



PITTWATER COUNCIL

PLAN OF MANAGEMENT

CAREEL BAY PLAYING FIELDS

&

HITCHCOCK PARK, AVALON

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TABLE OF CONTENTS

1.0	INTRODUCTION	4
1.1	Location	4
1.2	Overview	4
1.3	Plans of Management prepared for Pittwater's Reserves	6
1.4	What are the Aims of this Plan of Management?	6
1.5	List of Abbreviations used in this Plan	6
2.0	PLANNING CONTEXT	8
2.1	A Plan which Satisfies the Requirements of the Relevant Acts	8
2.2	Other Relevant Legislation and Policies	8
2.3	Principles of Crown Reserve Management	8
2.4	Principles of Community Land Management	10
2.5	Community Land Categories	11
2.6	Core Objectives	12
2.7	Development of Community Land	13
2.8	Leases, Licences or Other Estate on Community Land	14
2.9	Leases, Licences or Other Estate in respect of a Natural Area	14
2.10	Council's Policy on Leases and Licences	15
2.11	Development, Activities and Uses of Reserves	15
3.0	LAND DESCRIPTION AND PLANNING	16
3.1	Land Description	16
3.2	Crown Reserve and Community Land	16
3.3	Zoning	23
3.4	Leases, Licences or Other Estate in this Reserve	25
3.5	Schedule of Permissible Uses	26
3.6	Schedule of Permissible Uses	27
4.0	COMMUNITY ISSUES	28

4.1	Community Consultation	28
5.0	BASIC MANAGEMENT	30
5.1	Values Statement	30
5.2	Natural/Cultural Setting	30
5.3	Environmental/Biodiversity Values	31
5.4	Recreation Values	36
5.5	Role of Careel Bay Playing Fields & Hitchcock Park	37
5.6	Vision Statement for Careel Bay Playing Fields and Hitchcock Park	37
6.0	MANAGEMENT STRATEGIES	41
6.1	Action Plan	42
6.2	Capital Works Program	61
6.3	Landscape Masterplan	63
	APPENDIX 1 - Community Discussion Paper	64
	APPENDIX II: Rehabilitation of Species List	77
	Bibliography	82
	List of Figures	
	List of Tables:	

1.0 Introduction

1.1 Location

This Plan of Management applies to the land described as Careel Bay Playing Fields and Hitchcock Park, located adjacent to Careel Bay, Pittwater within the northern Sydney beaches suburb of Avalon (refer figure 1: Location Plan). Careel Bay Playing Fields and Hitchcock Park has a combined area of 8.9 hectares and consists of both Crown reserve (under Council care, control and management) and community land (owned in fee simple by Pittwater Council). The study area, described in this Plan of Management as the “reserve”, is a contiguous parcel of open space despite the northern section being known as Careel Bay Playing Fields and the southern section as Hitchcock Park (refer to Figure 2: Study Area).

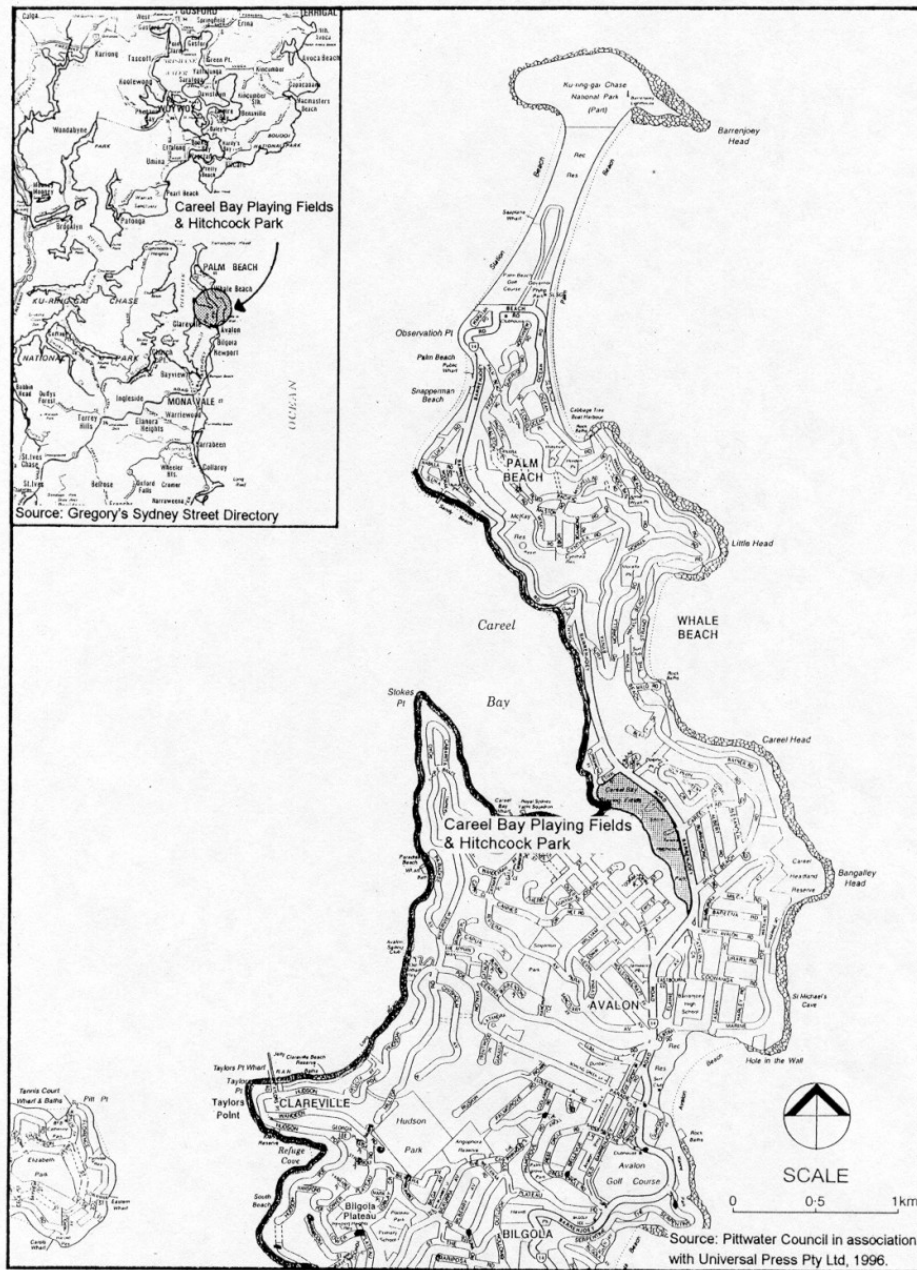
The following geographic features delineate the boundaries of the study area:

- ☐ Barrenjoey Road (eastern and north-eastern boundary);
- ☐ Etival Road (northern boundary);
- ☐ Careel Bay Environmental Protection Area (part of western boundary);
- ☐ Careel Creek and adjoining residential area including John Street, William Street and Elvina Avenue (part of western boundary).

1.2 Overview

The study area was a former land-fill site which was capped and re-developed as playing fields in the 1970s. It was a favoured area for equestrian activities for many years. Careel Bay Playing Fields and Hitchcock Park now provide a range of active recreational facilities for the local community including tennis, football (rugby league, touch football, soccer), cricket and a dedicated unleashed dog exercise area. These recreational opportunities are highly valued by the local community. Furthermore, the reserve’s outstanding scenic, environmental and biodiversity values, adjoining Pittwater and Careel Bay Environmental Protection Area are similarly highly valued by the community. The location offers significant wetland habitat for a range of species including migratory wading birds which are subject to international conservation agreement. Walking, jogging, bike riding, bird-watching, environmental study and fishing are all popular uses for the reserve.

This combination of active organised sports and passive recreational opportunities, diversity in natural settings, scenic quality, foreshore access, pedestrian linkages and facilities are considered key values in determining the significance of this reserve within Pittwater’s reserves system. These values are discussed further in section 5.0 Basis for Management.



Location Plan

Careel Bay Playing Fields & Hitchcock Park
Figure 1

1.3 Plans of Management prepared for Pittwater's Reserves

Pittwater Council has set out a five-year program for the preparation of Plans of Management for its parks and reserves to meet its statutory obligations under the *Local Government Act, 1993* and the *Crown Lands Act, 1989*. There are two main types of Plans of Management prepared by Council:

- ☐ “significant area” plans covering a specific area of open space; and
- ☐ “generic” plans applying to a number of similar types of open space.

Given the significance of this reserve, it has been designated by Council as requiring a significant area Plan of Management. A Generic Plan of Management for Sportsgrounds, which included Careel Bay Playing Fields and Hitchcock Park, was prepared and adopted by Council in 1998. The “generic” Plan of Management, as it relates to Careel Bay Playing Fields and Hitchcock Park, will be superseded following adoption of this “significant area” Plan of Management. As such, this Plan of Management will be inserted as a stand-alone document into the Generic Plan of Management for Sportsgrounds. The Plan will be subject to an ongoing review process by Council in accordance with available funding and implementation targets. A major review of the Plan should be undertaken in five years.

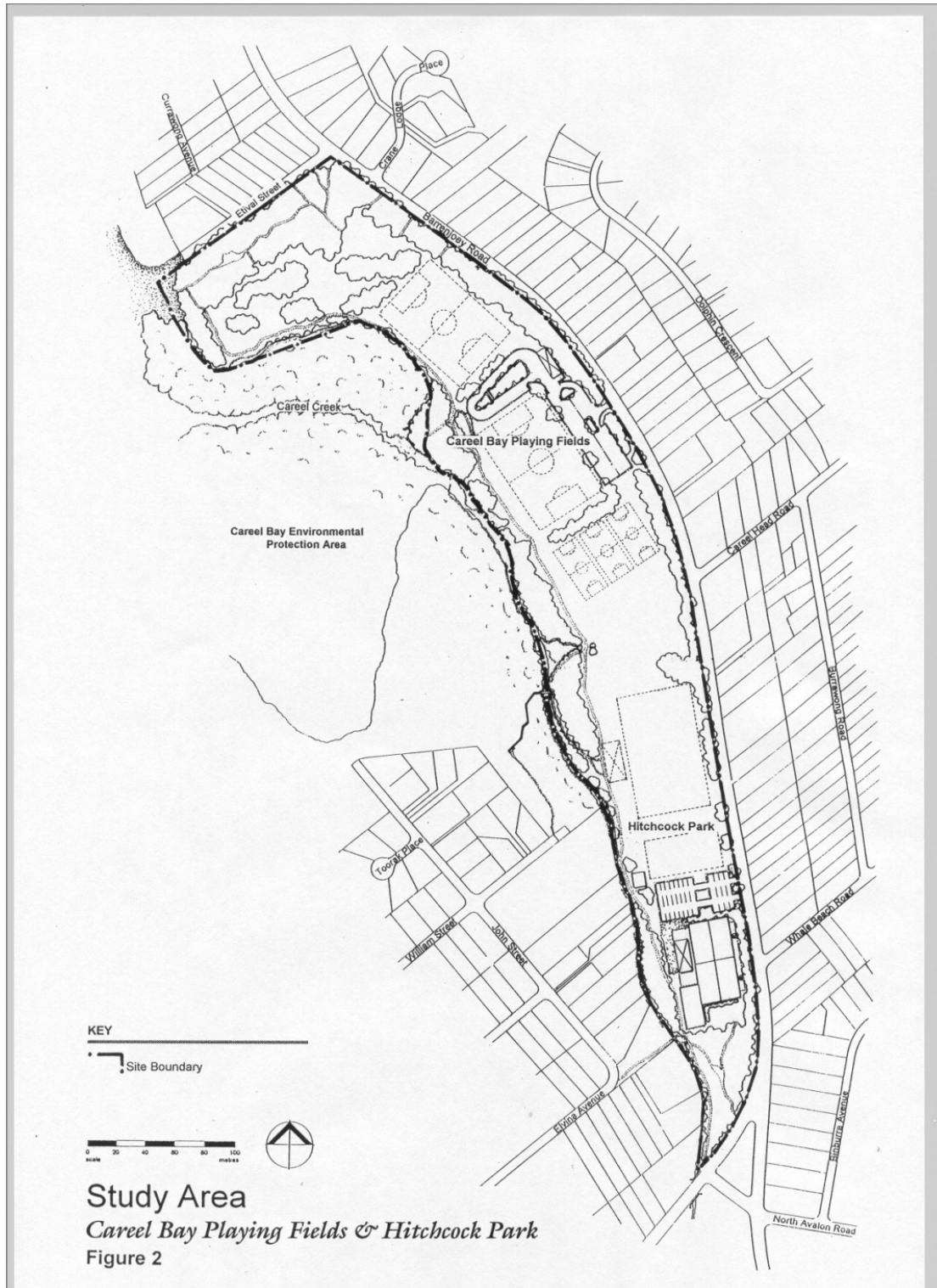
1.4 What are the Aims of this Plan of Management?

This Plan aims to provide a clear, concise and practical framework for the management of Careel Bay Playing Fields and Hitchcock Park. It aims to be performance oriented in order to contribute towards Council achieving its strategic goals, vision, mission and strategic outcomes. The Plan also aims to be consistent with the *Crown Lands Act 1989*, case law, the *Local Government Act 1993* and the *Local Government Amendment (Community Land Management) Act 1998*, the *Local government (General) Regulation 1999* and other relevant legislation. In accordance with these goals and objectives, this Plan of Management aims to provide the following strategic outcomes for this reserve:

- ☐ identify and assess the study area's values, uses and condition;
- ☐ define the study area's role within its Local Government Area and regional context;
- ☐ identify and assess key issues affecting this land;
- ☐ address current and future permitted uses and purposes for this land;
- ☐ address existing and future leases/licenses attached to this land;
- ☐ establish management strategies and their resourcing implications;
- ☐ assign directions and priorities in a strategic plan (5-years);
- ☐ develop a Masterplan.

1.5 List of Abbreviations used in this Plan

LEP	Local Environmental Plan
LGA	Local Government Area (Pittwater)
DLWC	Department of Land and Water conservation
AJRLFC	Avalon Junior Rugby League Football Club Inc
ASC	Avalon soccer Club Inc
UDEA	Unleashed Dog Exercise Area



2.0 Planning Context

2.1 A Plan which Satisfies the Requirements of the Relevant Acts

To comply with the requirements of the *Crown Lands Act 1989*, case law, the *Local Government Act 1993* and the *Local Government Amendment (Community Land Management) Act 1998*, this Plan of Management aims to address the following:

- ❑ the plan must be prepared in accordance with the **principles for land management** under the *Crown Lands Act*;
- ❑ existing and proposed uses, developments, leases and management practices must be consistent with the dedicated **public purpose** of the reservation;
- ❑ the plan must address any matters required by the Minister responsible for the *Crown Lands Act*;
- ❑ the plan must be consistent with requirements of the *Local Government Act* (as amended) for community land, including its categories and core objectives, s.36(a)-(n); and
- ❑ public exhibition of the plan and submissions been referred to the Minister (responsible for the *Crown Lands Act*) prior to adoption.

2.2 Other Relevant Legislation and Policies

This Plan of Management must be prepared in accordance with the provisions contained within other relevant legislation and policy guidelines, including but not limited to the following:

- ❖ Environmental Planning and Assessment Act 1979
- ❖ Australian heritage Commission Act 1975
- ❖ NSW Heritage Act 1977
- ❖ Disability discrimination Act 1992
- ❖ Noxious Weeds Act 1993
- ❖ Fisheries Management Act 1994
- ❖ Rural Fires Act 1997
- ❖ Threatened Species Conservation Act 1995
- ❖ Environment Protection and Biodiversity Conservation Act 1999
- ❖ SEPP 19: Bushland in Urban Areas
- ❖ SEPP 44: Koala Habitat Protection

2.3 Principles of Crown Reserve Management

The *Crown Lands Act 1989* identifies the planning principles, management and use of Crown land, including reservation or dedication for a designated “public purpose”. The Department of Land and Water Conservation (DLWC), together with Reserve Trusts appointed by the Minister, is responsible for management of the Crown reserve system throughout New South Wales. The Department encourages the community to be either directly involved in, or contribute to, the planning and management of the system as trustees of reserved and dedicated land.

In its role as trustee, Pittwater Council has the ongoing responsibility to provide care, control and management of the Crown land in this reserve in accordance with the *Crown Lands Act 1989*. The *Crown Lands Act 1989* provides for the reservation and dedication of Crown land for a range of “public purposes”. Uses and activities are broadly defined by the public purpose of the reservation, consistent with any conditions and provisions of specific zoning under the local council’s local environmental plan. As such, management of Crown land is administered under the provisions of the *Crown Lands Act 1989* to ensure that the land is managed for the benefit of the people of New South Wales and having regard for the principles of Crown land management (refer to section 3.2 Crown Reserve and Community land: 3.2.1 Crown Reserve).

Section 11 of the *Crown Lands Act 1989* provides a set of principles for Crown land management as follows:

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

Furthermore, when preparing a plan of management for Crown land, the trust manager must comply with the following requirements of the *Crown Lands Act 1989*:

- ☐ direction of the Minister or request by Trust for plan of management preparation;
- ☐ drafts circulated for comment;
- ☐ exhibition of draft Plan;
- ☐ draft Plan exhibition notices provided.

With the following outcomes:

- ☐ the Minister shall consider timely comment;
- ☐ Ministerial adoption of the Plan;
- ☐ Trust must follow the Plan; and
- ☐ all operations must be in accordance with it.

Case law judgements are also important in determining the policy and management practices affecting reserved or dedicated Crown land as follows:

- ☐ use of the reserve must be consistent with public purpose of the reservation;
- ☐ improvements and developments must support, or be ancillary to, the public purpose of the reservation;
- ☐ provision must be made for broad community access and equity. Reasonable entry fees and charges may be imposed but access may only be restricted where there is a legal requirement (eg health and safety) or need for maintenance/operational facilities or equipment storage relating to the reserve’s public purpose;

- ☐ a lease or licence must be consistent with public purpose of the reservation.

In addition, the Department of Land and Water Conservation has policies and guidelines for uses and activities on Crown land, including assessing food and beverage outlets – “*Food and Beverage Outlets on Crown Reserves (September 1996)*” as follows:

- ☐ the facility must be consistent with public purpose of the reservation;
- ☐ the facility should enhance the public use of the reserve and not become the focus of the reserve;
- ☐ integrity of the reserve and its environmental qualities must be preserved;
- ☐ the public’s right of access to the reserve must be preserved;
- ☐ pricing policy must be equitable and consistent with public purpose of the reservation.

2.4 Principles of Community Land Management

Council’s public land must be managed in accordance with the *Local Government Act 1993* and *Local Government Amendment (Community Land Management) Act 1998* and *Local Government (General) Regulation 199*. The *Local Government Act 1993 (as amended)* requires that councils must classify public land as “operational” or “community” and that plans of management must be prepared for community land. The ways in which community land can be used and managed are strictly governed in accordance with an adopted plan of management and any law permitting the use of the land for a specified purpose or otherwise regulating the use of the land.

Community land is owned in fee simple by Council and must not be sold, exchanged or otherwise disposed of except in the instance of enabling the land to be added to Crown reserve or a protected area under the *National Parks and Wildlife Act 1974*. leases, licenses or other estates may be granted subject to requirements of the Act. The period for leases and licenses cannot exceed 21 years (see 2.8 Leases, Licenses and other estate on Community Land). The use and management of community land must also be consistent with its designated categories and core objectives (see 2.5 Community Land Categories and 6.0 Management Strategies). Furthermore, the nature and use of community land may not change without an adopted plan of management. In comparison, operational land is not subject to the same restrictions.

A Plan of Management may apply to one or more areas of community land, providing all the requirements of the *Local Government Act 1993 (as amended)* are fulfilled. The Act states that the Plan of Management must identify the following:

- ☐ “the **category** of the land;
- ☐ the **objectives and performance targets** of the plan with respect to the land;
- ☐ the **means** by which the council proposes **to achieve** the plan’s **objectives and performance targets**;
- ☐ the **manner** in which the council proposes **to assess its performance** with respect to the plan’s objectives and performance targets, and may require the prior approval of the council to the carrying out of any specified activity on the land:

and must include a description of the following:

- ☐ “the **condition of the land**, and of any **buildings or other improvements** on the land, as at the date of adoption of the plan of management;
- ☐ the **use of the land and any such buildings or improvements** as at that date”;

and:

- ☐ “specify the **purposes** for which the **land**, and any such **buildings or improvements**, will be **permitted to be used**, and
- ☐ specify the **purposes** for which any **further development of the land will be permitted**, whether under lease or licence or otherwise, and
- ☐ describe the **scale** and **intensity** of any such **permitted use or development**.

The preparation and contents of this Plan of Management are in accordance with the requirements of the *Local Government Act 1993*, which has been amended by the *Local Government Amendment (Community Land Management) Act 1998* and *Local Government (General) Regulation 1999*.

2.5 Community Land Categories

Under the *Local Government Act 1993 (as amended)*, community land must be categorised as either a natural area, a sportsground, a park, an area of cultural significance or for general community use, or a combination of these categories. The Act has a further requirement that land categories as a “Natural area” must be given a sub-category of either bushland, wetland, escarpment, watercourse, foreshore or a category prescribed by the regulations. Community land categories must be consistent with the guidelines for categorising community land in *The Local Government (General) Regulation 1999*.

In accordance with the guidelines, Careel Bay Playing Fields and Hitchcock Park is divided into four categories, including one sub-category as follows:

1. Sportsground

Land should be categorised as a sportsground if the land is used or proposed to be used primarily for active recreation involving organised sports or the playing of outdoor games.

2. Park

Land which is, or is proposed to be, improved by landscaping, gardens or the provision of non-sporting equipment and facilities, and for uses which are mainly passive or active recreational, social, educational and cultural pursuits that do not unduly intrude on the peaceful enjoyment of the land by others.

3. General Community Use

In accordance with the Act, land should be categorised as general community use if the land:

- *may be made available for use for any purpose for which community land may be used, whether by the public at large or by specific sections of the public; and*
- *is not required to be categorised as a natural area, or does not satisfy the guidelines for categorisation as a sportsground, a park or any area of cultural significance.*

4. (a) Natural Area: Wetland

Land which includes marshes, mangroves, backwaters, billabongs, swamps, sedge-lands, wet meadows or wet heathlands that form a waterbody that is inundated cyclically, intermittently or permanently with fresh, brackish or salt-water, whether slow moving or stationary.

2.6 Core Objectives

In accordance with the *Local Government Act 1993* and *Local Government Amendment (Community Land Management) Act 1998*, each category and sub-category are provided with the following core objectives:

Sportsground

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

- a) to encourage, promote and facilitate recreational pursuits in the community involving organised and informal sporting activities and games, and;
- b) to ensure that such activities are managed having regard to any adverse impact on nearby residents".

Park

"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".

General Community Use

"The core objectives for management of community land categories as **general community use** are:

To promote, encourage and provide for the use of the land, and to provide facilities on the land, to meet the current and future needs of the local community and of the wider public:

- a) in relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public, and;
- b) in relation to purposes for which a lease, licence or other estate may be granted in respect of the land (other than the provision of public utilities and works associated with or ancillary to public utilities).

