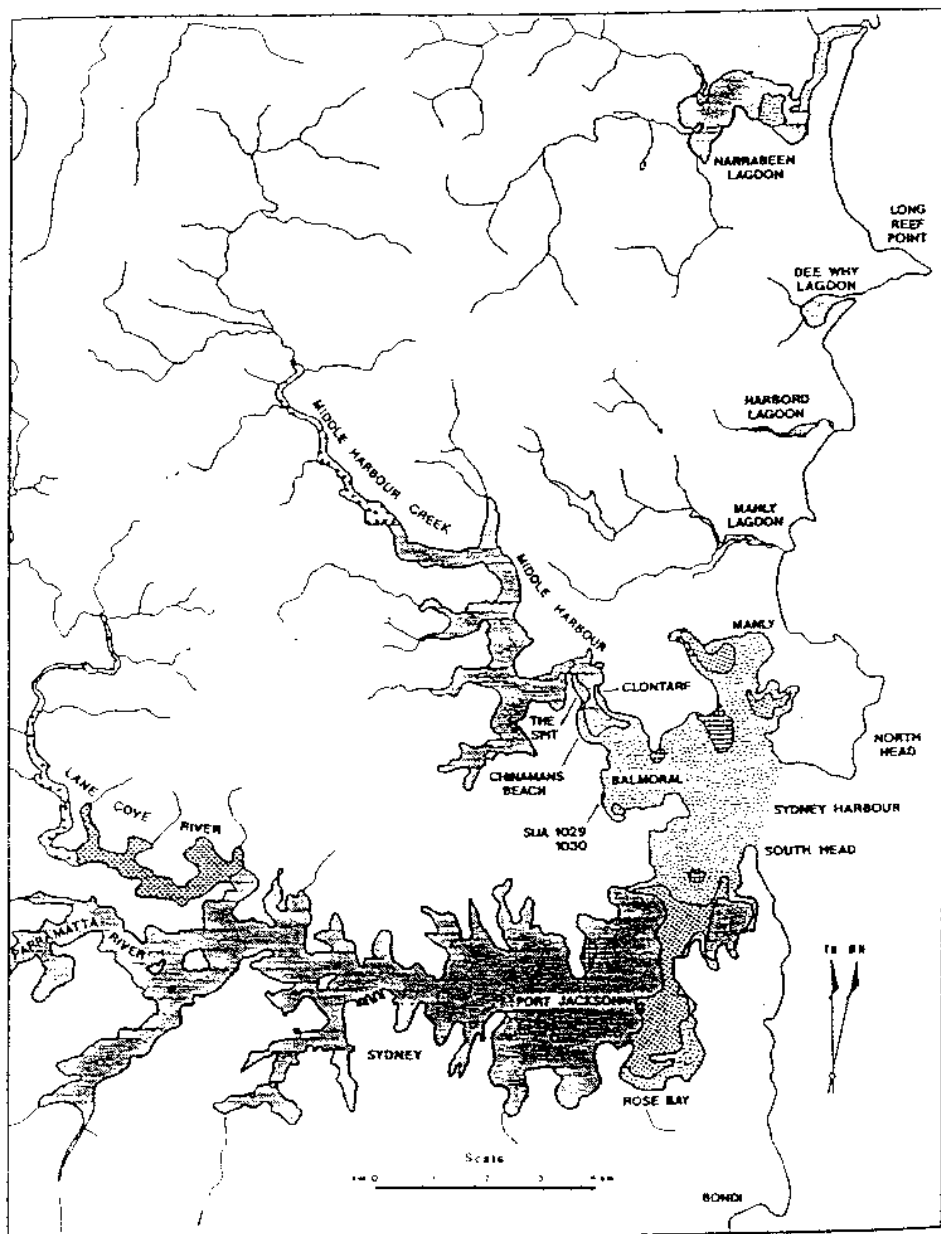
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## APPENDIX C Penguin Critical Habitat Aerial View

Appendix D: Estuarine Sediments in Sydney Harbour  
(Herbert 1983)



REFERENCE

	Mixed (fluvial and marine)		Clean sand (<10% mud)		Clean sand (<10% mud)
	Exposed sub-aqueous rock reef		Muddy sand (10-50% mud)		Muddy sand (10-50% mud)
					Mud and sandy mud (>50% mud)



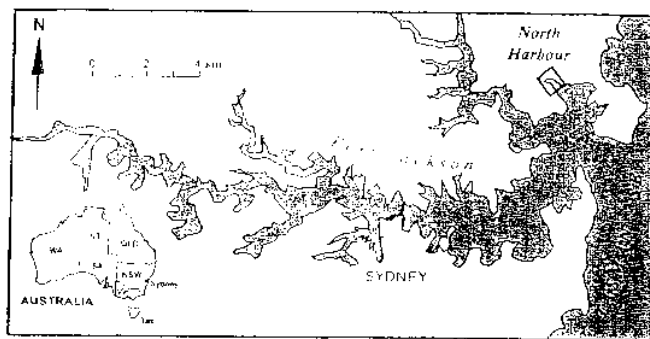


Figure 1. Location of study site in North Harbour, Port Jackson.

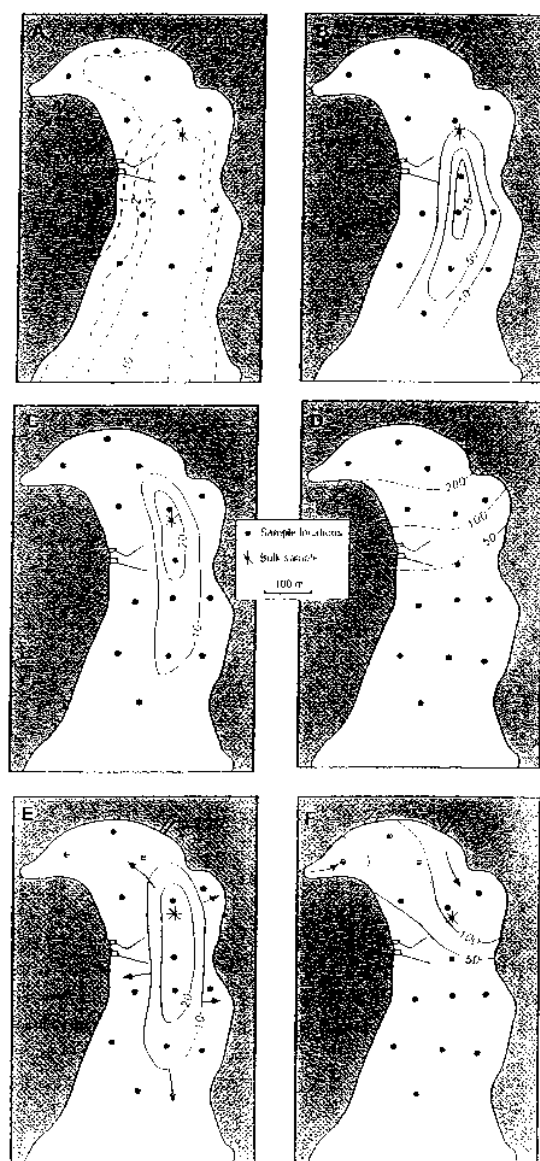


Figure 3. A) Location of sediment samples, bathymetry in meters, and location of drain. \* is the location of the bulk sample for size and replicate organochlorine analyses. (B) Distribution mud sized ( $< 62.5 \mu\text{m}$ ) sediment. (C) and (D) Distribution of total and size-normalised ( $< 62.5 \mu\text{m}$ ) total chlorides, respectively. (E) and (F) Distribution of total and size-normalised DDE distribution, respectively.

*Appendix F: The Distribution of Polycyclic Aromatic Hydrocarbons in Surficial Sediments of Sydney Harbour.*  
(McCreedy et al, 2000)

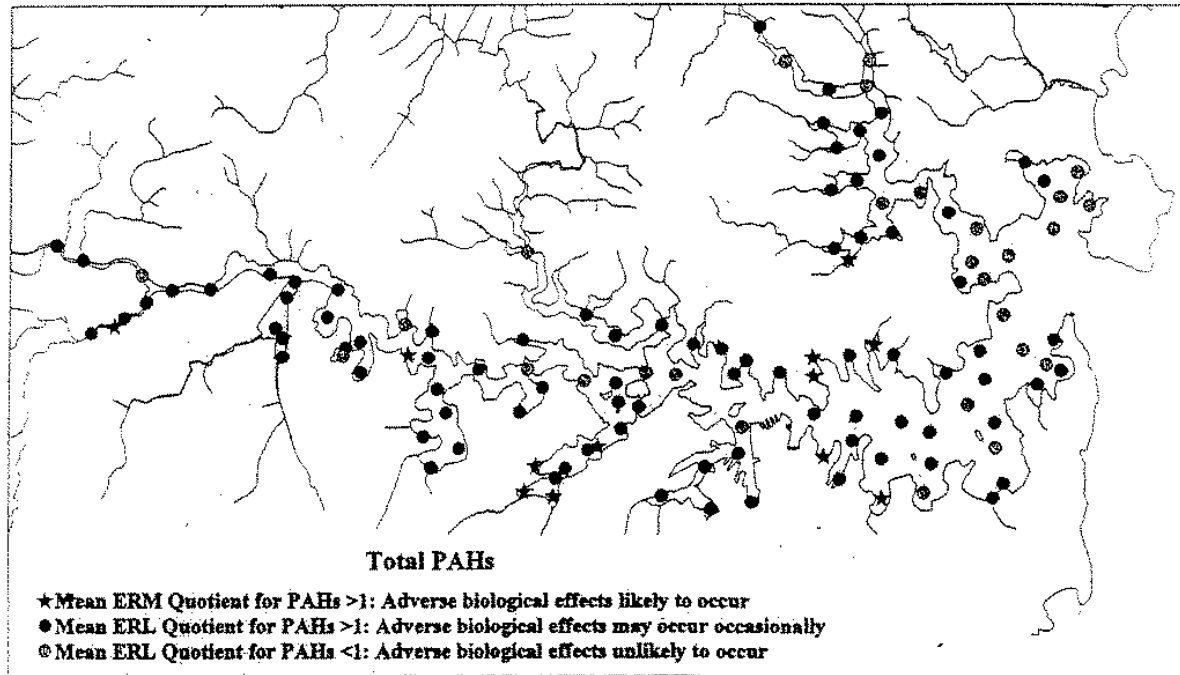
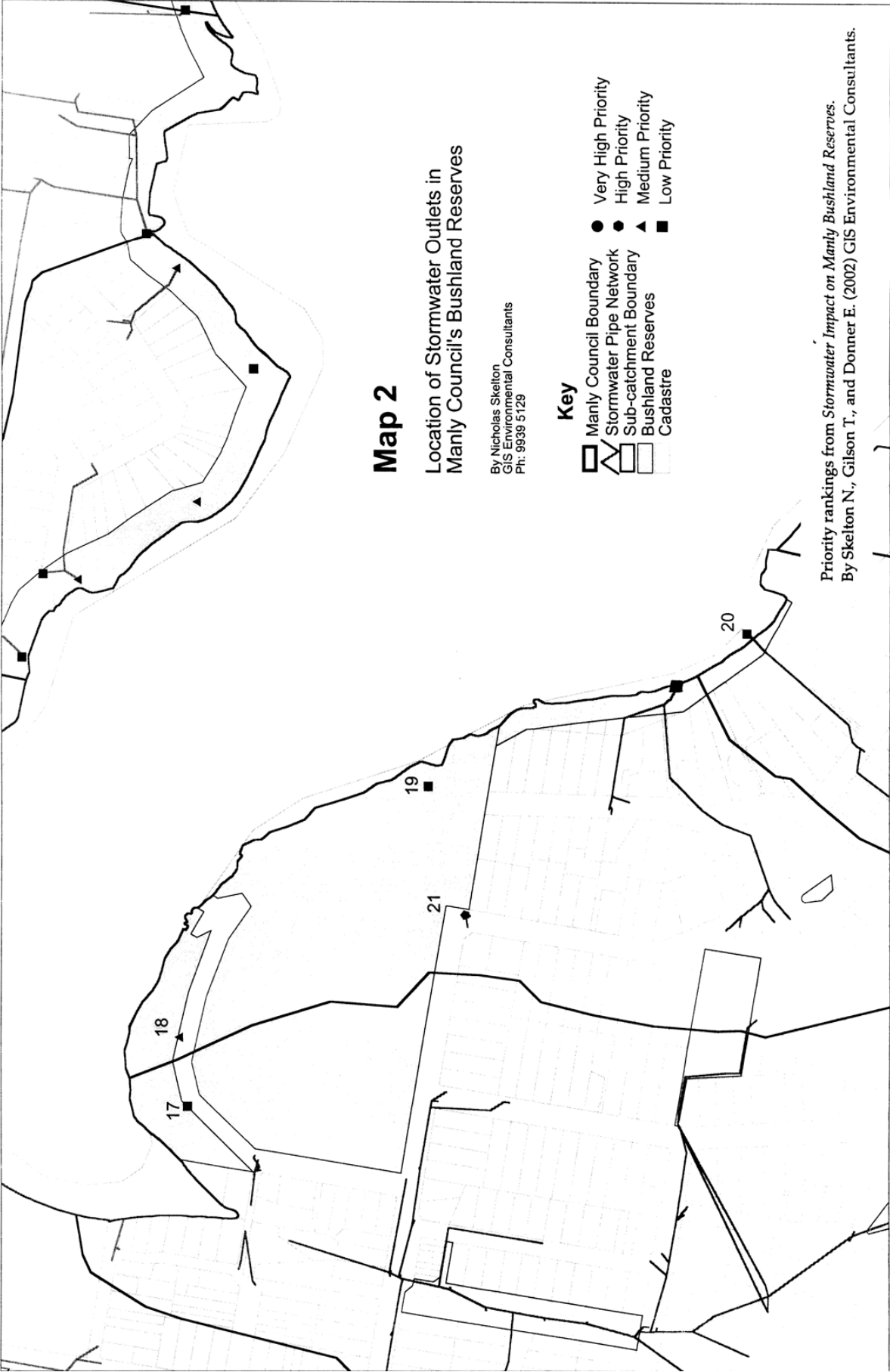


Fig. 5 Estimate of the spatial pattern of potential toxicity in Sydney Harbour sediments due to PAHs-Comparison with Effects-Range (ERL and ERM) guidelines.



