

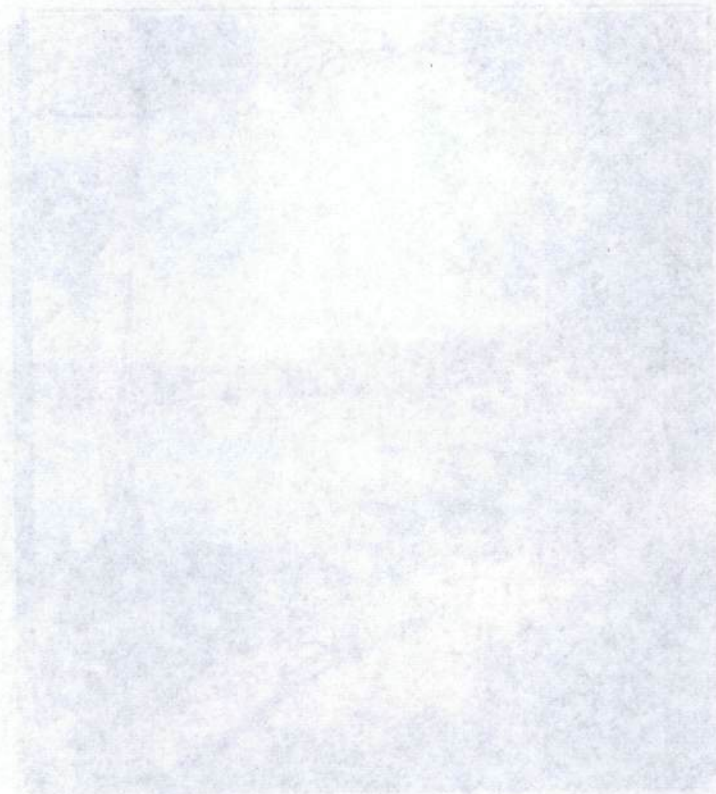
Jamieson Park

NARRABEEN

PLAN OF MANAGEMENT



Warringah
Council



Jamirsson, P. 1998
HARRASSEN
PLAN OF MANAGEMENT



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This Plan of Management for Jamieson Park
was prepared by



LandArc

Landscape, Environmental and Heritage Consultants

Suite 9, 55 Avalon Parade, Avalon NSW 2107
tel: 9973 1330 fax: 9973 1791 email: landarc@one.net.au

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3. Purpose of the document

1. To provide information about the project
2. To discuss the progress of the project
3. To report on the results of the project
4. To provide a summary of the project
5. To provide a conclusion to the project
6. To provide a recommendation to the project
7. To provide a final report on the project
8. To provide a final summary of the project
9. To provide a final conclusion to the project
10. To provide a final recommendation to the project

Executive Summary

Introduction

This Plan of Management provides the framework for managing Jamieson Park, (including the southern section of parkland east of South Creek). This park, designated as a Significant Area by Warringah Council, has a distinctive natural setting of bushland adjacent to Narrabeen Lagoon. The park comprises Crown land (with Council as trustee) and public land owned by the Department of Urban Affairs and Planning (DUAP). Overall, the park has significant environmental, biodiversity and scenic values creating a diverse range of opportunities for recreational activities. Its significant values have been recognized in the Crown land's reservation for public purpose "for recreation and promotion of study and the preservation of native flora and fauna". The DUAP land is equally important in terms of public purpose and this area also contains items of cultural heritage significance. As such, the park plays a vital role in Warringah's open space system and is highly valued by the local community.

This Plan aims to satisfy the requirements of both the Crown Land Act 1989 and Local Government Act 1993 (as amended for Community Land Management 1998). It takes a values-based approach to land planning and management, identifying the park's key values, role and purpose so that these assets may be protected and enhanced. The park's significant qualities, its environmental sensitivity and susceptibility to changing uses and impacts are all defining criteria for the way in which this land must be managed. Issues will come and go but the values which make this park what it is are potentially far longer lasting. However, these values can be easily lost, damaged or diminished so it is important to ensure their protection for the enjoyment of this generation as well as for generations to come.

Warringah Council's approach in facilitating this process and providing opportunities for extensive consultation has significantly improved understanding of these values and issues amongst stakeholders and the broader community. This Plan has provided a forum for this discussion and process through a public meeting and workshop, Council meetings, distribution of the community issues discussion paper, Council's Steering Committee meetings, meetings with key stakeholders, letters/ submissions to Council and articles in the local press.

Basis for Management

In concurrence with this community consultation, the Plan has further investigated and defined the park's values, its role and purpose in the context of being a Significant Area. Through the process of community consultation, the following key values were identified, namely:

- ☐ the park's natural setting and tranquillity beside Narrabeen Lagoon;
- ☐ outstanding natural and scenic beauty;
- ☐ its natural bushland values and low-key park development;

- ☐ valuable and threatened habitat values;
- ☐ significant flora and fauna values;
- ☐ easy public access;
- ☐ opportunities for a broad range of recreational uses (land & water-based).

Key values were divided into four major categories as follows:

1. Natural Setting
2. Environmental/ biodiversity
3. Heritage
4. Recreation/ access & circulation

Through further investigation and evaluation, these values were assigned a significance ranking. These values are affected, and in some cases threatened, by a broad range of activities, management practices and development pressures, many of which originate from beyond the park's boundaries. In effect, the park is a lineal foreshore corridor with an extensive perimeter exposed to adjoining plateau development. A broad range of negative environmental impacts continue to affect the park's management and all of its significant values. Furthermore, the park's recreational impacts are added to these extraneous pressures.

The issues and threats to identified values were assessed and analysed. This exercise provided opportunities for developing a co-ordinated planning framework which will help to ensure the protection of the park's identified values, its role and purpose. The vision statement, as developed in section 3.0 Basis for Management, encapsulates these values, provides guiding principles and addresses the fundamental expectations of the community as follows:

"To maintain and enhance Jamieson Park's role as a "significant natural area" in the Warringah open space system, ensuring protection and conservation of identified values through appropriate management, in a way which best meets the environmental, recreational, educational and social needs of the present community and future generations".

Management Strategies

In accordance with this vision statement and requirements of both the Crown Lands Act and Local Government Act (as amended), this Plan establishes the following guiding principles or desired outcomes:

- ☐ to protect and enhance the park's natural setting and its scenic, environmental, heritage and recreational values;
- ☐ to promote ecologically sustainable management practices;
- ☐ to establish guidelines for assessing development proposals and impacts;
- ☐ to establish guidelines for assessing leases and licenses;
- ☐ to protect and enhance public access, recreational linkages, facilities and settings;

and core objectives are established in relation to community land comprising:

- ☐ a natural area (including bushland, wetland, watercourse and foreshore);
- ☐ a park; and
- ☐ an area of cultural significance.

The Plan tables desired outcomes and core objectives and includes a description of the means of achievement (management actions), means of assessment (of the actions) and priorities for implementation. Key actions of the management strategies, as developed in this Plan, are summarised as follows (refer to section 4.0 Management Strategies):-

1. Biodiversity Management

Address critical biophysical data gaps and shortfalls (including a quantitative faunal/ threatened species survey). Enhance opportunities for faunal corridors (ie. bushland links to Garigal National Park and South Creek corridor). Continue to control feral animal populations. Promote integrated weed management/ bush regeneration and rehabilitation linked to improved catchment management. Continue community-based environmental education programmes and assist community groups in seeking funding for approved environmental projects. Introduce low-impact visitor education within the park (eg. interpretive signage). Implement objective monitoring of biophysical data (eg. university involvement) and mechanisms for adjusting the strategy.

2. Catchment Management

Investigate opportunities for an improved local catchment management strategy which specifically targets ridge-line development and its associated impacts (ie. urban run-off, altered hydrology, nutrient loading, localized track flooding, "die-back" and weed invasion of the park. Major stormwater lines as well as the large number of private residential drains are the focus of this integral part of the strategy. Catchment management is identified as a priority one issue requiring further investigation, and where appropriate, application for grant funding.

The strategy stresses the importance of creating a "partnership" with the RSL War Veterans Retirement Village to address key objectives. It aims to provide significantly enhanced controls on overland flow patterns, reduction in the use of fertilizers/ pesticides through education, connection to sub-surface drainage lines, introduction of sedimentation ponds/ swales, planting and gross pollutant traps. The strategy outlines opportunities for re-direction of flows and nutrients to constructed freshwater wetlands within the reclamation area, substantially enhancing a broad range of environmental and recreational values.

3. Weed Management/ Bush Regeneration

The strategy emphasizes opportunities for integrated weed management, bush regeneration and rehabilitation within the umbrella of improved local catchment management. The long term sustainability and cost effectiveness of the existing bush regeneration programme is directly linked to catchment management. In the interim, contract work should continue within identified priority areas (ie. associated with main visitor use areas/ tracks and Swamp Mahogany Forest which is priority one conservation significance). Ensure structural/ species composition diversity and avoid practices which lead to further ecosystem simplification. Introduce improved objective monitoring and assessment (see biodiversity management).

4. Bushfire Management

Implement a co-ordinated strategy which integrates the objectives of the Rural Fires Act 1997 and the Warringah - Pittwater Bush Fire Risk Management Plan (refer to Appendix V - Bush Fire Risk Management), site access and egress requirements and protection of public safety/ property whilst providing for the

park's significant environmental and biodiversity values. The management strategy emphasizes co-operation, liaison and flexibility. It promotes open, community consultation and an inter-disciplinary approach to fire management and hazard reduction.

Continue to consult and liaise with NSW Rural Fire Service to ensure flexibility in determination of fuel-free and fuel-reduced zones. Opportunities for improved management are based on specific site characteristics. The proposed actions within fuel reduced/ fuel free zones include removal of weeds and accumulated soil/ building waste from sandstone outcrops, mulching, appropriate native, non-contiguous planting.

5. **Establish guidelines for assessing development and lease proposals**
Ensure consistency with Crown policy, Council's adopted policy and the Draft LEP's Principles of Development Control. Specific criteria for assessment of any proposed development, leases/ licenses or commercial activities are scheduled in the Plan.

6. **Heritage**
Investigate options for protection, management and interpretation of cultural heritage (ie. ruins of jetty associated with James Wheeler estate). Conduct a review of possible indigenous heritage sites within the park.

7. **Public access, recreational linkages, facilities and settings**
Proposed actions are divided into major use areas as follows:

Main Carpark/ Picnic, BBQ Area, Sailing Club & the "Cascades":

- ☐ investigate options for visitor dispersal into reclamation area;
- ☐ enhance broad accessibility opportunities;
- ☐ complete asphalt pathway/ bikepath link to Berry Reserve (including short loop circuit track through reclamation area);
- ☐ develop an integrated system of signage (ie. identification, interpretive and directional) and upgrade recreational facilities (ie. electric BBQ's, picnic shelters for groups, low-key lighting to carpark area);
- ☐ review traffic/ visitor management (eg. "short-stay" Pay & Display);
- ☐ review catchment management issues affecting viability of the Sailing Club facilities and ensure flexibility in permitting appropriate uses. Investigate options for adaptive re-use of the building;
- ☐ implement the recommendations of the Safe Warringah Strategic Plan;
- ☐ continue to maintain recreational facilities, public amenities and open space to a high standard;
- ☐ address public safety/ repair erosion damage at the "Cascades" and provide site hardened access including a timber viewing deck.

Reclamation Area:

- ☐ significantly enhance recreational opportunities in reclamation area;
- ☐ western paddock re-grading/ rehabilitation measures;
- ☐ construct asphalt multi-use, short-circuit loop track through the eastern paddock, including pedestrian bridge widening over lower creek;
- ☐ upgrade foreshore linkages to main bush track;
- ☐ investigate opportunities for freshwater wetland construction in western paddock and the need for an alternate bush track (subject to catchment management);

- ☐ upgrading of recreational facilities (ie. relocation of picnic settings to shaded foreshores/ new shelter facilities for large groups);
- ☐ implement a co-ordinated approach to recreational facilities design;
- ☐ additional planting with locally indigenous species;
- ☐ protection of western spit habitat values;
- ☐ review and monitor recreational activities which may threaten values;
- ☐ no unleashed dogs in this area in accordance with Council policy.

Main Bush Track:

- ☐ reinforce low-key opportunities for recreational corridor linkages:
 - Dee Why Lagoon - South Creek - Berry Reserve
 - bridge crossing at South Creek linking to western shoreline and Garigal National Park
- ☐ provide minimal site hardening to the main bush track (ie. primarily compacted decomposed granite with timber decking/ boardwalks over low wet areas/ creek crossings);
- ☐ improve sight-line management to avoid user group conflicts;
- ☐ investigate opportunities for constructing a timber boardwalk through wetlands/ Swamp Oak Forest providing a direct foreshore link on public land.

South Creek Open Grassed Area:

- ☐ minimal enhancement of recreational opportunities to provide a rest point (eg. picnic tables/ seating);
- ☐ install entry signage (ie. locational/ directional and interpretive);
- ☐ rehabilitation/ buffer planting and protective fencing to enhance vital core habitat and reduce multiple tracking in this area;
- ☐ promote recreational linkage opportunities.

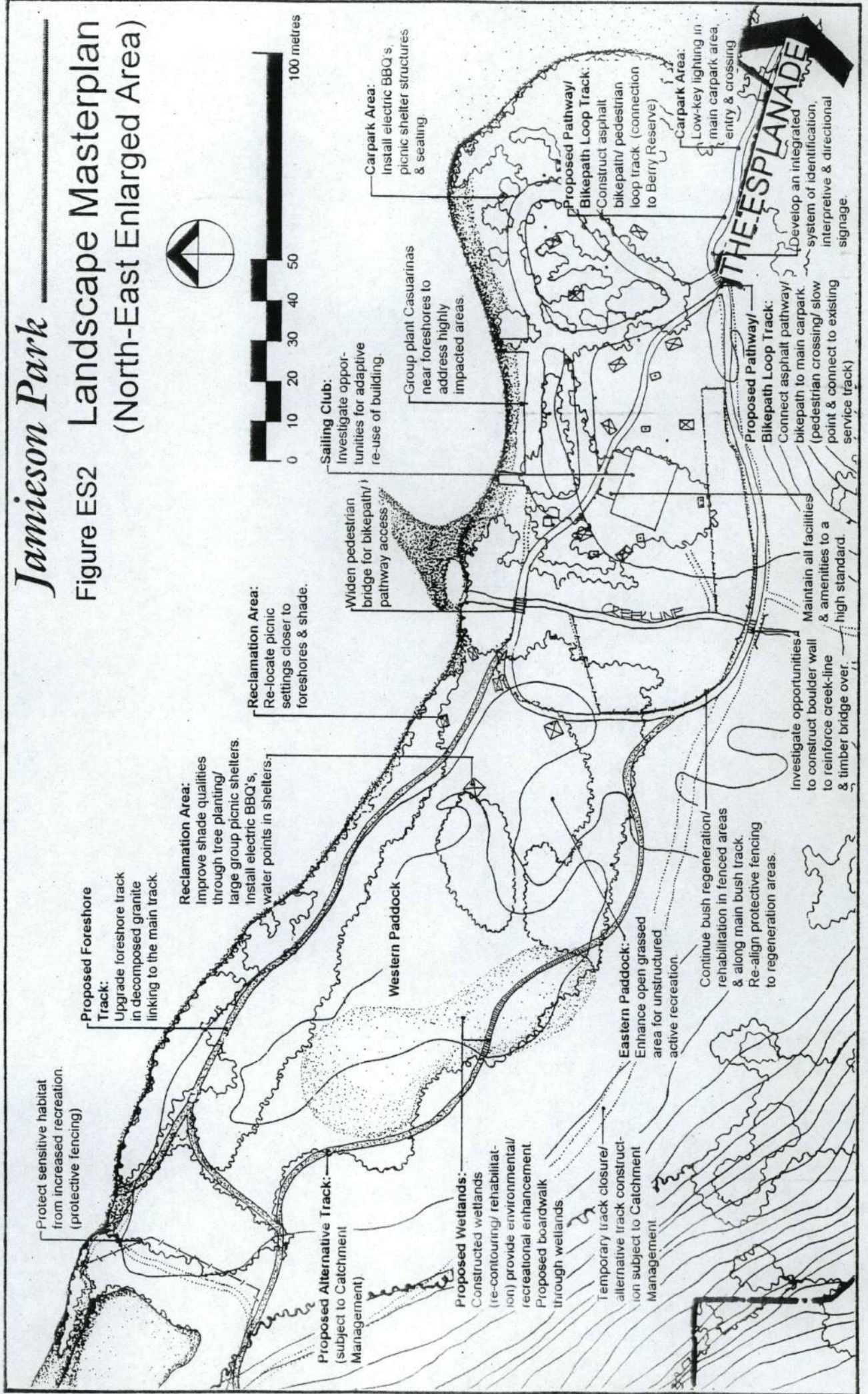
Action Plan

These management strategies form the basis for which Jamieson Park's values can be managed and protected on a sustainable basis, whilst meeting the needs of the present community as well as for future generations.

Performance measures and priorities for action have been assigned accordingly. The landscape masterplan identifies the physical locations and relationships of proposed actions within the park. These are based on a five-year capital works programme which includes responsibilities for tasks, costings and completion dates (refer to Works Schedule and Opinion of Probable Landscape Construction Costs and Summary Sheet in section 4.0 Management Strategies).

Jamieson Park

Figure ES2 Landscape Masterplan
(North-East Enlarged Area)



1.0 Introduction

1.1 Location

This Plan of Management applies to the public land described as Jamieson Park in the Warringah Land Register, including the southern portion of parkland east of South Creek (refer to Figure 1: Location Plan). Jamieson Park as defined, is made up of both Crown land (with Council as trustee) and public land owned by the Department of Urban Affairs and Planning (DUAP). The park, covering an area of 42.8 hectares, is located along the southern foreshores of Narrabeen Lagoon within Sydney's northern beaches and bounded by the surrounding suburbs of Narrabeen, Wheeler Heights and Cromer.