Natural Area

"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*, and in compliance with the requirements of the *Local Government (Community land Management Act 1998 – Sect 36A Community Land comprising the habitat of endangered species and 36B Community Land comprising the habitat of threatened species*”.

Natural Area: Wetland

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

- a) to protect the biodiversity and ecological values of wetlands, with particular reference to their hydrological environment (including water quality and water flow), and to the flora, fauna and habitat values of the wetlands, and;
- b) to restore and regenerate degraded wetlands, and;
- c) to facilitate community education in relation to wetlands, and the community use of wetlands, without compromising the ecological values of wetlands”.

2.7 Development of Community Land

Section 47E of the *Local Government Act 1993 (as amended)*, schedules specific requirements for permissible development on community land as follows:

1. “No power of a council under an environmental planning instrument to consent to the carrying out of development on community land may be delegated by the council, if:
 - a) the development involves the erection, rebuilding or replacement of a building (other than a building exempted by or under subsection (2) from the operation of this paragraph), or;
 - b) the development involves extensions to an existing building that would occupy more than 10 per cent of its existing area, or;
 - c) the development involves intensification, by more than 10 per cent, of the use of the land or any building on the land, or;
 - d) the location of the development has not been specified in the plan of management applying to the land and the development is likely, in the opinion of the council, to be unduly intrusive to nearby residents.
2. The following buildings are exempt from the operation of subsection (1)(a):
 - a) toilet facilities;
 - b) small refreshment kiosks;
 - c) shelters for persons from the sun and weather;
 - d) picnic facilities;
 - e) structures (other than accommodations for spectators) required for the playing of games or sports;
 - f) playground structures;
 - g) work sheds or storage sheds;
 - h) buildings of a kind prescribed by the regulations.
3. An existing area referred to in subsection (1)(b) does not include the area of any awning, balcony, verandah or other thing that extends beyond the main structural outline of the building.
4. A delegation granted before the commencement of this section, to the extent that the delegation could not have granted if this section had been in force at the time it was granted, is void”.

2.8 Leases, Licences or Other Estate on Community Land

A lease, licence or other estate may be granted, in accordance with an express authorisation by this plan of management, providing the lease, licence or other estate is for a purpose prescribed in s.46 of the *Local Government Act 1993 (as amended)* and is consistent with core objectives for the categories as described in section 2.6 Core Objectives.

Council must not grant a lease, licence or other estate for a period (including any period for which the lease could be renewed by the exercise of an option) exceeding 21 years. A lease, licence or other estate may be granted only by tender in accordance with s.46A of the *Local Government Act 1993 (as amended)* and cannot exceed a term of 5 years (including any period for which the lease could be renewed by the exercise of an option), unless it satisfies the requirements as scheduled in s.47, or is otherwise granted to a non-profit organisation. Leases, licences and other estates complying with the 5 year term, are subject to the requirements as scheduled in s.47A of the *Local Government Act 1993 (as amended)*. Leases, licences and other estates must not be granted in respect of land categorised as a natural area, unless it is for a purpose prescribed in s.47B of the *Local Government Act 1993 (as amended)*. Refer to 2.9 Leases, licences or other estate in respect of a natural area.

2.9 Leases, Licences or Other Estate in respect of a Natural Area

Specific requirements in relation to community land categorised as a natural area, under s.47B of the *Local Government Act* are scheduled as follows:

1. "A lease, licence or other estate must not be granted, in respect of community land categorised as a natural area:
 - a) to authorise the erection or use of a building or structure that is not a building or structure of a kind prescribed by this section of the regulations, or;
 - b) to authorise the erection or use of a building or structure that is not for a purpose prescribed by this section or the regulations.
2. A lease, licence or instrument granting any other estate is void to the extent that its provisions are inconsistent with this section.
3. In this section, erection of a building or structure includes rebuilding or replacement of a building or structure.
4. The following buildings and structures are prescribed for the purposes of subsection (1)(a):
 - a) walkways;
 - b) pathways;
 - c) bridges;
 - d) causeways;
 - e) observation platforms;
 - f) signs.
5. The following purposes are prescribed for the purposes of subsection (1)(b):
 - a) information kiosks;
 - b) refreshments kiosks (but not restaurants);
 - c) work sheds or storage sheds required in connection with the maintenance of the land;
 - d) toilets or rest rooms".

2.10 Council's Policy on Leases and Licences

Leases, licences and other estate are assessed in accordance with performance-based criteria and core objectives for respective categories of community land as described in this Plan of Management. Leases/licences are to be reviewed regularly and renewed subject to relevant compliance with this Plan of Management. Leases and licences must also address the following criteria:

- Enforcing the agreement
- Payments and/or other benefits to the community
- Use and occupation
- Statutory requirements
- Liability and insurance
- Improvements
- Repairs and maintenance
- Health and Safety
- Environmental Management

2.11 Development, Activities and Uses of Reserves

The *Environmental Planning and Assessment Act 1979* forms the basis of statutory planning in New South Wales, including the preparation of Local Environmental Plans (LEPs) which regulate land use and development. Pittwater Council, as the consent authority under the *Pittwater Local Environmental Plan 1993 (as amended)* and the *Environmental Planning and Assessment Act 1979* controls development and the use of land on parks and reserves in Pittwater.

The *Pittwater Local Environmental Plan 1993 (as amended)* refers directly to Plans of Management to define uses, activities and developments within the 6(a) zone that are permissible with and without development consent. This Plan of Management defines uses, activities and developments that will be permitted in this reserve and establishes a planning structure which identifies when development consent is required (refer to sections 3.3 Zoning, 3.4 Leases, licences and other estate in this reserve, 3.5 Schedule of Permissible Uses for Crown Reserve and Community land Categories: Sportsground, Park/General Community Use and 3.6 Schedule of Permissible Uses for Community Land Category: Natural Area – Wetland).

3.0 Land Description and Planning

3.1 Land Description

As outlined in previous sections, Careel Bay Playing Fields and Hitchcock Park are comprised of both Crown reserve (68%) and Community Land (32%). Refer to Table 1: Land Area

Table 1: Land Area

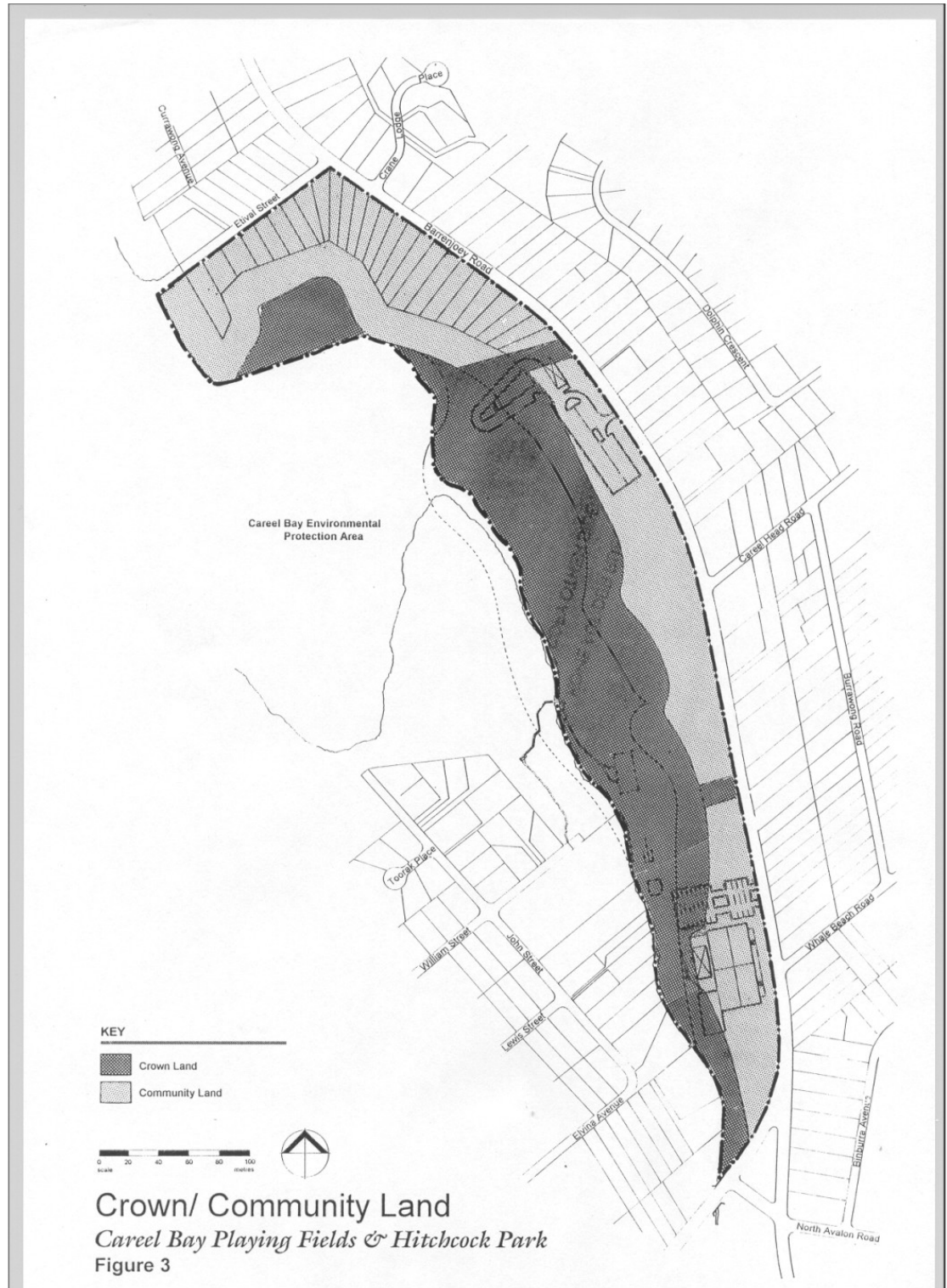
Land Description	Area (hectares)
Crown Reserve	6.1 Ha
Community Land	2.8Ha
TOTAL AREA	8.9Ha

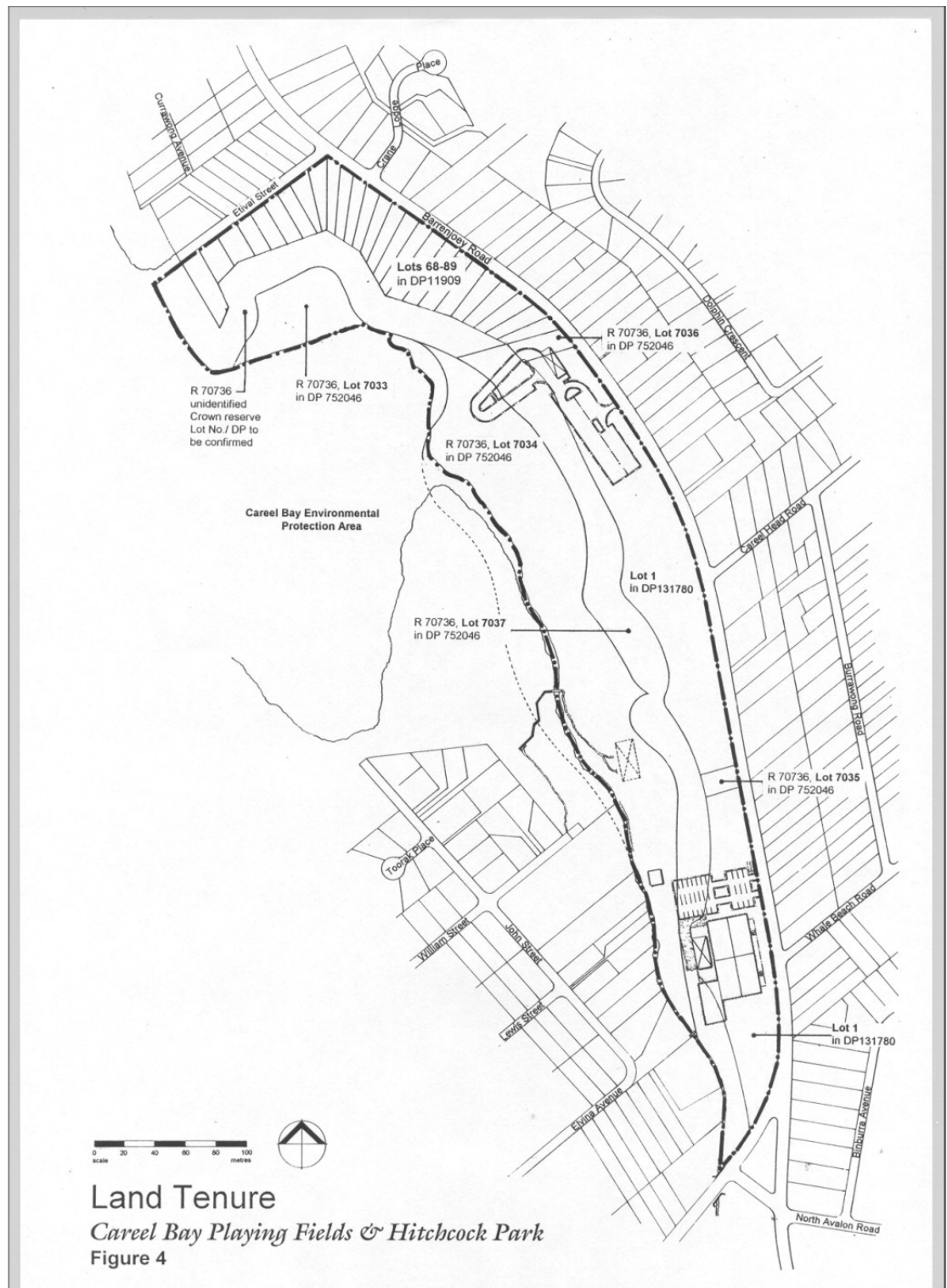
The Crown reserve is divided into six parcels of land and Community land into twenty-eight individual parcels of varying sizes (refer Figure 3: Crown/Community Lands). Crown land parcels generally relate to the bay's "reclaimed areas" with boundaries defined by earlier foreshore alignments and two unmade road reserves. Community land tends to reflect those areas which were above mean high water mark at the time of earlier surveys (for further details refer to figure 4: Land Tenure and Table 2: Land Description). Table 2 also schedules the condition and use of the land, buildings and improvements in accordance with the requirements of the *Local Government Act 1993 (as amended)*.

3.2 Crown Reserve and Community Land

3.2.1 Crown Reserve

The Crown reserve portion of Careel Bay Playing Fields and Hitchcock Park was reserved for "public recreation" in 1974. The management of Crown reserves must be in accordance with the *Crown Lands Act 1989*, case law and DLWC policy guidelines (see 2.3 Principles of Crown Reserve Management). Pittwater Council manages this Crown reserve by devolvement in accordance with section 48 of the *Local Government Act 1993 (as amended)*. This reserve, identified as a significant area within Pittwater's open space network, is also part of a much larger system of Crown reserves located throughout New South Wales.





It is the responsibility of DLWC, together with the trustee appointed by the Minister, namely Pittwater Council, to ensure that this public land's uses are consistent with the dedicated "public purpose" of the reservation in accordance with the *Crown Lands Act 1989*.

This Plan of Management confirms the significance of this reserve's recreational value as well as its environmental and biodiversity values which are all worthy of protection and sustainable management. It is important to recognise that the reserve adjoins a significant and sensitive environmental area, ie Careel Bay Wetlands, zoned 7(a) Environmental Protection Zone under *Pittwater Local Environmental Plan 1993 (as amended)*. Accordingly, this Plan of Management recommends that public purpose for parcels of Crown reserve adjoining these protected wetlands be expanded from "Public Recreation" to "Public Recreation and Environmental Protection". In addition, boundary anomalies and identification of one parcel of Crown reserve need to be further investigated (for actions required in accordance with this Plan refer to 6.0 Management Strategies: 6.1 Action Plan, items A1-A4).

3.2.2 Community Land

In accordance with the requirements of the *Local Government Act 1993*, the *Local Government Amendment (Community Land Management) Act 1998* and *Local Government (General) Regulation 1999*, this Plan of Management identifies four categories (including one sub-category) for community land in Careel Bay Playing Fields and Hitchcock Park as follows:

1. Sportsground
2. Park
3. General Community Use
4. Natural Areas (a) wetland

Figure 5: Community Land Categories identifies the location and extent of these four community land categories. The use, activities and development of community land must be consistent with its designated categories and core objectives (refer to 2.4 Principles of Community Land Management, 2.5 Community Land Categories, 2.6 Core Objectives and 6.0 Management Strategies).

This Plan of Management identifies land categories only on community land and not for Crown land portions. It is not a legislative requirement to categorise Crown land however it is important that there is overall consistency in the management of both community land and Crown land on this reserve in accordance with the relevant Acts As a means of ensuring consistency in land management principles, this Plan of Management recommends changes to "public purpose" to reflect the reserve's broader management objectives (refer to 3.2.1 *Crown Reserve*).

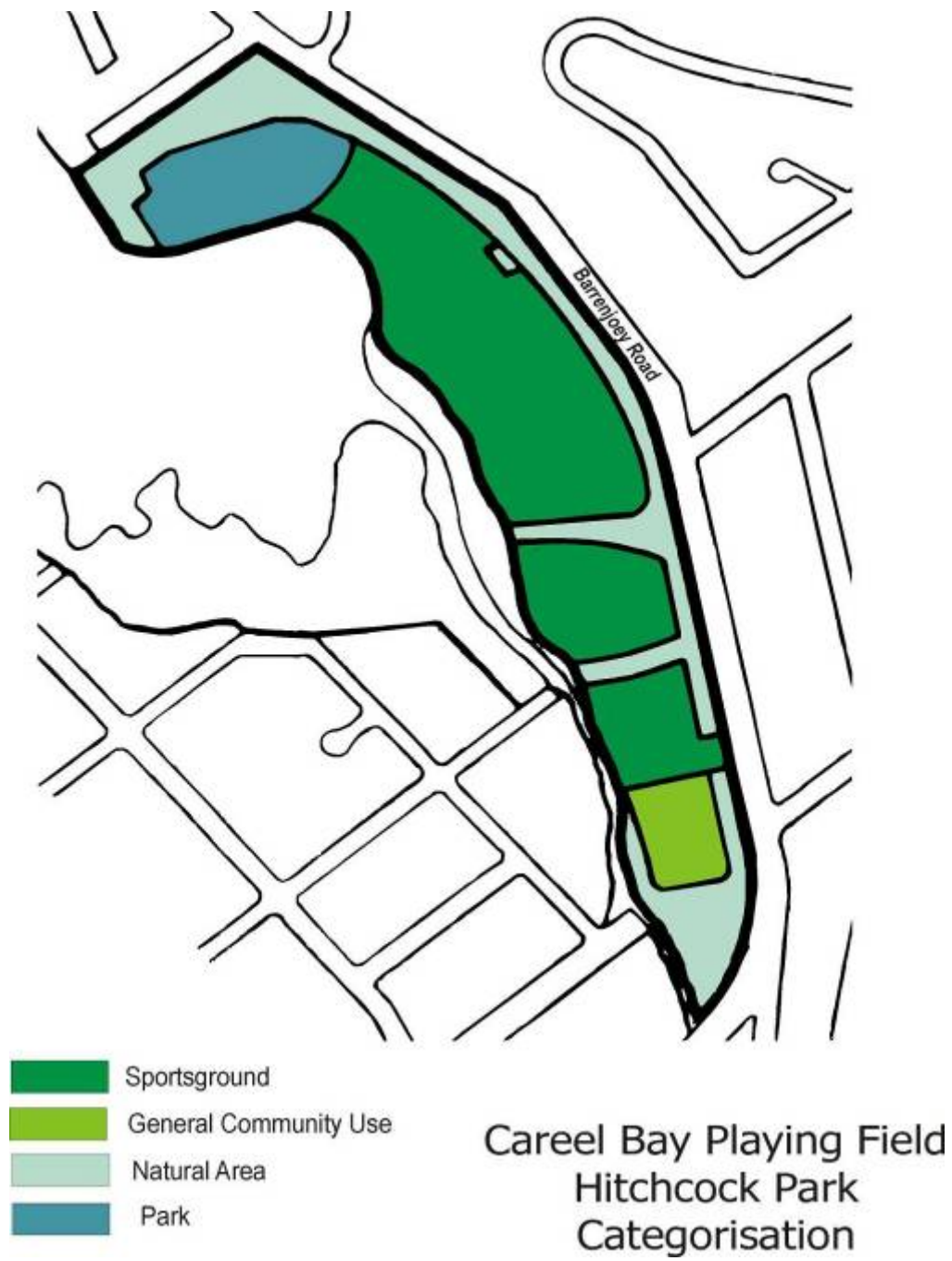


Table 2: Land Description

Crown Land: Hitchcock Park and Careel Bay Playing Fields

Crown Land Description	Existing Public Purpose	Existing Facilities/Improvements	Condition
R70736, Lot 7033 in DP 752046 [portion of UDEA]	Public Recreation	Part of unleashed dog exercise area, tap	Fair
R70736, Lot 7034 in DP 752046 [western lineal reserve]	Public Recreation	Part of 2 x sealed carparks, Hitchcock Park canteen/amenities building, playground, wood-fueled BBQ/picnic table, seats, taps, unformed track, log fences. Part of Hitchcock Park playing fields/part of Careel Bay Playing Fields Nos 1, 2 and Part of mini-fields (3), gravel pathway/metal grille footbridge and Elvina Avenue	Fair Good
R70736, Lot 7035 in DP 752046 [unmade road reserve]	Public Recreation	Part of Hitchcock Park playing fields	Good
R70736, Lot 7036 in DP 752046 [unmade road reserve]	Public Recreation	Part of Careel Bay Playing Fields sealed road to Carpark and log fences. Northern part of Hitchcock Park canteen/change-rooms and amenities building	Poor Fair
R70736, Lot 7037 in DP 752046 [central lineal reserve]	Public Recreation	Part of Hitchcock park playing fields and floodlighting/part of Careel Bay Playing Fields Nos 1, 2 and part of mini-fields (3) Part of 2 x sealed carparks, log fences and synthetic turf cricket pitch. Part of 1 x synthetic grass tennis court, floodlighting and chain-wire fences. Part of unsealed overflow Carpark [adj. to tennis courts] and unformed tracks.	Good Fair Good Poor
R70736, unidentified Lot/DP [northern central/foreshore res.]	Public Recreation	Part of unleashed dog exercise area, dog litter bins, tap, picnic tables/seats. Part of Careel Bay Playing Fields No 2	Fair Good

Table 2: Land Description (continued)
Community Land: Hitchcock Park and Careel Bay Playing Fields

Crown Land Description	Existing Public Purpose	Existing Facilities/Improvements	Condition
Lot 1 in DP 131780 [northern portion]	Sportsground	Part of Hitchcock Park Playing Fields/part of Careel Bay Playing Fields No 1 and part of mini-fields (3) Part of Careel Bay Playing Fields sealed & unsealed Carpark, post and rail log fences. Floodlighting to Careel Bay Playing Fields No 1/and Hitchcock Park Playing Fields. Part of sealed Carpark [68 car spaces], post and rail log and timber arise fences.	Good Poor Good Fair
	General Community use	Major portion of community building/clubhouse, include. Canteen/storage, change-rooms and amenities and immediate curtilage.	Fair
	Natural Area: wetlands	Piped and open drainage channels	Poor
	Sportsground	Major portion of tennis court complex include clubhouse building/public amenities/ change-rooms and kitchen, pathways, playground, 2 x picnic shelters/seating, floodlighting, chain-wire fences and 4 x synthetic grass tennis courts and part of 1 x synthetic grass tennis court. Part of unsealed overflow Carpark [adj. to tennis courts]. Part of Hitchcock Park playing fields/floodlighting. Cricket practice nets (2) Part of sealed Carpark [68 car spaces], post and rail log and timber arise fences	Good Poor Good Fair
	Natural Area: wetlands	Piped and open drainage channels Unformed walking tracks, no other facilities or improvements	Poor N/A
Lots 68 to 78 in DP 11909	Sportsground	Part of Careel Bay Playing Fields No 2 and floodlighting	Good
	Natural Area: wetlands	Unformed walking tracks, no other facilities or improvements	N/A
Lots 79 to 89 [include. 80A, 80B, 81A and 81B] in DP 11909	Park	Part of unleashed dog exercise area, unformed walking tracks. Unformed Carpark at cnr Barrenjoey Road/Etival Street	Fair Fair
	Natural Area: wetlands	Unformed walking tracks, no other facilities or improvements	N/A

3.3 Zoning

3.3.1 **Crown Reserve/Community land under this Plan**

Careel Bay Playing Fields and Hitchcock Park are zoned 6(a) Existing Recreation “A” in accordance with the *Pittwater Local Environmental Plan 1993 (as amended)*. Refer to Figure 6: Zoning. This LEP requires Plans of Management to specify the uses, activities and developments that will be permitted on the subject land that is zoned 6(a) Existing Recreation “A” with and without development consent. This Plan of Management forms the heads of consideration for all development applications required for uses, activities and developments in Careel Bay Playing Fields and Hitchcock Park. Refer to sections 3.5 Schedule of Permissible Uses for Crown Reserve and Community Land Categories: Sportsground, Park/General Community use and 3.6 Schedule of Permissible Uses for Community Land Category: natural Area – wetland.