*Appendix H: Flora Species List for Bushland Reserves within Forty Baskets Study Area  
(GIS Environ. Consult. 2003a)*

Native and exotic species of flora in located Wellings Reserve (WR) and Forty Baskets Reserves (FBR) (source Skelton *et al.* 2003). Status: Nox W2 = Category 2 Noxious plant, Nox W3 = Category 3 Noxious plant, Nox W4a,b,c,d,f,g = Category 4 Noxious plant (Noxious Weeds Act 1993)

Location	Genus/Species	Family	Habit	Common Name	Status
WR, FBR	<i>Acacia linifolia</i>	FABACEAE	Shrub	Flax-leaved Wattle	Native
WR, FBR	<i>Acacia longifolia</i> var. <i>sophorae</i>	FABACEAE	Shrub	Coastal Wattle	Native
WR	<i>Acacia longissima</i>	FABACEAE	Tree		Native
WR	<i>Acacia parramattensis</i>	FABACEAE	Tree	Parramatta Green Wattle	Native
WR	<i>Acacia saligna</i>	FABACEAE	Shrub	Golden Wreath Wattle	Weed
WR	<i>Acacia suaveolens</i>	FABACEAE	Shrub	Sweet Scented Wattle	Native
WR	<i>Acacia terminalis</i>	FABACEAE	Shrub	Sunshine Wattle	Native
WR	<i>Acacia ulicifolia</i>	FABACEAE	Shrub	Prickly Moses	Native
WR	<i>Acetosa sagittata</i>	POLYGONACEAE	Vine	Turkey Rhubarb	Weed
WR, FBR	<i>Acmena smithii</i>	MYRTACEAE	Tree	Lily Pilly	Native
WR	<i>Actinotus helianthi</i>	APIACEAE	Herb	Flannel Flower	Native
WR	<i>Actinotus minor</i>	APIACEAE	Herb	Lesser Flannel Flower	Native
WR	<i>Adiantum aethiopicum</i>	ADIANTACEAE	Fern	Maidenhair Fern	Native
FBR	<i>Agave attenuata</i>	AGAVACEAE	Herb	Century Plant	Weed
WR, FBR	<i>Ageratina adenophora</i>	ASTERACEAE	Herb	Crofton Weed	Nox W3
WR	<i>Allocasuarina littoralis</i>	CASUARINACEAE	Tree	Black She-oak	Native
FBR	<i>Andropogon virginicus</i>	POACEAE	Grass	Whiskey Grass	Weed
WR, FBR	<i>Angophora costata</i>	MYRTACEAE	Tree	Smooth-barked Apple	Native
WR	<i>Angophora hispida</i>	MYRTACEAE	Tree	Dwarf Apple	Native
FBR	<i>Araucaria heterophylla</i>	ARAUCAREACEAE	Tree	Norfolk Island Pine	Weed
FBR	<i>Archontophoenix alexandra</i>	ARECACEAE	Palm	Alexander Palm	Planted
WR	<i>Aridisia crenata</i>	MYRSINACEAE	Shrub	Coral Berry	Weed
FBR	<i>Asparagus officinalis</i>	ASPARAGACEAE	Herb	Asparagus	Weed
WR	<i>Asplenium australasicum</i>	ASPLENIACEAE	Fern	Birds Nest Fern	Native
FBR	<i>Backhousia myrtifolia</i>	MYRTACEAE	Tree	Grey Myrtle	Native
WR, FBR	<i>Banksia ericifolia</i> var. <i>ericifolia</i>	PROTEACEAE	Shrub	Heath Leaved Banksia	Native
WR, FBR	<i>Banksia integrifolia</i> ssp. <i>integrifolia</i>	PROTEACEAE	Tree	Coastal Banksia	Native
WR	<i>Banksia oblongifolia</i>	PROTEACEAE	Shrub	Banksia	Native
WR, FBR	<i>Banksia serrata</i>	PROTEACEAE	Tree	Old Man Banksia	Native
WR	<i>Bauera capitata</i>	BAUERACEAE	Shrub	Dog Rose	Native
WR	<i>Bauera rubioides</i>	BAUERACEAE	Shrub	Dog Rose	Native
WR	<i>Baumea acuta</i>	CYPERACEAE	Sedge	Pale Twig-rush	Native
WR	<i>Baumea teretifolia</i>	CYPERACEAE	Sedge	Wrinkle-nut Twig-rush	Native
WR	<i>Billardiera scandens</i>	PITTOSPORACEAE	Vine	Apple Berry, Dumplings	Native
WR	<i>Bossiaea heterophylla</i>	FABACEAE	Shrub	Bossiaea	Native
WR	<i>Bossiaea scolopendria</i>	FABACEAE	Shrub	Bossiaea	Native
WR	<i>Brachyloma daphnoides</i>	EPACRIDACEAE	Shrub		Native

WR	<i>Breynia oblongifolia</i>	EUPHORBIACEAE	Shrub	Breynia	Native
WR	<i>Caesia parviflora</i> var. <i>parviflora/vittata</i>	ANTHERICACEAE	Herb		Native
WR	<i>Caladenia catenata</i>	ORCHIDACEAE	Herb		Native
FBR	<i>Callistemon sp.</i>	MYRTACEAE	Shrub	Bottlebrush	Planted
WR, FBR	<i>Calochlaena dubia</i>	DICKSONIACEAE	Fern	False Bracken Fern	Native
WR	<i>Calytrix tetragona</i>	MYRTACEAE	Shrub		Native
WR	<i>Cassytha pubescens</i>	LAURACEAE	Vine	Hairy Devil's Twine	Native
WR	<i>Casuarina glauca</i>	CASUARINACEAE	Tree	Swamp Sheoak	Native
WR	<i>Caustis flexuosa</i>	CYPERACEAE	Sedge	Old Man's Beard	Native
WR	<i>Caustis pentandra</i>	CYPERACEAE	Sedge	Caustis	Native
WR	<i>Cayratia clematidea</i>	VITACEAE	Vine	Slender Grape	Native
WR	<i>Centella asiatica</i>	APIACEAE	Herb	Centella	Native
WR, FBR	<i>Chlorophytum comosum</i>	LILLIACEAE	Herb	Spider Plant	Weed
WR, FBR	<i>Christella dentata</i>	THELYPTERIDACEAE	Fern	Christella	Native
WR, FBR	<i>Cinnamomum camphora</i>	LAURACEAE	Tree	Camphora Laurel	Weed
WR, FBR	<i>Cissus hypoglauca</i>	VITACEAE	Vine	Native Grape	Native
WR	<i>Clematis aristata</i>	RANUNCULACEAE	Herb	Old Man's Beard	Native
WR	<i>Clematis glycinoides</i> var. <i>glycinoides</i>	RANUNCULACEAE	Herb	Forest Clematis	Native
WR	<i>Clerodendrum tomentosum</i>	VERBENACEAE	Shrub		Native
WR	<i>Comesperma volubile</i>	POLYGALACEAE	Herb		Native
WR, FBR	<i>Commelina cyanea</i>	COMMELINACEAE	Herb	Creeping Christian	Native
WR	<i>Conyza sp.</i>	ASTERACEAE	Herb	Fleabane	Weed
WR	<i>Corymbia gummifera</i>	MYRTACEAE	Tree	Bloodwood	Native
WR	<i>Cotoneaster pannosus</i>	ROSACEAE	Shrub	Cotoneaster	Nox W4b
WR	<i>Crinum pedunculatum</i>	AMARYLLIDACEAE	Herb	Swamp Lilly	Native
WR	<i>Crowea saligna</i>	RUTACEAE	Shrub	Crowea	Native
WR	<i>Cryptandra ericoides</i>	RHAMNACEAE	Herb		Native
FBR	<i>Cupressus sempervirens</i>	CUPRESSACEAE	Tree	Italian Cypress	Planted
FBR	<i>Cyanodon dactylon</i>	POACEAE	Grass	Common Couch	Native
WR	<i>Cyathea cooperi</i>	CYATHEACEAE	Fern	Straw Tree Fern	Native
WR	<i>Cynodon dactylon</i>	POACEAE	Grass	Common Couch	Native
WR	<i>Dampiera stricta</i>	GOODENIACEAE	Herb	Blue Dampiera	Native
WR	<i>Danthonia tenuior</i>	POACEAE	Grass		Native
WR	<i>Davallia pyxidata</i>	DAVALLIACEAE	Fern	Hares Foot Fern	Rare
WR	<i>Dendrobium linguiforme</i>	ORCHIDACEAE	Herb	Tongue Orchid	Native
FBR	<i>Dianella caerulea</i> var. <i>caerulea/producta</i>	PHORMIACEAE	Herb	Blue Flax Lily	Native
WR	<i>Dianella congesta</i>	PHORMIACEAE	Herb	Flax Lily	Native
WR	<i>Dichondra repens</i>	CONVOLVULACEAE	Herb	Kidney Weed	Native
WR	<i>Digitaria parviflora</i>	POACEAE	Grass	Smallflower Fingergrass	Native
WR	<i>Dillwynia retorta</i>	FABACEAE	Shrub	Eggs and Bacon	Native
WR, FBR	<i>Dodonaea triquetra</i>	SAPINDACEAE	Shrub	Hop Bush	Native
WR	<i>Duchesnea indica</i>	ROSEACEAE	Herb	Indian Strawberry	Weed



WR	<i>Echinopogon caespitosus</i>	POACEAE	Grass	Tufted Hedgehog Grass	Native
WR	<i>Elaeocarpus reticulatus</i>	ELAEOCARPACEAE	Tree	Blueberry Ash	Native
WR	<i>Entolasia stricta</i>	POACEAE	Grass	Wiry Panic	Native
WR	<i>Epacris longiflora</i>	EPACRIDACEAE	Shrub	Fuchsia Heath	Native
WR	<i>Epacris pulchella</i>	EPACRIDACEAE	Shrub		Native
WR	<i>Erigeron karvinskianus</i>	ASTERACEAE	Herb	Seaside Daisy	Weed
WR	<i>Eriostemon buxifolius ssp. obovatus</i>	RUTACEAE	Shrub	Box-leaved Wax Flower	Native
WR, FBR	<i>Eucalyptus botryoides</i>	MYRTACEAE	Tree	Bangalay	Native
WR	<i>Eucalyptus capitellata</i>	MYRTACEAE	Tree	Brown Stringy Bark	Significant
WR	<i>Eucalyptus haemastoma</i>	MYRTACEAE	Tree	Scribbly Gum	Native
WR	<i>Eucalyptus piperita</i>	MYRTACEAE	Tree	Sydney Peppermint	Native
WR	<i>Eucalyptus punctata</i>	MYRTACEAE	Tree	Grey Gum	Native
WR	<i>Eucalyptus saligna</i>	MYRTACEAE	Tree	Sydney Blue Gum	Native
WR	<i>Eucalyptus umbra</i>	MYRTACEAE	Tree	Bastard Mahogany	Significant
WR, FBR	<i>Eustrephus latifolius</i>	LUZURIAGACEAE	Vine	Wombat Berry	Native
WR	<i>Exocarpos cupressiformis</i>	SANTALACEAE	Shrub	Bush Cherry	Native
WR	<i>Ficus rubiginosa</i>	MORACEAE	Tree	Port Jackson Fig	Native
WR	<i>Gahnia erythrocarpa</i>	CYPERACEAE	Sedge	Cut Grass	Native
WR	<i>Gahnia sieberiana</i>	CYPERACEAE	Sedge	Cut Grass	Native
WR	<i>Geitonoplesium cymosum</i>	LUZURIAGACEAE	Vine	Scrambling Lily	Native
WR	<i>Geranium sp.</i>	GERANIACEAE	Herb	Geranium	Weed
WR	<i>Gleichenia rupestris</i>	GLEICHENIACEAE	Fern	Coral Fern	Native
WR, FBR	<i>Glochidion ferdinandi var. ferdinandi</i>	EUPHORBIACEAE	Tree	Cheese Tree	Native
WR	<i>Glycine microphylla</i>	FABACEAE	Vine	Love Creeper	Native
WR	<i>Gonocarpus teucrioides</i>	HALORAGACEAE	Herb	Germander Raspwort	Native
WR	<i>Grevillea buxifolia ssp. buxifolia</i>	PROTEACEAE	Shrub	Grey Spider Flower	Native
WR	<i>Grevillea linearifolia</i>	PROTEACEAE	Shrub	White Spider Flower	Native
FBR	<i>Grevillea longiflora</i>	PROTEACEAE	Shrub		Native
FBR	<i>Grevillea sericea</i>	PROTEACEAE	Shrub	Pink Spider Flower	Native
WR	<i>Hakea salicifolia</i>	PROTEACEAE	Shrub	Willow-leaved hakea	Native
WR	<i>Hakea sericea</i>	PROTEACEAE	Shrub	Bushy Needlebush	Native
WR	<i>Hakea teretifolia</i>	PROTEACEAE	Shrub	Dagger Hakea	Native
WR	<i>Hardenbergia violacea</i>	FABACEAE	Vine	False Sarsaparilla	Native
FBR	<i>Hedera helix</i>	ARALIACEAE	Vine	English Ivy	Planted
WR	<i>Hedychium gardnerianum</i>	ZINGIBERACEAE	Herb	Ginger Lily	Weed
WR	<i>Hibbertia aspera</i>	DILLENIACEAE	Shrub		Native
WR	<i>Hibbertia dentata</i>	DILLENIACEAE	Shrub	Twining Guinea Flower	Native
WR	<i>Hibbertia scandens</i>	DILLENIACEAE	Vine	Golden Guinea Flower	Native
WR, FBR	<i>Hydrocotyle peduncularis</i>	APIACEAE	Herb		Native
WR	<i>Hydrocotyle tripartita</i>	APIACEAE	Herb		Native
WR	<i>Impatiens walleriana</i>	BALSAMINACEAE	Herb	Balsam	Weed
WR	<i>Imperata cylindrica var. major</i>	POACEAE	Grass	Blady Grass	Native
WR	<i>Ipomea cairica</i>	CONVOLVULACEAE	Vine	Coastal Morning Glory	Nox W4c

WR	<i>Isolepis nodosa</i>	CYPERACEAE	Sedge	Knobby Club-rush	Native
WR	<i>Jacaranda mimosifolia</i>	BIGNONIACEAE	Tree	Jacaranda	Planted
WR, FBR	<i>Kennedia rubicunda</i>	FABACEAE	Vine	Dusky Coral-pea	Native
WR	<i>Kunzea ambigua</i>	MYRTACEAE	Shrub	Tick Bush	Native
WR	<i>Kunzea capitata</i>	MYRTACEAE	Shrub	Pink Kunzea	Native
WR	<i>Lambertia formosa</i>	PROTEACEAE	Shrub	Mountain Devil	Native
WR, FBR	<i>Lantana camara</i>	VERBENACEAE	Shrub	Lantana	Nox W2
WR	<i>Lasiopetalum ferrugineum</i> var. <i>ferrugineum</i>	STERCULIACEAE	Shrub	Rusty Petals	Native
WR	<i>Lepidosperma filiforme</i>	CYPERACEAE	Sedge		Native
WR	<i>Lepidosperma laterale</i>	CYPERACEAE	Sedge	Variable Sword Edge	Native
WR, FBR	<i>Leptospermum laevigatum</i>	MYRTACEAE	Shrub	Coastal Tea-tree	Native
WR	<i>Lepyrodia scariosa</i>	RESTIONACEAE	Rush	Scale-rush	Native
WR	<i>Ligustrum sinense</i>	OLEACEAE	Shrub	Privet - narrow leaved	Nox W4b
WR, FBR	<i>Livistona australis</i>	ARECACEAE	Palm	Cabbage Tree Palm	Significant
WR	<i>Lomandra brevis</i>	LOMANDRACEAE	Herb	Tuft Mat-rush	Rare
WR	<i>Lomandra filiformis</i> ssp. <i>filiformis</i>	LOMANDRACEAE	Herb	Wattle Mat-rush	Native
WR, FBR	<i>Lomandra longifolia</i>	LOMANDRACEAE	Herb	Spiny-headed Mat-rush	Native
WR	<i>Lomandra multiflora</i> ssp. <i>multiflora</i>	LOMANDRACEAE	Herb	Many-flowered Mat-rush	Native
WR	<i>Lomandra obliqua</i>	LOMANDRACEAE	Herb	Fish Bones	Native
WR	<i>Lophostemon confertus</i>	MYRTACEAE	Tree	Brush Box	Planted
FBR	<i>Melaleuca quinquenervia</i>	MYRTACEAE	Tree	Broad-leaved Paperbark	Native
WR	<i>Michelia figo</i>		Shrub	Port Wine Magnolia	Planted
WR	<i>Micrantheum ericoides</i>	EUPHORBIACEAE	Shrub	Micrantheum	Native
WR	<i>Microlaena stipoides</i> var. <i>stipoides</i>	POACEAE	Grass	Weeping Grass	Native
WR	<i>Mitrasacme polymorpha</i>	LOGANIACEAE	Herb	Mitre Weed	Native
FBR	<i>Monstera deliciosa</i>	ARACEAE	Herb	Swiss Cheese Plant	Weed
WR, FBR	<i>Nephrolepis cordifolia</i>	DAVALLIACEAE	Fern	Fishbone Fern	Nox W4c
WR	<i>Nerium oleander</i>	APOCYNACEAE	Shrub	Oleander	Planted
WR	<i>Notelaea longifolia</i> forma <i>longifolia</i>	OLEACEAE	Shrub	Mock Olive	Native
WR	<i>Notelaea ovata</i>	OLEACEAE	Shrub	Mock Olive	Native
WR	<i>Ochna serrulata</i>	OCHNACEAE	Shrub	Ochna, Mickey Mouse Plant	Nox W4b
WR	<i>Olea europaea</i> ssp. <i>africana</i>	OLEACEAE	Shrub	African Olive	Weed
FBR	<i>Olearia tomentosa</i>	ASTERACEAE	Herb	Daisy-bush	Native
WR, FBR	<i>Omalanthus populifolius</i>	EUPHORBIACEAE	Shrub	Bleeding Heart	Native
WR, FBR	<i>Oplismenus imbecillis</i>	POACEAE	Grass	Basket Grass	Native
FBR	<i>Oxalis</i> sp.	OXALIDACEAE	Herb		Native
WR	<i>Ozothamnus diosmifolius</i>	ASTERACEAE	Herb		Native
WR, FBR	<i>Pandorea pandorana</i>	BIGNONIACEAE	Vine	Wonga Wonga Vine	Native
WR	<i>Panicum simile</i>	POACEAE	Grass	Two Colour Panic	Native
WR, FBR	<i>Paspalum dilatatum</i>	POACEAE	Grass	Paspalum	Weed
WR	<i>Patersonia glabrata</i>	IRIDACEAE	Herb	Leafy Purple Flag	Native