The park's boundaries are delineated by the following geographical features:

- ❖ Narrabeen Lagoon (park's northern and western shoreline);
- ❖ The Esplanade/ Nioka Road/ Veterans Parade (north-eastern boundary);
- ❖ Colooli Road (south-eastern boundary);
- ❖ RSL War Veterans Retirement Village (southern and south-eastern boundaries);
- ❖ James Wheeler Place (far south-eastern boundary); and
- ❖ South Creek (far south-western boundary).

Jamieson Park's distinctive natural setting of bushland adjacent to Narrabeen Lagoon provides a natural buffer to surrounding suburban development on adjacent plateaus. The park has significant scenic, environmental and biodiversity values with a range of habitats extending from foreshore wetlands to upland woodlands and forests. These environmental qualities create opportunities for a diverse range of recreational activities and experiences. This combination of values makes Jamieson Park a significant area within Warringah's open space system. It is a park which is highly valued by the local community and regional visitors alike.

1.2 What is a Plan of Management?

A Plan of Management provides the framework for managing public land. Warringah Council has designated Jamieson Park as a Significant Area in recognition of its key values, role and purpose within the reserves system. Plans of management have either been prepared or are being prepared for all of Warringah's significant areas. A plan of management for Jamieson Park is part of this process.

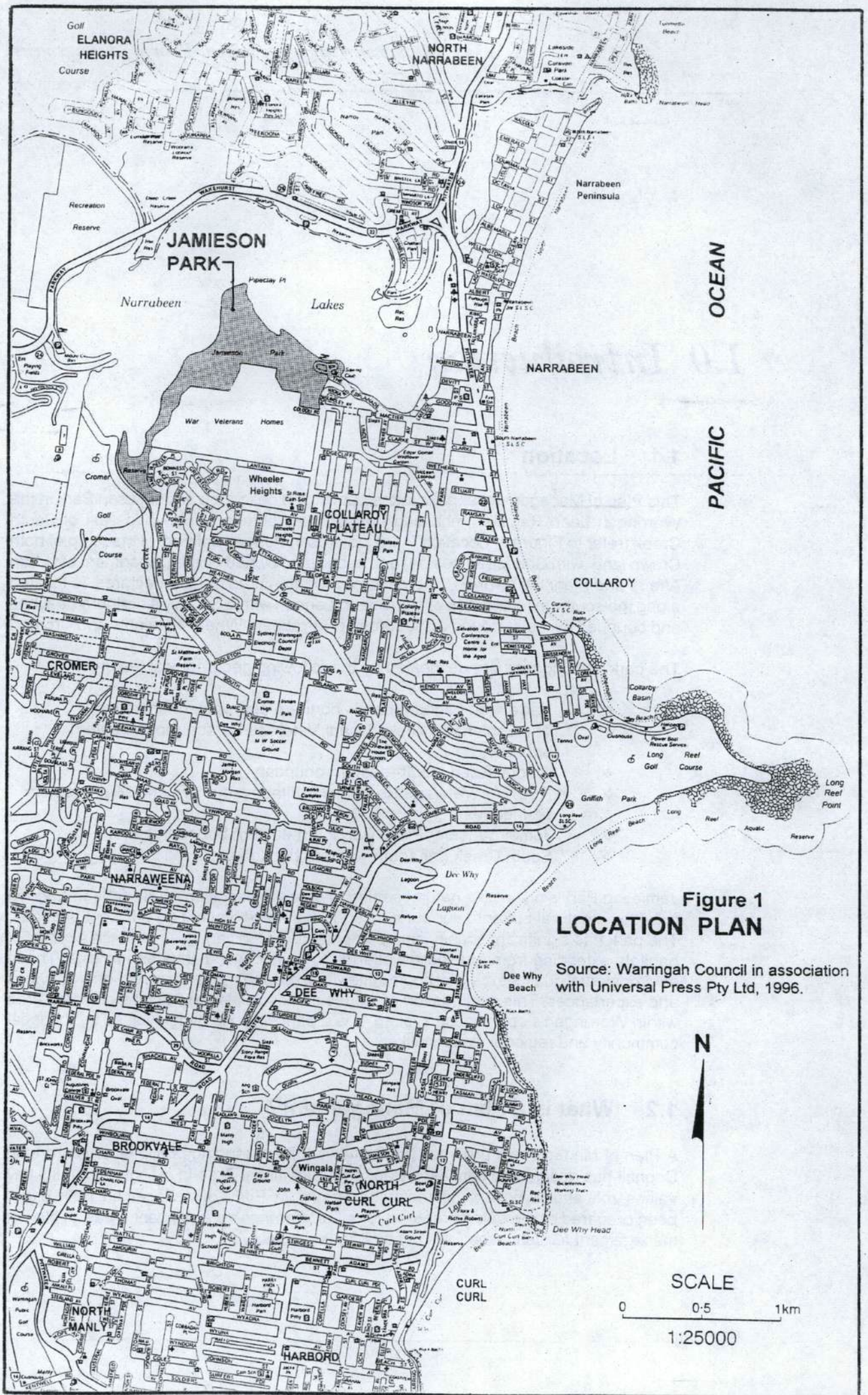


Figure 1
LOCATION PLAN

Source: Warringah Council in association with Universal Press Pty Ltd, 1996.

1.3 What are the aims of this Plan?

This Plan of Management aims to provide a clear, concise and practical framework for the management of Jamieson Park. It aims to be performance oriented in order to contribute towards Council achieving its strategic goals, vision, mission and strategic outcomes. As a means to achieving these aims, the Plan uses a values-based approach to land planning and management. This approach facilitates strategies which will protect and enhance values, whilst identifying the issues which may pose a threat to these values. It ensures the longer term objectives of sustainable management.

While preparation of the Plan has ensured an environment of consultation with the local community and key stakeholders, it is important to recognize that the approach has remained values-based rather than an issues-driven in the management outcomes. At an organizational level, the Plan has evolved through a team approach with direction provided by a Steering Committee, including key Council staff and representatives from the NSW Department of Land and Water Conservation (DLWC) and Total Catchment Management (SNBCMC).

Furthermore, in accordance with Council's broader goals and objectives, the Plan aims to provide the following strategic outcomes for Jamieson Park:

- ❖ identify and assess the park's values and uses;
- ❖ define the park's role within its LGA and regional context;
- ❖ identify and assess key issues affecting the resource base;
- ❖ develop an understanding of the resource at an organizational level;
- ❖ set a vision for the park spanning the next 20-30 years;
- ❖ establish management strategies and their resourcing implications;
- ❖ assign directions and priorities in a strategic plan (5-years);
- ❖ develop a masterplan.

1.4 What is Council's role in managing Jamieson Park?

Jamieson Park, including the southern prolongation to South Creek, is a combination of Crown reserve and land owned by the Department of Urban Affairs and Planning.

Managing Crown Land

Jamieson Park was originally dedicated as Crown Land in October 1888 for recreational purposes. It included the area north of Colooli Road to the lagoon and west to Pipeclay Point. Under the Crown Lands Act 1989, this public land is dedicated for the purpose of "public recreation and promotion of study and preservation of native flora and fauna" (refer to 1.7 Public Purpose). In addition, Crown reserve includes the north-eastern section of foreshore reclaimed land, reserved for Public Recreation and South Creek Road unformed section of Public Crown Road.

This park, identified by Warringah Council as a Significant Area within Warringah's open space network, is also part of a much larger system of Crown Reserves throughout New South Wales. It is the responsibility of the Department of Land and Water Conservation (DLWC), together with the trustee appointed by the Minister, namely Warringah Council, to ensure that this public land's uses are consistent with the dedicated public purpose of the reservation.

Public Land owned by Department of Urban Affairs & Planning (DUAP)

The elongated southern foreshore section of the reserve south of Colooli Road and east of South Creek is public land owned by the Department of Urban Affairs and Planning (DUAP). This land, administered under the Environmental Planning and Assessment Act 1979, was resumed in 1974 for Public Recreation purposes. An application is to be lodged with the Minister of the Department of Urban Affairs and Planning (DUAP) for the described public land to be vested in or under the control of Warringah Council. As such, this land would need to be managed in accordance with the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998. Under this transfer or otherwise, the land is classified as "community land".

Managing Community Land

The Act requires that plans of management must be prepared for all 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 must not be sold, exchanged or otherwise disposed of by the Council 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 estate may be granted subject to requirements of the Act. The period for leases and licenses cannot exceed 21 years. The use and management of community land must also be consistent with its designated categories and core objectives.

Figure 2: Land Tenure including Community Land Categories identifies Jamieson Park's land parcels and designated categories for DUAP owned/ community land. For further land tenure details, refer to extracts from the Land Register contained in the Appendices of this Plan of Management.

1.5 A Plan which satisfies the requirements of both Acts

To comply with requirements of both the Crown Lands and Local Government Acts, the plan of management must 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 draft plan and submissions must be referred to the Minister (responsible for the Crown Lands Act) prior to adoption.

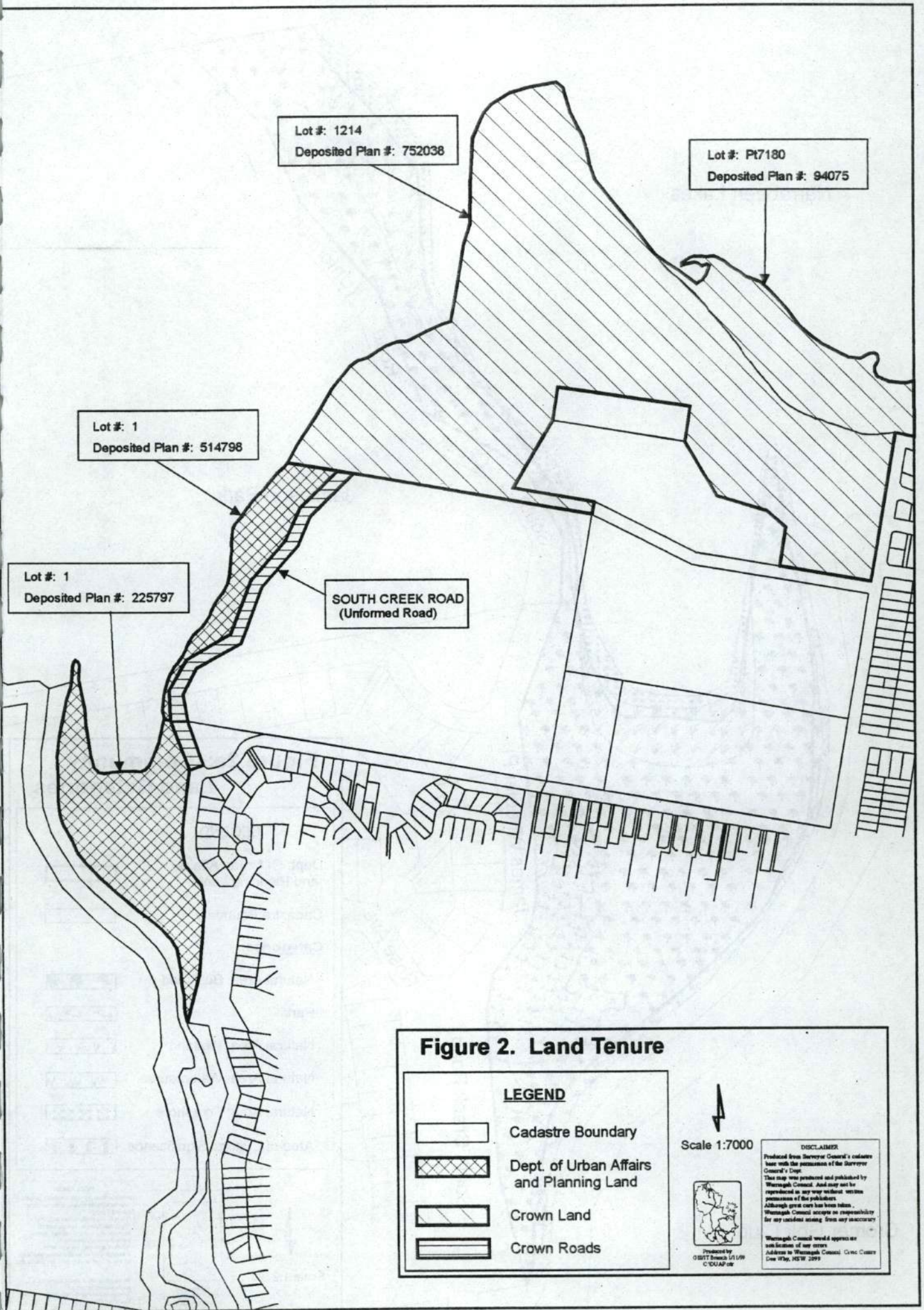
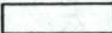





Figure 2. Land Tenure

LEGEND

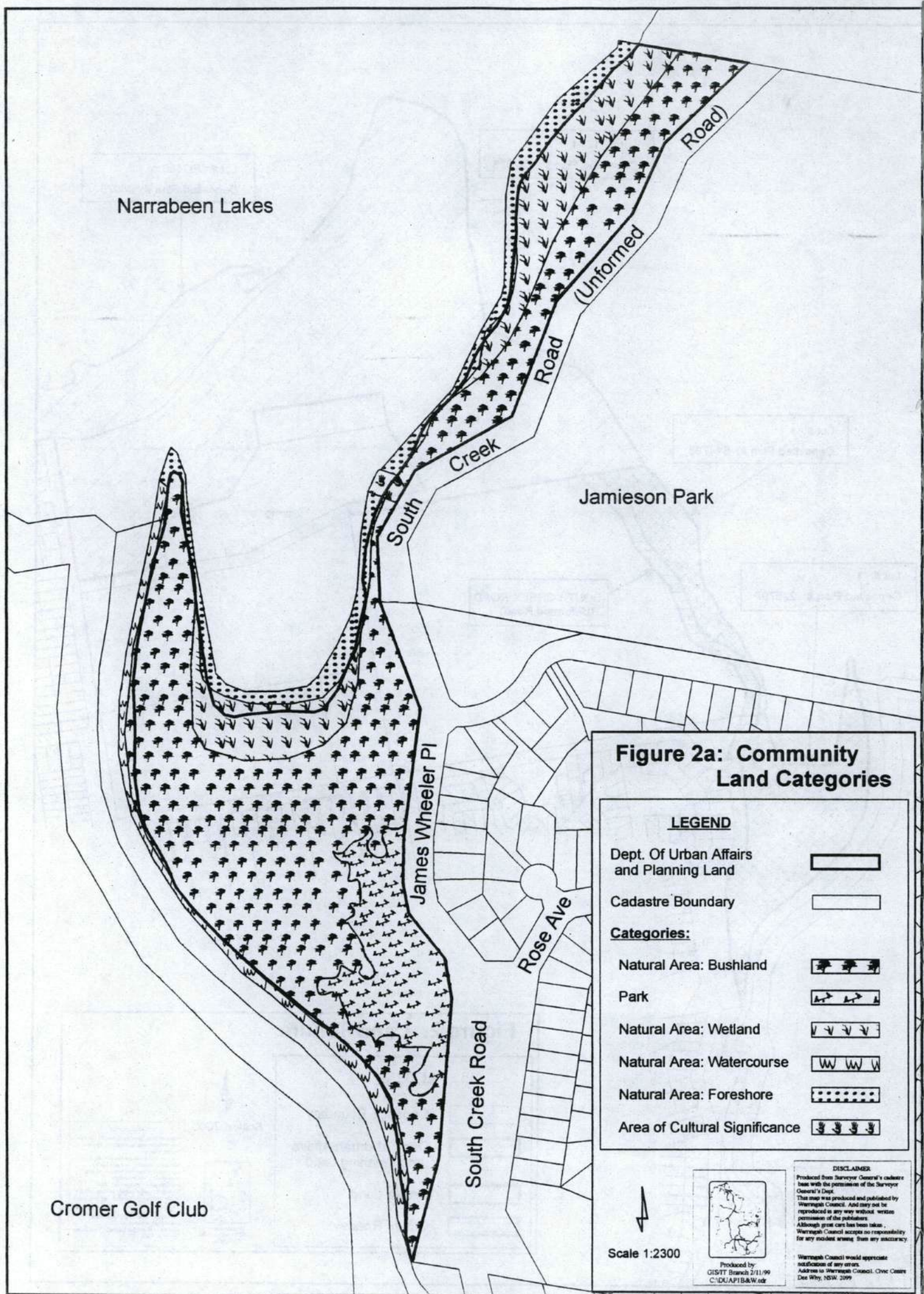
-  Cadastre Boundary
-  Dept. of Urban Affairs and Planning Land
-  Crown Land
-  Crown Roads

Scale 1:7000



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1.6 What are the principles of Crown Reserve Management?

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.

1.7 What is "Public Purpose"?

The Crown Lands Act 1989 provides for the reservation and dedication of Crown land for public purposes. In Jamieson Park, the major portion of Crown reserve is dedicated for the purpose of "public recreation and promotion of study and preservation of native flora and fauna".

The purpose and role of this Reserve has been thoroughly investigated and reviewed through public consultation and with the Department of Land and Water Conservation (DLWC). This Plan confirms that Jamieson Park is a significant area distinguished by a broad range of environmental, biodiversity and recreational values which are worthy of protection and sustainable management.

Furthermore, it is important to recognize the broader purpose of the reclaimed foreshore land in the north-eastern section of the park. This land is currently reserved only for the purpose of "public recreation". However, this Plan confirms that this purpose should be expanded to include the "the promotion of study and preservation of native flora and fauna" as for the major portion of Crown reserve.

1.8 What are the principles of Community Land Management?

Under legislative requirements of the Local Government Act 1993 and its amendment (Community Land Management) Act 1998, s.36 (a)-(n), councils must prepare and adopt plans of management for all community land. Furthermore, a plan may apply to one or more areas of community land, providing all the Act's requirements are fulfilled.

The Act states that the Plan 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 license or otherwise, and
- ☐ describe the scale and intensity of any such permitted use or development".

1.9 What are Community Land "Categories"?

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 categorised as a "natural area" must be given a sub-category of either bushland, wetland, escarpment, watercourse, foreshore or a category prescribed by the regulations (see Figure 2). Jamieson Park's categories for its community land include the following:

1. **Natural Area:**
 - (a) bushland
 - (b) wetland
 - (c) watercourse
 - (d) foreshore
2. **Park**
3. **An Area of Cultural Significance**

1.10 How are these "Categories" defined?

The following definitions are adapted from the Warringah Council document "Guidelines for Categorisation of Community Land".