3.3.2 **Adjoining Land Uses and Zoning**

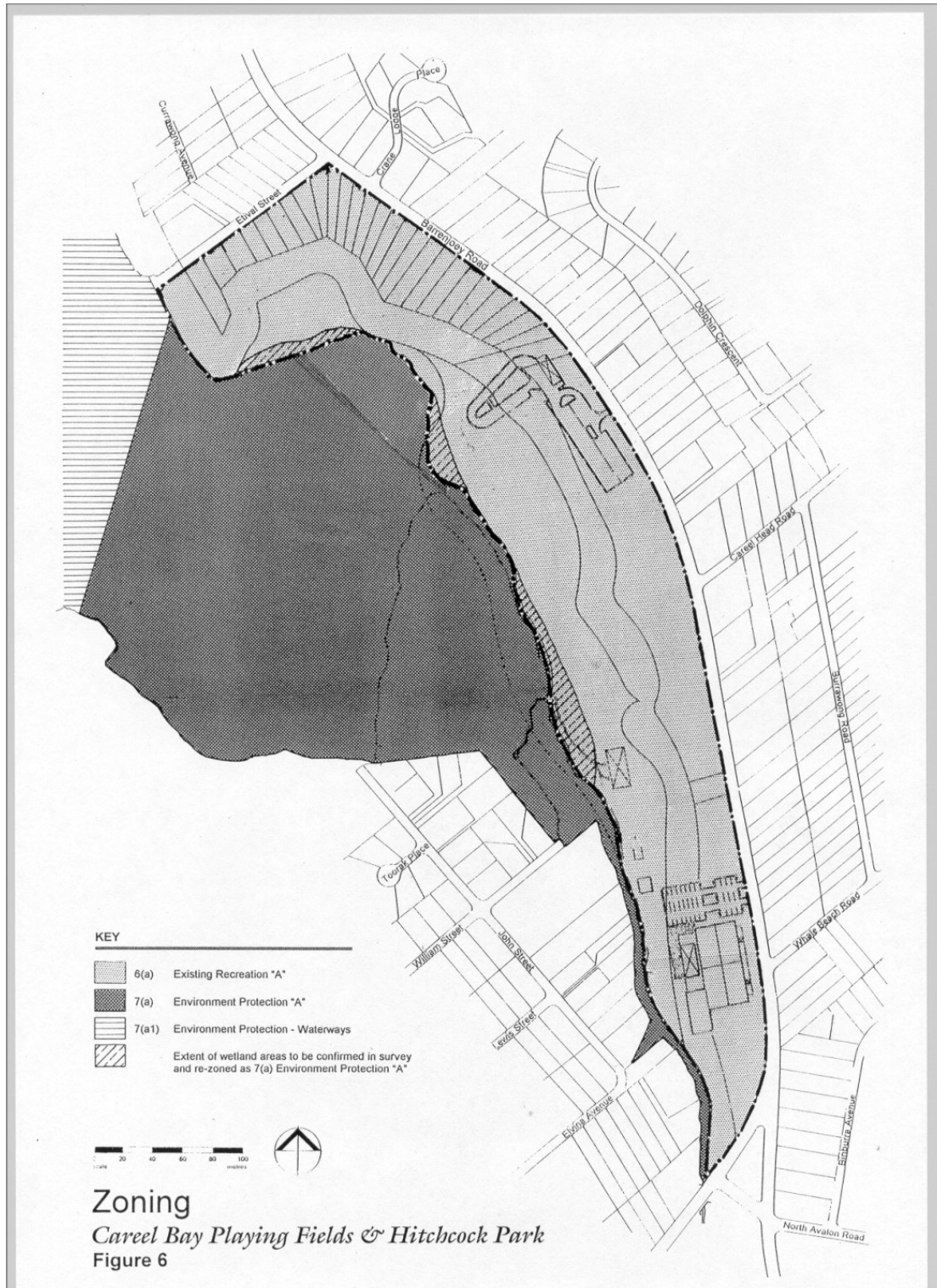
Barrenjoey Road, the main road linking Avalon to Palm Beach, defines the reserve’s north-eastern and eastern boundary with Etival Street forming the northern boundary. Careel Creek and Careel Bay wetlands define the western boundaries of the reserve and are zoned 7(a) Environmental protection “A”. This is a highly significant environmental area containing the largest single area of inter-tidal wetlands in Pittwater. The far north-western corner of the reserve is bounded by sensitive inter-tidal mudflats. This area is zoned 7(a1) Environmental Protection – Waterways and has been the subject of a high-tide trial unleashed dog swimming area. The main land use surrounding the northern, eastern and south-western parts of the reserve is residential area zoned 2(a) Residential “A”.

3.3.3 **Proposed Amendments to Existing Zoning**

This Plan identifies anomalies in the existing western boundary of the reserve adjoining wetlands zoned 7(a) Environment Protection “A”. Parts of these wetlands, including a small remnant salt-marsh community, are currently within the reserve’s boundary zoned 6(a) Existing Recreation “A”. These boundaries should be surveyed and the relevant areas re-zoned under 7(a) Environment Protection “A” (see Figure 6: Zoning and 6.0 Management Strategies, 6.1 Action Plan: item A4). The proposed amendments to zoning would have no detrimental impact on recreational values, particularly with respect to existing sporting activities on adjoining playing fields.

In accordance with the provisions of *Pittwater Local Environmental Plan 1993 (as amended)*, land zoned 7(a) Environmental Protection is afforded protection and enhancement of significant existing and potential native habitat values, whilst allowing use of the site for passive recreation purposes. Accordingly, the objectives for this zone are as follows:

- to identify areas having significant natural, cultural and heritage conservation value;
- to ensure that the ecology and environmental qualities of land within this zone are enhanced and protected from adverse impact arising from development of land in the vicinity.



3.4 Leases, Licences or Other Estate in this Reserve

As lease, licence or estate may be granted, in accordance with an express authorisation by this Plan of Management, providing the lease, licence or other estate is for a purpose which is consistent with the *Crown Lands Act 1989*, case law and the DLWC policy guidelines or prescribed in section 46 of the *Local government Act 1993 (as amended)* and is consistent with the core objectives for the relevant categories (see 2.8 Leases, license or other estate on Community land and 2.10 Council's Policy on leases and licences). Under these Acts there are also specific requirements and prescribed purposes relating to leases, licences or other estate on community land categorised as a "natural area" (see 2.9 leases, licences or other estate in respect of a natural area for background information and 6.0 Management Strategies: 6.1 Action Plan, items C1-C4 for specific requirements and actions.

3.4.1 Existing leases/Licences

A lease agreement has been recently renewed for the Careel Bay Tennis Club in Hitchcock Park, including provision for sub-leasing by Aden Tennis School. This Plan expressly authorises continuation of this lease (subject to relevant compliance, as scheduled in 6.0 Management Strategies: 6.1 Action Plan, items C1, C3 and C4).

3.4.2 Future leases/Licences

No other existing leases/license currently apply to this reserve, however this Plan of Management expressly authorises future leases/licences (subject to relevant compliance as scheduled in 6.0 Management Strategies: 6.1 Action Plan items C1, C3 and C4).

3.5 Schedule of Permissible Uses

Crown Reserve Public Purpose: Public Recreation

Community Land Category: Sportsground, Park and General Community Use

Permissible Uses Exempt [in accordance with LEP 1993, Amend No 42]

- > Sporting events consistent with this Plan of Management
- > Parking ancillary to the reserve
- > Multi-use pathways and tracks (other than for motor vehicle), footpaths, cycle tracks, boardwalks and bridges, consistent with this Plan of management and Landscape Masterplan
- > Temporary activities, developments or events consistent with the Crown Lands Act, Local government Act core objectives and Council goals for this park that do not exceed one of the following criteria:
 - a) The number of participants and/or spectators or any one day of an event does not exceed 1000
 - b) Activities will occur outside the period between 8.00am and 8.00pm
 - c) Activities or temporary facilities will occur over a total of more than three continuous days
- > Temporary activities, developments or events requiring a lease, licence or other estate consistent with this Plan of Management
- > Recreational facilities other than buildings [eg goal posts and other small structures directly related to sporting activities]
- > Minor public drainage and stormwater works
- > Public gardens, landscaping work, bush regeneration and habitat/land restoration works
- > Land restoration works, including mounding and landscaping
- > Compliance, directional, interpretive, identification and public safety signage
- > Shelters, shade structures, park furniture, picnic facilities, toilet blocks and the like, consistent with the Plan of Management and Landscape Masterplan
- > Playground facilities and associated structures
- > Filling (to a maximum depth of 500mm) levelling, grading and topdressing, consistent with the Plan of Management and Landscape Masterplan and subject to Flood Management Plan recommendations
- > Temporary overflow event parking consistent with the Plan of Management and Landscape Masterplan
- > Carparking areas and associated internal road access consistent with the Plan of Management and Landscape Masterplan

Permissible Uses Requiring Development Consent [in accordance with LEP 1993, Amend No 42]

- > Utility installations
- > Major public drainage and stormwater works
- > Sports facilities, clubhouses/amenities and the like consistent with this Plan of Management and Landscape Masterplan
- > Community facilities
- > Vehicular access road or track consistent with this Plan of Management and Landscape Masterplan
- > Advertising
- > Filling greater than 500mm in depth
- > Temporary activities, developments or events consistent with the Crown Lands Act, Local Government Act core objectives and Council goals for this park that exceed one of the following criteria:
 - a) The number of participants and/or spectators on any one day of an event will exceed 1000
 - b) Activities will occur outside the period between 8.00am and 8.00pm
 - c) Activities or temporary facilities will occur over a total of more than three continuous days

Prohibited Uses including (but not necessarily limited to the following)

- > Extractive industries
- > Private vehicular access to adjoining lands
- > Any road or vehicular access track not shown or consistent with this Plan of Management and Landscape Masterplan
- > Dumping of refuse (other than importing of fill for approved or permitted works)
- > Vegetation removal not in accordance with Council's tree preservation and management order of this Plan of Management
- > Private alienation or encroachment onto the reserve
- > Recreational motor sports (including four wheel driving, motorbike riding and the like)
- > Domestic drainage outlets
- > Development and temporary activities or events not consistent with the Crown Lands Act, Local Government Act core objectives or Council goals for this park

3.6 Schedule of Permissible Uses

Crown Reserve Public Purpose: Public Recreation and Environmental Protection
Community Land Category: Natural Area – wetlands

Permissible Uses Exempt [in accordance with LEP 1993, Amend No 42]

- > Multi-use and pedestrian tracks (other than for motor vehicle), footpaths, cycle tracks, boardwalks, bridges, viewing platforms and decks consistent with this Plan of Management and Landscape Masterplan
- > Compliance, directional, interpretive, identification and safety signage
- > Bush regeneration and land/habitat restoration works, including temporary access and storage of materials for the work, minor excavation of past land-fill, grading and installation of protective [livestock-type] fencing

Permissible Uses Requiring Development Consent [in accordance with LEP 1993, Amend No. 42]

- > Utility installations
- > Any public drainage and stormwater works
- > Work sheds or storage sheds required in connection with the maintenance of the land
- > Toilets or rest rooms

Prohibited Uses including (but nor necessarily limited to the following)

- > Extractive industries
- > Private vehicular access to adjoining lands
- > Dumping of refuse
- > Unleashed dogs
- > Vegetation removal not in accordance with Council's tree preservation and management order of this Plan of Management
- > Private alienation or encroachment onto the reserve
- > Recreational motor sports (including four wheel driving, motorbike riding and the like)
- > Domestic drainage outlets
- > Development and temporary activities or events, leases, licences and other estate not consistent with the Crown Lands Act, Local Government Act core objectives for a Natural Area or Council goals for this park

4.0 Community Issues

4.1 Community Consultation

4.1.1 Introduction

Community consultation is a vital component in the preparation of plans of management. The purpose of the public meetings/workshops is to assist Council and the community to identify the important values attached to this reserve and to provide a forum for discussion of community issues. Furthermore, a better understanding of key issues assists in the identification of existing and future impacts, threats, opportunities and constraints affecting this reserve and its values. Pittwater Council conducted four stakeholder/community workshops between 4-11 December 2000 (two with residents, one with environmental groups and one with sporting and other user groups). Over 500 invitations were delivered to residents in local neighbouring streets, local community interest groups, clubs and associations. A total of 41 people attended the workshops.

4.1.2 Community Values

The public workshops defined a strong sense of community ownership in this reserve with the desire to ensure the protection of its natural, ecological, scenic and recreational values. The following points identify the values and importance attached to this reserve by the participants at the workshops:-

- ❖ significant sporting and recreational facilities located within natural/cultural setting;
- ❖ open and informal character;
- ❖ provides specific and highly valued community, sporting and recreational facilities;
- ❖ opportunities for passive recreation including walking, jogging, relaxing, fishing, bird-watching, environmental study;
- ❖ opportunities for dog-owners and related activities with dogs;
- ❖ reserve used for regular informal and formal (club/association) sporting activities;
- ❖ offers expansive views over Pittwater;
- ❖ interface with adjoining wetlands provides a natural backdrop to the reserve;
- ❖ contains remnant terrestrial and estuarine vegetation communities of high conservation significance;
- ❖ faunal dispersal/corridor between Avalon/Careel Bay wetlands and McKay Reserve/peninsula.

The workshops and submissions highlighted a number of community issues and identified the ongoing need for management and protection of identified values as follows:

- ❖ to protect the range of passive and active recreational values and opportunities;
- ❖ to ensure broad community access to the reserve;
- ❖ to balance existing uses with appropriate protection of identified natural values;
- ❖ to ensure that sports activities/development do not compromise environmental values;

- ❖ to ensure pedestrian access, circulation and recreational activities address potential conflict between user groups;
- ❖ to ensure appropriate rehabilitation of highly modified natural values;
- ❖ to continue to address high level weed encroachment;
- ❖ to protect and restore vital habitats ensuring long term viability;
- ❖ to minimise existing and future pressures upon Careel Creek and adjoining wetlands;
- ❖ to resolve public safety issues, access and visual quality of Barrenjoey Road verge;
- ❖ to address and monitor any negative impacts on adjoining residents as a result of recreational activities and development;
- ❖ to address periodic parking and vehicular congestion/safety problems;
- ❖ to continue to address vandalism to public amenities and restricted hours of access;
- ❖ to continue monitoring of dog activities within the reserve to assist in development of appropriate management strategies;
- ❖ to ensure management of the reserve is consistent with the high environmental values of the adjoining Careel Bay Environmental Protection Area.

These issues are examined in Appendix 1: Community Issues Discussion Paper. The Paper is divided into the following sections:-

A. Protection of Community Values

B. Proposed Development

C. Environmental Issues

- ❖ Landscape Setting, Natural and Recreational Values
- ❖ Visual Quality
- ❖ Faunal Habitat and Corridors
- ❖ Exotic Weed Management and Bush Regeneration
- ❖ Drainage & Water Quality
- ❖ Careel Bay Environmental Protection Area

D. Public Access and Recreational Facilities

- ❖ Vehicular Access, Parking and Pedestrian Access
- ❖ Proposed Shared Pedestrian/Bikepath Access (Multi-use Pathway)
- ❖ Cricket Pitch and Practice Nets
- ❖ Vandalism of Public Property
- ❖ Signage

E. Unleashed Dog Exercise Area

- ❖ Overview
- ❖ UDEA Trial Area
- ❖ Designated UDEA and Unleashed Dogs in the Reserve

5.0 Basic Management

5.1 Values Statement

The combination of active and passive recreational opportunities, diversity in natural/cultural settings, scenic quality, adjoining wetlands and faunal habitat, foreshore access, pedestrian linkages and recreational facilities have all been identified as key values. It is vital that these values are protected and managed effectively. Furthermore, it is important that recreational demand, public access and proposed developments should not in any way compromise identified values or potentially limit opportunities for future generations.

Key values have been developed through further investigation and analysis of the reserve's resource base. These key values are divided into three major categories as follows:

1. Natural/Cultural Setting
2. Environmental/biodiversity
3. Recreational Uses/Public Access & Circulation

5.2 Natural/Cultural Setting

5.2.1 Natural/Cultural Foreshore & Bay-side Setting

- ❖ open space – sportsground setting of predominantly mown grass incorporating playing fields and an unleashed dog exercise area within remnant natural areas;
- ❖ reserve adjoins expansive inter-tidal mudflats, mangroves, tidal creek and natural foreshores/beach;
- ❖ natural buffers within reserve to surrounding residential development;
- ❖ remnant Swamp Oak and Swamp Mahogany communities;
- ❖ outstanding environmental and scenic qualities;
- ❖ informal character and natural tranquillity.

5.2.2 Views

- ❖ outstanding scenic quality and diversity;
- ❖ uninterrupted expansive natural views over mangroves to Ku-ring-gai Chase National Park;
- ❖ expansive views over Careel Bay (near Etival Street);
- ❖ quiet solitude/places for reflection along mangrove-lined creek and foreshores.

5.2.3 Topography

- ❖ relatively flat foreshore area subject to periodic inundation;
- ❖ part of Careel Creek floodplain;
- ❖ past land-fill and reclamation works have created the current foreshore profile (eg playing fields terminate abruptly in a steep embankment along much of the intertidal wetlands and mudflats);
- ❖ remnant wetlands occur in local swales and depressions (eg northern and southern ends of the reserve, eastern drainage line along Barrenjoey Road and central drainage swale);
- ❖ site topography contrasts with adjacent steep coastal scarps (ie McKay Reserve/Barrenjoey Peninsula).

5.2.4 Geology & Soils

- ❖ Pittwater is a narrow, deeply dissected, steep-sided drowned river valley estuary;
- ❖ inter-tidal mudflats consist of clay and sand sediments/high organic content;
- ❖ reserve's soils typically consist of fill materials from past reclamation works as well as marine and fluvial deposits of sand, silt, clay and shell layers with varying amounts of organic matter.

5.3 Environmental/Biodiversity Values

5.3.1 Pittwater/Local Catchment and Hydrology

- ❖ located within the Careel Bay catchment area;
- ❖ catchment drains into Careel Bay via the stormwater system and Careel Creek;
- ❖ Careel Creek's headwaters are in Hudson Park with much of the creek piped or flowing along a concrete channel before reverting to a more natural channel near Barrenjoey High School;
- ❖ gross Pollutant Trap located on concrete channel section of Careel Creek;
- ❖ hydrological processes dominated by tidal currents and local creek/stormwater flows;
- ❖ enclosed nature of the bay restricts tidal velocities and flushing affecting water quality;
- ❖ a number of smaller sub-surface drains connect to Careel Creek within the reserve;
- ❖ existing periodic/permanent water detention in swale along Barrenjoey Road;
- ❖ central swale/remnant wetland between Careel Bay Playing Fields and Hitchcock Park forms a significant physical feature in the reserve;
- ❖ small freshwater wetland in the northern end of reserve (near Etival Street).