WR	<i>Persicaria decipiens</i>	POLYGONACEAE	Herb		Native
WR	<i>Persoonia levis</i>	PROTEACEAE	Shrub	Smooth Geebung	Native
WR	<i>Persoonia linearis</i>	PROTEACEAE	Shrub	Narrow-leaved Geebung	Native
WR	<i>Petrophile pulchella</i>	PROTEACEAE	Shrub	Conesticks	Native
WR	<i>Philodendron bipinnatifidum</i>	ARACEAE	Herb	Philodendron	Weed
WR	<i>Phoenix canariensis</i>	ARECACEAE	Palm	Canary Island Palm	Weed
WR, FBR	<i>Phyllanthus hirtellus</i>	EUPHORBIACEAE	Herb		Native
WR, FBR	<i>Pittosporum revolutum</i>	PITTOSPORACEAE	Tree	Rough-fruit Pittosporum	Native
WR, FBR	<i>Pittosporum undulatum</i>	PITTOSPORACEAE	Tree	Sweet Pittosporum	Native
WR	<i>Platylobium formosum</i> ssp. <i>parviflorum</i>	FABACEAE	Shrub	Handsome Flat-pea	Native
WR	<i>Platysace lanceolata</i>	APIACEAE	Herb	Native Parsnip	Native
WR	<i>Platysace linearifolia</i>	APIACEAE	Herb	Carrot Tops	Native
FBR	<i>Podocarpus spinulosus</i>	PODOCARPACEAE	Shrub		Native
WR	<i>Pomaderris ferruginea</i>	RHAMNACEAE	Shrub		Native
WR	<i>Pomax umbellata</i>	RUBIACEAE	Herb	Pomax	Native
WR	<i>Pratia purpurascens</i>	LOBELIACEAE	Herb	White Root	Native
WR	<i>Protoasparagus aethiopicus</i>	ASPARAGACEAE	Herb	Asparagus Fern	Weed
WR	<i>Pteridium esculentum</i>	DENNSTAEDTIACEAE	Fern	Bracken	Native
WR	<i>Pultenaea elliptica</i>	FABACEAE	Shrub	Bush Pea	Native
WR	<i>Pultenaea flexilis</i>	FABACEAE	Shrub	Graceful Bush Pea	Native
WR	<i>Pultenaea hispidula</i>	FABACEAE	Shrub	Bush Pea	Significant
WR	<i>Pyrrosia rupestris</i>	POLYPODIACEAE	Fern		Native
WR, FBR	<i>Rapanea howittiana</i>	MYRSINACEAE	Tree	Brush Muttonwood	Native
WR	<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	CHENOPODIACEAE	Herb		Native
WR	<i>Senna floribunda</i>	CAESALPINIOIDEAE	Shrub	Cassia	Weed
FBR	<i>Senna pendula</i>	CAESALPINIOIDEAE	Shrub	Cassia / Senna	Nox W4b
WR	<i>Sida rhombifolia</i>	MALVACEAE	Herb	Paddy's Lucerne	Weed
WR	<i>Smilax glyciphylla</i>	SMILACACEAE	Vine	Native Sarsaparilla	Native
WR	<i>Stenotaphrum secundatum</i>	POACEAE	Grass	Buffalo Grass	Weed
WR, FBR	<i>Stephania japonica</i> var. <i>discolor</i>	MENISPERMACEAE	Vine	Snake Vine	Native
FBR	<i>Strelitzia nicolaii</i>	MUSACEAE	Herb	Strelitzia	Weed
FBR	<i>Syagrus romanzoffiana</i>	ARECACEAE	Palm	Cocos Palm, Queen Palm	Planted
WR	<i>Synoum glandulosum</i>	MELIACEAE	Tree	Scentless Rosewood	Significant
FBR	<i>Syzygium australe</i>	MYRTACEAE	Tree	Bush Cherry	Native
FBR	<i>Tetragonia tetragonoides</i>	AIZOACEAE	Herb	Warrigal Greens, Native Spinach	Native
WR, FBR	<i>Themeda australis</i>	POACEAE	Grass	Kangaroo Grass	Native
WR, FBR	<i>Toxicodendron succedaneum</i>	ANACARDIACEAE	Shrub	Rhus tree	Nox W2
WR	<i>Tradescantia albiflora</i>	COMMELINACEAE	Herb	Wandering Jew	Weed
FBR	<i>Trisaniopsis laurina</i>	MYRTACEAE	Tree	Water Gum	Native
WR	<i>Viminaria juncea</i>	FABACEAE	Shrub		Native
WR, FBR	<i>Viola hederacea</i>	VIOLACEAE	Herb	Native Violet	Native
FBR	<i>Westringia fruticosa</i>	LAMIACEAE	Shrub	Coastal Rosemary	Native

WR	<i>Wilkia huegeliana</i>	MONIMIACEAE	Shrub	Wilkia	Significant
WR	<i>Woollsia pungens</i>	EPACRIDACEAE	Shrub	Snow Wreath	Native
WR	<i>Xanthorrhoea arborea</i>	XANTHORRHOEACEAE	Grass Tree	Broad-leaved Grass Tree	Native
WR	<i>Xanthorrhoea media/resinifera</i>	XANTHORRHOEACEAE	Grass Tree	Forest Grass Tree	Native
WR	<i>Xanthosia pilosa</i>	APIACEAE	Herb	Wooly Xanthosia	Native
WR	<i>Xanthosia tridentata</i>	APIACEAE	Herb	Rock Xanthosia	Native
WR	<i>Zieria pilosa</i>	RUTACEAE	Shrub	Hairy Zieria	Native
WR	<i>Zieria smithii</i>	RUTACEAE	Shrub	Sandfly Zieria	Native



These classifications are based on the vegetation communities defined by Benson and Howell (1994) for their 1:100 000 map sheets of the Sydney region

**Sydney Sandstone Ridgetop Woodland (Map Unit 10ar)**

Sydney Sandstone Ridgetop Woodland is a dry woodland type, generally associated with exposed ridges and plateau tops with shallower soils interrupted by rocky outcrops. Soils are shallow lithosols and earthy sands, yellow earths and yellow podzolics.

**10ar(i) Woodland/Low woodland: *Corymbia gummifera* – *Eucalyptus haemastoma***

This community is typically comprised of woodland but is structurally very variable, ranging from low open-woodland to open-forest depending on local aspect, soil and drainage conditions, as well as the time since the last fire. Characteristic tree species are *Corymbia gummifera*, *Eucalyptus sparsifolia*, *Eucalyptus haemastoma* and *Eucalyptus racemosa*, sometimes with some intergradation between the latter two scribbly gum species. *Eucalyptus piperita* and *Angophora costata* may also occur.

This community typically has a rich sclerophyllous understorey, particularly abundant with species of the Proteaceae, Fabaceae, Epacridaceae and Myrtaceae. Common shrubs may include species of *Pultanaea*, *Isopogon*, *Hibbertia*, *Hakea*, *Banksia*, *Boronia*, *Leucopogon*, *Grevillea*, *Gompholobium* and *Tetratheca*, as well as *Actinotus minor*, *Allocasuarina distyla*, *Dillwynia retorta*, *Entolasia stricta*, *Phyllota phyllicoides*, *Leptospermum trinervium*, *Petrophile pulchella* and *Platysace linearifolia*.

**Sydney Sandstone Gully Forest (Map Unit 10ag)**

This vegetation is a moist forest type, generally associated with sheltered hillsides and moist gullies. Sydney Sandstone Gully Forest is a relatively widespread community that occurs on the sandstone plateaus and slopes surrounding Sydney. It is generally found in the moister and sheltered environments along gullies and slopes, particularly on the southern to eastern aspects and near the coast. The environment where this community is found is often termed mesic and is suitable for temperate rainforest species and soft-leaved moisture loving rainforest species. The soils are relatively high in nutrients and moisture.

Soils are shallow lithosols and siliceous sands, yellow earths and yellow podzolics, with deeper podzolic soils enriched by downwash material on lower slopes and in narrow valleys. The average tree height is 25m, although this does vary from approximately 18-30m.

**10ag(i) Open forest/woodland: *Eucalyptus piperita* - *Angophora costata* - *Corymbia gummifera***

The canopy of this subunit is dominated by *Eucalyptus piperita*, *Angophora costata* and *Corymbia gummifera*, generally 10-20m in height, which form an open-forest or woodland. *Allocasuarina littoralis* is a common smaller tree. The shrub layer (0.5-2m) is particularly diverse and there are many species from the families Proteaceae, Fabaceae, and Myrtaceae. Common shrub species include *Persoonia pinifolia*, *Acacia terminalis*, *Pultenaea daphnoides* and *Dodonaea triquetra*. There is considerable local variation in this community.

**10ag(a) Coastal Banksia - Eucalypt Woodland.**

This community varies in structure from open-scrub to closed scrub, low woodland or open forest. The canopy layer is composed of various combinations of *Angophora costata*, *Banksia integrifolia*, *Banksia serrata*, *Casuarina glauca* and *Eucalyptus botryoides*. Common understorey species are *Breynia oblongifolia*, *Dillwynia retorta*, *Hibbertia scandens*, *Kunzea ambigua*, *Lomandra longifolia*, *Melaleuca nodosa*, *Pteridium esculentum* and *Ricinocarpos pinifolius*.

*Appendix J: Species suitable for planting in Forty Baskets Study Area  
(GIS Environ. Consult. 2003a)*

This species list is only for Sydney harbour foreshore areas.

All plants must be propagated from local (<5km) indigenous plants.

At least 80% of each mix must be used. There can be no more than 10% of any one species.

Trees must be in 300 mm pots or larger, shrubs must be in tube stock to 300 mm pots, the herbs and grasses must be tube stock or similar. Suitable bush regeneration nurseries occur in the Terry Hills and Ingleside area.

These species are chosen because they are suitable for the habitat (soil, micro climate, salt load) of the area, they are local native species, they provide habitat for fauna, they can be readily propagated and they will look good in semi formal gardens.

The plant material will need to be preorded at least 6 months before it is required. Deep mulch must be used.

By Nick Skelton of GIS Environmental Consultants Ph:041 943 8672

## Species Mix A Trees

Scientific Name	Family	Habit	Common Name
<i>Acacia binervata</i>	FABACEAE	Tree	Two-veined Hickory
<i>Acacia implexa</i>	FABACEAE	Tree	Hickory
<i>Acmena smithii</i>	MYRTACEAE	Tree	Lily Pilly
<i>Banksia integrifolia</i> ssp. <i>integrifolia</i>	PROTEACEAE	Tree	Coastal Banksia
<i>Banksia serrata</i>	PROTEACEAE	Tree	Old Man Banksia
<i>Casuarina glauca</i>	CASUARINACEAE	Tree	Swamp Sheoak
<i>Cupaniopsis anacardioides</i>	SAPINDACEAE	Tree	Tuckeroo, Yowarro
<i>Eucalyptus botryoides</i>	MYRTACEAE	Tree	Bangalay
<i>Eucalyptus piperita</i>	MYRTACEAE	Tree	Sydney Peppermint
<i>Eucalyptus robusta</i>	MYRTACEAE	Tree	Swamp Mahogany
<i>Eucalyptus umbra</i>	MYRTACEAE	Tree	Bastard Mahogany
<i>Ficus rubiginosa</i>	MORACEAE	Tree	Rusty Fig
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	EUPHORBIACEAE	Tree	Cheese Tree
<i>Livistona australis</i>	ARECACEAE	Palm	Cabbage Tree Palm
<i>Melaleuca quinquenervia</i>	MYRTACEAE	Tree	Broad-leaved Paperbark
<i>Melaleuca styphelioides</i>	MYRTACEAE	Tree	Prickly-leaved Paperbark
<i>Syzygium oleosum</i>	MYRTACEAE	Tree	Blue Lillypilly
<i>Tristania collina</i>	MYRTACEAE	Tree	

## Species Mix B. Shrubs

<i>Angophora hispida</i>	MYRTACEAE	Shrub	Dwarf Apple
<i>Banksia marginata</i>	PROTEACEAE	Shrub	Silver Banksia
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	PROTEACEAE	Shrub	Hairpin Banksia
<i>Callicoma serratifolia</i>	CUNONIACEAE	Shrub	
<i>Cassine australis</i> var. <i>australis</i>	CELASTRACEAE	Shrub	
<i>Correa reflexa</i> var. <i>reflexa</i>	RUTACEAE	Shrub	Native Fuchsia
<i>Elaeocarpus reticulatus</i>	ELAEocarpaceae	Shrub	Blueberry Ash
<i>Grevillea linearifolia</i> (Hawkesbury Sandstone form)	PROTEACEAE	Shrub	White Spider Flower
<i>Hakea gibbosa</i>	PROTEACEAE	Shrub	Hakea
<i>Hakea propinqua</i>	PROTEACEAE	Shrub	Hakea
<i>Hakea sericea</i>	PROTEACEAE	Shrub	Bushy Needlebush
<i>Hakea teretifolia</i>	PROTEACEAE	Shrub	Dagger Hakea
<i>Kunzea ambigua</i>	MYRTACEAE	Shrub	Tick Bush

<i>Lambertia formosa</i>	PROTEACEAE	Shrub	Mountain Devil
<i>Leptospermum polygalifolium</i> ssp. <i>polygalifolium</i>	MYRTACEAE	Shrub	Lemon Scented Tea Tree
<i>Monotoca elliptica</i>	EPACRIDACEAE	Shrub	Tree Broom-heath
<i>Phebalium dentatum</i>	RUTACEAE	Shrub	
<i>Rhodamnia rubescens</i>	MYRTACEAE	Shrub	Scrub Turpentine
<i>Schizomeria ovata</i>	CUNONIACEAE	Shrub	White Cherry
<i>Synoum glandulosum</i>	MELIACEAE	Shrub	Scentless Rosewood

## Species Mix C. Understorey

<i>Aristida ramosa</i>	POACEAE	Grass	Three-awn Speargrass
<i>Aristida vagans</i>	POACEAE	Grass	Three-awn Speargrass
<i>Carpobrotus glaucescens</i>	AIZOACEAE	Herb	Pig Face
<i>Crinum pedunculatum</i>	AMARYLLIDACEAE	Herb	Swamp Lilly
<i>Dampiera stricta</i>	GOODENIACEAE	Herb	Blue Dampiera
<i>Danthonia tenuior</i>	POACEAE	Grass	
<i>Deyeuxia decipiens</i>	POACEAE	Grass	
<i>Deyeuxia quadriseta</i>	POACEAE	Grass	
<i>Dichelachne crinita</i>	POACEAE	Grass	
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	POACEAE	Grass	Tufted Hedgehog Grass
<i>Einadia hastata</i>	CHENOPODIACEAE	Herb	
<i>Entolasia marginata</i>	POACEAE	Grass	
<i>Entolasia stricta</i>	POACEAE	Grass	Wiry Panic
<i>Eragrostis brownii</i>	POACEAE	Grass	
<i>Goodenia ovata</i>	GOODENIACEAE	Herb	Hop Goodenia
<i>Hardenbergia violacea</i>	FABACEAE	Vine	False Sarsaparilla
<i>Hibbertia scandens</i>	DILLENIACEAE	Vine	Golden Guinea Flower
<i>Imperata cylindrica</i> var. <i>major</i>	POACEAE	Grass	Blady Grass
<i>Kennedia rubicunda</i>	FABACEAE	Vine	Dusky Coral-pea
<i>Lomandra longifolia</i>	LOMANDRACEAE	Herb	Spiny-headed Mat-rush
<i>Melanthera biflora</i>	ASTERACEAE	Herb	
<i>Microlaena stipoides</i> var. <i>stipoides</i>	POACEAE	Grass	Weeping Grass
<i>Olearia tomentosa</i>	ASTERACEAE	Herb	Daisy-bush
<i>Oplismenus aemulus</i>	POACEAE	Grass	Basket Grass
<i>Panicum simile</i>	POACEAE	Grass	Two Colour Panic
<i>Pelargonium australe</i>	GERANIACEAE	Herb	Coastal Geranium
<i>Pelargonium inodorum</i>	GERANIACEAE	Herb	Wild Geranium
<i>Stipa mollis</i>	POACEAE	Grass	
<i>Tetragonia tetragonoides</i>	AIZOACEAE	Herb	Warrigal Greens, Native Spinach
<i>Themeda australis</i>	POACEAE	Grass	Kangaroo Grass
<i>Viola hederacea</i>	VIOLACEAE	Herb	Native Violet
<i>Westringia fruticosa</i>	LAMIACEAE	Shrub	Coastal Rosemary