1. (a) Natural Area: Bushland

Land which contains primarily the original native vegetation or a remnant of the natural vegetation or is still representative of the structure or floristics of the natural vegetation of this locality. Such land includes:

- ▶ mostly undisturbed bushland with a range of habitats and largely intact ecosystem including canopy trees and an understorey of shrubs, herbs, native grasses, etc. with little or no weed invasion; or
- ▶ moderately disturbed bushland, retaining natural ecosystem functions and habitat values, including natural regeneration, with low to medium level of weed invasion; or
- ▶ highly disturbed bushland where the natural ecosystem functions and habitat values are significantly disrupted, native tree canopy is largely fragmented, native understorey has been removed, opportunities for regeneration are restricted and weeds are a significant component, but where the land is still capable of being rehabilitated.

1. (b) 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.

1. (c) Natural Area: Watercourse

Land described as:

- ▶ any perennial or intermittent stream, flowing in a natural or artificially improved or re-diverted channel; or
- ▶ associated riparian land or vegetation, including land which is protected under the relevant legislation.

1. (d) Natural Area: Foreshore

Land which is situated on the water's edge and forms a transition zone between the aquatic and terrestrial environment.

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. An Area of Cultural Significance

Land described as an area of:

- ▶ Aboriginal significance; or
- ▶ aesthetic significance; or
- ▶ archaeological significance; or

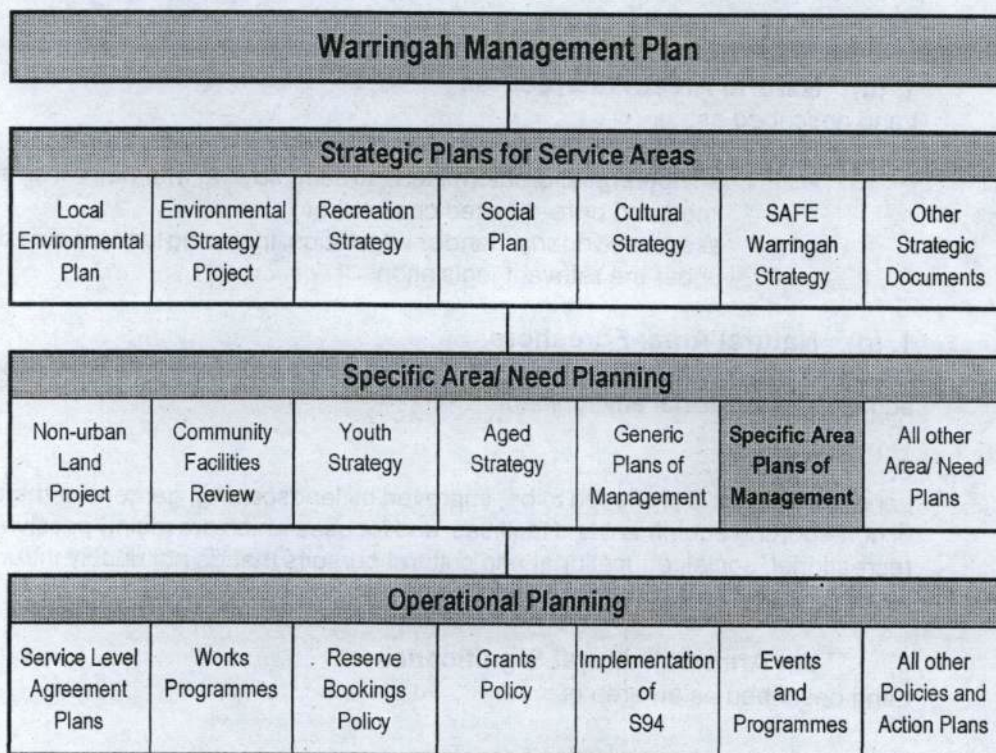
- ▶ historical significance; or
- ▶ technical or research significance; or
- ▶ social significance.

Refer to section 3.0 Basis for Management for details relating to the condition and use of the land. For core objectives, permitted uses and future development relating to these categories, refer to 4.0 Management Strategies.

1.11 How does this Plan relate to other Strategic Documents?

In accordance with the requirements of the Local Government Act 1993, Warringah Council has adopted a co-ordinated approach to planning. This involves development of a number of linked strategic documents under the guidance of the Warringah Council Management Plan: "Leading Us into the Twenty First Century, 1999-2003". This Plan highlights Council's commitment to protecting Warringah's identity, high quality of life and enhancement of natural environmental, aesthetic, cultural, heritage and recreational values. Table 1: Warringah's Strategic Planning Documents, illustrates the framework for planning and this Plan's relationship to other strategy documents which share the same guiding principles.

Table 1: Warringah Council's Strategic Planning Documents



Source: Warringah Council, 1999

Plan, ensuring consistency in values, principles and policies:

- ☐ "Leading us into the 21st Century, 1999-2003" Council's Management Plan;
- ☐ Draft Local Environmental Plan (1998);
- ☐ Recreation Strategy Plan (1999);
- ☐ State of Environment Report (1997-98);
- ☐ Jamieson Park Visitors Survey (1995);
- ☐ Urban Bushland Management Plan (1990);
- ☐ Warringah Bicycle Plan (1998); and
- ☐ Dee Why Valley Open Space Corridor Geographic Plan of Management (1996).

A complete list of policy documents, relevant studies and references are contained in the Bibliography.

1.13 Other Relevant Legislation and Policies

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

- ☐ Environmental Planning and Assessment Act 1979
- ☐ Australian Heritage Commission Act 1975
- ☐ Rural Fires Act 1997
- ☐ Threatened Species Conservation Act 1995
- ☐ Fisheries Management Act 1994
- ☐ Noxious Weeds Act 1993
- ☐ Disability Discrimination Act 1992
- ☐ SEPP 19: Bushland in Urban Areas

1.14 List of Abbreviations used in this Plan

DLWC	Department of Land and Water Conservation
DUAP	Department of Urban Affairs and Planning
LEP	Local Environmental Plan
LGA	Local Government Area (Warringah)
NBB	Northern Beaches Bikers
NLSC	Narrabeen Lakes Sailing Club
NPWS	National Parks & Wildlife Service (NSW)
RSLWVRV	RSL War Veterans Retirement Village
SEPP	State Environmental Planning Policy
SNBCMC	Sydney Northern Beaches Catchment Management Committee

2.0 Community Issues

2.1 Community Consultation

Introduction

Community consultation has been a vital and integral component in the preparation of this Plan of Management. This process continues through to Public Exhibition phase. Following release of the Draft Plan, the community has an opportunity to make final submissions and comments.

The purpose of conducting a public meeting/ workshop is to assist the community and Council to identify the important values attached to this community land 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 public land and its values.

The initial public meeting/ workshop was followed by a summary issues paper and a community issues discussion paper, Steering Committee meetings, meetings with key stakeholders, Council officers and representatives from the Department of Land and Water Conservation (DLWC), the National Trust of Australia (NSW) and NSW Rural Fire Service. The community has further contributed with responses to the Exploring Issues Papers and the discussion papers and in letters to Council.

Community Values

The value and significance of this natural bushland reserve to the local community was highlighted in the public meeting/ workshop and further developed in the "Exploring Issues Papers." Furthermore, the community discussion supported earlier results from the stakeholders' meeting held in October 1994 and the "Jamieson Park Visitor Survey" conducted in 1995. Jamieson Park's values are further developed in section 3.0 Basis for Management.

The local community and visitors are attracted to Jamieson Park's natural environment and lake-side qualities, as well as its relaxed and informal character. Together they provide outstanding recreational opportunities in a relatively pristine and idyllic setting only a short distance away from surrounding suburban development.

The community workshop/ meeting defined a strong sense of community ownership in this parkland with the desire to ensure the protection of natural, environmental, scenic and recreational values. The following points identify the values attached to this land by the community:

- ❖ Jamieson Park's "quiet serenity away from urban noise and pressures" and its tranquillity beside a beautiful lake;
- ❖ its "unique" natural and scenic beauty, undeveloped qualities, free of intrusive developments;
- ❖ "a reminder of [the natural values] which have been lost" in much of this area;
- ❖ a "natural green oasis in a built-up suburban area" which is "readily accessible to all";
- ❖ the park provides an important natural buffer, "a break from development";
- ❖ the bushland protects the aquatic environment from the impact of adjoining suburban development;
- ❖ the area provides valuable and threatened habitat for a range of native birds, mammals, reptiles, frogs and invertebrates;
- ❖ the importance as public reserve "owned by the broad community";
- ❖ the park offers opportunities for a range of water and land-based recreational uses and user groups, including walkers, cyclists, joggers, dog owners, sailing, canoeing and so on.
- ❖ the importance of the lagoon environs which are "probably as important as the lagoon itself";
- ❖ significance of flora and fauna and their conservation.

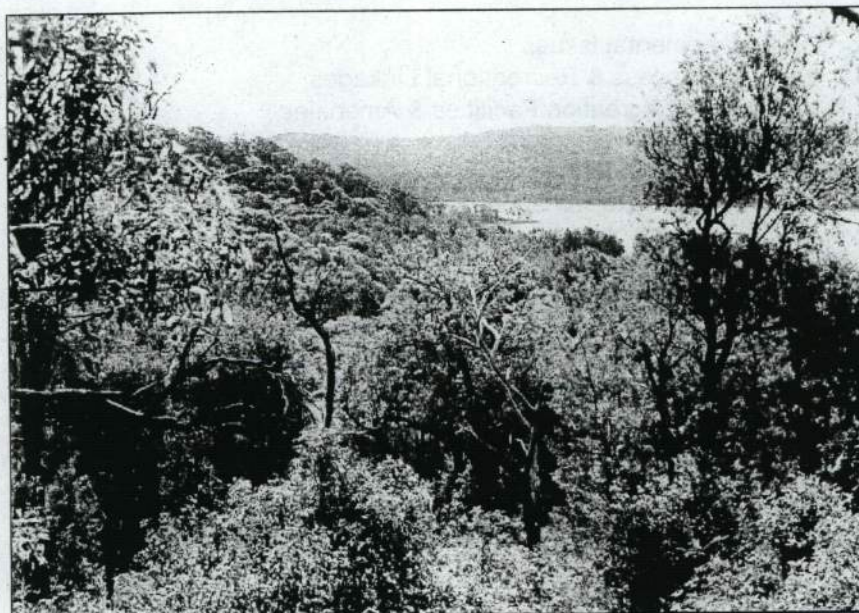


PHOTO 1: View of Jamieson Park and Narrabeen Lagoon from Veterans Parade

Issues & Threats

Community consultation confirmed the need for appropriate protection and management of these values. These comments are summarized as follows:

- ❖ to acknowledge the park's environmental fragility, particularly with respect to past clearing and development along its edges, altered hydrology and nutrient enrichment, habitat fragmentation, weed invasion, dredging and reclamation activities;
- ❖ to minimize current and future impacts on the natural bushland;
- ❖ to protect and restore valuable and threatened habitats and ensure the long-term viability of the park's biodiversity;
- ❖ to better manage sustainable use of the park's resources through encouraging appropriate recreational activities;
- ❖ to restrict and control unsympathetic uses and developments, particularly with regard to an ever-increasing range of demands and growing population base;
- ❖ to ensure fire management addresses safety issues as well as environmental and ecological values with respect to threatened species, populations and habitats (ie. determination of fuel reduced/ exclusion zones, fire management frequency and intensity);
- ❖ to ensure that proposed development along the park's boundaries adequately addresses fragmentation, loss of habitat values and scenic qualities, possible nutrient loadings, stormwater runoff, weed invasion, pollution of the lake and sedimentation.

Community Issues Discussion Paper

The Community Issues Discussion Paper was divided into the following sections:

- A. Environmental Issues
- B. Public Access & Recreational Linkages
- C. Existing Recreation Facilities & Amenities
- D. Adjoining Development
- E. Fire Management
- F. Dredging & Reclamation Area
- G. Sailing School

A detailed discussion of these items is contained in Appendix I(c): Community Issues Discussion Paper, which is the document distributed to attendees of the public meeting/workshop (April, 1999).

3.0 Basis for Management

3.1 Objectives

The Basis for Management document has the following objectives:-

- ☐ to identify the values attached to this area by the community, why they are valued and the importance of each of these values;
- ☐ to determine the role of this significant area in the lives of the community and within the greater Warringah open space system; and
- ☐ to establish a mechanism for reviewing values in relation to specific issues/ threats and develop opportunities for appropriate management; and
- ☐ to provide a vision for the future of this significant area.

3.2 Overview: Community Values

As discussed in previous sections, this Plan takes a values-based approach to planning and management of Jamieson Park. This approach allows the park's key values, role and purpose to be identified so that these assets may be protected and enhanced. "Values" can be simply described as "what is important about a place" (Department of Land and Water Conservation/ Manidis Roberts, 1996). Community values and the important issues affecting these values have been identified through the community consultation process (refer to section 2.0 Community Issues).

The process of community consultation confirmed the high value placed on this park by the local community. There was an overwhelming response at the public meeting/ workshop and in subsequent submissions that the area should be managed in a way that ensures protection of its significant environmental and recreational values for the present community as well as for future generations. The following key values were highlighted:

- ☐ the park's natural setting and tranquillity beside Narrabeen Lagoon;
- ☐ outstanding natural and scenic beauty;
- ☐ its natural bushland values and low-key park development;
- ☐ valuable and threatened habitat values;
- ☐ significant flora and fauna values
- ☐ easy public access;
- ☐ opportunities for a broad range of recreational uses (land & water-based).

Key values have been divided into four major categories which form the basis for further discussion in this section as follows:

1. Natural Setting
2. Environmental/ biodiversity
3. Heritage
4. Recreation/ access & circulation

Table 2: Values & Level of Significance assigns each of these values with a significance ranking, based on either a local or metropolitan (regional) basis. None of the identified values are considered of state or national significance, however further investigation is required to establish the significance of archaeological/ indigenous heritage values. The park's values, the issues and threats affecting them and the opportunities available for management are summarized in Table 5: Basis for Management.

Table 2: Values and Level of Significance		
Values	Level of Significance	
	Local	Metropolitan
Natural Setting		
natural bushland setting/ lagoon		
scenic values		
lakeside tranquillity/ free of development		
Environmental/ biodiversity		
environmental values		
biodiversity values		
educational/ scientific values		
Heritage		
aboriginal/ indigenous heritage	subject to further investigation	
cultural heritage		
Recreation, Access & Circulation		
recreational values		
public access/ circulation & linkages		

3.3 Natural Setting

Natural Bushland & Lake-side Setting

The park's bushland, lake-side location, tranquillity and views over the lake to Garigal National Park, provide a natural setting with outstanding environmental and scenic qualities. The park's low-key facilities and infrastructure is appropriate to the setting and cater for a diverse range of unstructured recreational opportunities. Environmental and biodiversity values provide opportunities for enhanced recreational experiences through education and interpretation.

Crown Reserve & DUAP Land

Jamieson Park is comprised of both Crown reserve (DWLC) and public land owned by the Department of Urban Affairs and Planning (DUAP). The Crown reserve is dedicated for the purpose of "public recreation and the promotion of study and preservation of native flora and fauna", except for the reclamation area, which is currently reserved for "public recreation" (refer to section 1.4).

Category One Bushland Reserve

Warringah Council has classified Jamieson Park as a "Significant Area", and Category One Bushland Reserve (ie. reserves of national or regional conservation significance).

Views

The main bush track offers many vantage points along the foreshores for views over the lagoon, surrounding bushland and steep escarpments of Garigal National Park. The north-eastern ridges offer panoramic vistas over Narrabeen Lagoon and the northern beaches.

Topography

The topography of Jamieson Park ranges from low alluvial flats bordering Narrabeen Lagoon to the adjacent sandstone slopes and ridges which form part of the Wheeler Heights/ Collaroy Plateau escarpment. The main ridge-line extending to Pipeclay Point and the eastern escarpment are major geological and topographical features of the park's landscape.

Geology & Soils

The upper slopes are characterised by Hawkesbury sandstone scarps and outcrops, while the lower slopes consist of inter-bedded shales and sandstones of the Narrabeen Group. The combination of deeply dissected sandstone plateaus, relatively steep terrain and highly erodible soils creates a high to extreme soil erosion hazard. Much of the park's foreshore alluvial soils are subject to periodic inundation. Small sandy beaches are found along much of Jamieson Park's northern foreshores and to a lesser extent, the western shoreline.

Narrabeen Lagoon/ Local Catchment

Jamieson Park is located within the Narrabeen Lagoon Catchment, an area which drains approximately 5,430 hectares (Beeh 1991). The lagoon area covers approximately 207 hectares and is generally shallow, characterised by sediments of mud, silt and clean sand. South Creek, on the park's south-western boundary, is one of three main creeks draining into the lagoon. Most of the South Creek catchment has been developed. Fluvial deposits have formed a typical delta in the southern section of the park.