5.3.2 Estuarine Wetland Vegetation Communities

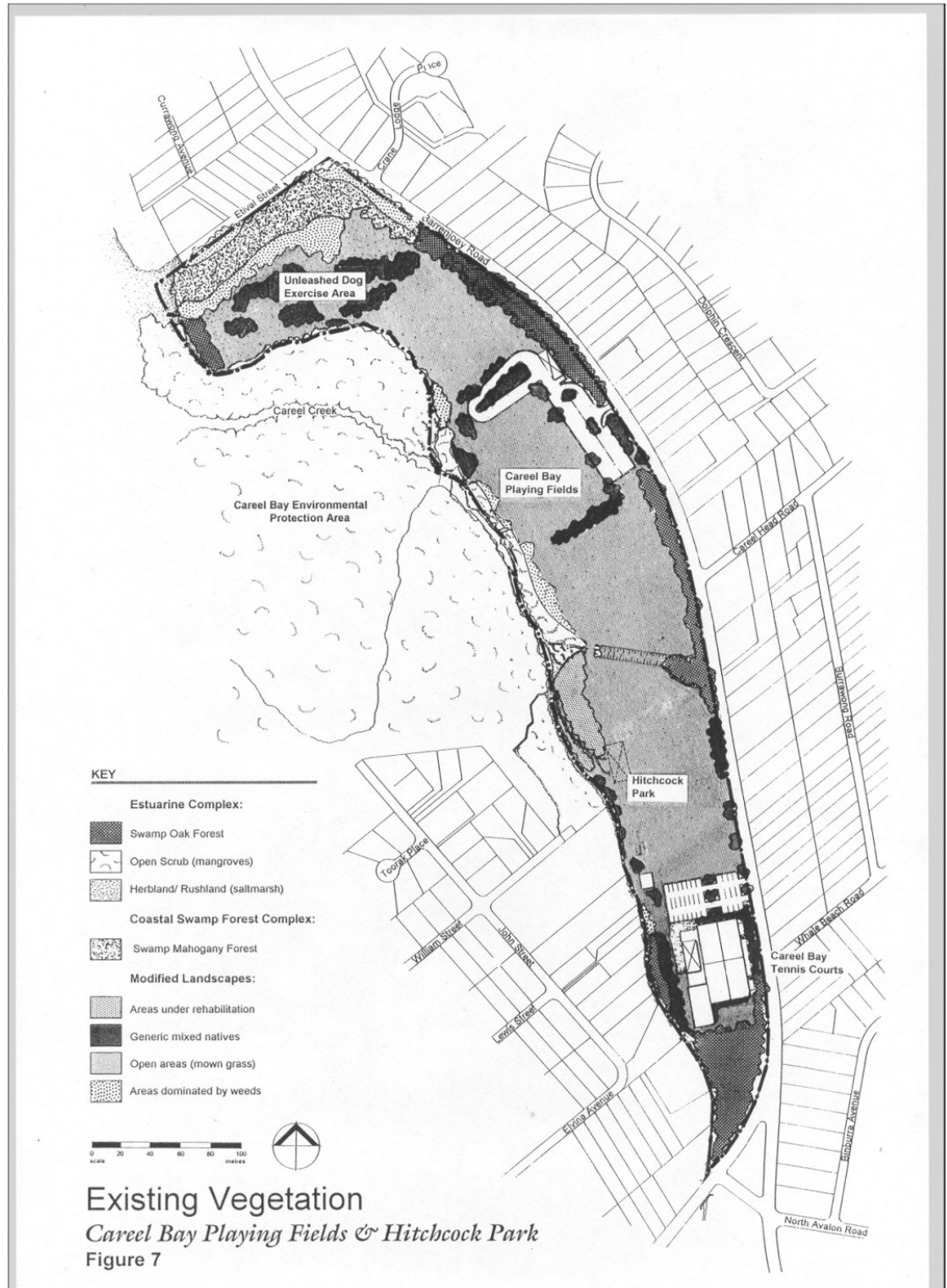
Four natural vegetation communities occur within and immediately adjacent to Careel Bay Playing Fields & Hitchcock Park (not including seagrass beds). These communities include the following:

1. Swamp Oak Forest;
2. Open-scrub (mangroves);
3. Herbland/Rushland (salt-marsh);
4. Swamp Mahogany Forest.

For further details see Table 3: Conservation Significance: Vegetation Communities. The distribution and extent of these communities are shown in Figure 7: Existing Vegetation. Areas which have been highly modified or planted to provide greater visitor amenity are also shown in this figure and include Swamp Oak (*Casuarina glauca*) plantings in carparks and along the Barrenjoey Road frontage and open grassed areas (refer to Appendix 1: Community Issues discussion Paper: A.2.3 *Environmental Issues: Faunal Habitat and Corridors & Exotic Weed Management and Bush Regeneration*).

5.3.3 Biodiversity Significance and Faunal Corridors

- ❖ remnant, fragmented Sydney Coastal Estuary Swamp Forest community, occurring within the reserve, is of state significance with a high conservation value and priority. This community, as described in the Final Determinations of the NSW Scientific Committee, is scheduled under the *Threatened Species Conservation Act 1995*, Schedule 1, part 2: Endangered Populations;
- ❖ small remnant population of Swamp Mahogany Forest (adjacent to Etival Street) has an extremely limited distribution within Pittwater and classified under SEP44 as potential Koala habitat;
- ❖ reserve's remnant estuarine communities and component species are poorly represented in local Pittwater reserves;
- ❖ reserve adjoins Careel Bay Environmental Protection Area which is the largest estuarine complex in the Pittwater local government area and contains the largest community of mangroves in the Pittwater estuary;
- ❖ reserve adjoins vital habitat for a diverse range of wading and migratory birds (including the regionally significant and endangered Bush Stone-curlew and other northern hemisphere birds protected under international agreements);
- ❖ reserve plays a significant role in providing a buffer to the Careel Bay Environmental Protection Area;
- ❖ reserve is an important reservoir of biodiversity providing habitat for the Long-nosed Bandicoot (*Perameles nasuta*);
- ❖ opportunities for enhanced faunal corridors;
- ❖ Swamp Oak Forest is poorly conserved in the Sydney region and has a high conservation status.



**Table 3: Conservation Significance:
Vegetation Communities**

Note: Data based on Vegetation Surveys conducted for Pittwater/Warringah Councils by Smith & Smith (1998), Natural Vegetation of Sydney 1:100 000
Map sheet by Benson & Howell (1994) and LandArc site assessment (2000)

Vegetation Communities	Conservation Significance	Conservation Priorities & Threatening Processes
Estuarine Complex: Swamp Oak Forest <i>Casuarina glauca</i>	Relatively common estuarine wetland community occurring on Holocene alluvium mudflats generally poorly drained and saline. On site conditions are highly disturbed and modified. Poorly represented in Sydney region as a result of landfill and in local National parks. Overall significance of wetlands recognised in SEPP, 14 providing habitat for threatened waterbird species, including the Black Bitten (<i>Threatened Species Conservation Act 1995</i>). Supports 14 plant species not recorded from Garigal or Ku-ring-gai National Parks. High level of modification, disturbance & weed invasion.	High Priority Estuarine Habitat: Lowering of water table due to past reclamation works may contribute to colonisation/invasion by drier-land exotic weed species, particularly Lantana. This has implications for enhancing species diversity in future restoration works using locally-sourced indigenous species. Weed management needs to ensure that habitat values are maintained through a staged, integrated program.
Open-scrub (mangroves) <i>Avicennia marina</i> <i>Aegiceras corniculatum</i>	Estuarine wetland community occurring on Holocene alluvium mudflats generally experiencing daily tidal inundation. Significantly reduced in NSW due to land-fill/reclamation works and is now poorly represented in Sydney region although increased sedimentation in urban areas allows populations to expand seawards. High regional significance providing habitat/food for commercial fish stocks and many aquatic organisms, including the threatened Australasian Bitten & Black Bitten. Mangroves also improve water quality of estuaries and provide protection against shore-line erosion. Discharged silt carried in open water channels is trapped by root systems which reduce water velocities/turbidity and sediment loads into waterways. Mangroves also provide a measure of absorption of elevated nutrient loadings and pollutants.	High Priority Estuarine Habitat: Small and regenerating areas are considered significant however this community is still poorly understood and is regarded by sections of the community as undesirable. Adjacent recreational facilities tend to increase multiple tracking in Mangroves which has the potential to expose shoreline to erosion and pneumatophores/seedlings to trampling. Need for continuing broad community education, interpretive signage and controlled/ managed access to these areas (eg boardwalks). Expansion of mangroves into saltmarshes may be a response/competitive advantage in utilising high nutrient levels near stormwater outlets/ creek estuaries. Need to monitor these changes.

Vegetation Communities	Conservation Significance	Conservation Priorities & Threatening Processes
Herbland.Rushland (saltmarsh) <i>Sarcocornia quinqueflora</i> <i>Suaeda australis</i> <i>Phragmites australis</i>	Estuarine wetland community occurring on Holocene alluvium mudflats experiencing occasional to infrequent tidal inundation of brackish water. Reduced throughout NSW, Sydney Region and Pittwater as a result of landfilling. Careel Bay has significant saltmarsh areas although saltmarsh contributes to <1% of the bay's estuarine community and is confined to a large patch (1.5ha) and a smaller patch (<.2ha). It is the most vulnerable of all remnant communities. High regional conservation significance providing habitat for aquatic animals and threatened waterbird species, including the Bush stone-curlew (<i>Threatened Species Conservation Act 1995</i>)	High Priority Estuarine Habitat: Increased siltation in local waterways has resulted in the expansion of mangrove stands often at the expense of saltmarsh areas. The weed <i>Juncus acutus</i> presents a potential long term threat being well established at Saltpan Creek. Multiple tracking and recreational parkland development potentially exposes community to further degradation, fragmentation and weed invasion and competition needs to be better managed to ensure long-term viability.
Coastal Swamp Forest Complex: [Sydney Coastal Estuary Swamp Forest] Swamp Mahogany Forest <i>Eucalyptus robusta</i> <i>Eucalyptus botryoides</i>	Occurring on creekflats or areas with impeded drainage in the Pittwater/ Warringah area of Holocene stream alluvium & estuarine sediments. Has been extensively disturbed and has extremely limited distribution within Pittwater LGA and is not represented in Ku-ring-gai or Garigal National Parks. Dominant tree species, Swamp Mahogany (<i>E. robusta</i>), is a major winter food source for nectar-feeding fauna, incl. two threatened bird species, Regent Honeyeater and Swift parrot, both of which have displayed a preference for this community. Community is classified (SEPP44) as a potential Koala habitat and Schedule 1, Part 2: Endangered Populations in <i>Threatened Species Conservation Act 1995</i> .	High Priority Estuarine Habitat: Community threatened by clearing, weed invasion, altered hydrology and multiple tracking. Modification of habitat is contributing to a disclimax understorey community of <i>Glochidion ferdinanci</i> & <i>Pittosporum undulatum</i> . Need for improved controls/regulation of unleashed dogs from adjoining unleashed exercise area.

5.4 Recreation Values

5.4.1 *Existing Recreation, Public Access and Facilities*

Table 4: Existing Recreational Facilities, Settings and Activities provides a summary of recreational facilities and opportunities available at Careel Bay Playing Fields and Hitchcock Park. Shortfalls in the provision of public access, particularly multi-use pedestrian/bikepath access, is addressed in this Plan of Management (refer to 6.0 Management Strategies: 6.1 Action Plan, items G1-H4).

5.4.2 *Sportsgrounds – Regional Context of Setting and Facilities*

The reserve provides for a diverse range of organised sporting activities suitable for senior and junior soccer, cricket, rugby league and touch football. The playing fields are used for competitive team sport mainly on weekends and for training during the week. Careel Bay Playing Fields are not used for competition during the summer months but have a very intense level of demand for soccer during the autumn to spring period. Hitchcock Park is used throughout the year for cricket and rugby league/touch football. Barrenjoey High School also used the playing fields for school sports. In addition, the Careel Bay Tennis Courts are a popular integrated facility, located adjacent to the main southern Carpark and Hitchcock Park playing fields. The tennis courts can be hired by the public throughout the year from Careel Bay Tennis Club and tennis lessons are provided by Aden Tennis School.

Sporting organisations and the Manly Warringah Pittwater sporting Union have identified a shortage in the number of playing fields in the northern beaches area with the greatest pressure placed on the supply of sportsfields during the winter months. Due to the limited supply of level open space in this northern portion of Pittwater LGA and recent growth in team sports, particularly soccer, there are increasing demands being placed on these playing fields and facilities. This Plan of Management addresses shortfalls in the provision of sporting facilities, including quality playing field surfaces, public toilets, change-rooms, carparking, floodlighting, picnic facilities, provision of shade for spectators and so on (refer to 6.0 Management Strategies: 6.1 Action Plan, items I1-J5).

5.4.3 *Passive and Information Recreation*

Furthermore, the diversity of settings provides the basis for a broad range of passive and informal activities, including bike riding, walking, jogging, bird-watching, picnics/BBQs or simply relaxing and taking in the views. The northern area of the reserve is a very popular designated unleashed dog exercise area (UDEA). It is one of seven unleashed dog exercise areas in Pittwater and the only area designated within the northern portion of the Pittwater LGA. The closest alternative UDEA is located at Dearin Reserve, Newport (see Appendix 1: Community Issues Discussion Paper: A.2.5 *Unleashed Dog Exercise Area*).

5.4.4 *Recreational Facilities and Infrastructure*

Figure 8: Recreation, Access & Circulation illustrated the configuration of existing visitor infrastructure within Careel Bay Playing Fields & Hitchcock Park as follows:

- ❖ main road access along Barrenjoey Road;
- ❖ vehicular access and parking areas;
- ❖ formal pedestrian access (constructed pathways/boardwalks);

- ❖ informal pedestrian access/multiple tracking;
- ❖ playing fields, tennis courts, cricket pitch and cricket nets;
- ❖ unleashed dog exercise area (UDEA);
- ❖ public amenities/change-rooms and club facilities.

Opportunities for enhancing existing recreational facilities, access and circulation need to be balanced with environmental and biodiversity values. The two main carparking areas are located adjacent to the playing fields with a third smaller unsealed Carpark at the eastern end of Etival Street. Existing pedestrian access is fragmented and poorly delineated. A boardwalk links the reserve to William Street via the Careel Bay wetlands and a second footbridge links with the tennis courts/Carpark to Elvina Avenue. Most of the drier areas retaining remnant vegetation contain extensive multiple tracking. For further detailed discussion see Appendix 1: Community Issues Discussion Paper: *Public Access and Recreational Facilities and Unleashed Dog Exercise Area*.

5.5 Role of Careel Bay Playing Fields & Hitchcock Park

Pittwater's reserves form an extensive open space system that is characterised by a diverse range of recreational settings and opportunities. Careel Bay Playing Fields and Hitchcock Park plays an important role in providing a recreational and social focus for organised sports in this northern part of Pittwater. In addition to its active organised sporting focus, the reserve is significant in terms of its natural foreshore and bushland setting, and its environmental, biodiversity and scenic values. Together these values determine the reserve's unique character, which enhance opportunities for a broad range of other informal and unstructured recreational activities.

The future role of this reserve should ensure continuity in organised sports activities and unstructured recreational opportunities. Future uses, activities and developments must be consistent with the existing character, setting and scale of existing recreational facilities and intensity of use, and must protect identified values and adhere to the principles of environmental sustainability (refer to 6.0 Management Strategies: 6.1 Action Plan, items B1-B4).

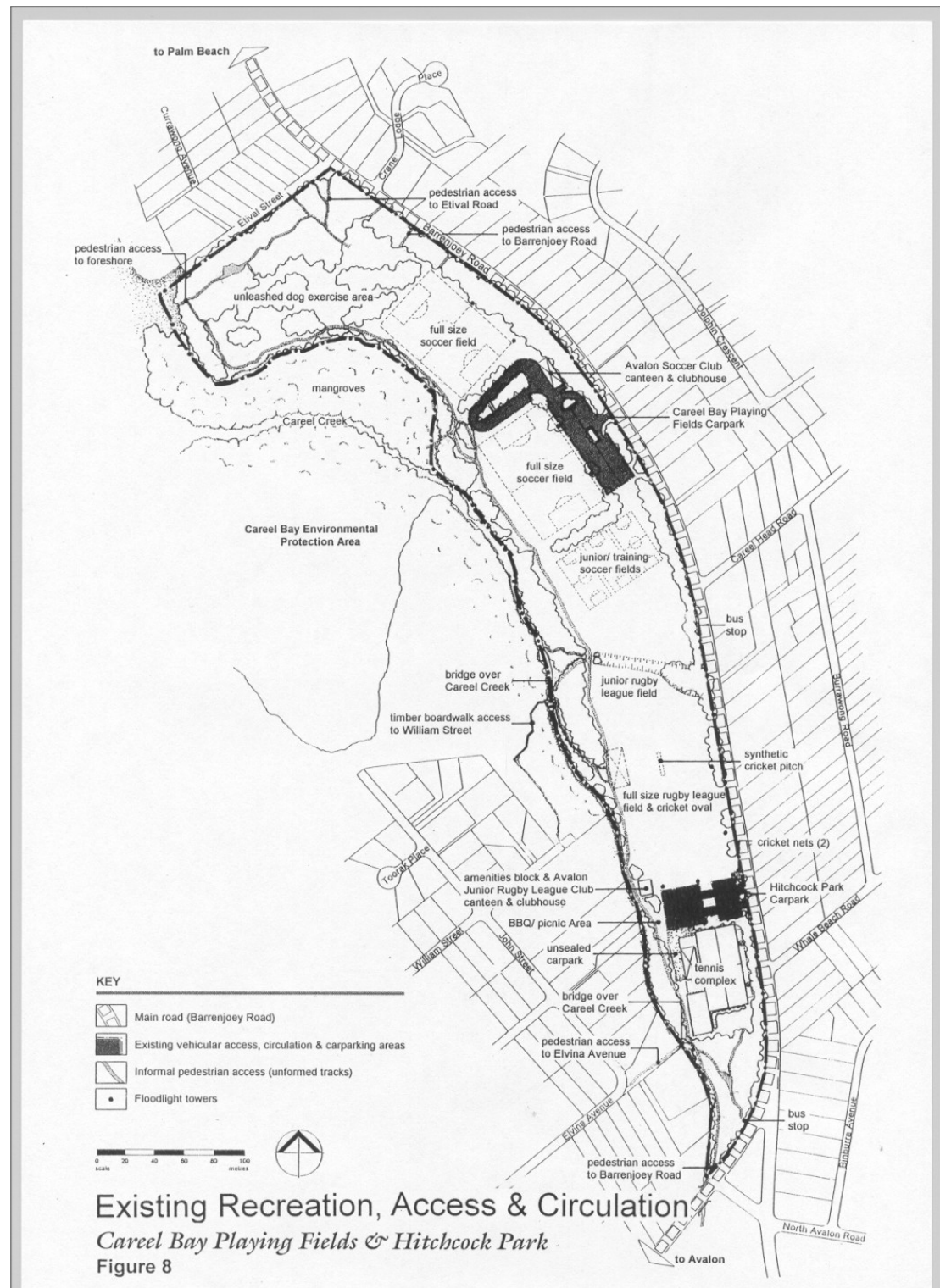
5.6 Vision Statement for Careel Bay Playing Fields and Hitchcock Park

The following statement provides a vision for Careel Bay Playing Fields and Hitchcock Park which will form the basis of management strategies as developed in the next section of this Plan:

“To maintain and enhance Careel Bay Playing fields and Hitchcock park’s role as a significant recreational asset with Pittwater’s foreshore and open space system, ensuring protection of identified valued through appropriate management, in a way which best meets the environmental, recreational, educational and social needs of the present community and for future generations.”

Table 4: Existing Community/Recreational Facilities, Settings & Activities	
Facility/Setting	Activities
Hitchcock Park	
Playing Fields and Clubhouse Amenities:	
> Hitchcock Park Playing Fields with Floodlighting	> Rugby league (AJRLFC) (winter), touch football and cricket (summer)
> Clubhouse/canteen, public amenities and change-rooms	> Used by Barrenjoey High School for school sport
> Synthetic turf pitch and 2 x cricket nets	> Community activities include fireworks displays on fields
Tennis Courts:	
> Includes 5 x floodlit synthetic grass tennis courts	> Careel Bay Tennis Club (sub-lease to Aden Tennis School)
> Courts upgraded in 1994-95 (include. Additional court)	> Courts available for hire
> Clubhouse, cabanas, picnic tables and children's play area	
> Small unsealed overflow Carpark adjoining tennis courts	
> Courts with remnant Swamp Oak Forest/ plantings	
Main Carpark:	
> Access off Barrenjoey Road (separate entry/exit points)	> Carparking for rugby league fields, cricket, tennis courts and other user groups
> Sealed surface with 68 car spaces	
> Landscape bays planted with mixed generic natives	
BBQ/Picnic Area & Playground:	
> Located on flat grassed area adjacent to Careel Creek	> Walking or jogging rest point
> Wood fuelled BBQ, picnic table, bin and bubbler	> Limited opportunities for picnicking and family gatherings
> Children's play equipment (swing & slide)	> Children's play
Signage:	
> Limited identification signage for reserve and tennis courts	> Opportunities to enhance visitor orientation and identification of recreational opportunities/ environmental values
> Regulatory/compliance signage for activities within reserve	
Recreational Linkages:	
> Linked to William Street via boardwalk and footbridge	> Currently caters for local pedestrian circulation within natura/cultural setting
> Linked to Elvina Avenue via footbridge	> Opportunities to enhance public access and circulation
> Unformed paths link tennis courts to Barrenjoey Road	> Need for controls on access & circulation in sensitive areas
> Multiple tracking through remnant wetland communities	

Facility/Setting	Activities
Careel Bay Playing Fields: Playing Fields & Changerooms/Amenities:	
> Playing fields: Careel Bay No 1 (opp Carpark) and Careel Bay No 2 (nth of Carpark) and floodlighting	> Soccer (ASC) winter > Used by Barrenjoey High School and Avalon Public School for school sports
> 3 x mini fields (no floodlighting)	> Used for community activities such as fireworks displays
> Clubhouse/canteen, public amenities and changerooms	
Unleashed Dog Exercise Area:	
> Located within northern grassed area (off Etival street)	> Used regularly by many local residents
> Contains 4 x dog litter disposal bins, 2 x taps and 3 x seats	> Trial dog swimming area to be used at high tide within designated area
> Trial dog swimming area (at end of Etival Street)	> Option to extend UDEA into nth playing field in summer
> Unleashed dog access to sensitive mudflats and wetlands	
Main Carpark:	
> Access off Barrenjoey road (separate entry/exit points)	> Carparking for soccer fields and other user groups
> Limited capacity due to layout (approx 100 car spaces)	
> Landscaped bays planted with mixed generic natives	
> Sealed/unsealed surface in poor condition with potholes	
Etival Street Carpark:	
> Unformed Carpark and access track to unleashed dog exercise area	> Opportunities to enhance existing carpark for UDEA and other user groups
Signage:	
> Limited identification signage for playing fields and UDEA	> Opportunities to enhance visitor orientation and identification of recreational Opportunities/environmental values
> Regulatory/compliance signage for activities within reserve	
Recreational Linkages:	
> UDEA linked to Etival Street via unformed tracks	> Currently caters for local pedestrian circulation
> Multiple tracking through remnant wetland communities	> Opportunities to enhance public access and circulation
	> Need for controls on access & circulation in sensitive areas



6.0 Management Strategies

6.1 Action Plan

An Action Plan defined the “means of achievement” (management actions) in accordance with desired outcomes and core objectives (refer to the following Management Strategies tables). The “means of assessment” provide a system of checks and balances to assess actions and performance. Priorities are assigned according to specific action’s relative importance.

6.2 Capital Works Program

Priorities and cost estimates are further developed in the 5-year capital works program (refer to works Schedule and Opinion of Probable Landscape Construction costs in this section). Cost estimates are based on the Landscape Masterplan and are indicative only (refer to pages 54-55).

6.3 Landscape Masterplan

The Landscape Masterplan identifies the management actions to be implemented throughout the 5-year capital works program as described in 6.1 Action Plan and 6.2 Capital Works Program (refer to page 56).