*Appendix K: Fauna Species list for Bushland Reserves within Forty Baskets Study Area  
(GIS Environ. Consult. 2003a)*

Native and exotic species of fauna in Wellings Reserve (WR) and Forty Baskets Reserves (FBR) (source Skelton *et al.* 2003). Record: h = Heard, o = Observed, t = Tracks, Scats, Hair and Traces, a = Anecdotal. Status: Native = Native species, \* Introduced = Introduced species, Vulnerable = Listed on Schedule 2 of *Threatened Species Conservation Act 1995*

Location	Type	Common Name	Scientific Name	Status	Record
WR	Amphibian	Brown-striped Frog	<i>Limnodynastes peronii</i>	Native	h
WR	Amphibian	Common Eastern Froglet	<i>Crinia signifera</i>	Native	h
WR	Amphibian	Peron's Tree Frog	<i>Litoria peronii</i>	Native	h
WR	Amphibian	Red-crowned Toadlet	<i>Pseudophryne australis</i>	Vulnerable	h
WR	Bird	Australian King Parrot	<i>Alisterus scapularis</i>	Native	o
WR, FBR	Bird	Australian Magpie	<i>Gymnorhina tibicen</i>	Native	o
WR	Bird	Australian Raven	<i>Corvus coronoides</i>	Native	o
WR, FBR	Bird	Australian White Ibis	<i>Threskiornis molucca</i>	Native	o
WR	Bird	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	Native	o
WR, FBR	Bird	Brown Gerygone	<i>Gerygone mouki</i>	Native	o
WR	Bird	Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	Native	o
WR	Bird	Common Myna*	<i>Acridotheres tristis</i>	Native	o
WR, FBR	Bird	Crested Pigeon	<i>Ocyphaps lophotes</i>	Native	o
WR	Bird	Crimson Rosella	<i>Platycercus elegans</i>	Native	o
WR	Bird	Dollarbird	<i>Eurystomus orientalis</i>	Native	o
WR	Bird	Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Native	o
WR	Bird	Galah	<i>Cacatua roseicapilla</i>	Native	o
WR	Bird	Grey Butcherbird	<i>Cracticus torquatus</i>	Native	o
WR	Bird	Grey Fantail	<i>Rhipidura fuliginosa</i>	Native	o
FBR	Bird	House Sparrow*	<i>Passer domesticus</i>	Introduced	o
WR, FBR	Bird	Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Native	o
WR, FBR	Bird	Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	Native	o
WR, FBR	Bird	Magpie-lark	<i>Grallina cyanoleuca</i>	Native	o
WR, FBR	Bird	Masked Lapwing	<i>Vanellus miles</i>	Native	h
WR	Bird	Masked Lapwing	<i>Vanellus miles</i>	Native	o
WR	Bird	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	Native	o
WR, FBR	Bird	Noisy Miner	<i>Manorina melanocephala</i>	Native	o
WR	Bird	Pied Currawong	<i>Strepera graculina</i>	Native	o
WR, FBR	Bird	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Native	o
WR	Bird	Red Wattlebird	<i>Anthochaera carunculata</i>	Native	o
WR, FBR	Bird	Silver Gull	<i>Larus novaehollandiae</i>	Native	o
WR	Bird	Spotted Turtle-Dove*	<i>Streptopelia chinensis</i>	Introduced	o
WR	Bird	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	Native	o
WR	Bird	Tawny Frogmouth	<i>Podargus strigoides</i>	Native	o

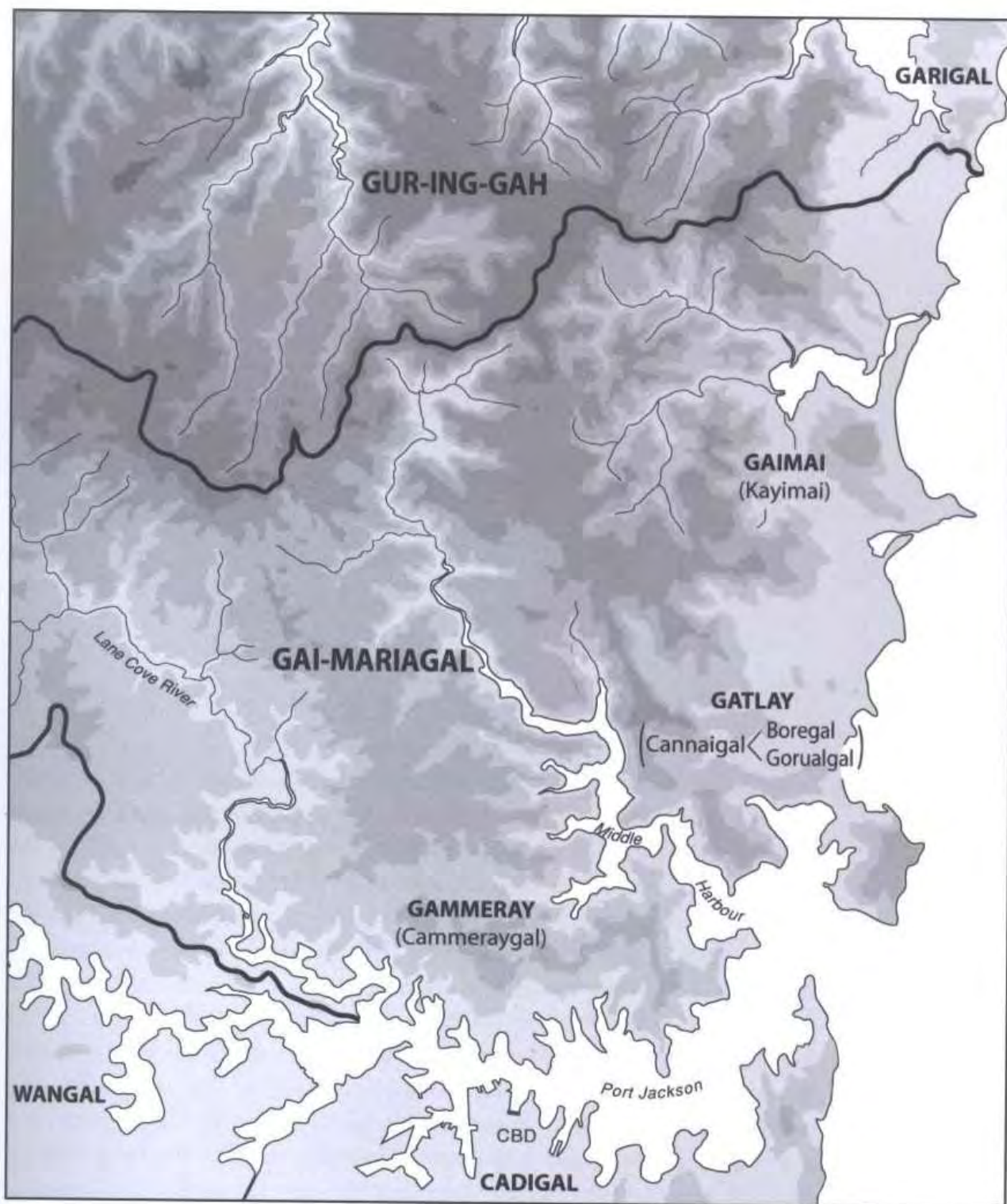


WR	Bird	Variegated Fairy-wren	<i>Malurus lamberti</i>	Native	o
WR	Bird	Welcome Swallow	<i>Hirundo neoxena</i>	Native	o
WR	Bird	White-browed Scrubwren	<i>Sericornis frontalis</i>	Native	o
WR	Mammal	Common Brushtail Possum	<i>Trichosurus vulpecula</i>	Native	t
WR	Mammal	Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>	Native	t
WR, FBR	Mammal	Dog*	<i>Canis familiaris</i>	Introduced	o
FBR	Mammal	Rabbit*	<i>Oryctolagus cuniculus</i>	Introduced	t
WR	Reptile	Copper-tailed Skink	<i>Ctenotus taeniolatus</i>	Native	o
WR, FBR	Reptile	Dark-flecked Garden Sunskink	<i>Lampropholis delicata</i>	Native	o
WR	Reptile	Eastern Blue-tongued Lizard	<i>Tiliqua scincoides</i>	Native	o
WR, FBR	Reptile	Eastern Water Dragon	<i>Physignathus lesuerii</i>	Native	o
WR, FBR	Reptile	Eastern Water-skink	<i>Eulamprus quoyii</i>	Native	o
WR	Reptile	Golden Crowned Snake	<i>Cacophis squamulosus</i>	Native	o
WR, FBR	Reptile	Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>	Native	o
WR	Reptile	Robust Ctenotus	<i>Ctenotus robustus</i>	Native	o

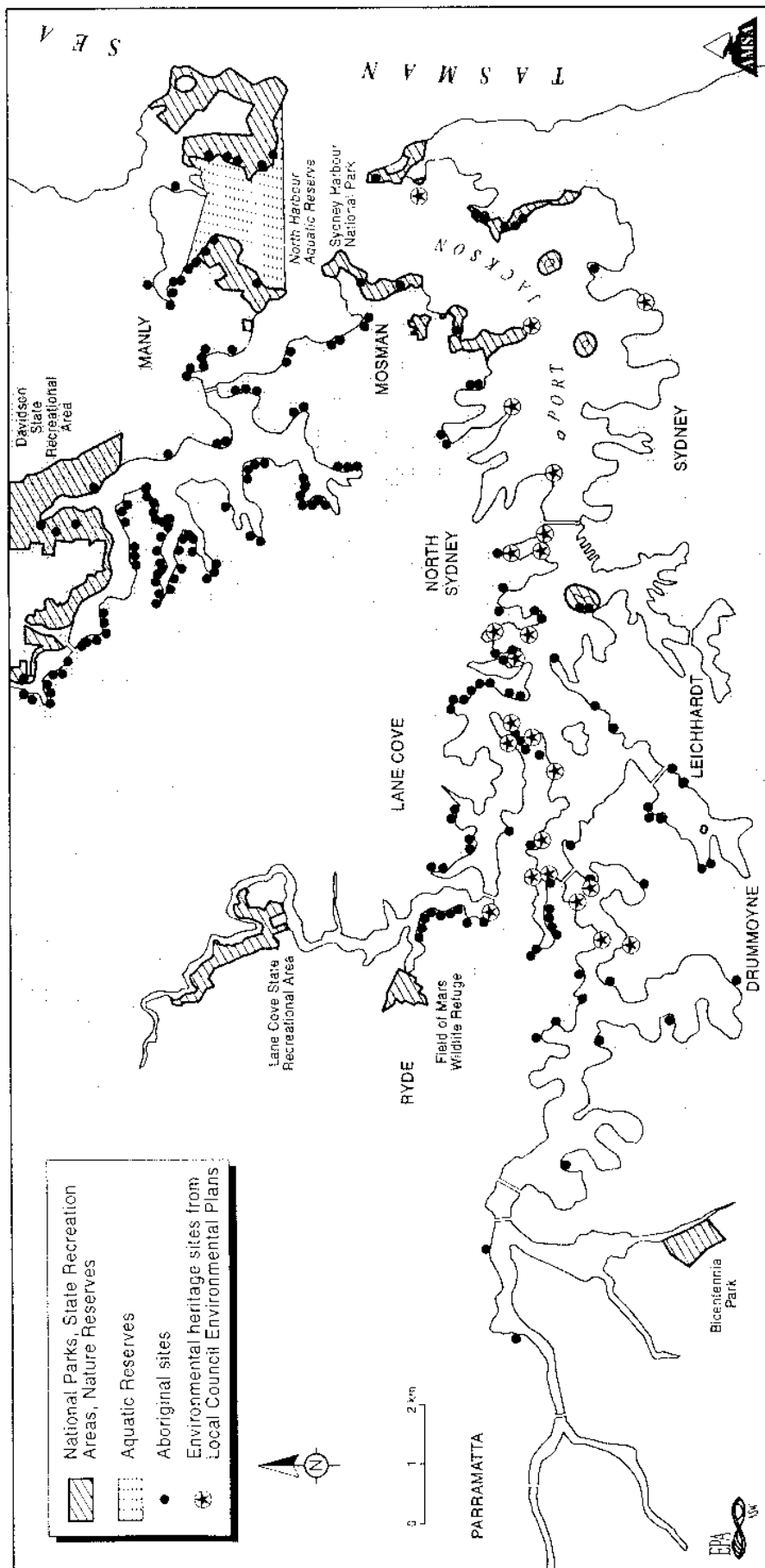
## *Appendix L: Landscape Masterplan*

At the time that this Coastline Management Plan was ready for public exhibition, the Landscape Masterplan was still being developed due to a number of unresolved issues. The draft Landscape Masterplan will therefore be exhibited separately and integrated into this appendix once adopted.

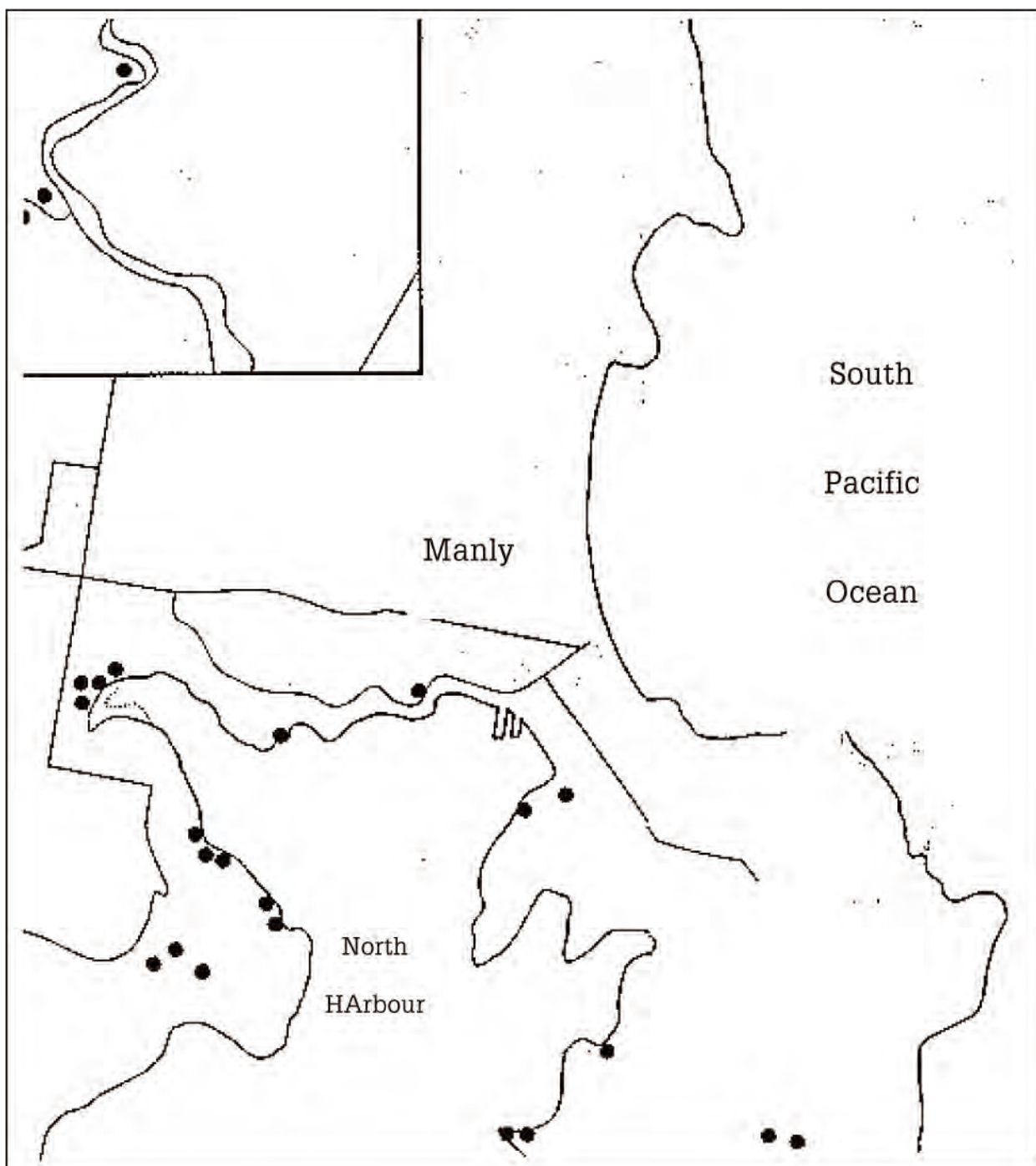
*Appendix M: Clans of the northern Sydney Region*  
*Foley, D. (2001)*



# Aboriginal and European heritage sites, National Parks, State Recreation Areas, State Recreation Areas, nature reserves and aquatic reserves in Port Jackson



Appendix O: Aboriginal Sites North Harbour – Aboriginal Relic Sites GAYMAI Tribal Group  
DUAP, 1988



# Forty Baskets Coastline Management Plan

## **ACTION PLAN:** May 2004

### **Priorities:**

High – within 2 years of adoption of the CMP

Medium – within 4 years of adoption of the CMP

Low – within 5 years of adoption of the CMP

Ongoing – throughout the time that this Coastline Management Plan is current.