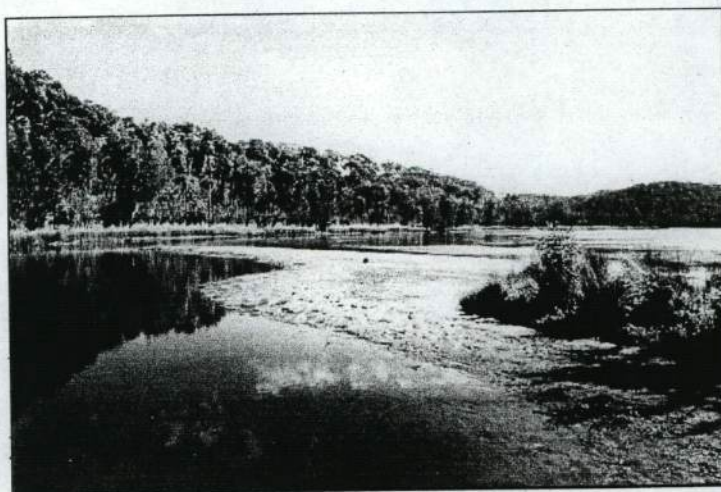
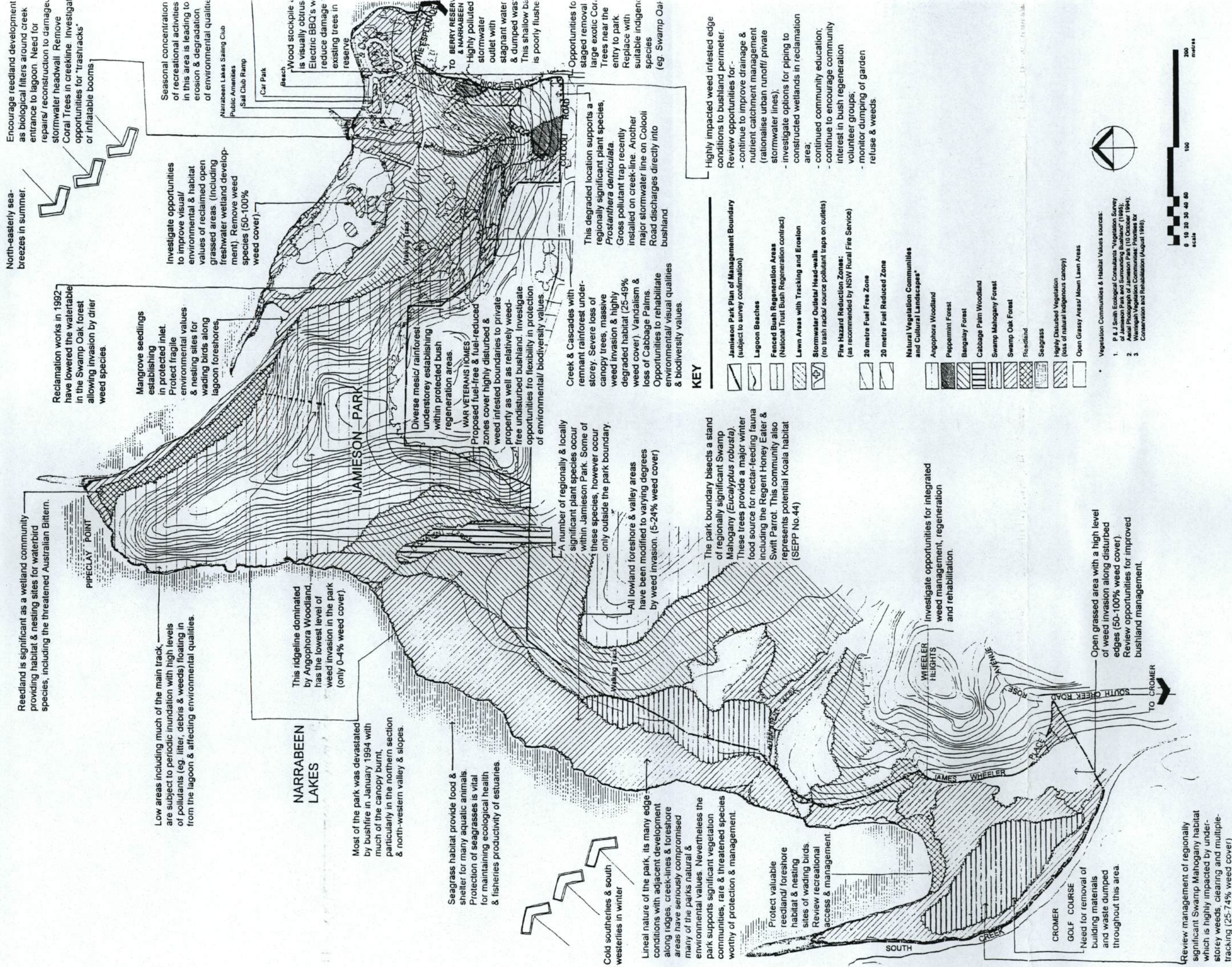


PHOTO 2: View over Pipeclay Point.



Jamieson Park
Figure 3 Environmental Context

3.4 Environmental/ Biodiversity Values

Biodiversity Significance

Jamieson Park is significant as an important reservoir of biodiversity (ie. the park is rich in a diversity of life forms including plants, animals and micro-organisms, the genes they contain, and the ecosystems they form).

These values can be summarized as follows:

- ▶ park plays a vital role in conserving regional biodiversity;
- ▶ most of the park's vegetation communities and component species are poorly represented in local reserves and National Parks;



PHOTO 3:
Angophora Woodland, Pipeclay Point.

- ▶ Swamp Mahogany Forest is a community of regional significance;
- ▶ Rough Mint-bush (*Prostanthera denticulata*), occurring on the north-eastern slopes near Colooli Road/ Nioka road is a regionally significant species;
- ▶ mosaic of vegetation communities creates a diverse range of habitats for fauna (including scheduled threatened species);
- ▶ only occurrence of mangroves (seedlings/ colonization) in Narrabeen Lagoon on western spit of reclamation area;
- ▶ opportunities for contiguous linkage with Garigal National Park

Vegetation Communities

Jamieson Park can be divided into seven major vegetation communities (not including seagrass beds). The distribution, extent and biodiversity values of these communities are shown in Figure 3: Environmental Context.

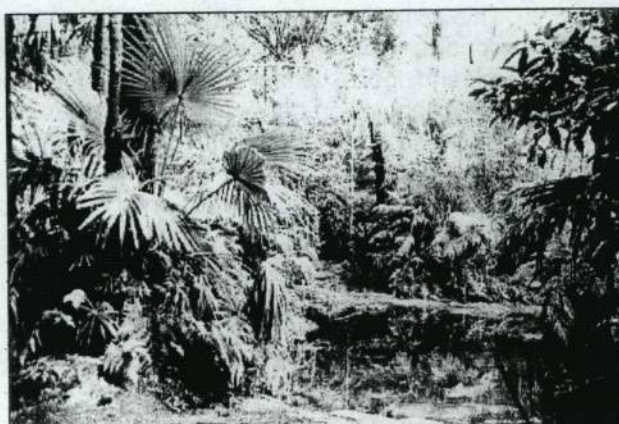


PHOTO 4: Cabbage Palm Woodland.

Bushland which has been highly disturbed and cultural landscapes, including open areas of mown grass, are also identified in this figure.

Conservation Significance

The conservation significance, threatening processes and priorities for management of these vegetation communities are summarized in Table 3: Conservation Significance: Vegetation Communities (adapted from P & J Smith, 1998).



PHOTO 5: Swamp Oak Forest and Reedland, western foreshores.

Faunal Corridors

The park has been largely isolated and fragmented by urban development, although a faunal connection or wildlife corridor could be re-established with Garigal National Park using an appropriate rehabilitation strategy. The opportunity lies in connecting the park across the lower reaches of South Creek and continuing a vegetative corridor along the western shoreline of Narrabeen Lagoon.

This action would have the potential to facilitate terrestrial faunal movements, improve opportunities for genetic exchange and diversity in populations, as well as improve and expand upon existing habitat values for threatened species. This initiative would depend on co-operation between Council, Department of Sport and Recreation, Cromer Golf Club and community involvement.

For further detailed discussion of environmental/ biodiversity values and impacts refer to Appendix III: Supplementary Data.

Table 3: Conservation Significance: Vegetation Communities

Note: All data based on Vegetation Survey by Smith & Smith (1995). Indicative species refers to survey plots undertaken in study area.

Vegetation Communities		Indicative Species*		Conservation Significance	Conservation Priorities & Threatening Processes
		Indigenous	Introduced	Total	
Coastal Swamp Forest Complex Swamp Mahogany Forest		23	13	36	Priority One (Warringah LGA: Priority One) South Creek community threatened by clearing, weed invasion, altered hydrology and multiple tracking through remnant forest Community within and adjacent to Greenhaven site threatened by development proposal
	Bangalay Forest	38	17	54	Priority Two (Warringah LGA: Priority One) North-eastern community is highly fragmented with extensive weed invasion in adjoining areas Western communities are potentially threatened by development proposal on adjoining RSLWV site.
Cabbage Palm Woodland		38	18	56	Priority Two (Warringah LGA: Priority Two) Community potentially threatened by development proposal on adjoining RSLWV site.
Estuarine Complex Swamp Oak Forest		15	13	28	Priority Three (Warringah LGA: Priority One) All areas affected by understorey weeds, particularly in the drier sites and adjacent to reclamation area/ open grassed areas. Multiple tracking exposes community to further degradation and weed invasion
	Reedland	15	8	23	Priority Three (Warringah LGA: Priority One) Reedlands are relatively small and to a lesser degree affected by weeds and recreational impacts
Sydney Sandstone Complex Angophora Woodland		54	7	61	Priority Four (Warringah LGA: Priority Two) Pipeday Point ridge woodland relatively isolated from human disturbance and weeds, however north-eastern escarpment woodland is highly fragmented
	Peppermint Forest	53	23	76	Priority Five (Warringah LGA: Priority Three) Small pockets of Peppermint Forest adjacent to Veterans Parade (north-east) and Rose Ave/ James Wheeler Pl. (south) are highly disturbed with many weeds present

3.5 Indigenous Heritage Values

Indigenous Heritage

"Over many thousands of years, Aboriginal people have left signs of their occupation of Australia. The reminders of where people lived, where they ate or collected food, how they hunted, their art and their sacred sites are all a special part of Australia's heritage...[These places] document the lives of Australian indigenous people not only before European settlement, but also the changes wrought by colonialism".

Australian Heritage Commission (1997)

The Cultural Heritage Services Division of NSW National Parks & Wildlife Service maintains the Aboriginal Sites Register for the Warringah LGA. A total of 399 Aboriginal Heritage sites have been recorded in the Warringah LGA with approximately 100 sites located within neighbouring Garigal National Park. These sites include middens, axe grinding grooves, water holes, camp sites, burial sites, quarries, rock engravings and rock shelters.

A site has been noted as occurring on the western side of Pipeclay Point, Jamieson Park, however this requires further investigation (Mitchell McCotter 1992). Under the National Parks and Wildlife Act (1974), all Aboriginal sites, whether recorded or not, are protected. Protection under the Act includes limiting public access to sites, promotion of educational/ interpretive programmes in Aboriginal heritage and conducting archaeological surveys to better understand this heritage.

Aboriginal Reconciliation

In May 1998, Warringah Council adopted a Reconciliation Strategy with the formation of the Aboriginal Land Working Group. The main objectives of the group are to address land management issues concerning Metropolitan Local Aboriginal Land Council lands within the Warringah LGA, including access and protection of heritage sites, catchment planning, cross cultural training, tourism management and environmental assessment.

3.6 European Cultural Heritage Values

James Wheeler Estate

The southern foreshores of Narrabeen Lagoon were settled by James Wheeler in the 1830's. The remains of a jetty dating from the James Wheeler Estate (c.1850's) is still evident at a small beach on the western shoreline. The land in this area was cleared and cultivated, with improvements including a saw mill on South Creek, a slaughter yard facing the lagoon and vegetable gardens (Childs 1993). The open, weed infested areas on the adjoining "Greenhaven" site were part of the estate's gardens and orchards. Together these items are of local heritage significance and require further investigation for scheduling within Council's Local Environmental Plan. The jetty foundations, located close to the main bush track, offer opportunities for visitor interpretation and education.

Dedication of Jamieson Park for Recreation

In October 1888, following increasing local development, an area north of Colooli Road extending west to the Lakes edge and adjoining Pipeclay Point, was dedicated for recreational purposes. The area became known as Jamieson Park. Refer to Appendix III: Supplementary Data for further historic background.



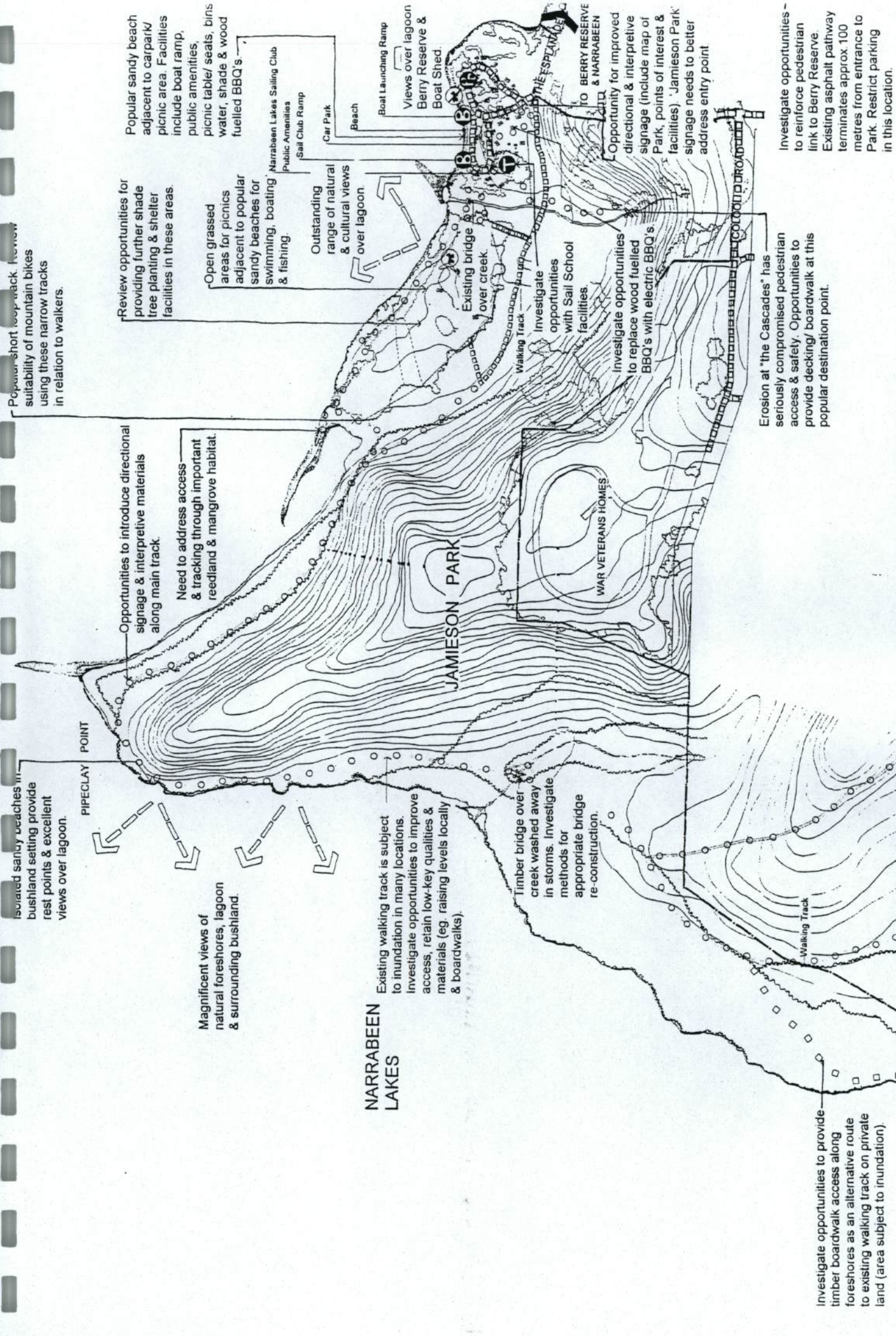
PHOTO 6: Jetty foundations and sandy beach, western shoreline.

3.7 Recreation Values

Table 4: Existing Recreation Facilities/ Settings & Activities provides a summary of the range of recreational facilities and opportunities available. Figure 4: Recreation, Access & Circulation shows the main north-eastern picnic/ carpark area and boat ramp, the poorly utilized reclamation area, existing public access and circulation throughout the park, including the main bush track and secondary tracks. Public access, recreational linkages and facilities are reviewed in Table 5: Basis for Management. For further detailed discussion refer to Appendix I(c): Community Issues Discussion Paper (see sections C. Public Access, D. Recreational Linkages, E. Existing Recreational Facilities and Amenities, H. Dredging and Reclamation Area and I. Sailing School).

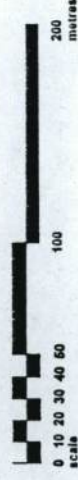


PHOTO 7:
Popular beach and boat
ramp at main carpark and
picnic area.