6.0 Management Strategies

6.1 Action Plan

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To establish an appropriate land management framework for this Crown reserve and community land.				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To address designated public purpose	A1	Expand public purpose of Crown reserve R70736, Lots 7033 and 7034 in DP 752946 which border 7(a) Environment Protection Zone, from "Public Recreation" to "Public Recreation and Environmental Protection".	Crown reserve's public purpose and consistency in land use addressed in consultation with DLWC	High
Issues and ensure consistently in uses, activities and development on Crown reserve and community land parcels	A2	Confirm identification of R70736, Lot/DP numbers in northern central strip and foreshore adjacent to UDEA Trial Area and adjoining 7(a) Environment Protection "A" and 7(a1) Environment Protection – Waterways	Anomalies addressed and amended accordingly	High
To address anomalies in Crown land parcels and boundaries	A3	Investigate boundary anomalies between Crown reserve R70736, Lots 7033 and 7034 in DP 752046	As above	High
To address zoning issues relating to sensitive Wetland habitat	A4	Investigate re-zoning of all wetlands within R70736, Lot 7034 in DP 752046 from 6(a) Existing Recreation to 7(a) Environment Protection "A".	Broader recognition and protection of reserve's environmental values	High Ongoing
Desired Outcome: To establish guidelines for assessing development proposals and impacts				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To ensure through community consultation with all development proposals	B1	Continue to promote an open community-based consultative process with all development proposals	Level of community consultation used in any new uses or development within the reserve	Ongoing
To ensure consistency with public purpose of Crown reserve, community land core objectives and Council's policies	B2	Ensure consistency in development proposals with the <i>Crown Lands Act 1989</i> , the Department of Land and Water Conservation policy guidelines, case law, the <i>Local Government Act 1993</i> , the <i>Local Government Amendment [Community Land Management] Act 1998</i> , the <i>Local Government [General] Regulation 1999</i> , Council's Land Management Goals and Adopted Policy, <i>Local Environmental Plan, 1993 [as amended]</i> , relevant Locality Plan & Building Code and Landscape & Vegetation Management Development Control Plan	Number and % of changes to reserve not consistent with relevant legislation and policy.	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To establish guidelines for assessing development proposals and impacts (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To protect park's values from inappropriate development, particularly within and adjacent to sensitive wetland and foreshore areas	B3	Development proposals within the parkland must address the following: <ul style="list-style-type: none"> - environmental sustainability - protection of identified values - demonstrate a clear connection with the reserve's public purpose, its role and bayside setting - uses/development to be compatible with community land core objectives - public accessibility, equity, exclusivity and alienation of reserve - demonstrate a clear connection with the reserve's role and bayside setting - consistent with character and scale of existing recreational facilities and intensity of use - adequately address flood design level requirements - ensure minimal site disturbance during construction works - protection of all views to and from this park - maintain and enhance public safety and security - address Council's risk management/public liability issues - minimise traffic hazards and pedestrian conflict in relation to vehicular access, carparking, service/operational and delivery areas - ensure appropriate indigenous planting/screening in accordance with site specific environmental constraints - protection of visual and environmental amenity 	Number and % of proposed developments that address and adhere to development guidelines. Measure trends over time.	High Ongoing
	B4	Development proposals which may directly or indirectly threaten the natural/cultural setting and/or other identified values are not permissible	As above	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To establish guidelines for assessing leases and licences				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To protect park's values from inappropriate leases, permits and commercial activities	C1	This Plan of management expressly authorises the granting of leases, licences, permits or any other estate over the land, subject to compliance with the following: <i>Crown Reserve:</i> that permitted use is consistent with the reserve's public purpose and requirements of the <i>Crown Lands Act 1989</i> <i>Community Land:</i> that the permitted use is consistent with the core objectives for identified categories of community land, in accordance with the requirements of the <i>Local Government Act 1993 [as amended]</i> s.46, 46A, 47A, 47B and 47E	Number of leases, licences and permits approved Measure trends over time Leases implemented in accordance with this Plan	High Ongoing
	C2	Careel Bay Tennis Club and facilities: This Plan of Management expressly authorises continuation of the existing lease for the tennis courts to Careel Bay Tennis Club and provision for sub-leasing to Aden Tennis School	Lease renewal in accordance with this Plan	Ongoing
	C3	Proposed Hitchcock Park community building, facilities & playing fields: This Plan of Management expressly authorises the lease, licence or granting of any other estate over Hitchcock Park playing fields & the proposed community/clubhouse building [as shown in the Landscape Masterplan] for sporting, community and auxiliary purposes, including changerooms, storage, cabana/canteen facilities, providing that the lease/licence of "Public Recreation and Environmental Protection" for this section of Crown reserve and following items: 1. Proposed Development: in accordance with items B1-B4 and I3(a-j) 2. Conduct thorough consultation with DLWC in the drafting of the lease agreement, ensuring consistency in permitted uses. Prepare a "Memorandum of Understanding" with the lessee	Leases/licences implemented in accordance with this Plan	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To establish guidelines for assessing leases and licences (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To protect park's values from inappropriate leases, permits and commercial activities	C3 [cont]	3. Access by the General Public: to provide for broad community access and equity [ie no areas should be designated for or imply and exclusive use other than the club's operational/office area]. 4. General Administration: lessee to ensure that day-to-day operations, including functions/special events, have no negative impact on the use of the reserve by other casual visitors or sporting groups or on the amenity of neighbouring residents.		
	C4	Careel Bay Playing Fields, community buildings and facilities: This Plan of Management expressly authorises the lease, licence or granting of any other estate over Careel Bay Playing Fields and the community/clubhouse building [as shown in the Landscape Masterplan] for sporting, community and auxiliary purposes, including changerooms, storage and canteen facilities, providing that the lease/licence or any other estate are consistent with reserve's public purpose and the core objectives for the categories of community land	Leases/licences implemented in accordance with this Plan	High Ongoing
Desired Outcome: To promote ecologically sustainable management practices				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
To protect adjoining estuarine complex [zoned 7(a): Environment Protection] and other remnant portions of this complex within the reserve. To adequately address stormwater and catchment management issues.	D1	Ensure that the reserve's recreation uses and activities do not in any way compromise or negatively impact upon the integrity of the adjoining wetlands and their significant habitat values. The estuarine management/rehabilitation program needs to be properly integrated and balanced with the objectives of catchment management, habitat protection, the visual character of the bay and recreational development/needs of the public	Co-ordinated strategy implemented	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
<p>To identify and effectively manage threatening processes</p> <p>To ensure an effective integrated management approach to weed management.</p> <p>To establish a quantifiable program emphasising the long term objective of sustainability</p> <p>To encourage development and expansion of the local volunteer 'bushcare' network</p>	D2	<p>This Plan targets six main areas for wetland restoration within the reserve, focussing on the following areas [see items D12-D17].</p> <ol style="list-style-type: none"> 1. Southern remnant Swamp Oak Forest [core area south of tennis courts]; 2. Northern remnant Swamp Mahogany Forest [core area adj Etival Street] 3. Remnant salt-marsh adj. to mangrove walk footbridge; 4. Wetlands/swale dividing Hitchcock Park & Careel Bay Playing Fields 5. Lineal corridor along edge of Careel Creek/Careel Bay adj. wetlands; 6. Lineal corridor/buffer along Barrenjoey Road frontage 	Co-ordinated strategy implemented in accordance with Works Program and appropriate funding	High Ongoing
	D3	Implement an integrated approach to bush regeneration and restoration techniques based on site-specific constraints and opportunities. Within highly impacted areas, supplement bush regeneration techniques with a more comprehensive rehabilitation strategy using locally-sourced indigenous species. Continue to enhance local diversity in restoration planting to promote habitat values and long-term eco system durability [see Appendix II];	% of locally sourced indigenous species used in program cf. generic sourcing	High Ongoing
	D4	Ensure that the Program fully addresses long term sustainability as its key objective and is consistent with current and future budget projections	Rehabilitation program appropriately staged, implemented and reviewed annually	High Ongoing
	D5	This Plan expressly authorises minor earthworks and re-contouring, temporary stockpiling and access for machinery to address past land-filling and implement appropriate restoration techniques to establish and extend salt-marsh, reedland and mangrove habitat	Works implemented in accordance with this Plan	Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
1. Southern remnant Swamp Oak forest [core area south of tennis courts]	D6	Consolidate core habitat areas through staged removal of weed species and enhance buffers. Continue to reduce edge to area ratios. Manage view issues arising during progressive weed clearing. Clearly delineate wetland edges to playing fields/open grassed areas using timber edging and mulching of restoration areas. Maintain edge condition.	% of area rehabilitated & revegetated with local/indigenous species per annum	High Ongoing
	D7	Remove dumped building waste and other accumulated waste materials in drainage swales along Barrenjoey Road and Careel Creek/Careel Bay wetlands. Investigate opportunities to co-ordinate with "clean-up" initiatives.	Measure trends over time	High Ongoing
	D8	Install low-key fencing as required to protect areas of regeneration/restoration or where trampling and erosion are causing problems. Use fencing to limit multiple tracking and inappropriate uses. Fencing to be typically pine log/galvanised pickets and tensioned wire;	Fencing installed in accordance with Works Program and appropriate funding.	High Ongoing
	D9	Construct low-key timber boardwalks in sensitive areas where trampling and accelerated erosion are causing serious decline in environmental values [see item K9];	Boardwalks installed in accordance with Works Program and appropriate funding	High Ongoing
	D10	Remove all long-term stockpiled materials on reserve [include. Sandstone, mulches, asphalt and the like]. This Plan authorises temporary stockpiling of materials for any works in progress.	Monitor changes and trends over time	High Ongoing
	D11	Continue public/community education programs in wetland restoration including brochures and interpretive signage. Continue to support community involvement in wetland restoration including applications for grant funding	Brochures developed. Signage installed. Number of grants applied for annually. Measure trends over time	Medium Ongoing
	D12	Continue to maintain and consolidate existing bush regeneration work within southern end of reserve. Close diagonal track through core area of Swamp Oak Forest [ie install protective fencing at entry points]. Clearly define edge condition to grassed area south of tennis courts and progressively restore highly degraded south-eastern section	Bush regeneration works/consolidation maintenance in accordance with appropriate funding.	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
2. Northern remnant Swamp Mahogany Forest [core area adj. to Etival Street]	D13	Progressively remove existing exotic weeds [include. <i>Eruthrina</i> sp., <i>Cinnamomum</i> sp., <i>Salix</i> sp., <i>Ligustrum</i> sp., <i>Lagunaria</i> sp. <i>Musa</i> sp., <i>Ipomea</i> sp., <i>Tradescantia</i> sp., etc] and replace with locally sourced indigenous species in accordance with items D1-D11. Investigate opportunities to source and propagate seed from existing remnant indigenous trees in this location [eg <i>Angophora floribunda</i> , <i>Eucalyptus robusta</i> x <i>botryoides</i> and <i>Acronychi oblongifolia</i>]. Selectively thin and remove <i>Hibiscus tiliaceus</i> . Retain thicket along edge of UDEA. Investigate options to enhance/expand existing freshwater wetland habitat adjacent to Barrenjoey Road/Etival Street. Monitor water quality.	Restoration works and maintenance implemented in accordance with appropriate funding	Medium Ongoing
3. Remnant saltmarsh adjacent to mangrove walk footbridge	D14	Install protective fencing along section of pathway near footbridge to protect significant salt-marsh habitat from trampling. Monitor status and dynamics of salt-marsh community and potential colonisation and displacement by adjoining mangroves.	Works implemented in accordance with Works program and funding Monitor changes over time	High Medium Ongoing
4. Wetlands/drainage swale dividing Hitchcock park and Careel Bay Playing Fields [adj. to proposed 3/4 playing field]	D15	Refer to F1-F3 for drainage and wetland constructions works. Restore Swamp Oak Forest, mangroves and reedlands providing contiguous habitat and a faunal corridor across central section of reserve. Progressively remove weed species [include. <i>Lantana</i> sp., <i>Arundo</i> sp., and <i>Acacia salgina</i>]. Protect remnant salt-marsh wetlands at western end of drainage line and ensure buffers are appropriately restored.	Works implemented in accordance with Work program and funding	High
5. Lineal corridor along edge of Careel Creek/Careel Bay adjoining wetlands	D16	Progressively remove existing exotic weed species [include. <i>Lantana</i> sp., <i>Populus</i> sp., <i>Acacia salgina</i> , <i>Ipomea</i> sp., <i>Arundo</i> sp., <i>Setaria</i> sp., etc] along creekline and bayside buffer strip. Establish clearly defined edge condition to grassed playing fields [ie using proposed multi-use pathway as edge or timber edge strip]. Restore contiguous buffer habitat to wetlands in accordance with items D1-D11. Continue to maintain existing <i>Eucalyptus robusta</i> dominated restoration area and supplement with appropriate understorey species.	Works implemented in accordance with appropriate funding	Medium Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
6. Lineal corridor/buffer along Barrenjoey Road frontage	D17	Maintain and consolidate remnant Swamp Oak Forest/Swamp Mahogany Forest buffers along Barrenjoey Road frontage. Progressively remove exotic weed species and restore wetlands/understorey species in accordance with items D1-D11. Continue to maintain/mulch existing planting beds and replace any inappropriate planted species. Clearly delineate edge condition to grassed playing fields with timber edge strip. Address drainage issues [see items F1-F3]. Maintain low-key "natural" edge condition to verge/shoulder of Barrenjoey road.	Works implemented in accordance with appropriate funding	Medium Ongoing
Biodiversity Management: To address conservation significance of native flora and fauna and ensure long term protection and viability of populations. To establish objective limits on the type and amount of acceptable change imposed on the natural/cultural setting. To implement actions which will restrict incremental impacts	E1	Enhance opportunities for native fauna within core wetland areas of the reserve and adjoining Environment Protection zone and the inter-tidal mud-flats at the end of Etival Street. Promote development of a contiguous indigenous canopy and buffer along central wetland area [see item D2].	Area/extent of faunal corridor links and buffers established within 5 years	High Ongoing
	E2	Conduct survey of wading bird population to assess status and the significance of continuing impacts within the adjoining wetland and inter-tidal areas, adjacent to the unleashed dog exercise area and within the designated trial area [see item K14].	Survey/assessment completed with recommendations	
	E3	Continue to monitor and control feral animal populations. Investigate options for controlling nocturnal predation by domestic cats.	Number of rabbit and fox baiting programs and feral cat trapping undertaken.	High Ongoing
	E4	Rationalise interpretive signage and improve identification/ locational signage for unleashed dog exercise area [see item K5]. Continue to monitor use of sensitive environmental areas by unleashed dogs	Measure trends over time	High Ongoing
	E5	Ensure that progressive weed management/clearing within the reserve retains adequate habitat at all times for Long-nosed Bandicoots and other fauna dependent on existing <i>Lantana Arundo</i> spp. Thickets	Area/extent of faunal corridor links and buffers established within 5 years	Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Water Quality /Catchment Management To enhance water quality and catchment management. To protect and enhance environmental values.	F1	Implement recommendations of the Pittwater Estuary processes Management Studies, the Careel Creek Floodplain Management Study and review Pittwater Stormwater Management Plan	Studies completed and recommendations implemented Measure trends over time	High Ongoing
	F2	This Plan of Management expressly authorises all stormwater/catchment management and wetland construction works within this reserve in accordance with the studies and plans in item F1.	Implementation in accordance with works Program and appropriate funding. Monitor water quality and trends over time	High Ongoing
	F3	Mid-reserve Drainage works [opp. Careel Bay Village Shops]: Provide appropriate falls along drainage swales [draining north and south along western edge of Barrenjoey Road] to central collection point. Construct wetlands as shown in the Landscape Masterplan to enhance biological filtration and reduce water velocity, turbidity and erosional impacts. Protect and retain all remnant indigenous wetland species within swales and central drainage channel [include. Swamp oaks, mangroves and Phragmites reedland]. Excavate former land-fill area at western edge of central channel to link inter-tidal flows to existing land-locked wetlands. Construct timber bridge multi-use access over creek-line [see items I6 and D15].	Implementation in accordance with Works Program, flood management studies and funding	High
	F4	Continue community environmental education programs to reduce pollutants/litter entering drains and to address dumping of rubbish and garden refuse within the reserve and adjoining road verges.	Measure trends over time	Medium Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Water Quality /Catchment Management To enhance water quality and catchment management. To protect and enhance environmental values.	F1	Implement recommendations of the Pittwater Estuary processes Management Studies, the Careel Creek Floodplain Management Study and review Pittwater Stormwater Management Plan	Studies completed and recommendations implemented Measure trends over time	High Ongoing
	F2	This Plan of Management expressly authorises all stormwater/ catchment management and wetland construction works within this reserve in accordance with the studies and plans in item F1.	Implementation in accordance with Works Program and appropriate funding. Monitor water quality and trends over time	High Ongoing
	F3	Mid-reserve Drainage Works [opp. Careel Bay Village Shops]: Provide appropriate falls along drainage swales [draining north and south along western edge of Barrenjoey Road] to central collection point. Construct wetlands as shown in the Landscape Masterplan to enhance biological filtration and reduce water velocity, turbidity and erosional impacts. Protect and retain all remnant indigenous wetland species within swales and central drainage channel [include. Swamp Oaks, mangroves and Phragmites reedland]. Excavate former land-fill area at western edge of central channel to link inter-tidal flows to existing land-locked wetlands. Construct timber bridge multi-use access over creekline [see items 16 and D15].	Implementation in accordance with Works Program, flood management studies and funding	High
	F4	Continue community environmental education programs to reduce pollutants/litter entering drains and to address dumping of rubbish and garden refuse within the reserve and adjoining road verges.	Measure trends over time	Medium Ongoing
Recreational Access, Circulation and Linkages: To enhance recreational linkages, interpretive opportunities, visitor safety and security. To provide for broad community access. To develop a strategy which will respond to increasing demands on recreational facilities and manage multi-uses of the reserve [ie playing fields/tennis courts, unleashed dog exercise area and a range of informal activities].	G1	Public Access and Parking along Barrenjoey Road [adjacent to reserve]L Investigate opportunities for pedestrian/multi-use access and parking along Barrenjoey Road [adjacent to reserve] in liaison with the RTA.	Investigation completed and recommendations implemented	High Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
<p>Refer to following specific areas for details:</p> <p>Hitchcock Park:</p> <p>1. Tennis Courts/Southern Area;</p> <p>2. AJRLFC playing fields;</p> <p>Careel Bay Playing Fields:</p> <p>3. ASC playing fields;</p> <p>4. Unleashed Dog Exercise Area/Etival Street</p>	G2	Proposed Multi-use pathway [shared pedestrian/bikepath]: Construct a multi-use pathway for pedestrians and bicyclists [2.5m width] in an integrally colour-tinted concrete finish [natural tone] linking the southern end of the reserve (North Avalon shopping centre) to Etival Street/Barrenjoey Road at the northern end as shown on the Landscape Masterplan. Refer to specific areas for details.	Enhanced public access, recreational linkages and circulation in accordance with Works Program. Measure visitor satisfaction levels with facilities	High Ongoing
	G3	Pathway design to be in accordance with this Plan's development guidelines [see items B1-B4] and Australian Building Standards. Design height of pathway and bridges to be at approved AHD levels. Compacted subgrade to be imported crushed sandstone.		
	G4	Ensure that public access and recreational facilities are carefully balanced with the protection of significant environmental values.	Monitoring and assessment on an annual basis	High Ongoing
	G5	Lighting [existing and proposed] Upgrade lighting within the reserve at major entry/exit points, public amenities and carparks. Ensure glare/light spillage for neighbouring residents is addressed in design. Lighting should be in accordance with best practice ESD principles. Continue to maintain and upgrade existing floodlighting to playing fields. Address all security issues.	Lighting upgraded in accordance with Works Program and appropriate funding	Medium Ongoing
	G6	Signage [existing and proposed]: Rationalise existing signage, particularly all compliance signage. Develop consistent, well designed, graphically illustrated identification, directional and interpretive signage, including the use of maps to improve access. Provide information in simple typeface/fonts and phrasing	Signage designed and installed in accordance with Works Program and appropriate funding	Medium Ongoing
<p>Hitchcock Park:</p> <p>1. Tennis courts/southern Area</p> <p>To enhance opportunities for public access, circulation and linkages for a range of user groups [eg school sport, people with disabilities, frail, aged, children, strollers, etc].</p> <p>To enhance opportunities for passive informal and family-based recreation.</p> <p>To improve visitor orientation and use of facilities.</p>	H1	Barrenjoey Road Pedestrian access [North Avalon Shops]: Provide multi-use link to North Avalon via Careel Creek corridor. Investigate options to widen existing pedestrian refuge island to min 3.0m width and install pedestrian crossing near Barrenjoey Road/North Avalon Road intersection. Widen existing 1.4m wide concrete pathway to 2.5m for multi-use between proposed crossing and bus stop [northbound]. Upgrade safety rails and bollards. Maintain sight distances along edge of reserve/road interface. Provide identification and directional signage to reserve.	Pathways designed and installed in accordance with Works Program and appropriate funding	Medium Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Hitchcock Park 1. Tennis Courts/Southern Area [cont'd] To improve and maintain playing surfaces, floodlighting, carparking areas and facilities	H2	Proposed Multi-use pathway [shared pedestrian/bikepath]: Section 1: Construct 2.5m wide multi-use concrete pathway from proposed crossing at Barrenjoey Road to Elvina Avenue footbridge [approx 135m]. Siting of pathway along existing creek-side track through remnant Swamp Oak Forest is subject to further site investigation by Council's Natural Resources Unit. Construct small timber bridge over minor drainage line.	All works implemented subject to Works Program and funding	Medium Ongoing
	H3	Investigate options to formalise pathway to end of Elvina Avenue		
	H4	Continue multi-use pathway between footbridge and Careel Bay Tennis club and Carpark [110m].		
	H5	Careel Bay Tennis Courts: Continue to maintain and upgrade tennis courts, playing surfaces and facilities. For lease information refer to item C2. Investigate options for formalising existing unsurfaced overflow Carpark adjacent to northern side of tennis courts.	All works implemented in accordance with this Plan and lease agreement. Investigation completed and actions implemented	High Ongoing
Hitchcock Park: 2. Playing fields and facilities To develop opportunities for multi-use of playing fields and ensure a sustainable level of use. To improve and maintain playing surfaces, floodlighting and facilities. To assist user groups in improving recreational and community facilities. To enhance opportunities for public access, circulation and linkages for a range of user groups [eg school sport, people with disabilities, frail, aged, children, strollers, etc].	I1	Proposed Upgrade to Hitchcock Park Playing Fields and Facilities: Relocate the mini-football fields to the south-eastern end of Hitchcock Park. Relocate the main football field to the north-western end of Hitchcock Park. Relocate the cricket pitch between the mini-fields and main football field. Investigate options to extend overhead chain-link [single panel] to relocated cricket nets to address safety issues adjacent to Barrenjoey Road. Replace old section of white painted post and rail fence on boundary with low log fence to match existing in Carpark. Continue to maintain and upgrade playing surfaces, drainage, irrigation and floodlighting for the mini and main football fields. Construct a new scoreboard on north-eastern side of Hitchcock Park.	All works implemented subject to Works Program and funding	High

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Hitchcock Park: 2. Playing fields and facilities [cont'd] To enhance opportunities for passive informal and family-based recreation. To improve visitor orientation and use of facilities	I2	Existing Canteen, Store-room and Amenities Building: Investigate options for upgrading of existing canteen, store-room and amenities building as a visitors' change-room. The building's physical appearance, security, floor and ceiling ventilation, natural light, level of cleanliness, general repair and ongoing maintenance all need to be addressed. Further investigate alternative option to demolish building and incorporate visitors' change-room within new clubhouse building	All works implemented subject to further investigations and funding	High
	I3	Proposed Hitchcock Park Community Building and Facilities: Develop and appropriately designed and sited community/ clubhouse building in accordance with this Plan's Development Guidelines [see items B1-B4] and Australian Building Standards. Further investigate siting options in accordance with community consultation. Subject to all on-street parking/traffic congestion, noise and light spillage issues being thoroughly addressed, the clubhouse is to be located on the south-western side of Hitchcock Park as shown in the Landscape Masterplan. Promote broad community access to the building and its facilities [eg private functions, gatherings].[See item C3: leasing] The proposal has the following components: a. minimum 10m setback from top of the embankment of Careel Creek; b. minimum floor level height: 2.35m AHD to satisfy the flood level requirements; c. minor earthworks and drainage works/no removal or disturbance to existing vegetation; d. building envelope: 35m x 8.99m (314.6m ²); e. height of building: 6.2m to the ridge of the roof; f. internal floor layout: clubroom, canteen/kitchen, club kitchen, small stage, office and storeroom, toilets (male/female/disabled) and a changeroom with showers and toilet; g. full length verandah with seating, steps and ramps (disabled access to north-east elevation);	All works implemented subject to further investigations and community issues being thoroughly addressed.	High