Please note: the priority listing for each recommendation is intended as a **guide only** and represents the desirable timeframe for addressing each action. The priorities may be revised to be in accordance with available resources and in consultation with the responsible agency and/or department/division of Council, bearing in mind that this is a strategic plan with a timeframe of 10 to 20 years (with revisions). Implementation of this plan will also be required to have regard to other Council priorities.

### **Authority Abbreviations**

WA – Waterways Authority of NSW

NSWF – NSW Fisheries

NPWS – NSW National Parks & Wildlife Service (now part of the Department of Environment & Conservation).

DIPNR – Department of Infrastructure, Planning & Natural Resources

DL - Department of Lands

MC – Manly Council

SPA – Sydney Ports Authority

Police – NSW Police Service

SW – Sydney Water

P&S – Planning & Strategy (Corporate Planning & Strategy), Manly Council

NRM - Natural Resource Management (Corporate Planning & Strategy), Manly Council

US – Urban Services (Corporate Planning & Strategy), Manly Council

ES – Environmental Services, Manly Council

CS – Civic Services, Manly Council

COS – Corporate Services, Manly Council

MEC – Manly Environment Centre

Note the status column is to be filled out during the implementation of the Plan. When a recommendation is completed the status column is to read 'complete' and the date of completion recorded.

**A number of the identified recommendations are issues that are broader than this Coastline Management Plan and have been included in more weighty Council documents and programs such as the Manly Sustainability Strategy, Council's Development Control Plans etc. These have still been included in the action plan.**

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## AQUATIC FLORA

### Objective / Performance Target:

- ☐ To conserve and enhance the integrity and diversity of the indigenous marine flora.
- ☐ To achieve community awareness and assistance in the conservation of aquatic flora through education and participation.
- ☐ To minimise the impact of the Manly LGA on the aquatic flora of North Harbour.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
AF1. Identify moorings located over seagrass beds and relocate, those moorings where feasible	MC to lobby WA to undertake this recommendation. Consult with Davis Marina.	Responsibility: WA  Priority: Medium	WA	
AF2. Extend the seagrass friendly moorings into North Harbour (including Forty Baskets), should they be proven effective in the current WA trial.	MC to stay up-to-date on the progress of the mooring trial and to encourage WA to introduce proven seagrass friendly moorings in North Harbour	Responsibility: WA  Priority: Medium	WA	
AF3. NSWf to provide up-to-date seagrass distribution maps to WA and MC for decision-making and education.	WA and MC to distribute map to boat users and other community groups for their education and use	Responsibility: NSWf  Priority: Medium	NSWF	

AF4. Lobby WA to increase the enforcement of boating restrictions over seagrass beds.		Responsibility: MC – NRM  Priority: High	N/A	
AF5. Continue to liaise with NSWf to facilitate the extension of the North (Sydney) Harbour Aquatic Reserve boundary to include the whole of North Harbour north of a line drawn between Quarantine Head and Grotto Point.		Responsibility: MC – P&S, NRM, NSWf  Priority: High & ongoing	N/A	
AF6. Continue to educate boat users, through MC's Starboard Right and Green education program, about impacts of their activities on the marine environment.	Include information regarding the importance of seagrass beds, the potential impacts of boating activities on seagrass and the presence of <i>Caulerpa taxifolia</i>  Work in consultation with NSWf & WA	Responsibility: MC - MEC, NSWf & WA  Priority: High	MC – Environment Levy	
AF7. Lobby State Government to authorise NSWf officers to enforce boating restrictions over seagrass beds		Responsibility: MC – NRM  Priority: Medium	N/A	
AF8. Identify any illegal sewage connections discharging directly into the Forty Baskets marine environment.		Responsibility: SW, MC - US  Priority: High	SW, MC	

AF9. Encourage the establishment of a community-based seagrass monitoring program to provide reliable data on any change in the distribution or health of seagrass in North Harbour	Contact the Underwater Research Group, who are presently undertaking marine biodiversity studies in the aquatic reserve, including a snap shot of <i>Caulerpa taxifolia</i> distribution.  Contact Dive shops and request their assistance.	Responsibility: MC – MEC and NRM, NSWF  Priority: Medium and ongoing	MC – Environment Levy	
AF10. Encourage local residents, dive/snorkel groups and boat users, to report all <i>Caulerpa taxifolia</i> sightings to NSWF	Undertake education campaign to aid in the identification of <i>Caulerpa Taxifolia</i>	Responsibility : NSWF & MC – MEC and NRM  Priority: High & ongoing	N/A	
AF11. NSWF to keep the community, WA and MC informed of the distribution all <i>Caulerpa taxifolia</i>	MC to integrate updated information into planning decisions	Responsibility: NSWF  Priority: High & ongoing	NSWF	
AF12. Lobby NSWF, WA & State Government to introduce boat exclusion zones over known <i>Caulerpa taxifolia</i> locations		Responsibility: MC, NSWF, WA  Priority: Medium	N/A	
AF13. Develop and implement a management strategy to stop the spread of <i>Caulerpa taxifolia</i> in and around North Harbour	The strategy should include a program to monitor the spread of <i>Caulerpa taxifolia</i> .	Responsibility: NSWF  Priority: High	NSWF	Caulerpa Control Plan adopted by Minister for Fisheries in March 2004.  Implementation of Control Plan underway.

AF14. Continue to seek the results of marine ecology studies undertaken in the area	Continue to liaise with the Underwater Research Group to obtain results of their marine diversity study of North Harbour	Responsibility: MC – MEC and NRM, SPA, NSWF  Priority: Medium & ongoing	N/A	
AF15. Undertake ongoing monitoring for introduced species.		Responsibility: NSWF  Priority: Low	NSWF	

## AQUATIC FAUNA

### Objective / Performance Target:

- ☐ To conserve and enhance the integrity and diversity of the indigenous marine fauna.
- ☐ To achieve community awareness of and assistance with the conservation of aquatic fauna through education and participation
- ☐ To minimise the impact of the Manly LGA on the aquatic fauna of North Harbour

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
AF16. Implement management recommendations identified in the Little Penguin Recovery Plan.	NPWS and MC to actively implement the Little Penguin Recovery Plan, including: monitor the population and identify potential habitat; threat management; manage nesting habitat through appropriate bush regeneration and community education.	Responsibility: MC – P&S, NRM & NPWS  Priority: High & Ongoing	MC & NPWS	

## CONSERVATION MANAGEMENT – Aquatic

### Objective / Performance Target:

- ❑ To conserve and enhance the integrity and diversity of the study area's marine environment
- ❑ To achieve community awareness of and assistance with the conservation of the Aquatic Reserve through education and participation
- ❑ To minimise the impact of the Manly LGA on the area's marine environment

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
CM1. Continue to provide input into the development of the North (Sydney) Harbour Aquatic Reserve Management Plan	<p>Suggested management recommendations to read:</p> <ul style="list-style-type: none"> <li>▪ the need for the extension of the aquatic reserve refer to AF5.</li> <li>▪ the inclusion of rock platforms around North Harbour presently excluded.</li> <li>▪ minimise boat-anchoring damage of seagrass &amp; increase seagrass protection in reserve.</li> <li>▪ increase enforcement of recreational fishing in the reserve.</li> <li>• increase conservation management,</li> <li>• cessation of commercial fishing,</li> <li>• increase enforcement of recreational fishing.</li> </ul>	<p>Responsibility: MC - NRM &amp; NSWFW</p> <p>Priority: High</p>	N/A	

CM2. Increase community awareness of and assistance with the conservation of the marine environment through education and participation		Responsibility: MC – MEC and NRM  Priority: High	MC – Environment Levy	
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<b>USER GROUPS</b>  <u>Objective / Performance Target:</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> To create a safe, sustainable and enjoyable public area for use by a variety of user groups</li> <li><input type="checkbox"/> To reduce conflict between user groups</li> </ul>				
Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
UG1. Ensure all passive recreational activities are able to continue within the area that are consistent with the objectives of this CMP		Responsibility: MC – NRM  Priority: Medium & ongoing	N/A	
UG2. Ensure appropriate reserve management guidelines are enforced and regulated where appropriate.		Responsibility: MC – US, ES  Priority: High	N/A	

<b>ESTUARINE / COASTAL HYDRODYNAMICS</b>				
<u>Objectives / Performance Targets:</u>				
<input type="checkbox"/> To achieve a greater understanding of the hydrodynamic environment in the Forty Baskets study area to guide future management decisions.				
<b>Recommendation / Strategy</b>	<b>Additional Action</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
E1. Undertake a hydrological study to assess the impacts of the LGA on the marine environment only as required by Council.	The study should include the identification of management recommendations to be included in the CMP and should assess residence time of pollutants and the rate of tidal flushing to identify the impacts of potential long-term pollutants on the marine ecology	Responsibility: MC – NRM  Priority: Low	MC – Environment Levy  State Government's Coastal/ Estuary Management Programs	
<b>SEDIMENT PROCESSES</b>				
<u>Objectives / Performance Targets:</u>				
<input type="checkbox"/> To achieve a greater understanding of sediment quality and processes to guide future management responses with regard to the impact that the Manly LGA has on the marine environment.				
<b>Recommendation / Strategy</b>	<b>Additional Action</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
SP1. Undertake investigations into sediment type and quality within the Forty Baskets study area	Information should be obtained to assess the LGA's impacts on the marine environment and/or to provide baseline data should beach nourishment be required in the future.	Responsibility: MC - NRM  Priority: Low	MC – Env Levy  Gov's Coastal/ Estuary Programs	



## RECREATIONAL FISHING

### Objectives / Performance Targets:

- ☐ To minimise the impact the Manly LGA has on the marine ecology of North Harbour.
- ☐ To minimise conflicts between user groups.
- ☐ To achieve a balance between fishing and conservation objectives.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
RF1. Educate community / fishers of the impacts of recreational fishing on the marine environment in addition to fishing regulations and associated penalties for non-compliance.	Incorporate objective into MC's current 'Starboard, Right & Green' education program considering fishers using boats.	Responsibility: NSWF & MC – MEC and NRM  Priority: High	NSWF, MC – Environment Levy	
RF2. Enforce rules and regulations applying to recreational fishers (bag limits, size limits and species types)	Liaise with NSW Fisheries regarding the dissemination of information and increased enforcement of regulations	Responsibility: NSWF, MC – ES  Priority: High	NSWF	
RF3. Encourage and inform the community to report illegal fishing activities to Fisher's Watch or NSWF	Liaise with Balgowlah Heights and North Harbour Precincts	Responsibility: MC – NRM, ES, NSWF  Priority: High	N/A	

## COMMERCIAL FISHING

### Objectives / Performance Targets:

- ☐ To minimise the impact that the Manly Local Government Area has on the marine ecology of North Harbour.
- ☐ To minimise conflicts between user groups.
- ☐ To achieve a balance between fishing and conservation objectives.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
CF1. Continue to authorise and train MC rangers as regulatory officers to enforce fishing regulations	Coordinate ongoing training of MC Rangers	Responsibility: NSWF, MC  Priority: High & ongoing	NSWF	
CF2. NSWF to stringently enforce regulations associated with hauling over <i>Posidonia</i> beds	NSWF to provide commercial fishers and regulatory staff with seagrass maps to assist in identification of <i>Posidonia</i> beds within North Harbour	Responsibility: NSWF  Priority: High	NSWF	
CF3. Continue to provide input into the development of Fisheries Management Strategies that apply to the Forty Baskets study area and North Harbour as a whole.		Responsibility: MC – NRM, NSWF  Priority: High	N/A	

## BOATING

### Objectives / Performance Targets:

- ☐ To ensure local boating facilities are safe and accessible with minimal disturbance to residents and other recreational groups.
- ☐ To improve the sustainability of boating activities in Forty Baskets.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
B1. Encourage compliance with all WA's boating regulations.	Incorporate objective into MC's current 'Starboard, Right & Green' education program	Responsibility: MC – MEC, WA  Priority: High & Ongoing	MC – Environment Levy, WA	
B2. Encourage residents to report all non-compliance of WA regulations to the WA.	Undertake consultation with Precincts	Responsibility: WA, MC – NRM, ES  Priority: High & Ongoing	N/A	
B3. Investigate the feasibility of installing dinghy storage facilities in the Forty Baskets study area	Undertake consultation with the community prior to the implementation of any system.  Consult with Davis Marina regarding options associated with the Marina area.  Address through the Landscape Masterplan  Refer Section 3.9.3 CMP: Support Document.	Responsibility: MC – P&S, NRM in association with DIPNR.  Priority: High	MC	

B4. Introduce a dinghy registration/licensing system to assist in the removal of non-utilised dinghies from the foreshore.	<p>Undertake a review of neighboring Council's to determine the most efficient licensing system</p> <p>Consider a temporary licence under the <i>Crown Lands Act 1989</i> if storage facility is located in Crown Land.</p> <p>Inform dinghy and boat owners of new system</p>	<p>Responsibility: MC – NRM and COS</p> <p>Priority: High</p>	MC	
B5. Prohibit the chaining of boats/dinghies to trees and the storing and dragging of dinghies / canoes / kayaks in/through the bushland of the study area	<p>Include restrictions on reserve code of conduct signage.</p> <p>Inform boat owners of registration requirements and associated penalties</p>	<p>Responsibility: MC – NRM</p> <p>Priority: High</p>	MC	
B6. Stringently enforce regulations associated with boat storage.		<p>Responsibility: MC - ES</p> <p>Priority: High</p>	N/A	
B7. Enforce restrictions associated with exclusion zones (or no go zones) around seagrass beds, particularly where any <i>Posidonia</i> species exists		<p>Responsibility: WA</p> <p>Priority: High and ongoing.</p>	WA	
B8. Install a code of conduct sign advising the community of appropriate dinghy storage procedures and associated non-compliance penalties	Owners of inappropriately stored boats to be issued a warning.	<p>Responsibility: MC –, P&amp;S to design, CS, US to implement approved works</p> <p>Priority: High</p>	MC	

## MARITIME OPERATIONS

### Objectives / Performance Targets:

- ☐ To achieve the highest level of environmental protection and safety for Forty Baskets with regard to the impacts of maritime operations.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
MO1. Ensure that MC Rangers are aware of Spill Response Procedures for both on-water and off-water incidents		Responsibility: MC – NRM, ES  Priority: High	N/A	
MO2. Encourage the community to report marine pest sightings to NSWf and SPA		Responsibility: MC – NRM and MEC, NSWf, SPA  Priority: High	N/A	

## WATER QUALITY

### Objectives / Performance Targets:

- ☐ To reduce sediments entering the aquatic environment from stormwater drains.
- ☐ To reduce discharges from sewage overflows in the Forty Baskets study area.
- ☐ To improve overall water quality in the study area.