KEY

	Jamieson Park Plan of Management Boundary (subject to survey confirmation)
	Residential Sealed Roads/ Access to Park
	Service & Emergency Vehicle Access/ Unsealed Access Roads
	Pay & Display Ticketed Car Parking Area
	Main Pedestrian Track (unsurfaced)
	Secondary Connecting Tracks (unsurfaced)
	Multiple Minor Tracks
	Boardwalk Option (alternative to private land access)
	Views over Lagoon
	Dogs on Leads Only; No Dogs on Beach
	Toilets/ Public Amenities
	Concrete Boat Ramp
	Bench Seat;
	Litter Bin
	Picnic Table/ Seats
	Picnic Setting;
	Water Point;
	Outdoor Shower
	Wood-fired BBQ; Lighting



Jamieson Park

Figure 4

Recreation, Access & Circulation

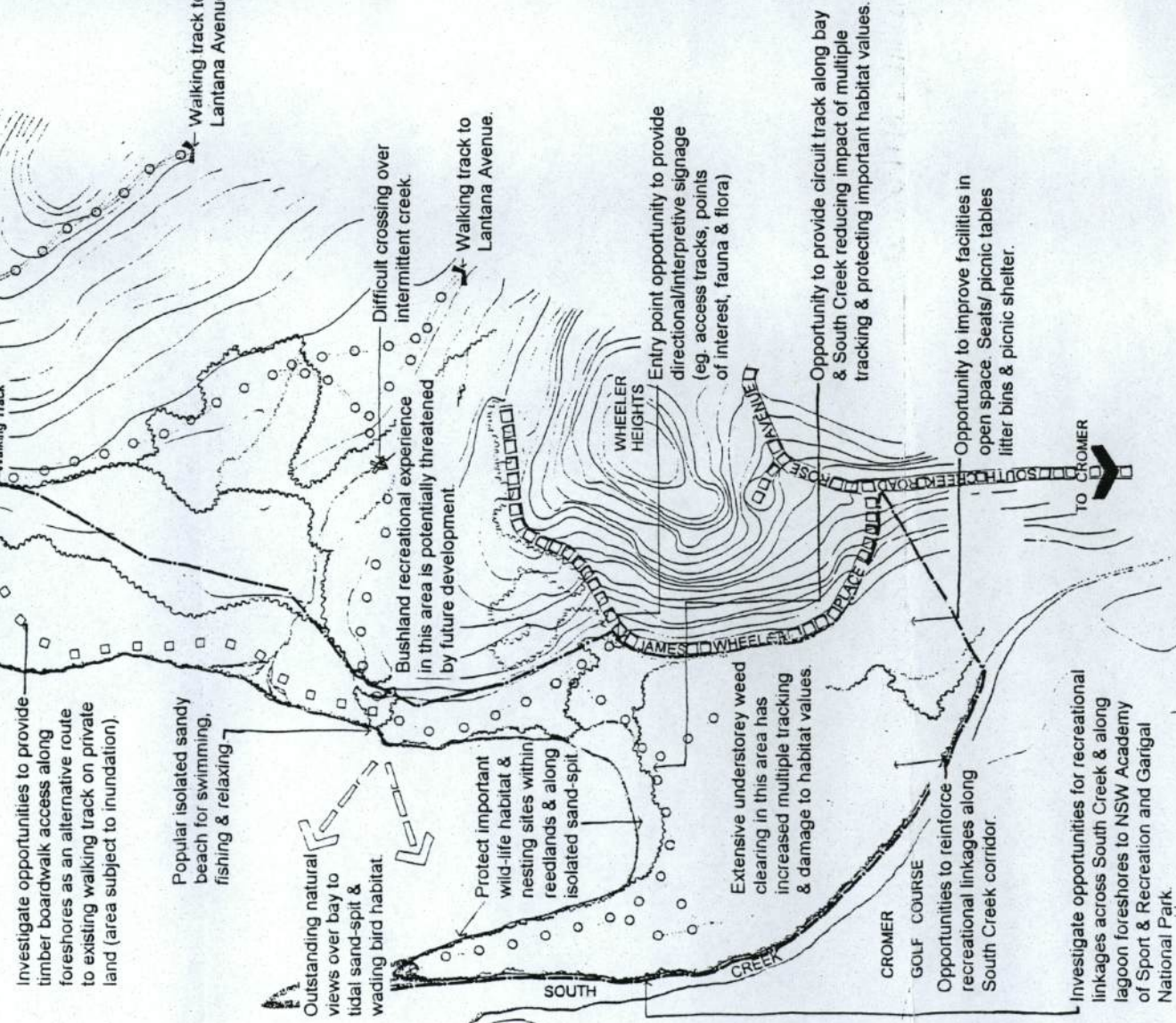


Table 4: Existing recreational facilities, settings & activities

Facility/ Setting	Activities
Main Carpark, Picnic & BBQ Area: carparking, public amenities, wood-fuelled BBQ's/ wood supply bins, picnic tables/ seats, litter bins, water taps & outdoor shower - good vehicle access/ popular in summer - mown grassed areas with a largely contiguous canopy of Swamp Oaks providing good shade in summer - sandy beaches and lagoon foreshores Boat ramp Sailing Club - facilities/ storage security, amenities and equipment	- picnicking, barbequing, socialising, relaxing, family gatherings - children's unstructured play with sand & water - casual play incl. kicking & throwing a ball/ frisbee - walking a leashed dog/ no unleashed dogs - water sports & activities: swimming, fishing & boating - model boating - sailing, canoeing, kayaking, ski paddling - sailing, sailboarding and water-based youth group activities - diminishing water-based opportunities due to lagoon sedimentation
The "Cascades" (south of the main picnic area) - elevated views over creek/ remnant rainforest	- opportunities for recreation enhancement linked to bushwalking
Reclamation Area: - open grassed paddocks/ too hot in summer - no shade over picnic tables/ seating - access to foreshores and small beaches	- limited opportunities for picnicking, BBQ's and family gatherings - casual play incl. kicking & throwing a ball/ frisbee - walking a leashed dog/ no unleashed dogs - fishing and relaxing
Main bush track: - importance of natural bushland setting - natural earth track/ low-key development - access to foreshores and small beaches (eg. Pipeclay Point and old jetty site)	- walking/ bushwalking, jogging - scenic outlooks for painting/ drawing - bird watching/ spot-lighting tour groups - viewing points for relaxation/ contemplation - cycling and mountain biking
Signage: - limited interpretive signage (directional & interpretive)	- opportunities for education in environment/ biodiversity values and low-impact activities
Recreational Linkages: - Dee Why Lagoon/ South Creek corridor link to Narrabeen - no existing pedestrian/ bikepath linkage to Berry Reserve - poor entry/ linkage to park at James Wheeler Place - no existing linkage over South Creek to Garigal National Park	- enhanced recreational opportunities need to be appropriate to natural setting and values

Recreation Needs

The Warringah Recreation Strategy Plan (adopted in June 1999) identified the following recreation needs and issues:

- ▶ the Warringah community is relatively satisfied with the level of facilities provided with the exception of youth facilities and the need for more unstructured non-sporting facilities, such as walking tracks and parks;
- ▶ an increased need for community facilities and recreational areas to be made more accessible. This was supported by demographic data which indicated that Warringah has an aging population and a comparatively high proportion of people with disabilities;

- ▶ need to emphasis upgrading of facilities and improving management of these resources, including upgrading of public amenities, resolution of parking issues, improved lighting and maintenance;
- ▶ need for Council to develop stronger relationships with the community and other relevant bodies;
- ▶ recreation programmes and services should continue to be managed and facilitated by Council. These should be of a high standard and designed to meet changing community demographics and needs;
- ▶ the natural environment is highly valued by the community and Council. It provides relief from the urban environment, supports a diverse flora and fauna and broadens opportunities for recreation;
- ▶ a diverse range of recreational opportunities is required to support Warringah's mix of ages, cultural backgrounds, education and family types.

Where appropriate, this Plan aims to address recreational needs and specific shortfalls, as outlined in Table 5: Basis for Management.

Visitor Survey

The Jamieson Park Visitor Survey (1995) indicated that many visitors believed that the current level of facilities and amenities provided in the park appeared to be sufficient. The public meeting/ workshop, Exploring Issues Papers and submissions also confirmed that any possible upgrading of facilities should be in keeping with the informal bushland character, and that this development should be kept "low key" with minimal impact on the environment. The upgrading of the main track and its shared uses were an important recreational issue (refer to Appendix I(c): Community Issues Discussion Paper).

Public Purpose of Jamieson Park

As discussed in 1.0 Introduction, the public purpose of the main portion of Crown land is for "public recreation and promotion of study and preservation of native flora and fauna". The reclamation area however is reserved only for "public recreation". This Plan confirms the significance of environmental values in this reclamation area, which in turn support the diverse range of recreational opportunities associated with the park. It is important therefore that public purpose be consistent for all Crown land in the park.

The Role of Jamieson Park

The coastal reserves within the Warringah area form an extensive open space system which is characterised by a diverse range of recreational settings and opportunities (Recreation Strategy for Warringah's Beaches and Coastal Open Space, adopted 23 June 1998, p.9). Recreational values are closely linked with environmental quality and significance of a place as well as the opportunities, activities and facilities available for public recreation and visitation.

Jamieson Park's role is that of a significant regional asset in the Warringah open space system, both as a recreational resource and in terms of its environmental/ biodiversity values. The park is classified by Warringah Council as a Category One Bushland Reserve (ie. reserves of national/ regional conservation significance in generally good condition and/ or those that offer a high diversity of recreational opportunities.) The park's natural bushland setting, lagoon and lack of formalized recreational facilities are important factors in determining this park's special character.

Narrabeen Lagoon is one of the most popular recreational waterways on the northern beaches, attracting a range of visitors from local and regional levels. As Sydney continues to grow and density of development increases, accordingly there will be an increasing demand for easily accessible, water-based recreational settings, particularly in urban bushland with high scenic values and suitable recreational facilities.



PHOTO 8: Children playing on sand-spit, Jamieson Park.

Managing Recreational Values

The number of visitors, time available to participate in leisure activities and the ever increasing range of land based and aquatic recreational pursuits will continue to impose pressures on the park's fragile natural environment and significant biodiversity values. In addition, increases in recreational use will lead to greater contact between users with the possibility of negative impacts such as perceived crowding, dissatisfaction with experience, perceived resource impacts and conflicts between user groups. These changes can lead to a loss of experiential quality and visitor displacement (Loomis and Graefe, 1992).

Research has shown that visitor surveys which identify the level of satisfaction are not necessarily a reliable measure for determining social carrying capacity. It is important to recognize that the design of tracks and nodal use areas has the potential for creating further changes in the type of user groups, activities and behaviour. Site development and introduction of facilities can easily change the type of user groups of a given area and hence alter recreation experiences and satisfaction. Creeping or incremental development of a recreational setting can easily lead to visitor displacement and recreational succession. An understanding of this process has important implications for the management of this relatively natural area with its existing low-key facilities.

It is essential that all of these environmental and social impacts are managed on a sustainable basis in order to meet the future needs of the community. Objective limits need to be established on the **types** and **amounts** of change that are either desirable or acceptable for Jamieson Park.

All forms of outdoor recreational use will inevitably lead to compaction and/ or erosion of soils and disturbance of vegetation communities and wildlife habitat. These impacts exhibit relatively predictable patterns both in space and over time. Bio-physical research has consistently confirmed that the fragility of most natural environments is such that very little use causes substantial amounts of impact (ie. most negative environmental impacts are caused during the initial phase after opening an area to visitors). It is therefore important to control the **spatial extent** of recreational uses and hence impact.

Impacts vary greatly between environments, along with differences in the tolerance of each environment. For Jamieson Park's sandstone and alluvial vegetation communities, resistance to impacts is low with a corresponding low level of resilience or ability to recover following these impacts. Erosion, sedimentation and weed encroachment readily occur with any disturbance (Hammit & Cole, 1987).

Visitor and site management strategies should therefore focus on the following:

- ▶ continue to review controls on visitor numbers and type of activities (eg. reserve bookings for large/ formal gatherings, limits to carparking/ pay & display parking, restrictions on unleashed dogs, appropriate use of existing facilities, hiring and leasing, provision of appropriate low-key facilities and amenities);
- ▶ dispersal of concentrated uses/ peak summer crowds within resistant sites (eg. the reclamation area near the main carpark/ picnic area);
- ▶ low impact education (eg. interpretive facilities/ signage, brochures);
- ▶ site hardening/ shielding options need to address potential changes to visitor numbers/ user groups and the loss of natural values (eg. the main bush track);
- ▶ use of temporary site or track closures for periodic recovery;
- ▶ regeneration/ rehabilitation of closed sites (National Trust regeneration areas near picnic area);
- ▶ enhance opportunities for visitors through improved access/ interpretation (eg. the "Cascades") and where appropriate, for wildlife interaction (eg. spotlighting) ensuring protection of nesting/ breeding areas.

In establishing limits of desirable or acceptable change, the Plan provides a framework for the park's future management.

Leases, Licenses & Other Estates

Narrabeen Lakes Sailing Club has a current 10-year lease with Warringah Council for a portion of the Sailing Club building. This lease expires on 2 February 2009. This is the only current lease at Jamieson Park. The granting of any future leases, licenses or other estate would need to comply with the requirements of both the Local Government Act as amended (for community land) and the Crown Lands Act (Crown land). For community land, a lease, license or other estate may be granted for a prescribed purpose which is consistent with the land's core objectives (LGA s. 46). Furthermore, land categorised as a natural area has specific restrictions in relation to granting of a lease, license, estate or the erection of a building or structure (LGA s. 47B).

The Department of Land and Water Conservation (DLWC) policy on Crown Land leases and licenses is that public access and equity must be preserved. Activities, services and facilities on Crown Land should have benefits for the broad community (ie. public use on a public reserve where the community as a whole has ownership). Any proposed leases, licenses or development should not over commercialize or alienate the open

space in any way. Areas which may designate or imply exclusive use are unacceptable. However, a reasonable entry fee or equitable pricing for facilities is not considered a barrier to public access. This Plan establishes specific guidelines for assessing future leases, licenses, estates and/ or permits for commercial activities, filming or special events (refer to 4.0 Management Strategies: *item G1*).

3.8 Vision Statement for Jamieson Park

Warringah Council recognizes the importance placed on its bushland and coastal foreshores by the community and has identified the need for appropriate planning as a priority for Council (Management Plan: "Leading Us into the Twenty First Century, 1999-2003"). Council has established the following Vision Statement for the whole Warringah local government area:-

"A Council which values Warringah's identity, high quality of life and strives to care for its special bush and beach environment".

This section of the Plan has identified Jamieson Park's values, its public purpose and its role as a Significant Area. A vision statement defines a guiding purpose for Jamieson Park. It is a statement describing the way the community wants to see this park's values protected, managed and enhanced for the enjoyment of people today as well as for future generations.

The following statement provides a vision for Jamieson Park which will form the basis of management strategies as developed in the next section of this Plan:

"To maintain and enhance Jamieson Park's role as a "significant natural area" in the Warringah open space system, ensuring protection and conservation of identified values through appropriate management, in a way which best meets the environmental, recreational, educational and social needs of the present community and future generations".

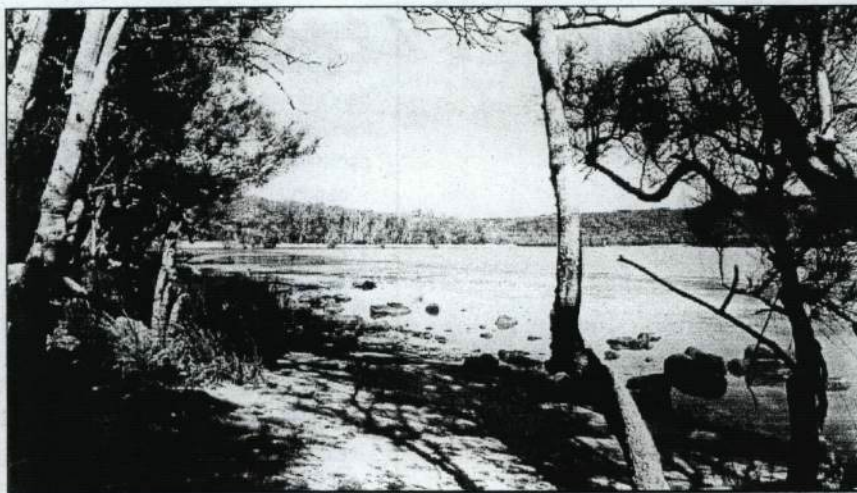


PHOTO 9: The main walking track, western shoreline of Jamieson Park.

Table 5
Basis for Management

	Values	Threats & Opportunities
natural setting	<p>Crown reserve (portion) public purpose for recreation & promotion of study & preservation of native flora and fauna Classified: Category One Bushland Reserve (ie. reserves of national or regional conservation significance)</p> <p>natural bushland setting adjacent to major lagoon lakeside tranquillity and lagoon environs appropriate low-key park development environmental education</p> <p>outstanding natural & scenic qualities views over lagoon and Garigal National Park</p>	<ul style="list-style-type: none"> - fragile vegetation communities on sandstone/ alluvial soils where resistance to impacts and resilience (ability to recover) are both low - erosion, sedimentation and weed invasion occur after disturbance - incremental changes to natural values are likely to have long term negative impact on the natural setting (eg. loss of vegetation, habitat values & fauna, weed encroachment and recreational experience) - need for appropriate protection and management of natural values - need to protect against over-development or inappropriate facilities - develop appropriate visitor and site management techniques (refer to Recreation, Access & Circulation values) - promote recreational opportunities appropriate to a natural setting - need to protect and enhance views - visual/ scenic deterioration of bushland on north-eastern slopes
environment/ biodiversity	<p>Conservation significance of native flora and fauna:</p> <ul style="list-style-type: none"> - most of the park's communities and component species are poorly represented in local reserves & Nat. Parks - representative role in conserving regional biodiversity - Swamp Mahogany Forest is of regional significance - <i>Prostanthera denticulata</i> occurring near Colooli Road is a regionally significant species - park is a reservoir of genetic diversity - opportunities for contiguous linkage with Garigal NP - mosaic of vegetation communities creates a diverse range of habitats for fauna [including scheduled threatened species] - mangrove colonization of sand spit area (west of reclamation area) is the only known occurrence of community in lagoon <p>water quality/ local catchment management</p>	<ul style="list-style-type: none"> - data gaps exist in the measurement of biophysical changes - no detailed field survey/ trapping data to determine faunal significance - no monitoring of biophysical impacts - continuing process of ecosystem fragmentation and simplification due to increasing human impacts - need to develop a co-ordinated environmental strategy based on: <ul style="list-style-type: none"> > biodiversity management > catchment management > bush regeneration/ rehabilitation > fire management > visitor and site management <p>Catchment Management: ridge line development is having a long-term negative impact on the park's environmental qualities (eg. altered drainage/ hydrology, nutrient loadings exacerbating long term canopy die-back and weed invasion particularly along the steep north-eastern slopes).</p> <ul style="list-style-type: none"> - opportunities to improve stormwater management along Colooli Road & RSL War Veterans Retirement Village (RSLWVRV) boundaries. - Gross Pollutant Trap (GPT) recently installed on 1.2m diam. pipe off Colooli Rd. reducing litter/ pollutants in main creek-line. - however, existing 600mm diam. pipe on Colooli Rd. (100m west of GPT) discharges directly onto upper slopes of the park - more than 20 X 100mm diam. + 5 X 300mm diam. stormwater lines discharging directly into park from RSLWVRV north-eastern boundary - existing concrete catch-drains provide no controls - all gardens/ lawns slope into park (surface water run-off) - very high levels of fertilizers required for exotic/ vegetable gardens - need to improve communications with neighbouring residents