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Hitchcock Park: 2. Playing fields and facilities [cont'd]	I3 [cont]	Existing Canteen, Store-room and Amenities Building: [cont'd] h. external finishes: walls: - red-brown brickwork; roof – colourbond dark green; i. public access: construct 2.5m wide multi-use concrete pathway between Carpark and proposed clubhouse [part of shared pedestrian/bikepath] including ramped/disabled access; j. proposed cabana/shelter: 4m x 3m to be located on south-eastern side of new clubhouse must be low-key, sympathetic with reserve amenity and architecturally consistent with clubhouse profile and design.		
	I4	Upgrade Existing Playground: Upgrade existing playground and safety-fall area to Australian Standards. Investigate replacing existing equipment with appropriately designed play structures targeting 0-4 and 5-10 age groups and safety fall, integrated with proposed multi-use pathways and cabana area. Replace wood-fuelled BBQs with electric BBQs [2] and install additional picnic tables [2] and litter bins[2].	All works implemented subject to further investigation and funding under works Program	Medium
	I5	Proposed Multi-use Pathway [shared pedestrian/bikepath]: Section 2: Continue 2.5m wide multi-use concrete pathway from section 1 [see item H2], linking Carpark, new clubhouse and Careel Bay Playing Fields as shown in the Landscape Masterplan.	All works implemented in accordance with Works Program and funding	Medium Ongoing
	I6	Construct 2.5m wide timber multi-purpose bridge over excavated section of drainage line [between Hitchcock Park Playing Fields and Careel Bay Playing Fields proposed ¾ playing field]. See item D15		
	I7	Link to existing Mangrove Walk/Footbridge Provide connection to existing mangrove walk and footbridge linking to William Street cul-de-sac. Maintain pedestrian use only on mangrove walk. Upgrade decomposed granite finish on this track. Ensure all weeds and stockpiled materials are removed. Install appropriate identification and directional signage.	All works implemented in accordance with Works Program and funding	Medium

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Hitchcock Park: 2. Playing fields and facilities [cont'd]	I8	Upgrade existing Carpark: Upgrade existing bitumen surface of carparking area [approx 68 car spaces], including line marking and provision for 3 disabled car spaces. Provide pale grey-brown aggregate topping to bitumen surface. Install landscaped bay in centre island strip [western end] to improve delineation of carparking spaces and vehicular circulation. Ensure that Carpark design and construction levels are in accordance with flood management study, this Plan's Development Guidelines and Australian Building Standards	Carpark construction and landscaping implemented in accordance with relevant flood management plan, traffic studies and funding.	Medium
	I9	Proposed Signage: Provide identification and directional signage at entry/Carpark area. Clearly identify unleashed dog exercise area [see item G6].	All works implemented subject to Works Program and funding	Medium Ongoing
Careel Bay Playing Fields: 3. Playing fields and facilities To develop opportunities for multi-use of playing fields and ensure a sustainable level of use. To improve and maintain playing surfaces and floodlighting To assist user groups in improving recreational and community facilities	J1	Proposed Upgrade to Careel Bay Playing Fields and Facilities: Continue to maintain and upgrade existing playing surfaces and floodlighting for Careel No 1 [main playing field] and Careel No 2 [second field], including sub-soil drainage, grading, re-levelling, irrigation and turfing. Construct ¾ size playing field and relocate/upgrade mini-fields (3) including floodlighting as shown in the Landscape Masterplan,. Investigate multi-use options to extend unleashed dog exercise area to Careel No 2 paying field during the summer period [ie outside soccer playing season]. See item K3.	All works implemented subject to appropriate funding Investigations completed and recommendations implemented	High Ongoing Medium Ongoing
	J2	Existing Community Building/Clubhouse and Amenities: Investigate options for upgrading existing clubhouse building [include. Meeting room, storage facilities, changerooms, amenities and canteen]. Review opportunities to improve building's external appearance and security. Upgrade public amenities including floor and ceiling ventilation, natural light, level of cleanliness, general repair and maintenance. Promote broad community access to the building and its facilities [eg private functions, gatherings]. See item C4 re: leases and licences. Investigate options for opening amenities during the day, particularly early mornings and evenings	All works implemented subject to appropriate funding	Medium Ongoing
To enhance opportunities for public access, circulation and linkages for a range of user groups [eg school sports, people with disabilities, frail, aged, children, strollers, etc] To enhance opportunities for passive informal and family-based recreation				

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Careel Bay Playing Fields: 3. Playing fields and facilities [cont'd] To address vehicular access, park and safety To address visual impact/aesthetic issues. To improved visitor orientation and use of facilities To address dog exercise compliance issued To enhance opportunities for public access, circulation and linkages for a range of user groups [eg school sport, people with disabilities, frail, aged, children, strollers, etc].	J3	Upgrade existing Carpark and Landscaping: Remove all existing stockpiled materials [see item D10]. Upgrade carparking area and extend southern section [additional 29 car spaces] as shown in the Landscape Masterplan. Rationalise entry/ exit and vehicular circulation. Re-grade Carpark to eliminate low points and address poor drainage, particularly adjacent to the clubhouse. Provide lighting [see item G5]. Re-seal Carpark and linemark car spaces allowing for provision of 3 disabled spaces. Provide pale grey-brown aggregate topping to finished bitumen surface. Ensure that Carpark design and construction levels are in accordance with flood management study, this plan's Development Guidelines and Australian Building Standards. Uplift/underprune existing shrubs in centre islands to enhance visual qualities and open up views to fields. Plant with indigenous groundcovers and grasses, Consolidate existing plantings of Swamp Oaks between Careel No 1 oval and proposed ¾ playing field	Carpark construction and landscaping implemented in accordance with relevant flood management plan, traffic studies and funding. Landscaping implemented in accordance with Works Program and funding.	Medium Ongoing Medium Ongoing
	J4	Proposed Signage: Provide identification and directional signage at entry/Carpark area. Clearly identify unleashed dog exercise area [see item G6]	All works implemented subject to Works Program and funding	Medium Ongoing
	J5	Proposed Multi-use Pathway [shared pedestrian/bikepath]: Section 3: Continue 2.5m wide multi-use concrete pathway from section 2, linking Careel Bay Playing Fields Carpark. Investigate options to provide an alternate eastern route along northern embankment to constructed wetlands as shown in the Landscape Masterplan. Provide connections to Carpark	All works implemented subject to Works Program and funding	Medium Ongoing
		Section 4: Continue single multi-use pathway along eastern side of Careel No 2 oval/Barrenjoey Road. Provide link to upgraded Etival Street Carpark via new ramped timber bridge over drainage swale/wetlands [see item K6].	All works implemented subject to Works Program and funding	Medium Ongoing

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Careel Bay Playing Fields: 4. Unleashed Dog Exercise Area/Etival Street To maintain and improve existing area designated for unleashed dog exercise To enhance opportunities for passive informal and family-based recreation To enhance visual amenity To address open, uncontrolled access from UDEA onto environmentally sensitive foreshores To improve visitor orientation and use of facilities. To address dog exercise compliance issues	K1	Maintain and upgrade existing UDEA [grassed area]: Continue to maintain and upgrade existing unleashed dog exercise area [UDEA] including grading, levelling and turfing to address areas of impeded drainage. Rationalise compliance, identification and interpretive signage in this area and at Etival Street entrances [Carpark and the cul-de-sac]. [See item K5].	Monitor recreational trends over time Measure visitor satisfaction with facilities Improvements implemented in accordance with Works Program and funding Works implemented in accordance with funding	Medium Ongoing
	K2	Construct concrete pads [2.0m x 2.0m] at base of both water points to address poor drainage conditions. Review current congested layout of dog litter bins [4]. Install additional bins at Etival Street Carpark [1], cul-de-sac [1] and grassed area near the western foreshore [2]. Relocate existing plastic bag dispenser next to main tap and add second dispenser in western grassed area. Remove ad hoc plastic bags in trees		Medium Ongoing
	K3	Investigate multi-use options to extend unleashed dog exercise area to Careel No 2 playing field during summer [ie outside soccer season].	Investigation completed and recommendations implemented	Medium Ongoing
	K4	Proposed Pedestrian Track through UDEA: Construct 1.8m wide compacted decomposed granite pedestrian track along south-western side of UDEA linking proposed multi-use pathway to foreshore boardwalk as shown in the Landscape Masterplan [see Item K9]	Works implemented in accordance with funding	Medium Ongoing
	K5	Proposed Signage: UDEA signage should address the following: 1. "You are here" identification; 2. Clear identification of UDEA boundaries; 3. Dog litter bins/taps [2] should be in locations shown on map; 4. Include "Code of Conduct" Install signs in strategic locations at cul-de-sac [end of Etival Street], entry from the upgraded Carpark at Etival street, all other carparks in the reserve and other major entry points to the reserve. Continue to enforce regulations. Interpretive signage relating to the Environment Protection Zone's wetlands, wading birds and the trial dog swimming area should be rationalised.	Signage designed and installed in accordance with Works Program and funding	High

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Careel Bay Playing Fields: 4. Unleashed Dog Exercise Area/Etival Street [cont] To address vehicular access, parking and safety To improve visitor orientation and use of facilities To address dog exercise compliance issues To enhance opportunities for public access.	K6	Etival Street Carpark [corner of Barrenjoey Road] Formalise existing unformed Carpark area at the corner of Etival Street/Barrenjoey Road. Construct sealed bitumen Carpark/line marking for max. 11 cars with vehicular access off Etival Street and 3m wide landscaped berm to Barrenjoey Road frontage with multi-use pathway as shown in Landscape Masterplan. Protect adjoining freshwater wetland [see item D13].	Works implemented in accordance with funding	Medium
	K7	Upgrade existing track to UDEA in 1.8m width compacted decomposed granite finish. Install appropriate UDEA signage [include. Identification and directional signage] and dog litter bin at track entry/exit point [see items G6, K5/K2]. Install protective log post./wire mesh fencing along both sides of track between Carpark and UDEA to exclude dogs from Swamp Mahogany Forest and wetlands adjacent to Etival Street.	Works implemented in accordance with funding	Medium
	K8	Etival Street cul-de-sac/entry to reserve Investigate options to reduce erosional impacts at the western end of Etival Street and immediate foreshores. Review options to re-direct flows through adjoining Swamp Mahogany Forest/ wetlands. Provide bitumen seal to turning area and upgrade parking bays in compacted decomposed granite	Investigation completed and recommendations implemented	Medium Ongoing
	K9	Foreshore Access adj. to Trial Area [near Etival Street cul-de-sac] Protect sensitive reedland and foreshores from further erosion and trampling by pedestrians and unleashed dogs. Install protective log post and tensioned wire fencing at cul-de-sac to channel access via proposed boardwalk as shown in the Landscape Masterplan: 1. Construct 2.2m wide timber ramped boardwalk from end of cul-de-sac onto sandy beach and inter-tidal mud-flats. 2. construct 2.2m wide timber boardwalk [no handrails] parallel with foreshores from end of cul-de-sac [max. height approx 600mm above existing GL] to proposed steps at the end of UDEA grassed embankment [approx 45m in length].	Works implemented in accordance with funding	High

Performance Target (Strategies)	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To maintain and enhance public access, circulation and recreational facilities (continued)				
Core Objectives: Management of community land categorised as a sportsground (36F), park (36G, general community use (36I) and natural area: wetland (36K)				
Careel Bay Playing Fields: 4. Unleashed Dog Exercise Area/Etival Street [cont] To address vehicular access, parking and safety To improve visitor orientation and use of facilities To address dog exercise compliance issues To enhance opportunities for public access. To establish a quantifiable means of Assessment of ongoing negative impacts as a result of human and dog-related activities To determine future of unleashed dog swimming area	K9 [cont]	Foreshore Access adj. to Trial Area [near Etival Street cul-de-sac] [cont] 3. Construct 2.2m wide tramp and steps with handrails at western end of UDEA/embankment to improve access to foreshores and dog swimming trial area. Link access ramp and steps to proposed foreshore boardwalk. 4. Construct 2.2m wide timber ramped boardwalk from base of steps/boardwalk to sandy beach and inter-tidal mud-flats at trial area	Works implemented in accordance with funding	Medium
	K10	Install additional timber picnic tables and seats [2] and bench seats [2] to western grassed area overlooking Pittwater.	Works implemented in accordance with funding	Medium
	K11	Install appropriate signage and dog litter bins adjacent to boardwalk entry points [see items K5/K2].	Works implemented in accordance with funding	High
	K12	Progressively remove all exotic weed species in foreshore area and restore diversity of habitats [inc; salt-marsh, reedlands, Swamp Mahogany Forest and littoral rainforest understorey]. See item D13	Works implemented in accordance with funding	Medium Ongoing
	K13	Trial period for Dog Swimming Area and Assessment On completion of the 12-month trial period [18.3.2000-17.3.2001] report on ranger observations and correspondence. Measure the level of compliance with 'dogs permitted to swim unleashed only in the area enclosed by posts only at high tide and to stay off the sand/mud-flats at all other times'.	Visitors and neighbours complaints registered Measure trends over time Level of compliance with regulations	High
	K14	Conduct an assessment of the ecological impacts on the foreshore/ wetland habitat, particularly quantifiable impacts of human and dog-related activities on wading birds within the inter-tidal mud-flats and adjacent waters. Conduct bird counts at high and low tides over an extended period. Compare results with earlier studies. Make recommendations based on quantifiable data.	Assessment completed and recommendations implemented	High Ongoing

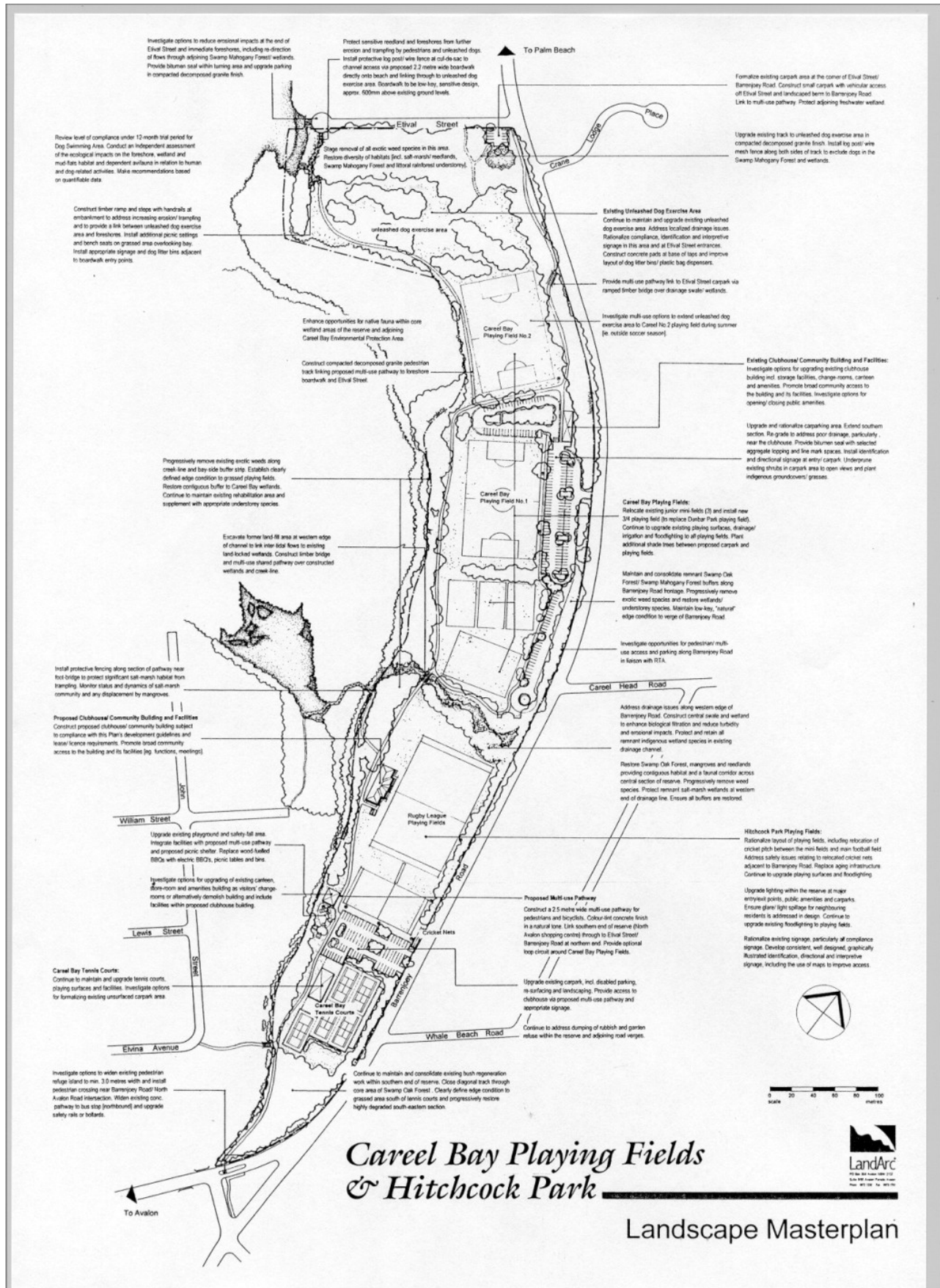
6.2 Capital Works Program

Item	Action	Capital Cost \$	Completed By
D1-D17	Wetlands Management and Restoration: 1. Southern remnant Swamp Oak forest 2. Northern remnant Swamp Mahogany Forest 3. Remnant salt-marsh adjacent to mangrove walk 4. Wetlands/drainage swale dividing AJRLFC/ASC fields 5. Lineal corridor along edge of Careel Creek/Careel Bay 6. Lineal corridor/buffer along Barrenjoey Road frontage	\$50,000 \$50,000 \$20,000 See items F1-F3 40,000 \$50,000	2002 2002 2001 2002 2003 2002 Ongoing
	Total Cost [D1-D17]	\$210,000	
E1-E5	Biodiversity Management: Wading Bird Survey [impacts in relation to trial dog swimming area] Monitor and control feral animals/unleashed dogs in protected area/rationalise interpretive and compliance signage	\$20,000 See items K1-K13	2002 Ongoing
	Total Cost [E1-E5]	\$20,000	
F1-F4	Water Quality/Catchment Management: Catchment management/wetland construction [opp Careel Bay Village] Catchment education programs	\$150,000 Not costed	2002 Ongoing
	Total Cost [F1-F4]	\$150,000	
G1-G6	Recreational Access, Circulation and Linkages: Barrenjoey Road multi-use pathway and parking study See below for further details	\$10,000	2002
		\$10,000	
H1-H5	Hitchcock Park: 1. Tennis Courts/Southern Area Upgrade Barrenjoey Rd entry/ped refuge island, signage & link to bus stop Section 1A: Proposed 2.5m wide multi-use colour tinted pathway [135 lin m] Section 1B: Proposed 2.5m wide multi-use colour tinted pathway [110 lin m] Elvina Avenue pathway link	\$30,000 \$17,000 \$14,000 Not costed	2003 2003 2003 2002
	Total Cost [H1-H5]	\$61,000	
I1-I9	Hitchcock Park: 2. Rugby playing fields./cricket and facilities Proposed upgrade to playing fields, irrigation/drainage, re-turfing Proposed cricket pitch/re-turfing Proposed floodlighting Hitchcock park lighting Upgrade amenities building to visitors changeroom/investigate options Proposed community building/clubhouse and facilities Upgrade playground, safety fall, BBQs [2], picnic tables [2] & litter bins[2] Section 2: Proposed 2.5m wide multi-use colour tinted pathway [280 lin m] Proposed 2.5m wide multi-use timber bridge over constructed wetlands Upgrade CDG link track to mangrove walk Upgrade Carpark/re-surfacing, line-marking, landscaped bays [2,650m ²] Proposed signage	\$80,000 \$30,000 \$40,000 \$50,000 Not costed \$55,000 \$34,000 \$40,000 \$5,000 \$95,000 \$10,000	2001 2001 2002 2002 2001 2005 2003 2003 2003 2001 2002
	Total Cost [I1-I9]	\$439,000	

Item	Action	Capital Cost \$	Completed By
J1-J5	Careel Bay Playing Fields: 3. Soccer playing fields and facilities		
	Proposed upgrade to playing fields include. Drainage/irrigation and re-turfing	\$120,000	2001
	Proposed floodlighting [include. Mini-fields & ¼ field]/lighting to carparks/entry and clubhouse	\$60,000	2002
	Upgrade clubhouse building [canteen, storage, changerooms and amenities]	\$50,000	2003
	Upgrade Carpark/surfacing, line-marking, landscaping: stage 1 [3,950m ²]	\$140,000	2002
	Proposed southern extension to Carpark/surfacing, line-marking, landscaping: stage 2 [1,700m ²]	\$85,000	2003
	Upgrade northern Carpark/re-surfacing, line-marking: stage 3 [2,500m ²]	\$90,000	2004
	Proposed signage	\$10,000	2002
	Section 3: Proposed 2.5m wide multi-use colour tinted pathway Careel Bay Playing Fields circuit [640 lin m]	\$78,000	2004
	Proposed 2.5m wide multi-use timber bridge over swale to Barrenjoey Road	\$40,000	2004
	Section 4: Proposed 2.5m wide multi-use colour tinted pathway along Barrenjoey Road from Clubhouse Carpark to Etival street [390 lin m]	\$47,000	
	Total Cost [J1-J5]	\$720,000	
K1-K14	Careel Bay Playing Fields: 4. Unleashed Dog Exercise Area		
	Upgrade UDEA [include. Drainage, taps, dog litter bins, signage]	\$10,000	2002
	Proposed CDG pedestrian track through UDEA [295 lin m]	\$25,000	2003
	Upgrade Etival Street/Barrenjoey Road Carpark/surfacing, landscaping	\$30,000	2003
	Upgrade CDG track [Carpark-UDEA]/signage, protective fencing	\$20,000	2003
	Etival Street cul-de-sac drainage/re-surfacing road and CDG parking	\$20,000	2002
	Proposed boardwalks/ramps [Etival Street cul-de-sac to UDEA]	\$50,000	2003
	Upgrade picnic tables [2], bench seats [2], and signage	\$10,000	2003
	Trial Dog Swimming Area – assessment	See items E1-E5	
	Total Cost [K1-K13]	\$165,000	
TOTALS		\$1,775,000	

Note: * Opinion of probable landscape construction costs are based on Landscape Masterplan and are indicative only.

6.3 Landscape Masterplan



APPENDIX 1 - Community Discussion Paper

A1 Community Consultation

Introduction

Community consultation is a vital component in the preparation of plans of management. This process continues through to public exhibition of the Draft Plan of Management and includes meetings and workshops with stakeholders and opportunities for public submissions. The purpose of the public meetings/workshops is to assist Council and the community to identify the important values attached to this reserve and to provide a forum for discussion of community issues. These issues form the basis for the following Discussion paper and will help to ensure the protection of identified values in a way which best meets the recreational and other needs of the community.