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
WQ1. Evaluate the effectiveness of stormwater improvement actions undertaken in the Forty Baskets catchment to-date	Refer to updated Stormwater Management Plans  Implement a stormwater quality monitoring strategy	Responsibility: MC – NRM  Priority: Medium	MC - Env Levy  EPA Stormwater Trust Grants (if program continues).	
WQ2. Continue to liaise with SW to ensure that all sewage overflows are sealed and redirected to the Northside Storage Tunnel	Continue participation in the SW Partnership.	Responsibility: MC - NRM, SW  Priority: High & ongoing	SW	
WQ3. Continue to educate boat users, through MC's Starboard Right and Green education program, about impacts of their activities on the marine environment.	Continue to work with Davis Marina regarding current practices and information dispersal  Educate boating enthusiasts of appropriate boating waste disposal  Incorporate objective into MC's current 'Starboard, Right & Green' education program	Responsibility: MC - MEC, WA  Priority: High	MC - Environment Levy  WA assistance	

WQ4. Identify point sources of pollution within the study area		Responsibility: MC – NRM  Priority: High & ongoing	MC	
WQ5. Investigate improving street cleaning programs to reduce litter and debris	Investigate current cleaning / maintenance regime	Responsibility: MC - CS  Priority: High & ongoing	MC	
WQ6. Implement a Stormwater Management Educational Program to coincide with the implementation of the Coastline Management Plan to address catchment and householder issues	The Education Programs should focus on issues such as Car washing, Cigarette butts and litter, Sewage, Stormwater and household runoff, Disposal of garden waste, Fertilisers, herbicides and pesticides, and the impacts of the above issues on water quality.  To be undertaken on a LGA wide scale	Responsibility: MC – MEC and NRM  Priority: High	MC – Environment Levy	
WQ7. Investigate the feasibility of installing litter traps in remaining stormwater inlets.	Within the Forty Baskets study area there are 9 drainage inlet pits of which 8 currently have pit inserts.	Responsibility: MC - NRM to investigate, US to implement approved works  Priority: High & ongoing	MC	
WQ8. Ensure the integration of best practice principles and development compliance with MC's Specifications for On-site Stormwater management		Responsibility: MC – NRM  Priority: High & ongoing	MC	

WQ9. Undertake a catchment wide hydraulic study to determine the capacity of the existing stormwater system and to identify the system's deficiencies eg: flooding and risk to property (E1)	The results of this assessment will be used to plan for future system upgrades. This information is to be included in this Coastline Management Plan in the Plan's initial review.	Responsibility: MC - NRM  Priority: Medium	MC	
WQ10. Continue to conduct beach cleaning program in Sydney Harbour, targeting rubbish hot spots	WA's existing program generally cleans the beaches up to the mean high water mark  Clean Up Australia Day site continuation	Responsibility: WA, MC - CS  Priority: High	WA	
WQ11. Implement management recommendations from the Northern Beaches Stormwater Management Plan within the Forty Baskets study area.		Responsibility: MC – NRM  Priority: High	MC  Stormwater Trust Grants (if program continues).	
WQ12. Encourage property owners in the Forty Baskets area to undertake investigations of their property's sewer pipes and ensure they are maintained in accordance with the findings of those investigations to reduce the number of sewage overflows that occur.	Undertake auditing and education programs.  Liaise with Sydney Water.	Responsibility: MC – NRM  Priority: High	SW & participating residents.	



WQ13. Liaise with SW regarding the feasibility of undertaking SewerFix work in the Forty Baskets study area, in consultation with the community, to identify and fix sewage mains and areas where property owners' pipes connect to the sewer mains.	Liaise with SW and local residents through the Precinct.	Responsibility: MC – NRM & SW  Priority: Medium	SW & participating residents.	
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## AIR QUALITY & NOISE

### Objectives / Performance Targets:

- ☐ To reduce localised air pollution
- ☐ To maintain an acceptable level of noise generation within the community and regulate noise sources

Recommendation / Strategy	Additional Action	Priority, Responsibility & Collaboration	Funding	Status
AQ/N1. Continue educational efforts to inform the community about the responsible use and maintenance of woodfire heaters	Undertake consultation with the Precincts.	Responsibility: MC – NRM and MEC, EPA  Priority: Low	MC	
AQ/N2. Encourage residents to report incinerator use and illegal backyard burning activities	Undertake consultation with the Precincts	Responsibility: MC – NRM  Priority: Medium & ongoing	N/A	

AQ/N3. Address the emission of foul odours from the amenities block in the upgrade of the facilities	Address in upgrade of amenities block	Responsibility: MC – NRM with US to implement approved works  Priority: High & ongoing	MC	
AQ/N4. Encourage local residents to report any excessive or unreasonable noise pollution to either MC, Police or the EPA		Responsibility: MC, Police  Priority: High	N/A	

<p><b>COASTLINE HAZARDS</b></p> <p><b>A. Planning for Coastal Hazards</b></p> <p><u>Objectives / Performance Targets:</u></p> <p><input type="checkbox"/> To effectively plan for potential coastline hazards and their likely impacts on private and public lands and human safety.</p>				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
CH1. Review the findings of the Forty Baskets Coastline Hazard Definition Study and incorporate the findings as a layer(s) for use on MC's GIS system.	Consideration should be given to at least two time frames; present day and any future-planning period, which should not be less than 50 years.  Refer to Forty Baskets Coastline Hazard Definition Study (2003).	Responsibility: MC – NRM  Priority: High	MC  DIPNR – Coastal Management Program	

CH2. Review existing planning controls to ensure they have regard to the coastline hazards identified in the Forty Baskets Coastline Hazard Definition Study.	<p>Refer to Forty Baskets Coastline Hazard Definition Study (2003).</p> <p>Develop a Coastal Hazards Plan or provisions for inclusion in existing DCPs to ensure coastal hazards are regarded in planning decisions.</p>	<p>Responsibility: MC – P&amp;S, NRM</p> <p>Priority: High</p>	MC	
CH3. Revise and update the assessment of coastline hazards as required	<p>Refer to Forty Baskets Coastline Hazard Definition Study (2003)</p> <p>Implement monitoring program</p>	<p>Responsibility: MC – NRM</p> <p>Priority: Medium</p>	<p>MC</p> <p>DIPNR – Coastal Management Program</p>	
CH4. Where private properties are impacted by coastline hazards, include notes on the property Section 149 Certificates.	<p>Refer to Forty Baskets Coastline Hazard Definition Study (2003).</p> <p>Place a copy of the Hazard Definition Study in the Library for community use and information.</p>	<p>Responsibility: MC – P&amp;S</p> <p>Priority: High</p>	N/A	

## B. Beach Erosion & Shoreline Recession

### Management Objective:

- ☐ To reduce to an acceptable level, the risk of damage to existing development as a result of beach erosion and shoreline recession
- ☐ To ensure future development is compatible with the erosion and recession hazard
- ☐ To ensure any protective works minimise impact on beach amenity and access, and where practical improve existing amenity and access
- ☐ To ensure the effects of shoreline recession do not adversely impact on beach amenity

CH5. Develop and implement a natural shoreline and shoreline structure monitoring program	<p>Undertake photogrammetric analysis of Forty Baskets Beach every three (3) years (utilise DIPNR's aerial photography, which is undertaken roughly every 3 years)</p> <p>Conduct beach profile surveys at a minimum of six (6) locations along the beach following significant storm/wave activity (to monitor beach recovery).</p> <p>Liaise with DIPNR</p> <p>Refer to Forty Baskets Coastline Hazard Definition Study (2003).</p>	<p>Responsibility: MC – NRM, US to implement approved works</p> <p>Priority: Medium &amp; ongoing</p>	<p>MC</p> <p>DIPNR – Coastal Management Program</p>	
CH6. Control new development so that it is appropriately sited and is not adversely affected by the erosion and recession hazard over a suitable planning time frame (minimum 50 years)	<p>Refer to Forty Baskets Coastline Hazard Definition Study (2003).</p> <p>Develop Coastal Hazards Plan or provisions for inclusion in existing DCPs.</p>	<p>Responsibility: MC – P&amp;S</p> <p>Priority: High</p>	MC	

CH7. Ensure any redevelopment and public facilities are compatible with the erosion and recession hazard and do not adversely affect coastal processes	Refer to Forty Baskets Coastline Hazard Definition Study (PB&P, 2003)	Responsibility: MC – NRM, US to implement approved works Priority: High as required.	N/A	
CH8. Develop design guidelines, for inclusion in existing DCPs, for any structures located within areas subject to coastline hazards, which address matters such as: <ul style="list-style-type: none"> <li>▪ Siting;</li> <li>▪ Foundation design; and</li> <li>▪ Materials.</li> </ul>	Refer to Forty Baskets Coastline Hazard Definition Study (PB&P, 2003)	Responsibility: MC – P&S, NRM  Priority: High as required.	MC  DIPNR – Coastal Management Program	
CH9. In the evaluation of the above management options, should the impact of shoreline recession on beach amenity become unacceptable, consider the benefits of beach nourishment for beach amenity.	Refer Forty Baskets Coastline Hazard Definition Study (PB&P, 2003)	Responsibility: MC – NRM, US to implement approved works  Priority: Low	MC  DIPNR – Coastal Management Program	

<b>C. Slope and Cliff Instability</b>  Management Objective: <input type="checkbox"/> To reduce to an acceptable level, the risk to property and risk to life as a result of slope and cliff stability				
CH10. Adopt recommendations set out in Jeffrey and Katauskas Pty Ltd (J&K) geotechnical report in regard to slope and cliff stability.	'Geotechnical Assessment for Manly Council Coastline Hazard definition Study between the Forty Baskets Beach Seawall and the Sailing Club Wharf, Balgowlah, NSW'  <ul style="list-style-type: none"> <li>Further geotechnical assessments should be undertaken for Items 2 and 16, 14 and 15, and 5 (as identified in <i>J&amp;K's Geotechnical Assessment, 2003</i>). Likely stabilisation works include: <ul style="list-style-type: none"> <li><i>For overhangs – construction of concrete or masonry piers or removal of overhangs to prevent their potential collapse</i></li> <li><i>For steep excavation batters – regrading of the slopes to an angle of about 30° to the horizontal, anchored shotcrete facing or construction of a toe retaining wall</i></li> </ul> </li> </ul>	Responsibility: MC – NRM with US to implement approved works on public lands.  Priority: High/Medium	MC  DIPNR – Coastal Management Program	

	<ul style="list-style-type: none"> <li>Geotechnical assessments to provide sufficient information to develop detailed design for the recommended stabilisation works</li> </ul> <p>Refer Forty Baskets Coastline Hazard Definition Study (PB&amp;P, 2003)</p> <p>Refer to CH12.</p>			
CH11. Install appropriate warning signs advising the community of potential geotechnical hazards along Forty Baskets foreshore as required	<p>Refer Forty Baskets Coastline Hazard Definition Study (PB&amp;P, 2003)</p> <p>Refer to CH12.</p>	<p>Responsibility: MC – NRM and P&amp;S to design, with US to implement approved works</p> <p>Priority: As required</p>	<p>MC</p> <p>DIPNR – Coastal Management Program</p>	
CH12. Prior to undertaking any stabilisation works the impact of those works on the amenity, geoheritage and physical environment of the area should be determined and weighed against the level of risk before the works proceed.	<p>Refer to G1.</p>	<p>Responsibility: MC - NRM with US to implement approved works</p> <p>Priority: as required.</p>	<p>MC</p>	

<b>D. Climate Change</b>  Management Objective: <input type="checkbox"/> To take into account the potential for future climate change to affect the magnitude of coastline hazards				
CH11. Ensure there is an up-to-date understanding of future climate change and the implications of these changes for the magnitude of coastline hazards	Liaise regularly with appropriate State Government authorities to obtain the latest predictions for future sea level rise and other predicted impacts of climate change  Revise the magnitudes of the coastline hazards as required	Responsibility: MC - NRM, DIPNR  Priority: Ongoing.	N/A	
CH12. Based on the up-to-date figures in the recommendation above <ul style="list-style-type: none"> <li>▪ Reassess the magnitude of each of the coastline hazards</li> <li>▪ Amend information in MC's GIS, as required</li> <li>▪ Amend information in planning controls and Section 149 Certificates as required</li> <li>▪ Review recommended management actions in the CMP</li> </ul>	Refer Forty Baskets Coastline Hazard Definition Study (PB&P, 2003)	Responsibility: MC – NRM  Priority: Low - as required	MC  DIPNR – Coastal Management Program	



## SEAWALL STABILITY

### Objectives / Performance Targets:

- ❑ To effectively plan for potential coastline hazards and their likely impacts on private and public lands and human safety

Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
SS1. Undertake regular inspections of the seawall to check for signs of movement	<p>Monitor the impact of changing coastal hazards on the stability of the seawall</p> <p>The seawall should be inspected at intervals of no greater than six months, and also after heavy rainfall</p> <p>Monitoring should occur following significant storm wave activity</p> <p>Refer to the Forty Baskets Coastline Hazard Definition Study (2003)</p>	<p>Responsibility: MC - US</p> <p>Priority: High &amp; ongoing</p>	MC	
SS2. Undertake stabilisation / reconstruction works as required along the concrete length of the seawall, particularly at its northern end to avoid further escalation of risk.	<p>Prior to carrying out stabilisation or reconstruction works, further geotechnical investigation including test pits should be undertaken to determine the seawall geometry and backfill materials.</p> <p>If movement of the wall occurs prior to stabilization / reconstruction, it is recommended that a safety</p>	<p>Responsibility: MC - NRM, US to implement approved works</p> <p>Priority: Medium – as required</p>	<p>MC</p> <p>DIPNR – Coastal Management Program</p>	

	<p>barrier/fence be placed at least 2m behind the wall together with signage warning people walking on the wave cut platform</p> <p>Refer to the Forty Baskets Coastline Hazard Definition Study (2003)</p>			
SS3. Undertake regular monitoring of the existing sandstone wall	<p>While the existing sandstone block seawall is in fair condition, it should be monitored at similar intervals as the concrete section of the wall</p> <p>Refer Forty Baskets Coastline Hazard Definition Study (PB&amp;P, 2003)</p>	<p>Responsibility: MC - US</p> <p>Priority: As required</p>	MC	
<p>SS4. Design any stabilisation works or new seawall at Forty Baskets Beach to minimise impact on coastal processes, minimise impact on beach amenity and access, and where practical improve existing amenity and access:</p> <ul style="list-style-type: none"> <li>▪ Ensure any new seawall is as far landward as possible;</li> <li>▪ Ensure any stabilisation works at the toe of the seawall involve the minimum encroachment onto the beach in front of the seawall</li> <li>▪ Consider inclusion of steps and/or access ramp, and</li> </ul>	<p>Refer to Forty Baskets Coastline Hazard Definition Study (2003)</p> <p>Consider inclusion of steps and seating in the design of any new seawall</p> <p>Consider use of coloured concrete for any new seawall to match the colour of the beach, sand or rock platform</p>	<p>Responsibility: MC – NRM and US to implement approved works</p> <p>Priority: High as required.</p>	MC	

seating, in the design of any new seawall ▪ Consider use of coloured concrete for any new seawall to match the colour of the beach sand.				
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<b>TERRESTRIAL FLORA</b> (Flora/Weeds/Bush Regeneration/Fire)				
<u>Objectives / Performance Targets:</u>				
<input type="checkbox"/> To maintain native communities and habitats and provide suitable habitat for endangered populations				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
TF1. Remove <i>Camphor laurel</i> trees from Forty Baskets Reserve to prevent further spread of propagules from this highly invasive species		Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works.  Priority: Medium	MC	
TF2. Remove or control the <i>Strelitzia</i> at the northern end of Forty Baskets Reserve	Liaise with MC's Bush Regeneration Team	Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works.  Priority: Medium	MC	
TF3. Remove Coral trees and weeds in the vicinity of the creek that flows down the eastern side of the study area		Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works.  Priority: Medium	MC – Environmental Levy	