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		Values	Threats & Opportunities
environmental/ biodiversity	water quality/ local catchment management (continued)		Catchment Management (continued): <ul style="list-style-type: none"> - periods of high rainfall + altered up slope drainage/ hydrology leading to localized flooding erosion and multiple tracking along the bush track (south of the reclamation area) - reclamation area also impedes rapid drainage on this part of the track - reclamation area has lowered the water table exacerbating weed problems and accelerating decline in adjoining Swamp Oak Forest - opportunities to utilize and rehabilitate part of the large western paddock (reclamation area) which is currently an impoverished fill-site. - continuing erosion damage following peak flows, around headwalls at creek crossing (below the "Cascades") - need to manage existing erosion in lower creek area
	bush regeneration/ rehabilitation		Bush Regeneration: <ul style="list-style-type: none"> - National Trust regeneration work hampered by on-going nutrients & exotic weeds, leading to high long-term maintenance costs - current work concentrated in 3 areas: <ul style="list-style-type: none"> > fenced areas (north-east)/ lower creek-line > along northern section of main bush track to Pipeday Point > Swamp Oak Forest/ Swamp Mahogany Forest (western shore) - regeneration programme may be leading to "arrested succession" (ie. long-term simplification of the ecosystem). Need to address the causes of bushland decline. - 1994 bushfire further exacerbated simplification and weed invasion - simplified ecosystems have low durability and will continue to be infested with weeds - need to address catchment management issues as a priority - need for integrated approach to bush regeneration/ bush rehabilitation - current programme leading to increasing costs over time with no clear time-frame for recovery or sustainability - volunteer/ community bush regeneration programmes need appropriate levels of supervision and co-ordination to avoid negative impacts (eg. trampling, over-clearing/ access to vital habitat)
	bushfire management public safety		Bush Fire Management: <p>1994 bush fire burnt out 95% of Jamieson Park & destroyed property in the adjoining War Veterans Homes</p> <p>Rural Fires Act stresses the legislative responsibility & priority for protection of life and property while acknowledging the importance of natural & cultural values. Management strategy needs to establish appropriate fire regimes.</p> <ul style="list-style-type: none"> - a rigid approach to fuel-free & fuel-reduced zones potentially has further debilitating impacts on biodiversity values, increasing the extent of man-made disturbance and facilitating weed encroachment - past building practices and building waste dumping/ on-going nutrient loadings continue to facilitate dense weed growth along property boundaries (refer to catchment management) - opportunities to integrate environmental and biodiversity management programmes with the objectives of fire management policy

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		Values	Threats & Opportunities
recreation/ access & circulation		<p>Recreational values closely linked to environmental quality (refer to natural setting)</p> <ul style="list-style-type: none"> - close proximity to a highly urbanised environment - broad community access to a relatively natural setting - ease of access (relatively flat) around lagoon edge, beaches and foreshores - diverse range of passive and active (including water-based) recreational opportunities - opportunities for combining recreational activities - informal recreational facilities and amenities including: <ul style="list-style-type: none"> > main carpark/ picnic & barbeque area > reclamation area > Sailing Club/ water-based activities > main bush track > South Creek open, grass area (James Wheeler Place) 	<ul style="list-style-type: none"> - park's values should provide a guide to appropriate recreational uses - the natural setting should be protected and managed so that recreational values are not compromised, particularly by over-development - natural setting qualities are reinforced by the lack of formalized facilities - active, formalized or structured sporting activities are inappropriate for this setting - review opportunities for improving visitor and site management: - during peak periods, improve control of visitor numbers/ type of activities, dispersal of concentrated uses within resistant sites [eg. reclamation area] - low impact education [eg. improved interpretive signage] - site hardening/ shielding options need to address potential changes to visitor numbers/ user groups and loss of natural values - options for temporary site closures for periodic recovery - enhance opportunities for visitor/ wildlife interaction where appropriate, ensuring protection of nesting/ breeding areas - need to restrict visitor impacts in fragile habitat.
		<p>Main Carpark/ Picnic & Barbeque Area:</p> <ul style="list-style-type: none"> - off-street sealed car park with easy access/ egress (off The Esplanade), located close to lagoon/ beach access, boat ramp, Sailing Club, public amenities & BBQ's - easy, flat access to facilities, bushland & foreshores - pedestrian/ bikepath linkages along foreshores - bushwalking - cascades close to carpark/ rainforest gully 	<ul style="list-style-type: none"> - seasonal peak concentration of activities and user groups in the area surrounding the main carpark leading to increased psycho-social impacts (eg. crowding, parking congestion, activity conflicts, facilities over-loading & possible changes in user groups) - environmental impacts are relatively stable (recovery over winter months) with increasing pressure over summer months (eg. wood for barbeques, trampling of regrowth/ seedlings & exposure of roots) - visitor numbers are limited during peak periods by size of carpark - existing wood-fuelled BBQ's/ wood enclosures make the area untidy and promote litter & dumping problems/ vandalism of trees - signage is ad hoc and primarily relates to regulatory controls - quality of pedestrian access and linkages need to be addressed - no formal connection with Berry Reserve multiple-use pathway - poorly signposted linkages with the main bush track, reclamation area and the "Cascades" south of the service vehicle track - opportunities to improve the quality of public access, recreational linkages and circulation. - the "Cascades" are highly eroded with steep embankment to creek - opportunity to enhance recreational opportunities in this location - need to address safety issues/ risk management at "Cascades"
		<p>Reclamation Area:</p> <ul style="list-style-type: none"> - relatively flat access from main carpark/ picnic area - access to foreshores/ beaches 	<ul style="list-style-type: none"> - under-utilized area which is hot & undesirable in peak summer months, when the area is most needed for visitor dispersal - restoration of area (removal of fill material) considered too expensive - existing picnic tables set-back from foreshore with no shade or views - poor spatial qualities with large paddock divided by high mound - opportunities to significantly enhance environmental qualities and desirability of reclamation area as a destination point with improved recreational facilities, shade and attractive open space qualities for unstructured play [eg. for kicking a ball, frisbee, etc]

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		Values	Threats & Opportunities
recreation/ access & circulation		Reclamation Area (continued):	<ul style="list-style-type: none"> - site has developed significant habitat values (ie. mangroves in western spit area/ bird-nesting areas) - need to protect significant habitat values - very poor, dredged sands and lowered water table have hampered past rehabilitation efforts. - opportunities for construction of wetlands [see Catchment Mangement] - opportunities for improving access and circulation - unleashed dogs not permitted on beaches/ foreshores
		Sailing Club/ water-based activities:	<ul style="list-style-type: none"> - Sailing Club/ lease viability is dependent on lagoon access and water depth for activities such as sailing, sailboarding, etc. - sedimentation has reduced water-based recreational opportunities leading to user groups seeking alternative locations (ie. recreational displacement) with implications for future viability of the Sailing Club - continuing debate over lagoon dredging issues
		Main Bush Track: <ul style="list-style-type: none"> - major pedestrian linkage between The Esplanade (Berry Reserve) and South Creek corridor/ James Wheeler Place via Narrabeen Lagoon foreshores/ Pipeclay Point & the "Greenhaven" site - predominantly natural setting/ experience - unsealed natural earth track/ low volume pedestrian traffic 	<ul style="list-style-type: none"> - mostly narrow, unsealed, natural-earth track, highly eroded in places - some sections are over-grown with native vegetation since the 1994 bushfire, increasing the potential for user group conflicts/ safety issues - opportunities for recreational corridor linking South Creek/ Dee Why to Berry Reserve/ Narrabeen via lagoon need to be balanced with other park values - no existing access across South Creek linking park to western shoreline & Garigal National Park - the existing main bush track restricts access to some user groups (eg. bike access restricted to mountain-bikes) but unformed track protects the park's natural values and informal experience - site hardening/ shielding to main bush track likely to limit further erosion/ vegetation damage & improve pedestrian safety but may alter visitor numbers & user groups (possible recreational succession) - periodic flooding makes the main bush track inaccessible and susceptible to erosion/ loss of vegetation and multiple-tracking in a number of locations - bridge wash-outs from flooding in the Palm woodland - large section of the main bush track traverses the "Greenhaven" site raising the following issues: <ul style="list-style-type: none"> > development proposal may or may not go ahead > provision of public access through development a requirement but would likely not be within a natural setting > intermittent creeks make crossings difficult during wet periods > alternative access on Crown reserve is restricted to foreshore wetlands/ Swamp Oak Forest subject to periodic flooding
		South Creek Open Grassed Area (adjacent to James Wheeler Place) <ul style="list-style-type: none"> - easy access to southern section of park 	<ul style="list-style-type: none"> - open grassed area with opportunities for minimal low-key facilities - area adjacent to remnant Swamp Mahogany Forest/ wetlands - multiple tracking/ over-clearing within vital core habitat - opportunities to enhance recreational linkages and faunal corridors
heritage		Cultural/ Archaeological Heritage: <ul style="list-style-type: none"> - ruins of jetty associated with James Wheeler estate 	<ul style="list-style-type: none"> - ruins part of broader fabric of historic James Wheeler estate - no current management or interpretation/ review options
		Indigenous Heritage:	<ul style="list-style-type: none"> - no confirmed sites in Jamieson Park - opportunities for investigation

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4.0 Management Strategies

4.1 Objectives

The Management Strategies document has the following objectives:-

- ☐ to formulate management strategies (ie. desired outcomes);
- ☐ to ensure consistency with core objectives for community land categories;
- ☐ to develop means of achievement (ie. management actions);
- ☐ to provide means of assessment (of the actions);
- ☐ to assign priorities for each of the performance targets; and
- ☐ to develop a masterplan and capital works programme for implementation.

Desired Outcomes

This section of the Plan provides the framework for protection and management of values identified in 3.0 Basis for Management. The vision statement (refer to 3.8 Vision Statement for Jamieson Park) provides the basis for developing "guiding principles" or "desired outcomes" for the management of Jamieson Park. These are summarized as follows:

- ☐ to protect and enhance the park's natural setting and its scenic, environmental, heritage and recreational values;
- ☐ to promote ecologically sustainable management practices;
- ☐ to establish guidelines for assessing development proposals and impacts;
- ☐ to establish guidelines for assessing leases and licenses;
- ☐ to protect and enhance public access, recreational linkages, facilities and settings.

Core Objectives

Desired Outcomes need to be consistent with the core objectives relating to community land categories. The portion of public land owned by the Department of Urban Affairs and Planning (DUAP), as community land, is assigned the following categories:

1. **Natural Area:**
 - (a) bushland
 - (b) wetland
 - (c) watercourse
 - (d) foreshore
2. **Park**
3. **An Area of Cultural Significance**

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 a set of core objectives as follows:

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 1993- Sect 36A Community Land comprising the habitat of endangered species and 36B Community land comprising the habitat of threatened species".

Bushland

"The core objectives for management of community land categorised as bushland are:

- a) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, and flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;
- b) to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and;
- c) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and;
- d) to restore degraded bushland, and;
- e) to protect existing landforms such as natural drainage lines, watercourses and foreshores, and;
- f) to retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and;
- g) to protect bushland as a natural stabiliser of the soil surface".

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".

Watercourse

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

- a) to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and waterflows, and;
- b) to manage so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and;
- c) to restore degraded watercourses, and;
- d) to promote community education, and community access to and use of the watercourse, without compromising the other core objectives to the category".

Foreshore

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

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

Park

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

- a) to encourage, promote and facilitate recreational, cultural, social & 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".

An Area of Cultural Significance

- 1) "The core objectives for management of community land categorised as an area of cultural significance are to retain and enhance the cultural significance of the area (namely its Aboriginal, aesthetic, archaeological, historical, technical or research or social significance) for past, present or future generations by the active use of conservation methods.
- 2) Those conservation methods may include any or all of the following methods:
 - i) the continuous protective care and maintenance of the physical material of the land or of the context and setting of the area of cultural significance;
 - b) the restoration of the land, that is, the returning of the existing physical material of the land to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material;
 - c) the reconstruction of the land, that is, the returning of the land as nearly

- d) as possible to a known earlier state;
the adaptive re-use of the land, that is, the enhancement or reinforcement of the cultural significance of the land by the introduction of sympathetic alterations or additions to allow compatible uses (that is, uses that involve no changes to the cultural significance of the physical material of the area, or uses that involve changes that are substantially reversible or changes that require a minimum impact);
 - e) the preservation of the land, that is, the maintenance of the physical material of the land in its existing state and the retardation of deterioration of the land.
- 3) A reference in subsection (2) to land includes a reference to any buildings erected on the land".

Leases, licences or other estates 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".

Action Plan & Capital Works Programme

An action plan defines the specific tasks to achieve these desired outcomes and core objectives (refer to following Management Strategies tables). The Means of Assessment provides a system of checks and balances to assess actions and performance. Priorities are assigned according to the specific action's relative importance. These priorities are further developed in the 5-year capital works programme (refer to Works Schedule and Opinion of Probable Landscape Construction Costs and Summary Sheet in this section).

Masterplan

Refer to the Executive Summary for the masterplan (Figures ES 1 and ES 2).

Selected items from the masterplan and capital works programme are illustrated in this section. These include a series of four photographs (existing condition) and perspective sketches of proposals.

Management Strategies

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
natural setting	<p>Desired Outcome: To protect and enhance the park's natural setting and its scenic, environmental, heritage and recreational values</p> <p>Core Objective: Management of community land categorised as bushland (36J)</p> <p>a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;</p> <p>b.) to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and;</p> <p>c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbances caused by human intrusion, and;</p> <p>d.) to restore degraded bushland, and;</p> <p>e.) to protect existing landforms such as natural drainage lines, water courses and foreshores, and;</p> <p>f.) to retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and;</p> <p>g.) to protect bushland as a natural stabiliser of the soil surface.</p>			
	Crown reserve (portion) public purpose for recreation & promotion of study & preservation of native flora and fauna Classified: Category One Bushland Reserve natural bushland/ lake-side setting environmental/ heritage education	A1 - continue to protect and enhance natural bushland to provide quality settings for recreation and to promote biodiversity values	- identified values protected and enhanced	high/ongoing
		A2 - continue to improve environmental management and monitoring of urban run-off, targeted/ integrated weed management/ bush regeneration & rehabilitation, appropriate fire management and visitor/ site management	- introduction of an integrated management strategy with annual monitoring of biophysical impacts [see items B, C, D, and E]	high/ongoing
		A3 - continue to promote public education in low-impact strategies	- interpretive signage installed [see works programme]	high/ongoing
		A4 - integrate heritage items within recreational experience [see item N1]	- continuing community/ heritage education programmes	ongoing
	appropriate low-key park development	- protect against over development or inappropriate recreational facilities whilst enhancing recreational opportunities, access and circulation	- all types of development, leases/ licenses thoroughly addressed [see items F1 - F6 and G1]	ongoing
	outstanding natural & scenic qualities	- protect and enhance views, ensuring appropriate management	- views protected and enhanced with appropriate management	ongoing
	views over lagoon & Garigal National Park	- reinforce linkages with the western shoreline & Garigal NP [including scenic/ visual, recreational and faunal corridors - see B2 & M5 - M6]	- important environmental and recreational linkages addressed in accordance with CAPEX funding	ongoing
	recreation linkages & habitat corridors			ongoing
environment/ biodiversity	<p>Desired Outcome: To promote ecologically sustainable management practices</p> <p>Core Objective: Management of community land categorised as bushland (36J) (core objectives as above, refer to items a-g.)</p>			
	Conservation significance of native flora and fauna.	Biodiversity Management: - address critical biophysical data gaps and shortfalls - conduct a faunal survey focussing on threatened species	- quantitative faunal study completed with recommendations - confirmation of threatened species status & habitat values	medium
		B2 - enhance faunal corridors providing additional food sources and habitat for threatened species	- vital faunal corridor links under community regeneration and revegetation programmes within 5 years	med/ongoing
		B3 - continue to control and monitor feral animal populations	- reduced predation of native faunal competition for resources	ongoing
		B4 - continue community-based environmental education programmes	- broader community understanding of environmental issues	ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objective: Management of community land categorised as bushland (36J) (continued)				
<ul style="list-style-type: none"> - water quality - local catchment management 	B5	Biodiversity Management (cont'd) - link stormwater management to weed management/ bush regeneration strategy. Make improved stormwater management priority one in the co-ordinated strategy [see items C1 - C12]	- catchment/ bush regeneration and fire management strategies improved liaison and co-ordination of objectives	high/ongoing
	B6	- integrate fire hazard reduction management with stormwater, weed management/ bush regeneration [see items E1 - E4]	- catchment/ bush regeneration and fire management strategies linked with improved liaison and co-ordination of objectives	high/ongoing
	C1	Catchment Management: Coloooli Road: - formalize service vehicle access to GPT in Coloooli Road, addressing run-off, weed management & bush regeneration/ rehabilitation issues	- GPT rehabilitation works completed - localized weed management not compromised by works - regionally significant <i>Prostanthera denticulata</i> protected	High
	C2	- investigate opportunities to rationalize second smaller stormwater line in Coloooli Road, connecting to new GPT and addressing erosion issues downstream at "the Cascades" [see item I1]	- significantly enhanced opportunities for bush regeneration downslope in this highly impacted area	High
	C3	- link programme to integrated bush/ wetland rehabilitation [see items C5, C11 and J1] to improve opportunities for funding	- reduction in long term maintenance costs for this area - programme implemented subject to appropriate funding	ongoing High
Core Objective: Management of community land categorised as bushland (36J)				
a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;				
d.) to restore degraded bushland.				
<ul style="list-style-type: none"> - water quality - local catchment management 	C4	RSL War Veterans Retirement Village (RSL WVRV) boundary: - initiate development of a stormwater management plan in association with RSL WVRV for improved management and use of site's stormwater	- continue regular liaison with RSL WVRV undertaken - trends over time	high ongoing
	C5	- review opportunities for rationalizing (combining) small stormwater lines & directing stormwater to constructed freshwater wetlands within the reclamation area, providing biological filtration of nutrients & enrichment of impoverished dredged soils for rehabilitation	- investigation undertaken and funding options addressed - enhanced environmental/ recreational opportunities in accordance with CAPEX funding	high
	C6	- planting within fuel reduced zone (adjoining property boundaries) should be designed to help contain and reduce nutrient loadings, discharged as surface run-off from gardens and lawns	- co-ordinated strategy with NSW Rural Fire Service - % of nutrient loadings reaching park significantly reduced	ongoing high/ongoing
	C7	- continue local resident education programme in minimizing impacts	- education programmes changing attitudes to garden fertilizing	ongoing
	C8	- develop a working "partnership" with RSL WVRV to address impacts around total perimeter of ridgeline development	- management "partnership" developed to address issues affecting whole of park including "Greenhaven" bushland	ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objective: Management of community land categorised as bushland (36J)				
a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;				
c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion.				
Core Objective: Management of community land categorised as wetland (36K)				
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.				
environmental/ biodiversity	- major access/ linkage to park - bush/ wetland rehabilitation	C9	Main Service/ bush track (section south of Reclamation Area): - temporary closure of this section of the track for recovery due to flooding and erosion (re-opening subject to upslope drainage rationalization)	high
		C10	- investigate opportunities to re-align track along southern edge of reclamation area, providing a linkage through to Pipeday Point	ongoing
		C11	- constructed wetlands/ re-contouring and rehabilitation of the larger western paddock area (reclamation site) provide additional opportunities for environmental/ recreational values enhancement	ongoing
		C12	- strengthen/ extend headwalls and prevent access at creekline (extend fencing). Investigate opportunities to replace pipes, construct rock walls to creek bed & a timber bridge over creek-line	medium low
Core Objective: Management of community land categorised as bushland (36J)				
a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;				
c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and;				
d.) to restore degraded bushland.				
- natural bushland setting - conservation significance of native flora and fauna - habitat values	D1	Weed Management, Bush Regeneration and Rehabilitation: Implement an integrated approach to bush regeneration AND rehabilitation techniques using locally-sourced indigenous species, as necessary, and dependent on the level of weed impact on each community	- co-ordinated strategy addresses arrested succession and long term simplification of the ecosystem	high ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To promote ecologically sustainable management practices (continued)				
Core Objective: Management of community land categorised as bushland (36J) (continued)				
<ul style="list-style-type: none"> - conservation significance of native flora and fauna - habitat values 	D2	Weed Management, Bush Regeneration and Rehabilitation (cont'd): Continue to prioritize work based on the following areas: > fenced areas (north-east)/ lower creek-line > along northern section of main bush track to Pipeclay Point > Swamp Mahogany Forest/ Swamp Oak Forest (western shore) - seek additional funding for improved catchment management to provide long-term sustainability in bush regeneration	- current programme maintained subject to improved monitoring and evaluation - monitor changes and trends over time [see item D5] - programme subject to catchment management outcomes	ongoing
	D3			high ongoing
	D4	- in highly impacted areas need to supplement bush regeneration techniques with a more comprehensive rehabilitation strategy [see item D1]	see item D1	ongoing
	D5	- introduce objective monitoring of regeneration sites using standard rapid assessment/ measurement techniques (including photography) - investigate opportunities to involve universities in monitoring - option for detailed quantitative measurements [eg. use of quadrats] - compare the effectiveness/ value for money of different techniques	- independent bi-annual review of the programme - objective monitoring to provide basis for cost/ benefit analysis and opportunities for reviewing the strategy	medium ongoing
	D6	- continue to co-ordinate and manage volunteer bush regeneration teams within the programme. Support community groups in seeking grant funding.	- increasing local community commitment and programmes targeting non-critical habitat, under appropriate supervision	high/ongoing
	Core Objective: Management of community land categorised as bushland (36J) b.) to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and; c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbances caused by human intrusion. d.) to restore degraded bushland.			
<ul style="list-style-type: none"> - public access/ safety - natural bushland setting - conservation significance of native flora and fauna 	E1	Bushfire Management: - integrate environmental and biodiversity programmes with the objectives of fire management policy	- co-ordinated strategy with NSW Rural Fire Service which emphasizes co-operation, liaison and flexibility in fire-hazard reduction	high/ongoing
	E2	- promote an inter-disciplinary approach to management, emphasizing flexibility in determination of fuel-free & fuel-reduced zones dependent upon the following: > building construction/ materials > fire appliance access and egress > type & quality of available bushfire fuel > aspect (eg. westerly exposure) > slope characteristics (ie. steepness, rock outcrops)		