Scope of Plan

This Plan of Management applies to the land described by Pittwater Council as Careel Bay Playing Fields & Hitchcock Park, located on the southern foreshores of Pittwater within the northern beaches suburb of Avalon. The reserve covers an area of approximately 9 hectares and forms a lineal, open space corridor along the eastern shores of Careel Bay, Pittwater adjacent to Barrenjoey Road. The study area is contiguous despite the northern section being known as Careel Bay Playing Fields and the southern section as Hitchcock Park.

Careel Bay Playing Fields & Hitchcock Park consist of both Crown land (under Council care, control and management) and community land (owned in fee simple by Pittwater Council). Careel Bay Playing Fields & Hitchcock Park are predominantly open grassed reserves with two small parcels of remnant bushland at the northern and southern extremities. The reserve directly adjoins Careel Bay wetlands, a significant environmental protection area and subject of international wetland and migratory bird agreements.

Community Workshops

In early December 2000, Pittwater Council conducted four stakeholder/community workshops. Over 500 invitations were delivered to residents in local neighbouring streets, local community interest groups, clubs and associations.

The community workshops were conducted as follows:-

Stakeholder Group:	Residents
Venue:	Avalon Community Centre
Date:	Monday 4 th December 2000
Time:	7.00pm-8.30pm
Attendance:	13

Stakeholder Group:	Sporting Clubs & Dog Exercise Area user groups
Venue:	Avalon Community Centre
Date:	Wednesday 6 th December 2000
Time:	7.00pm-8.30pm
Attendance:	10

Stakeholder Group:	Environmental Interest Groups
Venue:	Avalon Community Centre
Date:	Thursday 7 th December 2000
Time:	7.00pm-8.30pm
Attendance:	4

Stakeholder Group:	Residents
Venue:	Avalon Community Centre
Date:	Monday 11 th December 2000
Time:	7.00pm-8.30pm
Attendance:	14

Presentation and Discussion

The community workshops/meetings were conducted jointly by Pittwater Council and LandArc Pty Limited. At each of these workshops/meetings, all the issues raised by participants were clearly summarised on a chalk-board as well as being recorded in detail for further development in this Paper. The Summary of Issues is attached. Each of the workshops/meetings were brought to a close after all comments from participants appeared to have been raised. It was requested that any further written comments be forwarded to Pittwater Council.

Overview

A total of 41 people attended the workshops. While a broad range of issues were discussed at each of these venues, the most contentious issues were undoubtedly raised at the two residents' workshops. Participants' concerns were followed up in three written letters and submissions (including a residents' group submission) which highlighted and expressed outrage over the lack of consultation in relation to the proposed football clubhouse and associated issues of increased traffic congestion, noise, parking in streets, safety, privacy and light spillage into neighbouring residents. The issues raised at the community workshops and in submissions form the basis for the following Discussion Paper.

A.2 Community Values and Issues

A.2.1 Protection of Community Values

Introduction

The reserve provides a range of active recreational facilities for the local community including tennis, football (rugby league & soccer) and cricket. Since the conversion of the study area from a land-fill site to playing fields in the 1970s, it has serviced the recreational demands of the local community which until relatively recently included equestrian activities. The area's high scenic and environmental values provide an outstanding natural setting for the reserve's recreational activities. The installation of a boardwalk within adjoining mangroves and the dedication of an area within Careel Bay Playing Fields for unleashed dog exercise have significantly enhanced passive recreational opportunities. In addition, walking, jogging, bike riding and fishing are all popular uses of the reserve.

This combination of active and passive recreational opportunities, diversity in natural settings, scenic quality, foreshore access, pedestrian linkages and facilities are all considered key values. It is vital that these values are protected and managed effectively. It is important that recreational demand, public access and proposed developments should not in any way compromise identified values or potentially limit opportunities for future generations. The public workshops defined a strong sense of community ownership in this reserve with the desire to ensure the protection of its natural, ecological, scenic and recreational values.

The following points identify the values and importance attached to this reserve by the participants at the workshops:

- ❖ significant recreational facilities located within natural/cultural setting;
- ❖ open and informal character;
- ❖ provides specific and highly valued community and recreational facilities;
- ❖ opportunities for passive recreation including walking, jogging, relaxing, fishing, bird-watching, environmental study;
- ❖ opportunities for dog-owners and related activities with dogs;
- ❖ open space is utilised for regular informal and formal (club/association) sporting activities;
- ❖ offers expansive views over Pittwater;
- ❖ interface with adjoining wetlands (mangroves) provides a natural backdrop to the reserve;
- ❖ contains remnant terrestrial and estuarine vegetation communities of high conservation significance;
- ❖ faunal dispersal/corridor between Avalon/Careel Bay wetlands and McKay Reserve/peninsula.

The public meetings and submissions highlighted a number of community issues and identified the ongoing need for management and protection of identified values as follows:

- ❖ to protect the range of passive and active recreational values and opportunities;
- ❖ to ensure broad community access to the reserve;
- ❖ to balance existing uses with appropriate protection of identified natural values;
- ❖ to ensure that any increase in sporting activity and infrastructure development does not compromise environmental values;
- ❖ to ensure pedestrian access, circulation and recreational activities address potential conflict between user groups;
- ❖ to ensure appropriate rehabilitation of highly modified natural values;
- ❖ to continue to address high level of weed encroachment;
- ❖ to protect and restore vital habitats ensuring long term viability;
- ❖ to minimise existing and future pressures upon Careel Creek and adjoining wetlands;
- ❖ to resolve public safety issues, access and visual quality of Barrenjoey Road verge;

- ❖ to address and monitor impacts of recreational activity and infrastructure on adjoining residents;
- ❖ to address periodic parking and vehicular congestion/safety problems;
- ❖ to continue to address vandalism to public amenities and restricted hours of access;
- ❖ to continue monitoring of dog activities within the reserve to assist in development of appropriate management strategies;
- ❖ to ensure management of the reserve is consistent with the high environmental values of the adjoining Careel Bay Environmental Protection Area.

The following provides a more detailed discussion of the community issues.

A.2.2 Proposed Development

Proposed Clubhouse for Avalon Junior Rugby League Football Club

The proposed clubhouse for Avalon Junior Rugby League Football Club (AJRLFC) raised significant concerns and debate at each of the workshops, particularly amongst the resident groups over a lack of public consultation. A number of residents of John Street, William Street, Lewis Street and George Street stated that prior to notification of this plan of management, they had been unaware of any proposal for a clubhouse.

The AJRLFC has used Hitchcock park as its home ground for over 37 years. In 1997, the AJRLFC, following discussions over many years with Council, prepared initial plans for the proposed clubhouse development. These plans were further developed by AJRLFC in discussions with Council staff in accordance with Council's generic plan of management for sportsgrounds over the following year. The proposal as an integrated development application located on Crown land required a permit from the Department of Land and Water Conservation under Part 3A of the Rivers & Foreshores Improvement Act 1948. The development application was endorsed with the consent of the Department in February 1999 and lodged with Council in May 1999. A total of six property owners received notification of the proposal.

In support of the DA on behalf of AJRLFC, Don Fox Planning prepared a "Statement of Environmental Effect: Alterations and Additions to Hitchcock park, North Avalon including Avalon JRLFC Clubhouse and Associated Facilities".

The main features of the proposal included the following:

- re-location of the mini-football field to the south-eastern end of Hitchcock Park;
- re-location of the main football field to the north-western end of Hitchcock Park;
- re-location of the cricket oval (pitch located between the mini-field and main football field);
- existing floodlighting for the mini and main football fields to be retained and upgraded;
- construction of a new scoreboard on northern side of Hitchcock Park;
- upgrading of existing gravel carparking area (approximately 68 car spaces), including provision for 3 marked disabled car spaces;
- development of a multi-purpose, all-weather, 1.5 metre wide pathway from the existing Carpark to the new clubhouse (including disabled access/ramps and carparking);
- retention of existing canteen, store-room & amenities building as a visitors' change-room;
- development of the proposed clubhouse and small cabana on the south-western side of Hitchcock Park mid-way along the main playing field;
- minimum 10-metre set-back from the top of the embankment of Careel Creek;
- no removal or disturbance to existing native vegetation;
- minor earthworks and drainage works required;
- clubhouse to serve broader community uses and other community groups;
- AJRLFC to enter into a lease agreement with Council for the use of Hitchcock park, the new clubhouse and other facilities;
- building location within a flood zone (minimum floor level – 1% AEP flood level);
- minimum floor level height: 2.35 metres AHD to satisfy flood level requirements;

- building envelope: 35 metres x 8.99 metres (314.6 square metres);
- height of building: 6.2 metres to the ridge of the roof;
- internal floor layout: clubroom, canteen/kitchen, club kitchen, small stage, office and store-room, toilets (male/female and disabled) and a change-room with showers and toilet;
- full length verandah with seating, steps and ramps (disabled access) to north-east elevation;
- external finishes: walls – red-brown brickwork; roof – colourbond dark green;
- cabana: 4.0 metres x 3.0 metres located on south-eastern side of new clubhouse.

The proposed development was described in the State of Environmental Effects as significantly contributing to the local community recreational asset base. The proposed location for the clubhouse maximised the distance between the nearest dwellings on Barrenjoey Road however residents in John Street and William Street appear to have been given little consideration. The presence and extent of vegetative buffers along the creek-line and Barrenjoey Road were believed to provide an adequate level of screening. It was further stated that there would be no adverse impacts in terms of view loss, overshadowing, noise nuisance, light spillage, glare and privacy impacts. It was also anticipated that peak traffic and parking demands for the playing fields would continue to be during weekend football games in winter and would likely remain at similar levels to previous years.

It was considered by Council that the proposed development would not intensify the use of the area or increase the demand for additional carparking spaces. Pittwater Council's Natural Resources section however objected to the proposal on the basis of the new building's position being inappropriate *"as it is in close proximity to Careel Creek and Careel Bay Wetlands zoned 8(a) Environment Protection which is an important habitat refuge for migratory birds and other fauna containing the largest stand of mangroves and saltmarsh in Pittwater. The building will also significantly impact on visual amenity"*. Otherwise, the proposal complied in all respect with Council's relevant DCP, draft DCP/Locality Plan, Building Code and Council's policies and development consent was granted.

Whilst it was broadly acknowledged by participants at the workshops that the proposed clubhouse would become a community asset, objections focussed on the clubhouse DA process, the clubhouse's location and appearance, potential environmental impacts on the wetlands and social/environmental impacts on neighbouring residents such as traffic, parking and congestion, noise, privacy, safety and lighting. The potential use of William Street and John Street for playing field access via the mangrove boardwalk on football days was of major concern. It was believed that there was potential for conflict between recreational user groups such as pedestrians/bicyclists and children and use by service vehicles. Participants were also in favour of demolition of the existing canteen/store-room and public amenities building rather than proposed retention and refurbishment. It was believed that the open, natural landscape character of the reserve, its environmental and scenic values would be significantly compromised by a collection of "ad hoc" buildings, public amenities and new access road.

It was stated that the siting of the building in open space against a backdrop of natural wetlands ensured a high level of visual exposure to Barrenjoey Road and would seriously compromise existing panoramic vistas. It is important to recognise that recent weed clearing of Lantana (*Lantana camara*) along the Barrenjoey Road frontage has opened up these vistas to the public. In addition, substantial areas of exotic weed growth, particularly Giant Reed (*Arundo donax*), in the vicinity of the proposed clubhouse, have been cleared and restoration areas established since this development application was lodged. The environmental and visual impacts therefore appear to be magnified (refer to *Exotic Weed Management and Bush Regeneration*).

A.2.3 Environmental Issues

Landscape Setting, Natural and Recreational Values

Careel Bay Playing Fields and Hitchcock Park's open space, bay-side natural/cultural setting and its range of passive and active recreational opportunities are highly valued by the local community. Apart from the reserve's active sporting focus in its playing fields and facilities, the reserve's scenic outlook and environmental qualities provide an outstanding setting for relaxation, walking, jogging, fishing, bird-watching, dog exercise, painting, environmental study and many other passive and unstructured active recreational pursuits.

The reserve's remnant bushland and proximity to significant wetlands, a tidal creek, extensive mud-flats, sandy beaches offer a diversity of recreational opportunities as well as vital habitat for rare and threatened species.

It is the combination of such values that attract numerous walkers to the reserve predominantly in the early mornings and evenings on weekdays. It was claimed that this weekday user group rivalled in number the groups involved in active recreation on weekends. It was also stated that the natural, informal qualities of the reserve are in keeping with the surrounding character of the area and that it was important not to over-develop or formalise recreational infrastructure and access.

The workshops confirmed the community's broad support for the reserve's role as a multi-use, shared community resource. It is important however that existing or future recreational uses and development of recreational infrastructure should not in any way compromise the natural/cultural setting or its environmental values.

Visual Quality

Careel Playing Fields & Hitchcock Park are located within an area of outstanding scenic quality. The reserve offers expansive views over Pittwater and Careel Bay and an uninterrupted, natural view to the north-west over the bay's wetlands and the more distant bushland of Ku-ring-gai National Park. In addition to these expansive vistas, the reserve offers a range of more contained and intimate views within the remnant Bangalay and Swamp Oak Forests and beside the mangrove-lined Careel Creek and wetlands.

The workshops confirmed that weed management is an important issue affecting the scenic and visual qualities of the reserve. The prolific weed infestation along Careel Creek was identified as having a particularly high negative visual impact for reserve users and adjacent residents along the creek (see *Exotic Weed Management and Bush Regeneration*). It was also stated that recent clearing of dense exotic weeds/undergrowth adjacent to Barrenjoey Road had increased the level of floodlight spillage from playing fields into adjacent dwellings. It was suggested though that the removal of vegetation has improved the passive surveillance of the reserve from Barrenjoey Road. The level of vandalism and anti-social behaviour had been reduced and it was believed that the reserve was now safer for children and the elderly (see *Vandalism*).

Furthermore, it was stated that current drainage works in conjunction with vegetation clearing along Barrenjoey Road, had created a very negative visual impact for the reserve with the creation of stockpiled soils and large stagnant ponds in the drainage line beside the roadside (refer to *Drainage & Water Quality*). The informal road shoulder on the reserve side of Barrenjoey Road was also identified as being in disrepair and visually unattractive.

The visual impact of the proposed AJRLFC clubhouse was discussed at each of the workshops (refer to Proposed Development: *Proposed Clubhouse for Avalon Junior Rugby League Football Club*). It was also suggested that the existing canteen/store-room and public amenities building be removed for visual reasons. Over-full 'dog litter' bins and plastic bags tied to trees in the dog exercise area were also identified as having a negative visual impact on the reserve (see *Unleashed Dog Exercise Area*).

Faunal Habitat and Corridors

Careel Bay is the most significant area of estuarine wetlands in the Pittwater local government area. The inter-tidal mudflats provide vital habitat for a diverse range of wading and migratory birds including the regionally significant and endangered Bush Stone-curlew (*Burhinus grallarius*). See *Careel Bay Environmental Protection Area*. The reserve also provides a habitat for a local population of the Long-nosed Bandicoot (*Perameles nasuta*). This species is currently common within this area however it has gone extinct in almost all other parts of the metropolitan area. It is vulnerable to habitat loss, particularly with respect to unleashed dogs. It is believed that the reserve does not have a significant fox or rabbit population.

To illustrate the significance of habitat values, the environmental group workshop made the point that the Swamp Pheasant or Coucal (*Centropus phasianinus*) continued to nest in the area adjacent to the tennis courts until a clean-up occurred a few years ago. This species has not been seen again in the reserve. This example also underlines the concerns over recent CLEARING ALONG Barrenjoey Road. This strip of vegetation forms an important faunal corridor with opportunities of genetic exchange between the Avalon area and McKay Reserve. It was proposed that indigenous planting of buffers and contiguous corridors be established within the reserve to facilitate greater faunal movement between the bushland reserves of Avalon and the northern part of the peninsula.

Exotic Weed Management and Bush Regeneration Overview

There is a considerable support by the community for appropriate bush regeneration, restoration and management of the reserve's highly modified native vegetation. Concerns were raised, particularly at the environmental group workshop, that any increase in sporting and recreational infrastructure should be balanced with appropriate protection and management of identified natural values. Core areas of bushland in the northern and southern edges of the reserve need to be consolidated and better integrated with adjoining bushland and the bay's wetlands. Furthermore, it was stated that there were significant opportunities to increase the area of natural bushland buffers and corridors within the reserve. In particular, the western (Careel Bay Environment Protection Zone) and eastern (Barrenjoey Road) edges of the playing fields and the grassed open space between the soccer and rugby league fields should be targeted for enhancement. All buffer enhancement and restoration works should be staged and managed progressively using locally-sourced, indigenous species planted. Rehabilitation areas should be well-defined, edged and mulched and placed under an appropriately funded and co-ordinated maintenance regime.

Illegal Dumping

The illegal dumping of garden refuse/green waste within the reserve and along its perimeters, particularly Careel Creek, is an ongoing environmental issue (refer to *Drainage and Water Quality*). It is visually obtrusive, costly to remove and contributes significantly to further weed encroachment. Careel Creek has a long history of illegal dumping with old rusted car-bodies and parts still present amongst the mangroves.

Clearing and Stockpiling

Participants at the workshops were divided over the practice by "bushcare" groups of stockpiling weeds for collection and removal. Some believed it to be visually unacceptable and inappropriate whilst a number were of the opinion that stockpiling was a necessary process and also provided much needed habitat for native fauna temporarily displaced by the clearing of understorey weeds (see *Faunal Habitats and Corridors*). It was also stated that the significant areas of Lantana within the site tend to keep people out of the mangroves as well as providing habitat and it was therefore suggested that this species' management should involve control rather than removal. This approach however would simply retain the status quo. The ecosystem would essentially remain simplified and species depauperate, providing habitat for only a few of the more resilient native species. It would also have long-term cost implications.

Eastern Boundary Corridor

The recent weed clearing along Barrenjoey Road was criticised at the workshop on the basis of its total loss of habitat and faunal corridors rather than a more sympathetic staged approach. In addition, it was suggested that at least some of the native plants used for revegetation were not indigenous to the site and that a lack of appropriate maintenance provided an environment for significant weed invasion.

Southern Area Regeneration

The southern end of the reserve, containing a remnant Swamp Oak Forest community, is currently under weed management and bush regeneration by a small, local volunteer “bushcare” group. It was stated that this area had been under a bush regeneration contract however grant funding had failed to carry through on the project. This lack of funding has seriously affected expansion of the program resulting in objectives being largely restricted to follow-up maintenance in existing regeneration areas. It was however confirmed by the “bushcare” group supervisor that this current approach was not preventing the spread of exotic weeds and that further funding was required for a bush regeneration team as well as the continued support of local volunteers. A current application for funding has been lodged by the “bushcare” group under the Coastcare grants program. Careel Creek forms the edge to all “bushcare” works in this area. No work is undertaken in the adjoining reserve across the footbridge at the end of Elvina Avenue.

The informal walking track along Careel Creek between Barrenjoey Road and Careel Bay Tennis Club is a relatively recent connecting track formed since regeneration work commenced in this area. It has become a popular short-cut to North Avalon shops and the beach. The creek bank is easily eroded and supports a sensitive riparian community. The “bushcare” group would prefer this track to be closed for regeneration work and an alternative track formalised along an existing unformed track to the east through the Swamp Oak Forest (see *Proposed Shared Pedestrian/Bikepath Access*).

Rehabilitation of Western Margin adjoining Wetlands

It was confirmed by the “bushcare” group supervisor that a small area of saltmarsh on the eastern bank of Careel Creek (near the mangrove walk bridge) was currently under bush regeneration by the volunteer “bushcare” group. The saltmarsh is highly sensitive to trampling. Its location near the bridge and pathway makes it particularly vulnerable to further degradation through multiple tracking. This area would therefore need to be fenced off to prevent access.

In recent years, the adjoining higher ground (former land-fill) has been restored with local indigenous species dominated by plantings of Swamp Mahogany (*Eucalyptus robusta*), replacing a formerly weed infested area. The extent of weeds, particularly the Giant Reed (*Arundo donax*), necessitated the use of heavy machinery for weed removal and grading before planting and mulching could commence. Concerns were raised that the location of the proposed clubhouse directly adjacent to this area may compromise this rehabilitation see *Proposed Clubhouse for Avalon Junior Rugby League Football Club*).

The higher ground directly fringing the mangrove wetlands, adjacent to the playing fields, is dominated by a number of weed species, particularly lantana (*Lantana camara*), and Coral Trees (*Erythrina hybrida*). Locally indigenous species such as Swamp Oaks (*Casuarina glauca*) also occur along this perimeter. The carefully staged regeneration and restoration of a suitable buffer community long the edge of the wetlands was highlighted as a significant environmental issue. It was suggested that a mowing edge to the playing fields’ grass cover of kikuyu would improve turf maintenance practices as well as providing opportunities to establish a bay-side, mulched buffer area for bush regeneration/restoration. While the spread of exotic weeds needs to be better managed and contained, it is important to recognise that weed species (eg Lantana) provide vital habitat for ground dwelling and understorey native fauna, including the Long-nosed Bandicoot and Fairy Wren. Faunal habitat should not be eliminated in a single clearing exercise but rather progressively managed and restored.

Rehabilitation of Northern Area

The northern end of the reserve adjoining Etival Street contains remnant Swamp Mahogany/Bangalay Forest and littoral rain forest elements. This area is in very poor condition with a highly disturbed and fragmented canopy showing considerable die-back and a simplified, depauperate understorey of Cheese Trees (*Glochidion ferdinandi*), the introduced north-coast Coastal Hibiscus (*Hibiscus tiliaceus*) and exotic weed species such as Coral Trees (*Erythrina hybrida*), Camphor Laurels (*Cinnamomum camphora*), Norfolk Island Hibiscus (*Lagunaria petersonia*), Small and Large-leaved Privets (*Ligustrum sinense* and *L. lucidum*) and Wandering Jew (*Tradescantia albiflora*). Local drainage and soils have also been highly modified.

Nevertheless, this community still contains significant remnant indigenous species, such as Swamp Mahogany (possibly *Eucalyptus robusta* X *E. botryoides*), Rough-barked Apple (*Angophora floribunda*), Common Acronychia (*Acronychia oblongifolia*), Cabbage Plan (*Livistona australis*), Blueberry Ash (*Elaeocarpus reticulatus*) and Lilly Pilly (*Acmena smithii*). Some of these mesic understorey species are relatively large old specimens and are remnant of a littoral rain forest community. The area is also believed to contain a locally rare example of Red Ash (*Alphitonia excelsa*) and past evidence of an aboriginal midden. Neither of these items has been confirmed in recent site investigations. A small freshwater wetland has developed in the far north-eastern corner adjacent to Etival Street.

This area is worthy of protection, weed management and restoration works. It was stated that the site had no previous bush regeneration works and would require more than a community grant to adequately address the high level of disturbance. Interest was expressed in establishing a peripheral zone or vegetative buffer around the unleashed dog exercise area as a means of keeping dogs out of this sensitive area and adjacent mudflats.