TF4. Remove pampas grass from Forty Baskets Reserve	Liaise with MC's Bush Regeneration Team	Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works  Priority: Medium	MC	
TF5. Investigate the inclusion of vegetation at the northern end of the bushland area at Forty Baskets Reserve into MC's Bush Regeneration Program	Liaise with MC's Bush Regeneration Team	Responsibility: MC – NRM to liaise with US, CS to implement approved works.  Priority: Medium	MC	
TF6. Concentrate bush regeneration efforts on the southern end of Forty Baskets Reserve	This area is currently quite weedy in comparison to the rest of the reserve  Liaise with Bush Regeneration Team	Responsibility: MC – US and CS  Priority: Ongoing	MC	
TF7. Undertake maintenance removal of bindies where necessary and undertake investigations into more sustainable methods of treatment		Responsibility: MC - NRM to investigate more sustainable methods, US and CS to implement approved works.  Priority: Ongoing	MC	
TF8. Improve habitat value of disturbed areas, such as lawns and informal gardens and encroachments, by replacing with native species	Refer Appendix J of Support Document for species suitable for planting  Refer to landscape masterplan once adopted.	Responsibility: MC - NRM, US to implement approved works.  Priority: Ongoing	MC	

TF9. Continue bush regeneration within Wellings Reserve		Responsibility: MC – US and CS  Priority: High	MC	
TF10. Implement an appropriate fire regime within Wellings Reserve to keep the ecosystem from becoming senescent and requiring high levels of maintenance	Refer to Forty Baskets Natural Environment Assessment (GIS Environ. Consult. 2003)  Undertake more detailed, investigations to assist in the establishment of appropriate fire regime to be implemented in the area  In the development and implementation of appropriate fire regime, consideration must be give to the proximity of the bushland areas to residential properties	Responsibility: MC - US  Priority: Low	MC	
TF11. Prevent the establishment of informal tracks through the bush.	Tracks often increase erosion and slope instability	Responsibility: MC - NRM, US to implement approved works.  Priority: High & Ongoing	MC	
TF12. Investigate the feasibility of diverting runoff from tracks, stormwater outlets and along side the concrete pathway in Tutus Street in order to minimise soil erosion.	Refer Forty Baskets Natural Environment Assessment (GIS Environ. Consult., 2003)	Responsibility: MC – NRM, US to implement approved works.  Priority: Medium	MC	
TF13. Replace concrete steps extending from Tutus Street with suspended metal steps and install energy dissipaters to disperse water and prevent erosion and exposure of plant roots	Refer Forty Baskets Natural Environment Assessment (GIS Environ. Consult., 2003)	Responsibility: MC – NRM, US and CS to implement approved works.  Priority: Medium	MC	

TF14. Undertake bush regeneration along the edge of New Street East	The bushland could be maintained to the street edge. This may require some additional planting of native tubestock	Responsibility: MC – US and CS  Priority: Medium	MC	
TF15. Remove the <i>Acacia saligna</i> shrubs along the foreshore near the boat shed before the species is able to spread further into the bushland.	Liaise with MC's Bush Regeneration Team  Replace with appropriate species as identified in Appendix N	Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works  Priority: Medium	MC	
TF16. Encourage community involvement in bushcare activities		Responsibility: MC – US and MEC  Priority: High	MC – Environment Levy	
TF17. Remove blue metal discarded after use in the construction of Gourlay Avenue	The material is high in nutrients, which may increase the problem of weed infestation if nutrients are leached out of the material down into the bushland soils	Responsibility: MC – NRM to investigate, US to implement approved works  Priority: High	MC	
TF18. Investigate the feasibility of constructing a gutter along the road edge (at least on the downhill side) of Gourlay Avenue to assist with future weed control and prevent nutrients and stormwater from running directly into the bushland		Responsibility: MC – NRM to liaise with US. US to implement approved works.  Priority: Low	MC	

TF19. Undertake maintenance of the gardens and the surrounding land in the vicinity of the marina	Investigate the tenure of the marina	Responsibility: Davis Marina, MC – US and CS  Priority: Medium	MC	
TF20. Install edging between all bushland areas and lawn areas and between all gardens, to provide a clear delineation between the boundaries, identify a clear edge for maintenance mowing and to prevent rhizomatous grasses and other plants from invading the bushland		Responsibility: MC – P&S to design, US to implement approved works.  Priority: Low	MC	
TF21. Remove weeds located along the foreshore of the study area in a staged approach	<p>Liaise with MC's Regeneration Team</p> <p>Regenerate rather than revegetate where there is a reasonable seed bank in the soil</p> <p>Should replacement planting be required refer Appendix J for species suitable for planting.</p>	<p>Responsibility: MC – NRM to undertake consultation, US and CS to implement approved works.</p> <p>Priority: Medium – ongoing</p>		



**TERRESTRIAL FAUNA** (Fauna/Threatened Species/Introduced Animals)

Objectives / Performance Targets:

- ☐ To maintain native communities and habitats and provide suitable habitat for endangered populations

<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
TF22. Introduce an appropriate trapping or control program to reduce the occurrence of feral cats and their threat to terrestrial fauna in the area	Undertake consultation with NPWS	Responsibility: MC - NRM & NPWS, US to implement approved works.  Priority: Low	MC, NPWS	
TF23. Check for the presence of rabbits annually and implement an appropriate trapping program should they become a problem		Responsibility: MC – NRM, NPWS, US to implement approved works.  Priority: Low	MC, NPWS	
TF24. Assist in the development of the Red-crowned Toadlet Recovery Plan	Liaise with NPWS	Responsibility: MC - NRM & NPWS  Priority: High & ongoing	N/A	

TF25. Implementation of management recommendations for the Red-crowned Toadlet (as identified in the NPWS Information Sheet)	<p>Refer to CMP: Support Document. Management Recommendations include:</p> <ul style="list-style-type: none"> <li>• prevent habitat loss</li> <li>• active prevention of bushrock removal</li> <li>• education</li> <li>• strategies to reduce stormwater runoff</li> <li>• development of erosion &amp; stormwater control measures</li> </ul> <p>Special care will be needed to ensure that fire hazard reduction burns do not have a negative effect on Red-crowned Toadlet habitat in Wellings Reserve</p>	<p>Responsibility: MC – NRM, NPWS, US to implement approved works.</p> <p>Priority: High &amp; ongoing</p>	MC, NPWS	
TF26. Assist in the monitoring of the Red-crowned Toadlet population in Wellings Reserve		<p>Responsibility: MC – NRM, US, CS, NPWS</p> <p>Priority: High</p>	NPWS, MC	
TF27. Ensure that an ecological assessment of Wellings Reserve bushland is undertaken prior to any future modification		<p>Responsibility: MC –NRM with US to implement approved works</p> <p>Priority: High</p>	MC	

TF28. Remove the plastic netting on the slope at the southern end of Wellings Reserve, as this is a possible hazard to fauna	Plastic netting should be replaced with stabilisation logs as this is working well on other parts of the site  Liaise with MC's Bush Regeneration Team	Responsibility: MC – US and CS  Priority: Medium	MC	
<b>GEODIVERSITY</b>  <u>Objectives / Performance Targets:</u> <input type="checkbox"/> Conserve the significant geodiversity elements of the area's coastline				
<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
G1. Undertake a detailed inventory study of the area's geodiversity elements with recommendations identified for conservation and management of those elements determined as significant.	Refer to study by Osborne & Osborne (1999) - full reference in support document.	Responsibility: MC - NRM  Priority: Medium	MC	

## MANLY SCENIC WALKWAY

### Objectives / Performance Targets:

- ❑ To provide a sustainable and accessible public foreshore walk for people's recreation and enjoyment

Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
MSW1. Install clear directional and educational signs throughout the study area in accordance with Council's signage policy	Undertake consultation with MC MSW Committee	Responsibility: MC - P&S and NRM to design and consult, US to implement approved works  Priority: Medium	MC	
MSW2. Retain and enhance the native vegetation along the MSW	Undertake consultation with MC MSW Committee	Responsibility: MC - NRM to consult, US to implement approved works.  Priority: Medium	MC, NPWS	
MSW3. Investigate the feasibility of installing a formed path across Forty Baskets Reserve that would alleviate concerns regarding degradation of the reserve due to heavy pedestrian use.	Undertake appropriate consultation with the community, MC LMUD & MSW Committees  Address in the development of the Forty Baskets Landscape Masterplan	Responsibility: MC – P&S, NRM with US to implement approved works  Priority: Medium	MC	

MSW4. Install appropriate signage in the vicinity of Gourlay Ave and the access road advising of shared pedestrian/vehicular access	Undertake appropriate consultation	Responsibility: MC – P&S to design, US to implement approved works Priority: High	MC	
<p><b>LANDSCAPE MASTERPLAN</b></p> <p><u>Objectives / Performance Targets:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> To provide an aesthetic, safe and accessible open space area for people's recreation and enjoyment.</li> <li><input type="checkbox"/> To ensure the relatively 'under-developed' landscape character of the area is maintained while also allowing for improvement and maintenance requirements.</li> </ul>				
<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
L1. Seek appropriate protection for the area's significant trees and heritage landscape items	Significant trees to be identified and incorporated into the Landscape Masterplan.	Responsibility: MC – P&S  Priority: Medium & ongoing	N/A	
L2. Develop, adopt and implement the Forty Baskets Landscape Masterplan	<p>Staged approach required</p> <p>Ensure that a timber non-raised walkway be constructed within the footprint of the existing informal track across Forty Baskets Beach as recommended by Council resolution 11 August 2003.</p> <p>Consideration of geomorphologic features of the area - refer to Coastal</p>	<p>Responsibility: MC – P&amp;S, NRM with US to implement approved works</p> <p>Priority: Staged according to availability of funds.</p>	<p>MC</p> <p>DIPNR - Sharing Sydney Harbour Access Program</p> <p>DIPNR – Coastal Management</p>	

	<p>Hazards section.</p> <p>Ensure that the area's Aboriginal and non-Aboriginal heritage and historical features are considered in any proposed works. Development of the landscape masterplan to include consideration of heritage.</p> <p>Ensure appropriate consultation is undertaken</p>		Program	
L3. Undertake consultation prior to the planting of trees to inform property owners and enable them to raise issues or concerns about the planting.	<p>The Precinct has expressed interest in helping to plant and maintain the plantings.</p> <p>View maintenance to be considered in new plantings.</p>	<p>Responsibility: MC – NRM to undertake consultation. US to implement proposed works.</p> <p>Priority: Ongoing</p>	N/A	
L4. Ensure all earthmoving machinery used within the study area is cleaned prior to use to prevent soil containing pathogens and weed seeds from entering the area.	<p>Include provision in all consultant briefs</p>	<p>Responsibility: MC – US and CS</p> <p>Priority: Ongoing</p>	N/A	
L5. Ensure all gravel used in landscaping and drainage is inert material such as quartz or sandstone. No blue metal or granite or other igneous material should be used.	<p>Address in the development of the Forty Baskets Landscape Masterplan</p>	<p>Responsibility: MC – NRM and US</p> <p>Priority: Ongoing</p>	N/A	

L6. Ensure any fertilisers, insecticides, herbicides or detergents used on public lands are used only as a last resort in the construction or maintenance of the area.		Responsibility: MC – US and CS  Priority: Ongoing	N/A	
L7. Use certified mulch from native trees to prevent any infestations of willows, camphor laurel, privet and other noxious species within the area.		Responsibility: MC – US  Priority: Ongoing	N/A	
L8. Encourage the use of permeable surfaces over impermeable surfaces where appropriate and feasible	Address in the development of the Forty Baskets Landscape Masterplan	Responsibility: MC – NRM and P&S to include in any designs, US to implement approved works  Priority: Ongoing	MC	
<p><b>VIEW MAINTENANCE</b></p> <p><u>Objectives / Performance Targets:</u></p> <p><input type="checkbox"/> To maintain and preserve views of existing natural and man made features for existing and future residents.</p>				
<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
VM1. Undertake consultation prior to the planting of trees to inform property owners and enable them to raise issues or concerns about the planting	The Precinct has expressed interest in helping to plant and maintain the plantings.	Responsibility: MC – NRM to undertake consultation, US to implement approved works.  Priority: Ongoing	N/A	

VM2. In areas within the study area where MC is conscious of providing shade, consideration must be given to view maintenance	Address in the development of the Forty Baskets Landscape Masterplan	Responsibility: MC – P&S, NRM  Priority: Ongoing	N/A	
<p><b>CONSERVATION MANAGEMENT</b></p> <p><u>Objective / Performance Target:</u></p> <p><input type="checkbox"/> To conserve and enhance the integrity and diversity of the Forty Baskets study area.</p> <p><input type="checkbox"/> To achieve community awareness of and assistance with the conservation of the Forty Baskets study area.</p>				
<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
CM1. Install regulatory signs advising dog owners of appropriate conduct and penalties associated with non-compliance	Consult MC Companion Animals Committee	Responsibility: MC – NRM and P&S to design, CS to implement approved works.  Priority: High	MC	
CM2. Continue to enforce companion animal regulations within the Reserve and on Forty Baskets Beach		Responsibility: MC - ES  Priority: High	MC	



CM3. Ensure that Forty Baskets Reserve remains an off-leash area for companion animals		Responsibility: MC – NRM  Priority: High & ongoing	N/A	
CM4. Educate the local community regarding responsible pet ownership, companion animal regulations, and the potential impact of irresponsible pet ownership on the terrestrial fauna of the area	Liaise with Balgowlah and North Harbour Precincts	Responsibility: MC – NRM and MEC  Priority: Medium	MC	
CM5. Incorporate the installation of dog faeces bins and bag dispensers in the development of the Forty Baskets Landscape Masterplan		Responsibility: MC – NRM  Priority: High	MC	

## HERITAGE

### Objectives / Performance Targets:

- ☐ To maintain and preserve both Aboriginal and Non-Aboriginal natural and cultural heritage in the Forty Baskets study area.

Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
H1. Continue to liaise with NPWS for the provision of the Aboriginal Heritage database.		Responsibility: MC – P&S, NPWS  Priority: High & ongoing	N/A	

H2. Prepare a Heritage Management Plan to identify detailed management measures to protect and maintain the area's heritage.	<p>Include both Aboriginal and non-Aboriginal heritage.</p> <p>Liaise with Aboriginal Heritage Officer and Council's Heritage Officer.</p> <p>Ensure that all middens and aboriginal sites around the foreshore are recorded and protected</p> <p>Consult the local Aboriginal Land Council regarding 'non-physical' elements in preparing history of occupation</p>	<p>Responsibility: MC – P&amp;S</p> <p>Priority: Medium</p>	MC	
H3. Undertake consultation with the Metropolitan Aboriginal Land Council, MC Aboriginal & Torres Strait Island Committee, NPWS and other local Aboriginal Groups in regard to the management of Aboriginal heritage.		<p>Responsibility: MC – P&amp;S</p> <p>Priority: Medium &amp; ongoing</p>	N/A	
H4. Undertake a Heritage Impact Assessment prior to proceeding with works that may impact on any heritage items within the study area.	<p>Refer to the NPWS Heritage Impact Assessment Guidelines.</p> <p>This should include proposed landscaping works.</p>	<p>Responsibility: MC – P&amp;S</p> <p>Priority: High &amp; ongoing</p>	MC	
H5. Undertake a study to consolidate all anecdotal evidence of Aboriginal occupation		<p>Responsibility: MC – P&amp;S</p> <p>Priority: Medium</p>	MC	

H6. Install interpretive signage depicting the Indigenous Heritage of the Forty Baskets study area	All signage be developed in consultation with the Manly Aboriginal & Torres Strait Island Committee and the Metropolitan Local Aboriginal Land Council	Responsibility: MC – P&S  Priority: Low	MC, Heritage Grant Assistance	
H7. Consult the local Aboriginal community on any future development and management of Forty Baskets		Responsibility: MC – P&S  Priority: Ongoing	N/A	
H8. Undertake annual health checks on heritage-listed and significant trees		Responsibility: NPWS, MC - P&S and US  Priority: Medium & ongoing	NPWS	
H9. Compile photographic survey of plantings over time and continue to photograph plantings for historical record.		Responsibility: MC – P&S and US  Priority: Medium & ongoing	MC	
H10. Investigate replacement options for plantings as existing trees age.	Refer to Appendix N of CMP Support Document	Responsibility: MC – P&S, US to implement approved works.  Priority: Low & ongoing	MC	
H11. Consult with local fishing industry regarding historical context.		Responsibility: MC – NRM Priority: Low	N/A	

H12. Compile photographic and text record of future construction		Responsibility: MC – P&S and US  Priority: Low & ongoing	MC	
H13. Maintain the fabric of heritage items as recommended by the ICOMOC Burra Charter (1996)		Responsibility: MC – P&S  Priority: Medium & ongoing	N/A	
<p><b>ACCESS</b></p> <p><u>Objectives / Performance Targets:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> To provide an environment at Forty Baskets that is accessible to all people, including those with disabilities.</li> <li><input type="checkbox"/> All new facilities and buildings to be fully accessible to Australian Standards and the BCA.</li> <li><input type="checkbox"/> All existing facilities and buildings, when upgraded or improved, to be fully accessible to the Australian Standards and BCA.</li> </ul>				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
<b>Disabled &amp; Aged Access</b>				
A1. Investigate the provision of disabled drop-off/pick-up and turnaround bay at the bottom of the access ramp in Gourlay Avenue.	Refer matter to MC Traffic Committee  Address in development of Forty Baskets Landscape Masterplan	Responsibility: MC – P&S with US to implement approved works  Priority: Medium	MC  DIPNR - Sharing Sydney Harbour Access Program	

<p>A2. Recommendations as per CMP Support Document: Amenities Block</p> <ul style="list-style-type: none"> <li>• Install accessible toilet facilities</li> <li>• Install access ramp on the eastern side of the amenities block (opposite that of the existing ramp) to a grade of 1:14</li> <li>• Modify privacy shelters at the entrance of the toilets to address safety and disabled access issues</li> <li>• Resurface the ground suitable for chair access</li> <li>• Install path around the front perimeter of the amenities block to improve access</li> <li>• Remove steps into the facilities</li> </ul>		<p>Responsibility: MC – NRM, P&amp;S and US to implement approved works</p> <p>Priority: High</p>	<p>MC</p> <p>DIPNR - Sharing Sydney Harbour Access Program</p>	
<b>Pedestrian Access</b>				
<p>A3. Investigate feasibility of upgrading both sets of stairs leading from Beatty Street to Forty Baskets Reserve</p>		<p>Responsibility: MC – US</p> <p>Priority: Low</p>	<p>MC</p>	

A4. Undertake regular maintenance of vegetation growing along the access paths	Consult MC's Bush Regeneration Team	Responsibility: MC – US and CS Priority: High & Ongoing	MC	
A5. Investigate the suitability of installing a path across Forty Baskets Reserve to prevent further degradation of the reserve	Undertake consultation with the community  Address in the development of the Landscape Masterplan	Responsibility: MC – NRM  Priority: Low	MC  DIPNR - Sharing Sydney Harbour Access Program	
A6. Mark the steps leading from Beatty Street to Forty Baskets Reserve to provide adequate contrast as a safety requirement		Responsibility: MC – US and CS  Priority: Medium	MC	

<b>TRAFFIC MANAGEMENT</b>  <u>Objectives / Performance Targets:</u> <input type="checkbox"/> To achieve a safe area for pedestrians and motorists.				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
TM1. Clearly mark 90° parking spaces in Gourlay Avenue to ensure that the indented parking area is utilised in an efficient manner.	This may be done in several forms such as motorcycle spaces or by reserving some space for facilities such as bicycle racks.	Responsibility: MC – NRM with US to implement approved works  Priority: Medium	MC	

TM2. Investigate the provision of installing disabled parking at the top of the access ramp in Gourlay Avenue.	This would allow parking in the vicinity of the proposed disabled drop-off and pick-up point	Responsibility: MC – NRM to undertake consultation, US  Priority: Medium	MC	
TM3. Investigate the application of restricted parking, on weekends, in Gourlay Avenue to increase the turnover of vehicles at this location.	Grassed area opposite indented parking area	Responsibility: MC – NRM to undertake consultation, US  Priority: Medium	N/A	
TM4. Install suitable fencing, barricading or guttering along the northern side of Gourlay Avenue to prevent parking on the nature strip.		Responsibility: MC – NRM with US to implement approved works  Priority: High	MC	
TM5. Clearly mark on-street parallel parking spaces at the south end of Gourlay Avenue with the appropriate allocation of passing bays.	This will help to promote an efficient and safe use of this parking area.	Responsibility: MC – US  Priority: Medium	MC	
TM6. Implement parking restriction in the vicinity of Davis Marina to allow turning, maneuverability and short-term parking while preventing long-term parking	Undertake consultation with Davis Marina, boating enthusiasts, the Sea Scouts Water Base and community.  30-minute parking restrictions in the vicinity of the marina would prevent vehicles blocking the access ramp while allowing adequate time to unload or load vehicles	Responsibility: MC – US  Priority: Medium	MC	

TM7. Undertake a visibility assessment to address safety concerns in the vicinity of the off-street parking area in Tutus Street / New Street	Restriction on users of this parking area may be required should the location be found to be unsafe for high visitor turnover.	Responsibility: MC – US  Priority: High	MC	
TM8. Undertake a parking study to assess the amount of on/off-street parking in Beatty Street		Responsibility: MC –US  Priority: Low	MC	
TM9. Install appropriate signage in the vicinity of the access ramp (from Gourlay Car Park to the Marina) to indicate shared pedestrian/vehicle access.	Invest amending speed limits (install appropriate signage).	Responsibility: MC – US to implement approved works  Priority: Medium	MC	
TM10. Investigate the feasibility of implementing restricted parking in Beatty Street	Undertake appropriate consultation with residents and community	Responsibility: MC – NRM with US to implement approved works  Priority: Low	MC	



## INFRASTRUCTURE

### Objectives / Performance Targets:

- ☐ To provide well-maintained and useable infrastructure in Many Council's owned/managed public lands.

Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
I.1. Undertake regular maintenance checks on all BBQ facilities	Implementation of MC Preventative Maintenance Contract	Responsibility: MC – US and CS  Priority: Ongoing	MC	
I.2. Investigate the feasibility of upgrading existing single burner BBQ in Forty Baskets Reserve to double burner.	Address in development of Landscape Masterplan	Responsibility: MC – NRM with US to implement approved works  Priority: Medium	MC	
I.3. Install appropriate signage in vicinity of BBQ facilities advising users of maintenance requirements	Address in development of Landscape Masterplan	Responsibility: MC - P&S and NRM to design, US to implement approved works.  Priority: Medium	MC	

I.4. Install accessible toilet facilities at Forty Baskets Reserve	Address in development of Landscape Masterplan & upgrade of Forty Baskets amenities block	Responsibility: MC – P&S to design, US to implement approved works  Priority: High	MC	
I.5. Install access ramp to the amenities block, of appropriate grade (1:14) to allow disabled access	Address in development of Landscape Masterplan & upgrade of Forty Baskets amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
I.6. Modify privacy shelters at the entrance of the amenities block to address safety and disabled access issues	Address in upgrade of amenities block	Responsibility: MC – P&S to design, US to implement approved works  Priority: Medium	MC	
I.7. Resurface the floor surface of the amenities block to cater for wheel chair access	Address in upgrade of amenities block	Responsibility: MC – P&S to design, US to implement approved works  Priority: High	MC	
I.8. Install path around the front perimeter of the amenities block to improve access	Address in upgrade of amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	

I.9. Install gutter plugs in amenities block to stall rainwater for use in toilet flushing	Address in upgrade of amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC-Environment Levy	
I.10. Replace all fittings and fixtures in the amenities block with standard water saving devices	Address in upgrade of amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
I.11. Connect basin and shower discharge to the sewer line	Address in upgrade of amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
I.12. Ensure new amenities are vandal proof	Address in upgrade of amenities block	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: Medium	MC	
I.13. Refurbish and modernise existing playground facilities as per recommendations outlined in MC's Playground Assessment Report	Safety issues, as identified in MC's playground assessment to be addressed	Responsibility: MC - US  Priority: Medium	MC	
I.14. Improve lighting in the vicinity of the amenities block	Address in upgrade of amenities block	Responsibility: MC - NRM, P&S with US to implement approved works  Priority: High	MC	

I.15. Should additional lighting be installed in the vicinity of the Forty Baskets Reserve it should be in appropriate locations and only as required	Consult Police Safety Officer	Responsibility: MC - NRM and P&S to design, US to implement approved works.  Priority: Low	N/A	
I.16. Undertake maintenance of all steps within the study area		Responsibility: MC – US and CS  Priority: Medium	MC	
I.17. Maintain vegetation along Access Route 2, 3 & 4 (Refer Figure 9 – Access)		Responsibility: MC - US  Priority: High	MC	
I.18. Replace existing 'No Diving' sign in the vicinity of the swimming enclosure with an updated code of conduct and safety warning sign.	Include warning of sharp marine organisms inhabiting the perimeter of the swimming enclosure.	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
I.19. Investigate manual removal of crustaceans from the swimming enclosure bars to improve both safety and amenity of the area.	<ul style="list-style-type: none"> <li>• A marine ecologist must inspect area prior to and after works</li> <li>• Consideration must be given to ecological communities that may inhabit the structures</li> <li>• investigate alternate long-term antifouling techniques</li> </ul>	Responsibility: MC - US  Priority: High	MC	

I.20. Amend MC's Swimming Enclosure Maintenance Program in accordance with newly identified methods and studies as they become available.	Keep up-to-date on investigations into more sustainable cleaning procedures/methods	Responsibility: MC – NRM, US and CS to implement approved works.  Priority: Medium - as new technologies become available.	MC	
I.21. Undertake investigations into the significance of epibiotic colonies on marine structures such as pilings and fixed swimming enclosures.		Responsibility: NSWFW, WA, MC – NRM  Priority: Low	NSWFW, WA	
<b>INTERPRETATION &amp; SIGNAGE</b>  <u>Objectives / Performance Targets:</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> The provision of up-to-date and useful regulation and interpretive signage suitable to the local environment and Manly Council's signage requirements.</li> <li><input type="checkbox"/> To reduce visual clutter by reducing the number of signs and making signs multi-functional regarding the information provided.</li> </ul>				
<b>Recommendations / Strategies</b>	<b>Additional Actions</b>	<b>Priority, Responsibility &amp; Collaboration</b>	<b>Funding</b>	<b>Status</b>
IS1. Remove existing signs within the study area that convey outdated or contradictory information		Responsibility: MC – NRM, P&S with US to implement approved works  Priority: High	MC	

IS2. Install approximately three new 'Conduct in Reserve' signs with current information about relevant regulations	Ensure signs are strategically placed ensuring that they are visible and eye catching but not obtrusive	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
IS3. Incorporate existing 'Litter' and 'Dog Prohibition' sign information into the new 'Conduct in Reserve' signs.	Ensure signs are strategically placed ensuring that they are visible and eye catching but not obtrusive	Responsibility: MC – NRM and P&S to design, US to implement approved works  Priority: High	MC	
IS4. Investigate the installation of appropriate interpretive signage	Ensure signs are strategically placed ensuring that they are visible and eye catching but not obtrusive	Responsibility: MC – P&S, NRM & US  Priority: Medium	MC	
IS5. Liaise with relevant state authorities regarding the replacement of existing signage with signs more sympathetic to the area		Responsibility: MC – – NRM, P&S with US to implement approved works  Priority: High	Relevant authorities	

## Crime Prevention & Safety

### Objectives / Performance Targets:

- ☐ To provide public areas in which patrons feel safe and are safe.

Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
C&S1. Improve lighting in the vicinity of the amenity block.		Responsibility: MC - NRM and P&S to design, US to implement approved works  Priority: High	MC	
C&S2. Should additional lighting be installed in the vicinity of the Forty Baskets Reserve it should be in appropriate locations and only as required	Consult Police Safety Officer	Responsibility: MC - NRM, P&S  Priority: Low	MC	
C&S3. Thin vegetation in vicinity of amenities block to increase visibility		Responsibility: MC – US and CS  Priority: High & Ongoing	MC	
C&S4. Regularly prune/cut back vegetation in vicinity of access steps/routes		Responsibility: MC - CS  Priority: High & Ongoing	MC	
C&S5. Initiate the formation of a 'Capable Guardians Group' as per King Ave Fairlight		Responsibility: MC – P&S  Priority: Low	MC	

C&S6. Encourage the community to report any crime or inappropriate behavior to Police or MC's Rangers		Responsibility: MC – P&S, ES and Police Priority: Ongoing	N/A	
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<b>WASTE MANAGEMENT</b>  <u>Objectives / Performance Targets:</u> <input type="checkbox"/> To minimise waste and maximise recycling in the Forty Baskets Study Area				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
W1. Continue to conduct and support community education programs to avoid litter at source.		Responsibility: MC – ES and MEC  Priority: Medium	MC – Environment Levy	
W2. Implement MC's Litter Avoidance Strategy in the Forty Baskets study area	Cater education programs to target specific litter problems	Responsibility: MC – NRM & ES Priority: Medium & ongoing	MC	
W3. Undertake catchment wide approach to the reduction of litter flowing/washing into the area.		Responsibility: MC – NRM  Priority: Medium	MC	



W4. Install appropriate segregated recycling stations within the study area	Install appropriate signage advising of appropriate use of the bins  Address in development of Landscape Masterplan	Responsibility: MC – ES, NRM with US to implement approved works  Priority: Medium	MC	
W5. Ensure that all bins within the study area have appropriate covers to prevent litter dispersal		Responsibility: MC – US, ES  Priority: Medium	MC	
W6. Continue to promote Forty Baskets study area as a 'Clean Up Australia' target site		Responsibility: MC – NRM, ES  Priority: High & ongoing	N/A	
W7. Continue to promote and enforce litter laws.		Responsibility: MC – ES and MEC  Priority: High & ongoing	MC	
W8. Address the appropriateness of bin location within the study area in the application of the Landscape Masterplan	Address in development of Landscape Masterplan	Responsibility: MC – NRM  Priority: Medium	MC	
W9. Revise litter management infrastructure and cleaning services (provision of litter bins etc).	Undertake audit on maintenance regime. Bins within the study area should only be emptied on a needs basis	Responsibility: MC – NRM, ES  Priority: High	MC	

W10. Support and assist precinct/community programs that address litter issues within the study area		Responsibility: MC – ES and MEC  Priority: Ongoing	MC	
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<b>Administrative Management</b>  <u>Objectives / Performance Targets:</u> <input type="checkbox"/> Adequate implementation, funding and review of the Coastline Management Plan.				
Recommendations / Strategies	Additional Actions	Priority, Responsibility & Collaboration	Funding	Status
Ad1. Include the implementation of the adopted Forty Baskets Management Plan into MC's Corporate Plan.		Responsibility: MC – NRM  Priority: High	N/A	
Ad2. Seek a Memorandum of Understanding or Statement of Intent (or similar) signed by stakeholders including government authorities and public interest groups to adopt and implement this Plan.		Responsibility: MC – NRM  Priority: High	N/A	
Ad3. Review the Coastline Management Plan Support Document every five (5) years and update on an as needed basis.		Responsibility: MC – NRM  Priority: Low	MC	

Ad4. Review the Coastline Management Plan Action Plan every two (2) years, or as required, to ensure that the Plan's strategies and priorities are kept up-to-date.		Responsibility: MC – NRM  Priority: High	MC	
Ad5. Service a Committee for the implementation of Coastline Management Plans.	This should be the Harbour Management Committee, or similar, which would represent an amalgamation of the existing smaller committees presently involved in management of harbour foreshore areas. The committee would address areas along Manly's harbour foreshore.	Responsibility: MC – NRM  Priority: High	MC	
Ad6. Develop an implementation matrix to assist with priority implementation by relevant agencies		Responsibility: MC – NRM  Priority: High	MC	
Ad7. Consider appointment of Council as Trust Manager of Wellings Reserve.	Wellings Reserve is presently devolved to Council.	Responsibility: MC - P&S, DL  Priority: Low	N/A	
Ad8. Re-zone the Council owned community land within Forty Baskets reserve from Residential to Open Space.	Refer to support document for details.	Responsibility: MC - P&S  Priority: Low	N/A	