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
environmental/ biodiversity	<p>Desired Outcome: To promote ecologically sustainable management practices (continued)</p> <p>Core Objective: Management of community land categorised as bushland (36.J) (continued)</p>			
	E3	<p>Bushfire Management (cont'd)</p> <ul style="list-style-type: none"> - strategy based on specific site characteristics: <ul style="list-style-type: none"> > remove accumulated soil/ building waste from sandstone outcrops thus reducing opportunities for weed growth > remove weed growth and spread "lud-ground" hardwood mulch > non-contiguous "native" and locally indigenous planting within fuel-reduced zone, replacing weed species (eg. lantana) > use of clumping sedges (wet sites) and grasses (dry sites) to reduce movement of nutrients downslope > use of mesic (rainforest) species where appropriate in damp, cooler areas/ below rock outcrops, rather than dry heath species > select robust native species in highly disturbed sites, including smaller canopy forming species (eg. Cyathea sp., Livistona sp., Acmena sp., Acronychia sp., and Elaeocarpus sp.) - development proposals on adjoining property should provide the necessary set-backs for fuel-free & fuel-reduced zones within the property boundary 	<ul style="list-style-type: none"> - implementation of this strategy which ensures the necessary level of protection to public and property in accordance with all requirements of the Act as well as providing for environmental/ biodiversity values - annual monitoring of fire-hazard reduction zones - continuing liaison with RSL WVRV residents and NSW Rural Fire Service 	high/ongoing
	E4	<ul style="list-style-type: none"> - development proposals on adjoining property should provide the necessary set-backs for fuel-free & fuel-reduced zones within the property boundary 	<ul style="list-style-type: none"> - fuel-free and fuel reduced zones addressed in new developments on adjoining properties 	high/ongoing
recreation, access and circulation	<p>Desired Outcome: To establish guidelines for assessing development proposals and impacts in compliance with requirements for community land and to ensure consistency with both Acts</p> <p>a.) development must be in accordance with LGA s. 47E sub-sections (1) (a)-(d), (3) and (4) and listed exemptions (2) (a)-(h); and</p> <p>b.) the granting of a lease, license, estate, or erection of a building or structure must be consistent with the core objectives for the category of land; and</p> <p>c.) a lease, license, estate or authorisation for erection of a building or a structure must not be granted in an area categorised as a natural area except for the prescribed purposes as scheduled in this Plan in accordance with LGA s. 47B sub-sections (4) (a)-(f) and (5) (a)-(c).</p>			
	F1	Promote an open, community-based consultative process	<ul style="list-style-type: none"> - thorough community consultation 	ongoing
	F2	Ensure consistency with Crown policy, Council's adopted policy and the Draft LEP's Principles of Development Control.	<ul style="list-style-type: none"> - Crown reserve's values, purpose and role are protected from inappropriate development 	ongoing
	F3	Development proposals must address the following: <ul style="list-style-type: none"> - environmental sustainability - protection of identified values - public accessibility, equity, exclusivity and alienation of Crown land - demonstrate a clear connection with the park's purpose, role and setting 	<ul style="list-style-type: none"> - clear, unambiguous documentation of development proposals and impacts/ enhanced opportunities for community consultation - measure trends over time 	ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Desired Outcome: To establish guidelines for assessing development proposals and impacts in compliance with requirements for community land and to ensure consistency with both Acts (continued)				
recreation, access and circulation	F3 cont	<ul style="list-style-type: none"> - consistent with character and scale of park's existing recreational facilities - protection of all views to and from this reserve - maintain amenity and public safety in relation to noise emissions and pollutants, building surface glare and reflection - maintain and enhance public safety and security - minimize traffic hazards and pedestrian conflict in relation to vehicular access, car parking, service and delivery areas - ensure appropriate indigenous planting/ screening in accordance with site specific environmental constraints - protection of visual and environmental amenity 		
	F4	Development proposals which may directly or indirectly threaten the natural bushland setting and/ or other identified values are not permissible	- identified values protected and enhanced.	ongoing
	F5	Development which may adversely affect scheduled heritage items is not permissible. Development in the vicinity of a heritage item should complement its character and integrity.	- heritage items protected from inappropriate development	ongoing
	F6	Proposed changes to any lease boundaries must address identified values associated with each parcel of land.	- no simple land parcel "trade-offs" in relation to lease boundaries.	ongoing
Desired Outcome: To establish guidelines for assessing leases and licences in compliance with requirements for community land and to ensure consistency with both Acts a.) the granting of a lease, license, estate, or erection of a building or structure must be consistent with the core objectives for the category of land; and b.) a lease, license, estate or authorisation for erection of a building or a structure must not be granted in an area categorised as a natural area except for the prescribed purposes as scheduled in this Plan in accordance with LGA s. 47B sub-sections (4) (a)-(f) and (5) (a)-(c).				
natural bushland setting environment/ biodiversity heritage recreation	G1	<p>Ensure that all leases/ licences and permits for commercial activities, filming or special events are in accordance with:</p> <ul style="list-style-type: none"> - Crown policy, adopted Council policy and permitted uses - spatial and temporal constraints [subject to site-specific values] - Draft LEP's General Principles of Development Control <p>[including development relating to or in the vicinity of heritage items]</p> <p>- Development guidelines as outlined in this Plan [refer to items F1 - F6].</p>	<ul style="list-style-type: none"> - Crown reserve's values, purpose and role are protected from inappropriate development - number of leases/ licences and permits approved - measure trends over time 	ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
recreation/ access & circulation				
Desired Outcome: To protect and enhance public access, recreational linkages, facilities and settings				
Core Objective: Management of community land categorised as a park (36G)				
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.				
Core Objectives: Management of community land categorised as bushland (36J)				
a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and;				
c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbances caused by human intrusions.				
Recreational values closely linked to environmental quality [see natural setting] Recreational values, public access and facilities include: > main carpark/ picnic & barbeque area > the "Cascades & lower creek area" > reclamation area > Sailing Club/ water-based activities > main bush track > South Creek open, grassed area (opposite James Wheeler Place)		Protect and enhance the park's natural and recreational values	see below for details	
Core Objectives: Management of community land categorised as a park (36G)				
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.				
Core Objectives: Management of community land categorised as bushland (36J)				
c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbances caused by human intrusions.				
- off-street sealed car park with easy access / egress (off The Esplanade), located close to lagoon/ beach access, boat ramp, Sailing Club, amenities & BBQ's - easy, flat access to facilities, bushland and foreshores	H1	Main Carpark/ Picnic & Barbeque Area: - investigate options for dispersing visitors within the north-eastern area [refer to Reclamation Area - Item J1]. Continue to maintain recreational facilities, public amenities and open space to a high standard.	see item J1 - compliance with Service Level Agreements [SLA] - measure visitor satisfaction with setting and facilities	ongoing
	H2	- enhance accessibility to cater for a broad range of user groups (eg. people with disabilities, frail, aged, children, strollers, etc) - construct pedestrian ramp access to public amenities (Sailing Club building)	- provision of broad-based, easy community access - disability access completed in accordance with CAPEX	high/ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority	
recreation/ access & circulation					
Desired Outcome: To protect and enhance public access, recreational linkages, facilities and settings (continued)					
Core Objective: Management of community land categorised as a park (36G) (continued)					
Core Objective: Management of community land categorised as bushland (36J) (continued)					
- pedestrian/ bikepath foreshore linkage	H3	Main Carpark/ Picnic & Barbeque Area (cont'd) - complete link between Berry Reserve - Jamieson Park by connecting asphalt pathway/ bikepath to main carpark [including a pedestrian crossing/ slow-point and linkage to existing service track]	- important link completed in line with CAPEX funding	high	
		- construct 1.6 metre wide bikepath/ pedestrian loop track in asphalt finish along service vehicle track/ reclamation area (eastern paddock) and return over widened bridge through picnic area to Berry Reserve	- enhanced recreational opportunities in the reclamation area - measure recreational trends over time - multi-use loop track implemented under CAPEX programme	medium	
		- develop an integrated system of identification, interpretive & directional signage to improve visitor awareness of appropriate low-impact activities and range of recreational opportunities and linkages. Signs should include the use of maps and consider sensory and multi-lingual options.	- interpretive and directional signage installed - improved visitor awareness of park's values and appropriate low-impact activities	high ongoing	
		- provide low-key lighting in main carpark area/ entry & crossing, using a combination of pole mounted fixtures and bollards	- measure recreational trends/ visitor satisfaction over time	medium	
		- replace existing wood-fuelled BBQ's with 6-8 electric BBQ's, including two shelter structures and seating to accommodate small groups	- measure recreational trends/ visitor satisfaction over time - % of damage/ vandalism to Casuarinas reduced	high/ongoing	
		- group plant additional Casuarinas near carpark foreshores and install tensioned wire temporary closures [ie. timber/ star-steel post & fencing].	- % of high visitor impact areas given temporary protection for rehabilitation measures	medium	
		- review opportunities for Pay & Display parking with "short-period" option	- investigation completed and recommendations implemented	low	
		Core Objective: Management of community land categorised as bushland (36J)			
		c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbances caused by human intrusions.			
Core Objective: Management of community land categorised as watercourse (36M)					
a.) to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and waterflows, and;					
b.) to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and;					
c.) to restore degraded watercourses, and;					
d.) to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.					
- bushwalking - cascades close to carpark/ rainforest gully	I1	The "Cascades" and Lower Creek Area: - repair extensive erosional damage/ re-grade and batter embankment, construct sandstone wall or use large sandstone boulders to reinforce creek-line near the end of "Cascades" track. [See item C12 for lower creek]	- erosion damage, public safety and risk management issues addressed	high	

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
recreation/ access & circulation				
Desired Outcome: To protect and enhance public access, recreational linkages, facilities and settings (continued)				
Core Objective: Management of community land categorised as bushland (36J) (continued)				
Core Objective: Management of community land categorised as watercourse (36M) (continued)				
	12	The "Cascades" and Lower Creek Area (cont'd): - formalize track access with compacted decomposed granite/ timber boardwalk, viewing deck & interpretive signage. Plant with local rainforest species. Opportunity to "name" the "Cascades".	- works completed in accordance with CAPEX funding - opportunities provided for community involvement and stewardship	medium high
	13	- remove exotic Coral Trees from lower creek-line & rehabilitate [see D1 - D6]	- all Erythrina crista-galli in creek-line removed within 2 years	high
	14	- construct fencing to control mowing/ rehabilitate lower creek-line vegetation	- works completed in accordance with CAPEX funding	high
Core Objective: Management of community land categorised as park (36G)				
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.				
Core Objective: Management of community land categorised as bushland (36J)				
a.) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land.				
Core Objective: Management of community land categorised as wetland (36K)				
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.				
- relatively flat access from main carpark/ picnic area - access to foreshores/ beaches	J1	Reclamation Area: - opportunities to significantly enhance environmental qualities and desirability of the reclamation area as a destination point: > conduct soil sampling/ analysis (pH, EC and complete chemical) to provide necessary data for soil amendment/ rehabilitation strategy > remove mounded area in western paddock to open water views > investigate opportunities for development of a freshwater wetland in western paddock [see items C5 & C11] > investigate options for alternate main track construction [see item C9 - C10] > protect sensitive western part of site from increased recreation (eg. protective fencing across tracks and connect foreshore track to main track) > improve pedestrian access ie. bridge widening over lower creek crossing, asphalt multiple-use loop track through eastern paddock [see item H4]	- monitor recreational trends over time - measure visitor satisfaction with facilities - recommendations implemented in rehabilitation strategy - enhanced visual and environmental opportunities - improved protection of important habitat/ bird nesting sites	ongoing medium medium high medium

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
recreation/ access & circulation				
<p>Desired Outcome: To protect and enhance public access, recreational linkages, facilities and settings (continued)</p> <p>Core Objective: Management of community land categorised as a park (36G)</p> <p>Core Objective: Management of community land categorised as bushland (36J)</p> <p>Core Objective: Management of community land categorised as wetland (36K)</p>				
	J1 cont'	<ul style="list-style-type: none"> > upgrade foreshore track to a 1.2 metre wide decomposed granite track (linking to main bush track). > improve shade qualities (tree planting/ and a large group picnic shelter) > re-locate facilities closer to foreshores, utilizing existing shade trees > install BBQ's in shelters for large groups/ install water points > enhance open grassed areas for unstructured active recreation 	<ul style="list-style-type: none"> - improved public access and circulation in line with CAPEX - enhanced recreational opportunities for larger groups including areas for unstructured active recreation - monitor recreational changes and trends over time 	<p>medium</p> <p>medium</p>
<p>Core Objective: Management of community land categorised as a park (36G)</p> <p>a.) to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and;</p> <p>b.) to provide for passive recreational activities or pastimes and for the casual playing of games.</p> <p>Core Objective: Management of community land categorised as foreshore (36N)</p> <p>a.) to maintain the foreshore as a transition area between the aquatic and the terrestrial environment, and to protect and enhance all functions associated with the foreshore's role as a transition area.</p>				
- water-based recreation and access	K1	<p>Sailing Club/ water-based activities:</p> <ul style="list-style-type: none"> - review catchment management issues which directly impact on the viability of the Sailing Club & the building's facilities/ equipment (subject to Estuary Management Plan recommendations in 2001) 	- investigations completed and recommendations implemented	medium
	K2	- ensure flexibility in permitting appropriate uses of the building (eg. water-based recreation &/ or hiring of equipment or environment education, bush walking/ interpretation)	- facilities providing appropriate recreational opportunities which are broadly-based and equitable in accordance with guidelines [see items F1 - F6 and G1]	high
	K3	- investigate options for adaptive re-use of un-leased portion of the building	- investigation completed and recommendations implemented	ongoing
	K4	- continue current lease to Narrabeen Lakes Sailing Club with option for renewal upon expiration date	- lease renewal evaluated before expiration date in accordance with lease guidelines [item G1]	ongoing
<p>Core Objective: Management of community land categorised as bushland (36J)</p> <p>c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed minimising or mitigating any disturbance caused by human intrusion, and;</p> <p>e.) to protect existing landforms such as natural drainage lines, water courses and foreshores.</p> <p>Core Objective: Management of community land categorised as wetland (36K)</p> <p>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;</p> <p>b.) to restore and regenerate degraded wetlands, and;</p> <p>c.) to facilitate community education in relation to wetlands, and the community use of wetlands, without compromising the ecological values of wetlands.</p>				