Drainage & Water Quality

A number of issues relating to drainage and water quality were presented at the workshops. It was broadly acknowledged by participants that the construction of drainage pipes to discharge surface run-off through the reserve would be environmentally inappropriate. There was concern however over the amount of stagnant water which backs up in the open drainage channels between Barrenjoey Road and the reserve. It is believed that the problem has been exacerbated by recent drainage works and stockpiling. It was stated that ponding near the bus stop adjacent to the Careel Bay Shopping Village needed urgent attention. With no footpath along either side of Barrenjoey Road, public safety concerns were also raised regarding pedestrian safety. Existing ponding reduced the area along the road verge for pedestrian access thus compounding an already hazardous situation (refer to *Proposed Shared Pedestrian/Bikepath Access*). In addition, stagnant water in drainage swales was providing habitat for breeding mosquitoes and unacceptable odours were affecting the reserve's amenity values. Council is continuing to resolve these drainage issues in the construction of appropriate open drainage swales. These drainage swales will help to dissipate energy and ensure that debris and foreign matter are trapped before entering the bay.

It was suggested that while a gross pollutant trap (GPT) exists upstream on Careel Creek, the small drainage line entering Careel Creek near the Elvina Avenue pedestrian bridge may be contributing significantly to the level of litter and waste in the creek. It was believed that options should be further investigated to address this problem.

Most pedestrian access points into the reserve and large parts of the dog exercise area are poorly drained and subject to local inundation. These conditions encourage further multiple tracking, and in places, trampling of mall native plants (see *Proposed Shared Pedestrian/Bikepath Access*).

Careel Bay Environmental Protection Area

Although not specifically within the study area of this plan of management, the adjoining Careel Bay Environmental Protection Zone is nonetheless highly significant in terms of developing an integrated approach to reserve, foreshore and waterways management. This area forms the largest estuarine wetland complex in the Pittwater local government area supporting seagrass beds, intertidal mudflats, mangrove forest, saltmarsh and Swamp Oak Forest. This area is of high conservation significance providing habitat for a variety of waterbirds including migratory waders from the Northern Hemisphere. The protection of its environmental values was highlighted by many participants at the workshops. The area was also highly valued for its scenic qualities and its contribution in defining the bay's natural landscape character. It was suggested by participants that the plan of management for the reserve should acknowledge and protect these outstanding environmental values and compliment the existing plan of management for this Environment Protection Zone.

A.2.4 Public Access and Recreational Facilities

Vehicular Access, Parking and Pedestrian Access

A number of issues were raised regarding existing vehicular access and parking within and around the reserve. Although it was suggested that parking can at times be a problem throughout the year, the winter sports period was identified as being of particular concern to all residents. The impact on residents extends from Barrenjoey Road and adjoining streets on the eastern side to William Street and John Street on the western side of Careel Creek. It was claimed that the end of Elvina Avenue, and William Street and John Street areas had become a "de facto carparking area for the reserve" since the mangrove boardwalk was installed. It was also stated that anti-social, drunken behaviour often accompanied the sporting fixtures and spilled into the adjoining residential streets. The proposed rugby league clubhouse raised concerns that an already difficult situation would be compounded by increased traffic, parking and congestion (see *Proposed Clubhouse for Avalon Junior Rugby League Club*). Parking in winter was also identified as a problem for the Avalon Tennis Club although any expansion of the existing carparking area at Hitchcock Park was believed to be an unacceptable intensification of uses on the reserve.

Similarly, concerns were raised regarding extensions to the carparking areas adjacent to Careel Bay playing fields and the corner of Etival Street and Barrenjoey Road. Although upgrading of the existing carparks was welcomed, provision for overflow parking at Careel Bay playing fields was considered an over-development of this location. Furthermore, while it was acknowledged that a significant number of dog owners travel by car to the unleashed dog exercise area, it was believed that the existing carparking area should remain low-key and not be increased in size.

Public safety issues were raised over the use of Barrenjoey Road by pedestrians. This road can be particularly busy with traffic and pedestrians at certain peak times. However, there is currently no formal footpath along this side of the reserve or along Barrenjoey Road (see *Drainage & Water Quality* and *Proposed Shared Pedestrian/Bikepath Access*). The shoulder of the road is shared by both pedestrians and parked vehicles during sports events. In addition, vehicles may move to the shoulder to avoid other vehicles turning into Careel Head Road and Whale Beach Road causing a considerable public safety hazard to pedestrians. A large number of students from Barrenjoey High School regularly use this road shoulder to walk to and from school. It was suggested that there may be scope to address these safety and parking issues with the construction of formalised rear to kerb angle parking, landscaped bays and a pedestrian footpath. However, other participants believed this option would not be consistent with the reserve's informal character.

Opinion was divided as to the appropriateness of formalising existing pedestrian tracks within the reserve. It was believed by many participants that the informal qualities of the reserve should not be compromised by over development of recreational infrastructure or landscaping. However, it was acknowledged that the existing unformed tracks restrict access to the reserve particularly for the elderly, disabled or people with prams. Access is also made difficult during periods of wet weather.

The pedestrian track leading from the tennis courts/Elvina Avenue footbridge to North Avalon shops via Careel Creek also raises serious safety concerns. The junction of this track and Barrenjoey Road occurs on a bend in the road. A pedestrian refuge island has been constructed in the centre of the roadway however an investigation should be conducted into pedestrian route options before any future upgrading of the pathway is considered (see *Proposed Shared Pedestrian/Bikepath Access*).

Proposed Shared Pedestrian/Bikepath Access (Multi-use Pathway)

A shared pedestrian/bikepath or multi-use pathway linking the reserve to North Avalon and Avalon Beach via Careel Creek has been discussed in a number of earlier plans of management and bikeplan studies. The Avalon shops to North Avalon section was constructed by Council three years ago and is a very popular multi-use pathway, particularly on weekends. An unformed track along Careel Creek provides a link to the existing shared pathway and services a high demand by walkers, joggers and bike riders alike. Within the reserve, a less-defined track along the western edge of the playing fields links Careel Bay Tennis Courts/Elvina Avenue footbridge to the unleashed dog exercise area and Etival Street. It was suggested that this shared pathway could follow much of the existing track along the reserve's western edge and that there were options for completing a loop or circuit near Etival Street which could link with a future footpath along Barrenjoey Road. The shared pathway however would not link to the unleashed dog exercise area in order to avoid potential safety issues.

Any upgrade of the existing Careel Creek track south of the tennis courts/Elvina Avenue footbridge would need to consider safety issues at the crossing on Barrenjoey Road. This crossing occurs near a bend in the road and the existing pedestrian refuge island is very small, certainly not large enough to accommodate one or more bikes and riders. It is believed that this refuge island would need to be enlarged to provide for safe crossing with bicycles. The "bushcare" group support closure of this relatively recent creek-side track due to its potential to exacerbate environmental impacts through trampling (refer to *Exotic Weed Management and Bush Regeneration*).

Overall, the shared pathway proposal received broad support in principle at the workshops however there were concerns that it may not be compatible for use by both pedestrians and bicyclists. It should not over develop the reserve or change its character. It should be low-key and well-constructed in a sympathetic finish in keeping with the reserve. There were concerns that such infrastructure would introduce further user groups into an already crowded and popular area with the potential to compromise environmental values. Furthermore, it was suggested that any proposed shared pathway should not compromise the significant environmental values of the adjoining wetland, particularly sensitive saltmarsh area. It was stated that the shared pathway could in fact play a positive environmental role by providing a mowing edge adjacent to buffer planting along Careel Creek and the wetlands (refer to *Exotic Weed Management and Bush Regeneration*).

There was considerable discussion regarding cyclists and the unleashed dog exercise area, including an option for a fenced-off area. This option however would impact significantly on the visual character of the reserve. The question was also raised regarding possible incorporation of the existing mangrove boardwalk and footbridge into the shared pathway proposal however this option is not considered appropriate in terms of public safety.

Cricket Pitch and Practice Nets

The relocation of the cricket pitch and particularly the cricket nets immediately adjacent to Barrenjoey Road were broadly criticised at the workshops with concerns raised over safety and traffic issues. Coupled with the recent removal of vegetation along the road-side, it was believed that there was not a high risk of cricket balls hitting passing traffic and residential properties on Barrenjoey Road (see *Vandalism of Public Property*). The pitch and nets have to be relocated to accommodate the proposed rugby league clubhouse as well as addressing compliance issues with insurance requirements for cricket pitches on playing fields. It was noted at the workshops that the cricket nets would be extended to address safety issues and are at present used only for informal use and not for formal cricket practice.

Vandalism of Public Property

As previously outlined, the clearing of weeds adjacent to Barrenjoey Road appears to have improved passive surveillance of the reserve (refer to *Visual Quality* and *Exotic Weed Management & Bush Regeneration*). It was believed that improved views into the reserve made it a safer place for children to play. Furthermore, it was stated that the incidence of vandalism, including the igniting of “soda bombs” has been reduced. Nevertheless, participants believed that vandalism will remain a significant issue within the reserve. Concerns were raised over the use of the mangrove boardwalk being used as a convenient escape route by vandals avoiding the police. In response to continued vandalism the public amenities in the Avalon Soccer Club and Avalon Junior Rugby league clubhouses are locked between the hours of 6pm and 6am every day. As a consequence, public amenities are restricted during the evening and early morning hours when many walkers and joggers use the reserve.

Signage

Issues relating to a lack of regulatory and identification signs were raised, particularly with respect to unleashed dogs. The location of the unleashed dog exercise area should be highlighted on reserve signage as the current situation is considered to be too ambiguous with many people walking their dogs off-leash throughout the reserve. It was suggested that both regulatory and identification signage be installed, particularly at the southern entry points of the reserve in Hitchcock Park (see *Unleashed Dog Exercise Area & Guidelines for Designing and Managing Dog Exercise*).

A.2.5 Unleashed Dog Exercise Area

Overview

The unleashed dog exercise area (UDEA) located within the northern portion of the reserve, is highly valued by a broad section of the community. Since formal establishment of the UDEA by Council, use of the foreshores and inter-tidal mud-flats for unleashed dog exercise has remained an ongoing management issue due to the high conservation values of these wetlands. The wetlands and inter-tidal mud-flats are a favoured location for unleashed dog exercise. However, this area, zoned 7(a) Environment Protection Zone, provides vital habitat for a range of threatened species and is subject to international agreements on migratory waders. In response to these issues, Council established a trial area to extend the UDEA into the inter-tidal mud-flats only during high tide.

Under the Companion Animals Act (1998) the owners of cats and dogs are at all times responsible for the actions of their animals. It was believed by participants at the workshops that the majority of dog owners are acting responsibly with respect to controlling dogs at all times, observing restrictions on where dogs can exercise off-leash and collecting/depositing dog faeces in allocated bins. It was believed that only a small percentage of owners continue to breach the regulations. It was suggested that the current UDEA is operating to capacity and there is pressure to expand into the soccer playing field north of the Carpark (eg time-share basis) as well as making the inter-tidal trial area a permanent use area.

UDEA Trial Area

While there was broad support at the workshops for the established UDEA, many participants raised serious concerns over the continuation of the designated trial area along the environmentally sensitive foreshores and inter-tidal mud-flats at the end of Etival Street. Contrary to the trial's objectives, it is common to find dogs off leash at low-tide on these mud-flats and the adjoining wetlands and well beyond the designated area, exposing wading and migratory birds to significant disturbance. Some people believed it was not appropriate to permit foreshore access for unleashed dogs due to these environmental values. It was further stated that the area was not being effectively monitored and that "something had to be done" to stop the dogs chasing the birds on the mudflats. Proposals to keep dogs off the mudflats included perimeter fencing although this was not popular with the majority opinion being that it would impact greatly on the informal character of the area. It was suggested that nocturnal activities of domestic cats have a far greater impact on the migratory bird population than unleashed dogs.

At the environmental group workshop it was stated that photographic evidence illustrated a significant reduction in the amount of natural vegetation in the foreshore salt-marsh area since the trial began. It was however unclear whether this was a result of trampling or a response to increased erosional activity in this location. Furthermore, participants believed that the trial area had increased the level of unsupervised dogs entering properties adjacent to the reserve in Etival Street, causing a high level of nuisance and confrontation between residents and dog owners. Unleashed dogs and the amount of dog faeces had also increased in the remnant Swamp Mahogany Forest and wetlands adjoining the UDEA possibly as a result of the trial area and recent clearing.

Upon conclusion of the trial period, Council's Natural Resources section will undertake an independent assessment of the impacts on birds as part of an ongoing monitoring process. This study should also include bird species counts at both high and low tide. A quantitative assessment of the impact on birds by unleashed dogs would provide important data to establish an appropriate management strategy.

Designated UDEA and Unleashed Dogs in the Reserve

The practice of some owners allowing their dogs off leash outside the designated UDEA, particularly on the Careel Bay and Hitchcock Park playing fields, adjoining the wetlands and Etival Street raised a number of issues at the workshops. The Careel Bay playing fields Carpark is a common location to release dogs. It was stated that the soccer playing fields between the Carpark and the UDEA had been the subject of a trial as an extended off-leash area. Although this trial period has now expired the area remains a defacto unleashed dog exercise area. It was suggested that there may be some confusion regarding the UDEA amongst less regular users and signage should be installed to address this issue (refer to *Signage*). Unleashed dogs outside the UDEA could potentially have an impact on other reserve users, particularly children who may be playing on the fields and not be accustomed to dogs. It was further stated that the release of unleashed dogs from the Hitchcock Park Carpark increased the potential for user conflicts to occur.

Representatives of the Avalon Soccer Club had no objections to extending the UDEA to the Careel Bay playing fields Carpark providing dog owners continued to act responsibly. It was important that dog activities had no negative impact on the standard of the northern playing field and that these activities occurred outside the soccer season. The Club believed this "multi-use" of the northern playing field would help to encourage a greater sense of ownership over this area.

Participants requested the installation of more permanent "dog litter" receptacles within the UDEA and at entry points to the reserve. Plastic bags attached to trees are visually obtrusive and impact on the amenity of this area. A plastic bag dispenser is located in this area however it is obscured by foliage and should be relocated. The drainage problems and boggy conditions associated with this part of the reserve should be addressed, including construction of a concrete pad and installation of appropriate drainage at the bases of existing taps.

APPENDIX II: Rehabilitation of Species List

Schedule of Species for Rehabilitation

Sydney Coastal Estuary Swamp Forest Complex and Estuarine Wetlands

Botanic Name

Common Name

Recommended Planting for Drier Land-fill Areas zoned Existing Recreation 6(a) (incl. Crown Reserve and Community Land Categories: Sportsground/ Park/ General Community Use)

Trees:

<i>Acacia implexa</i>	Hickory Wattle
<i>Acmena smithii</i>	Lilly Pilly
<i>Acronychia oblongifolia</i>	Common Acronychia
<i>Alphitonia excelsa</i>	Red Ash
<i>Angophora floribunda</i>	Rough-barked Apple
<i>Banksia integrifolia</i>	Coastal Banksia
<i>Casuarina glauca</i>	Swamp She-oak
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus punctata</i>	Grey Gum
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Ficus rubiginosa</i>	Port Jackson Fig
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Livistona australis</i>	Cabbage Tree Palm
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Melaleuca linearifolia</i>	Snow-in-Summer
<i>Syzygium oleosum</i>	Blue Cherry

Shrubs/ Accents:

<i>Crinum pedunculatum</i>	Beach Lily
<i>Melaleuca hypericifolia</i>	Paperbark

Groundcovers and Climbers:

<i>Dianella caerulea</i>	Paroo Lily
<i>Gahnia sieberiana</i>	Red-fruited Saw-sedge
<i>Hibbertia scandens</i>	Climbing Guinea Flower
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush

Botanic Name

Common Name

**Recommended Planting for Sydney Coastal Estuary Swamp Forest Complex
Restoration Areas and areas adjoining Careel Bay Environment Protection Area
(incl. Crown Reserve and Community Land Category: Natural Area – wetland)**

Trees:

<i>Acacia floribunda</i>	Gossamer Wattle
<i>Acacia implexa</i>	Hickory Wattle
<i>Acmena smithii</i>	Lilly Pilly
<i>Acronychia oblongifolia</i>	Common Acronychia
<i>Alphitonia excelsa</i>	Red Ash
<i>Angophora floribunda</i>	Rough-barked Apple
<i>Banksia integrifolia</i>	Coastal Banksia
<i>Casuarina glauca</i>	Swamp She-oak
<i>Cryptocarya microneura</i>	Murrogun
<i>Diospyros australis</i>	Black Plum
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus punctata</i>	Grey Gum
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Ficus rubiginosa</i>	Port Jackson Fig
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Livistona australis</i>	Cabbage Tree Palm
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Melaleuca linearifolia</i>	Snow-in-Summer

Large Shrubs > 2.5 metres:

<i>Acacia longifolia</i>	Sydney Golden Wattle
<i>Clerodendrum tomentosum</i>	Hairy Clerodendrum
<i>Commersonia fraseri</i>	Brush Kurrajong
<i>Duboisia myoporoides</i>	Corkwood
<i>Kunzea ambigua</i>	Tick Bush
<i>Monotoca elliptica</i>	Broom Heath
<i>Persoonia lanceolata</i>	Lance-leaf Geebung
<i>Polyscias sambucifolius</i>	Elderberry Panax
<i>Neolitsea dealbata</i>	White Bolly Gum
<i>Omalanthus populifolius</i>	Bleeding Heart
<i>Rapanea howittiana</i>	Brush Muttonwood
<i>Rapanea variabilis</i>	Muttonwood
<i>Rhodamnia rubescens</i>	Brush Turpentine
<i>Synoum glandulosum</i>	Bastard Rosedwood
<i>Trema aspera</i>	Native Peach
<i>Wilkea huegeliana</i>	Wilkiea

Botanic Name

Common Name

Small Shrubs < 2.5 metres:

<i>Acacia suaveolens</i>	Sweet-scented Wattle
<i>Acacia terminalis</i>	Sunshine Wattle
<i>Astrotricha latifolia</i>	Broad-leaf Star-hair
<i>Breynia oblongifolia</i>	Coffee Bush
<i>Callistemon linearis</i>	Narrow-leafed Bottlebrush
<i>Dodonaea triquetra</i>	Hop Bush
<i>Eupomatia laurina</i>	Bolwarra
<i>Hibiscus diversifolius</i>	Swamp Hibiscus
<i>Notelaea longifolia</i>	Mock Olive
<i>Oxylobium ilicifolium</i>	Native Holly
<i>Pittosporum revolutum</i>	Hairy Pittosporum
<i>Platylobium formosum</i>	Handsome Flat-pea
<i>Platysace lanceolata</i>	Native Parsnip
<i>Rubus parvifolius</i>	Native Raspberry
<i>Zieria smithii</i>	Sandfly Zieria

Herbs, Grasses, Climbers & Ferns:

<i>Adiantum aethiopicum</i>	Common Maidenhair
<i>Billardiera scandens</i>	Dumplings
<i>Blechnum cartilagineum</i>	Gristle Fern
<i>Dianella caerulea</i>	Paroo Lily
<i>Calochlaena dubia</i>	False Bracken Fern
<i>Cayratia clematidea</i>	Slender Grape Vine
<i>Christella dentata</i>	
<i>Cissus antarctica</i>	Water Vine
<i>Cissus hypoglauca</i>	Giant Water Vine
<i>Clematis aristata</i>	Old Man's Beard
<i>Commelina cyanea</i>	Scurvy Weed
<i>Cyathea cooperi</i>	Rough Tree-fern
<i>Davallia pyxidata</i>	Hare's Foot Fern
<i>Dendrobium linguiforme</i>	Tongue Orchid
<i>Dichondra repens</i>	Kidney Weed
<i>Doodia aspera</i>	Rasp Fern
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Gahnia clarkei</i>	Tall Saw-sedge
<i>Gahnia sieberiana</i>	Red-fruited Sword-sedge
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glycine clandestina</i>	Love Creeper
<i>Gonocarpus teucroides</i>	Germander Raspwort
<i>Goodenia heterophylla</i>	
<i>Gymnostachys anceps</i>	Settlers Flax
<i>Hardenbergia violacea</i>	Purple Twining Pea
<i>Hibbertia aspera</i>	Rough Guinea Flower
<i>Hibbertia dentata</i>	Twining Guinea Flower
<i>Hibbertia scandens</i>	Climbing Guinea Flower

Botanic Name	Common Name
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Herbs, Grasses, Climbers & Ferns (cont'd):

<i>Histiopteris incisa</i>	Bat's Wing Fern
<i>Hypolepis muelleri</i>	Harsh Ground Fern
<i>Imperata cylindrica</i>	Blady Grass
<i>Kennedia rubicunda</i>	Dusky Coral Pea
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Lepidosperma filiforme</i>	
<i>Marsdenia suaveolens</i>	Scented Marsdenia
<i>Morinda jasminoides</i>	Morinda
<i>Opercularia aspera</i>	Coarse Stinkweed
<i>Oplismenus aemulus</i>	
<i>Oplismenus imbecillis</i>	
<i>Oxalis rubens</i>	
<i>Pandorea pandorana</i>	Wonga Vine
<i>Parsonsia straminea</i>	Silkpod Vine
<i>Plectranthus parviflorus</i>	Cockspur Flower
<i>Pomax umbellata</i>	Pomax
<i>Pratia purpurascens</i>	White Root
<i>Pteridium esculentum</i>	Bracken
<i>Sarcopetalum harveyanum</i>	Pearl Vine
<i>Schoenus brevifolius</i>	Zig-zag Bog-rush
<i>Selaginella uliginosa</i>	Swamp Selaginella
<i>Smilax australis</i>	Lawyer Vine
<i>Smilax glycyphylla</i>	Sweet Sarsaparilla
<i>Stephania japonica</i> var. <i>discolor</i>	Snake Vine
<i>Tetragonia tetragonoides</i>	Warrigal Spinach
<i>Viola hederacea</i>	Native Violet

Mangroves, Salt-marsh and Reedlands

Trees:

<i>Avicennia marina</i>	Grey Mangrove
<i>Aegiceras corniculatum</i>	River Mangrove

Herbs, Grasses & Ferns:

<i>Blechnum camfieldii</i>	
<i>Baumea juncea</i>	Bare Twig-rush
<i>Baumea teretifolia</i>	Wrinkle-nut Twig-rush
<i>Eleocharis sphacelata</i>	Tall Spike-rush
<i>Gahnia clarkei</i>	Tall Saw-sedge
<i>Goodenia paniculata</i>	Swamp Goodenia
<i>Isachne globosa</i>	
<i>Isolepis inundata</i>	Swamp Club-rush

Herbs, Grasses & Ferns (cont'd):

<i>Isolepis nodosa</i>	Knobby Club-rush
<i>Juncus kraussii</i>	Sea Rush
<i>Lobelia alata</i>	Angled Lobelia
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Persicaria hydropiper</i>	Water Pepper
<i>Persicaria strigosa</i>	Spotted Knotweed
<i>Phragmites australis</i>	Common Reed
<i>Salicornia quinqueflora</i>	Glasswort/ Samphire
<i>Suaeda australis</i>	Austral Seablite
<i>Tetragonia tetragonioides</i>	Warrigal Cabbage

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