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Core Objective: Management of community land categorised as a watercourse (36M) (continued) a.) to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and waterflows, and; b.) to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and; c.) to restore degraded watercourses, and; d.) to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.				
- major pedestrian linkage between The Esplanade (Berry Reserve) and South Creek corridor/ James Wheeler Place via Narrabeen Lagoon foreshores/ Pipeclay Point & the "Greenhaven" site - predominantly natural setting/ experience - existing unsealed natural earth track/ low volume pedestrian traffic	L1	Main Bush Track: - reinforce low-key opportunities for improved recreational corridor linkages: > Dee Why Lagoon - South Creek - Berry Reserve > bridge crossing South Creek linking to western shoreline & Garigal National Park	- enhanced public access, recreational linkages and circulation in line with CAPEX funding	low/ongoing
	L2	- provide minimal site hardening/ shielding to main bush track [ie. predominantly compacted decomposed granite finish, 1.6 metre width]	- surfacing treatment addresses natural setting, values and purpose of this Crown Reserve	high/ongoing
	L3	- track design should address the following site-specific issues: > minimize track diversions or dispersal of impacts > clean fill for raising sub-grade levels must be guaranteed weed-free, local crushed sandstone suitable for sub-grade compaction > install appropriate sub-surface drainage and rubble energy dissipaters > construct timber boardwalk through Cabbage Palm Woodland over semi-permanent creek crossing > construct low-key timber foot-bridges over intermittent water courses on "Greenhaven" site > pathway/ boardwalk design in accordance with this Plan's development guidelines [see items F1 - F6] and relevant Australian standards > design height of pathway set at approved flood level AHD	- increases in visitor numbers/ changes in user groups - changes in user groups managed effectively with this strategy. - monitor changes and trends over time	high/ongoing
	L4	- maintain adequate sight distances along track through appropriate control of shrubs. Encourage a cover of low shrubs, grasses & sedges beside track.	- number of public safety and risk management complaints received	high/ongoing
	L5	- investigate opportunities for timber boardwalk construction through wetlands/ Swamp Oak Forest providing direct foreshore link	- provision of foreshore alternate route on Crown land - low-impact solution through wetlands	medium
	L6	- need agreement and clarification of management issues with RSLWVRV for any interim upgrading of bush track traversing "Greenhaven" site	- agreement prior to any track upgrading on "Greenhaven" site	high/ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
recreation/ access & circulation		<p>Desired Outcome: To protect and enhance public access, recreational linkages, facilities and settings (continued)</p> <p>Core Objective: Management of community land categorised as a park (36G)</p> <p>a.) to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and;</p> <p>b.) to provide for passive recreational activities or pastimes and for the casual playing of games.</p> <p>Core Objective: Management of community land categorised as bushland (36J)</p> <p>c.) to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and;</p> <p>d.) to restore degraded bushland, and;</p> <p>e.) to protect existing landforms such as natural drainage lines, watercourses and foreshores.</p> <p>Core Objective: Management of community land categorised as a watercourse (36M)</p> <p>a.) to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and water flows, and;</p> <p>b.) to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and;</p> <p>c.) to restore degraded watercourses, and;</p> <p>d.) to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.</p>		
	- easy access to southern section of park	South Creek Open Grassed Area (adjacent to James Wheeler Place):		
		M1	- provide max. two picnic tables/ seating in discrete locations	medium
		M2	- rehabilitation planting (large mulched beds) to delineate large, open area and to improve environmental values & buffers to core habitat	medium
		M3	- install fencing/ signage as part of volunteer regeneration work to protect vital core habitat	high
		M4	- enhance entry to park with locational/ directional signage/ planting	high
		M5	- investigate opportunities for construction of timber bridge and pedestrian access to western shoreline and Garigal NP	low/ongoing
	M6	- investigate opportunities for providing an improved low-key pathway link along South Creek corridor	- investigation undertaken and recommendations implemented	medium ongoing

Management Strategies (continued)

Values	Item	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
heritage	Desired Outcome: To protect and enhance the park's heritage values			
	Core Objective: Management of community land categorised as an area of cultural significance (36H)			
	a.) the continuous protective care and maintenance of the physical material of the land or of the context and setting of the area of cultural significance;			
	b.) the restoration of the land, that is, the returning of the existing physical material of the land to a known earlier state by removing accretions or by assembling existing components without the introduction of new material;			
	c.) the reconstruction of the land, that is, the returning of the land as nearly as possible to a known earlier state;			
d.) the adaptive re-use of the land, that is, the enhancement or reinforcement of the cultural significance of the land by the introduction of sympathetic alterations or additions to allow compatible uses (ie. uses that involve no changes to the cultural significance of the physical material of the area, or uses that involve changes that are substantially reversible or changes that require a minimum impact);				
e.) the preservation of the land, that is, the maintenance of the physical material of the land in its existing state and the retardation of deterioration of the land.				
Cultural/ Archaeological Heritage: - ruins of jetty associated with James Wheeler estate	N1	- investigate options for protection, management & interpretation	- investigation conducted and recommendations implemented	medium ongoing
Indigenous Heritage: - no confirmed sites	N2	- conduct review with National Parks/ Aboriginal Land Working Group to establish the location of any sites	- investigation conducted and recommendations implemented	medium ongoing

Works Schedule & Opinion of Probable Landscape Construction Costs (5-years: Capital & Recurrent Works)

Item	Action	Responsibility	Completed By	Capital Cost (\$)	Recurrent Cost (\$)
A1-A6	see relevant actions as follows:	Council (P&A/ S/ EM/ C& M)	2004	see below	see below
Biodiversity Management:					
B1	conduct a faunal survey	Council (EM)	2001	15,000.00	n/a
B2	faunal corridor rehabilitation planting [South Creek corridor - Garigal NP links]	Council (EM/ NTA/ volunteers)	ongoing	n/a	3,000.00
B3	continue to control and monitor feral animal populations [eg. pindone/ education]	Council (S/ EM)	ongoing	n/a	ex
B4	continue community-based environmental education programmes	Council (S/ EM)	ongoing	n/a	ex
B5	refer to C1-C11 actions		see below		
B6	refer to E1-E4 actions		see below		
Catchment Management:					
C1	formalize service vehicle access to GPT in Colooli Road/ rehabilitation & planting	Council (P&A/ C&M/ EM/ NTA)	2000	10,000.00	1,000.00
C2	investigate stormwater rationalization in Colooli Road	Council (P&A/ C&M)	2000	10,000.00	ex
C3	refer to C4, C10 and J1 actions		see below		
C4	initiate development of stormwater management plan (north-east boundary RSLWVRV)	Council (P&A/ C&M/ EM)	2000	20,000.00	ex
C5	stormwater lines/ connection to new wetlands in western paddock (reclamation area)	Council (P&A/ C&M/ EM)	2001	allow 60,000.00	ex
C6	planting within fuel reduced zone (adjoining property boundaries)	Council (EM/ RFS)	ongoing	n/a	see item E3
C7	continue local resident education programmes	Council (S/ EM)	ongoing	n/a	ex
C8	develop a working "partnership" with RSLWVRV	Council (S/ EM)	ongoing	n/a	ex
C9	temporary closure of track south of reclamation area/ fencing, rehabilitation & signage	Council (EM/ NTA/ volunteers)	2000	7,000.00	3,000.00
C10	new CDG track & boardwalk [180 metres] (subject to ex. track closure - see item C8)	Council (C&M/ EM)	2001	22,000.00	1,000.00
C11	construct wetlands/ re-contouring, planting and rehabilitation [approx. 1750 m2]	Council (EM)	2001	80,000.00	4,000.00
	strengthen/ extend headwalls & fence creekline. Investigate bridge/ culvert enhancement.	Council (P&A/ C&M/ EM)	2002	20,000.00	ex
Weed Management, Bush Regeneration and Rehabilitation:					
D1	implement an integrated strategy to bush regeneration and rehabilitation	Council (EM/ NTA/ volunteers)	ongoing	n/a	25,000.00
D2	confine with current area/ contract priorities	Council (EM/ NTA)	ongoing	n/a	see above
D3	seek additional funding for improved catchment management [see C4, C10 and J1 actions]	Council (P&A/ S/ C&M/ EM)	2000	n/a	ex
D4	supplement regeneration with rehabilitation planting in highly impacted areas eg. the "Cascades"	Council (EM/ NTA/ volunteers)	ongoing	n/a	15,000.00
D5	introduce objective monitoring of regeneration sites	Council (EM)	ongoing	n/a	ex
D6	co-ordinate/ manage volunteer bush regeneration teams & support grant funding applications	Council (EM/ volunteers)	ongoing	n/a	ex

KEY TO RESPONSIBILITY:

Council (P&A): Property & Assets

Council (S): Strategy

Council (EM): Environmental Management

Council (C&M): Construction & Maintenance

NTA: National Trust Bush Regeneration

RFS: Rural Fire Service

volunteers: community volunteer network

Note: "ex" refers to sourcing from existing budgets/ staff costs.

"n/a" cost not applicable

"capital cost" includes design/ documentation, construction and supervision costs.

Works Schedule & Opinion of Probable Landscape Construction Costs (5-years: Capital & Recurrent Works)

Item	Action	Responsibility	Completed by	Capital Cost (\$)	Recurrent Cost (\$)
Bushfire Management:					
E1	fire management policy integrated with objectives of biodiversity management	Council (EM/ RFS)	ongoing	n/a	ex
E2	promote an interdisciplinary approach, emphasizing flexibility in fuel-free & fuel reduced zones	Council (EM/ RFS)	ongoing	n/a	ex
E3	fire management strategy within fuel-free/ fuel-reduced zones based on site specific criteria	Council (EM/ RFS)	ongoing	n/a	20,000.00
E4	new development proposals on adjoining property should provide set-backs for fire hazard reduction	Council (S/ EM)	ongoing	n/a	ex
Development & Leases/ Licenses:					
F1-F6	establish guidelines for assessing development proposals and impacts	Council (P&A/ S)	ongoing	n/a	ex
G1	establish guidelines for assessing leases and licenses	Council (P&A/ S)	ongoing	n/a	ex
Main Carpark/ Picnic & Barbeque Area:					
H1	investigate options for dispersing visitor impacts [see item J1].	Council (P&A/ S/ EM/ C&M)	ongoing	n/a	ex
H2	enhance accessibility to cater for a broad range of user groups/ construct ramp access to amenities	Council (P&A/ C&M)	2000	10,000.00	n/a
H3	Berry Reserve - Jamieson Park link [including asphalt pathway/ bikepath, crossing & slow-point]	Council (C&M/ EM)	2001	12,000.00	n/a
H4	construct 2.5 metre wide bikepath/ pedestrian loop track in asphalt finish [260 metres/ widen bridge	Council (C&M/ EM)	2002	50,000.00	n/a
H5	develop an integrated system of identification, interpretive & directional signage	Council (S/ EM/ C&M)	2003	30,000.00	1,000.00
H6	install low-key lighting in main carpark area/ entry [pole mounted fixtures and bollards]	Council (P&A/ C&M/ EM)	2004	25,000.00	1,000.00
H7	install 6-8 electric BBQ's + two shelter structures/ picnic seating (for small groups)	Council (P&A/ C&M/ EM)	2002	60,000.00	1,000.00
H8	group planting near carpark foreshores/ temporary closures [fencing]	Council (EM)/ volunteers	2001	5,000.00	n/a
H9	review option for Pay & Display parking with "short-stay" provisions	Council (P&A/ S)	ongoing	n/a	ex
The "Cascades" and Lower Creek Area:					
I1	repair damage/ re-grade embankment, construct sandstone wall or boulders at the "Cascades"	Council (C&M/ EM)/ volunteers	2000	10,000.00	n/a
I2	formalize track access with CDG/ timber viewing deck & interpretive signage. Rehabilitation planting.	Council (C&M/ EM)/ volunteers	2000	20,000.00	n/a
I3	remove exotic Coral Trees from lower creek-line & rehabilitate [see D1 - D6]	Council (EM)/ volunteers	2001	2,000.00	n/a
I4	construct protective fencing along creek-line for rehabilitation/ incl. revegetation and regeneration	Council (EM)/ volunteers	2001	4,000.00	1,000.00
Reclamation Area:					
J1	soil testing/ amendments, install protective fencing/ re-alignment, rehabilitation planting & signage foreshore track/ linkages to main bush track upgrade to 1.5 metre width in CDG [210 metres]	Council (S/ EM)	2001	30,000.00	n/a
	install electric BBQ's shade structure for large groups & re-locate ex. facilities/ planting for alternate CDG track + boardwalk, wetland construction & asphalt loop track see C9, C10 & H4	Council (C&M/ EM)	2001	11,000.00	n/a
		Council (P&A/ C&M/ EM)	203	60,000.00	5,000.00
			see above		

KEY TO RESPONSIBILITY:

Council (P&A): Property & Assets

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Council (EM): Environmental Management

Council (C&M): Construction & Maintenance

NTA: National Trust Bush Regeneration

RFS: Rural Fire Service

volunteers: community volunteer network

Note: "ex" refers to sourcing from existing budgets/ staff costs.

"n/a" cost not applicable

"capital cost" includes design/ documentation, construction and supervision costs.

Works Schedule & Opinion of Probable Landscape Construction Costs (5-years: Capital & Recurrent Works)

Item	Action	Responsibility	Completed by	Capital Cost (\$)	Recurrent Cost (\$)
Sailing Club/ water-based activities:					
K1	review catchment management issues affecting the Sailing Club	Council (P&A/ S)	ongoing	n/a	ex
K2	ensure flexibility in permitting appropriate uses of the building	Council (P&A/ S)	ongoing	n/a	ex
K3	investigate options for adaptive re-use of the building	Council (P&A/ S)	ongoing	n/a	ex
Main Bush Track:					
L1	reinforce low-key opportunities for improved recreational corridor linkages [see items M5 & M6]	Council (EM/ NTA/ volunteers)	see below		
L2	staged upgrade main bush track to 1.5 metre width, minimal site hardening in CDG [1600 metres] stage 1: Pipeclay Point section (from reclamation area to Palm Woodland creek) [680 metres] stage 2: timber boardwalk/ bridge crossing (Palm Woodland creek section) [120 metres] stage 3: Palm Woodland to James Wheeler PL/ incl. crossings (via "Greenhaven" site) [800 metres]	Council (C&M/ EM)	2001 2000 2002	35,000.00 45,000.00 45,000.00	1,000.00 1,000.00 1,000.00
L3	track design/ construction to emphasize minimal impact	Council (C&M/ EM)	see above		
L4	maintain adequate sight distances along track through appropriate control/ pruning of shrubs	Council (EM/ NTA/ volunteers)	ongoing	n/a	1,000.00
L5	investigate opportunities for timber boardwalk construction through wetlands/ Swamp Oak Forest	Council (S/ EM)	ongoing	n/a	ex
	timber boardwalk construction [330 metres] (Note: this option not costed into 5-year programme)	Council (S/ C&M/ EM)	optional	130,000.00	n/a
L6	co-ordinate interim upgrading of track through "Greenhaven" site with RSLWVRV	Council (S/ EM)	ongoing	n/a	ex
South Creek Open Grassed Area (adjacent to James Wheeler Place):					
M1	provide max. two picnic tables/ seating in discrete locations	Council (C&M/ EM/ volunteers)	2003	3,000.00	n/a
M2	rehabilitation planting beds	Council (C&M/ EM/ volunteers)	2001	3,000.00	2,000.00
M3	install protective fencing/ signage to address multiple tracking in core habitat	Council (C&M/ EM/ volunteers)	2002	15,000.00	1,000.00
M4	enhance entry to park with locational/ directional signage/ planting [see item H5]	Council (S/ EM/ C&M)	2002	10,000.00	n/a
M5	investigate opportunities for construction of timber bridge/ pedestrian access to western shoreline	Council (S/ EM)	ongoing	n/a	ex
	timber bridge/ pathway construction [180 metres only] (Note: this option not costed in 5-year programme)	Council (S/ C&M/ EM)	optional	60,000.00	n/a
M6	investigate opportunities for providing an improved low-key pathway link along South Creek corridor	Council (S/ EM)	ongoing	n/a	ex
	CDG pathway construction [260 metres only] (Note: this option not costed in 5-year programme)	Council (S/ C&M/ EM)	optional	13,000.00	n/a
Heritage Management:					
N1	investigate options for protection, management & interpretation of James Wheeler estate jetty ruins	Council (S/ EM)	ongoing	n/a	ex
N2	indigenous heritage: conduct review with National Parks/ Aboriginal Land Working Group	Council (S/ EM)	ongoing	n/a	ex

KEY TO RESPONSIBILITY:

Council (P&A): Property & Assets

Council (S): Strategy

Council (EM): Environmental Management

Council (C&M): Construction & Maintenance

NTA: National Trust Bush Regeneration

RFS: Rural Fire Service

volunteers: community volunteer network

Note: "ex" refers to sourcing from existing budgets/ staff costs.

"n/a" cost not applicable

"capital cost" includes design/ documentation, construction and supervision costs.

Summary Works Sheet:

(5-years: Capital & Recurrent Works)

Unit Management Action	Works Period Expenditure (\$)										Unit Management Totals (\$)	
	2000		2001		2002		2003		2004			
	Capital	Recurrent	Capital	Recurrent	Capital	Recurrent	Capital	Recurrent	Capital	Recurrent	Capital	Recurrent
Biodiversity Management B1-B6			15,000.00	3,000.00		3,000.00		3,000.00		3,000.00	15,000.00	12,000.00
Catchment Management C1-C11	47,000.00		162,000.00	4,000.00	20,000.00	9,000.00		9,000.00		9,000.00	229,000.00	31,000.00
Weed Management/ Regeneration D1-D6		25,000.00		40,000.00		40,000.00		40,000.00		40,000.00		185,000.00
Bushfire Management E1-E4		20,000.00		20,000.00		20,000.00		20,000.00		20,000.00		100,000.00
Recreation Management:												
H1-H9 (Main carpark/ picnic)	10,000.00		17,000.00		110,000.00		30,000.00	2,000.00	25,000.00	3,000.00	192,000.00	5,000.00
I1-I4 (The "Cascades")	30,000.00		6,000.00	1,000.00		1,000.00		1,000.00		1,000.00	36,000.00	4,000.00
J1 (Reclamation area)			41,000.00				60,000.00			5,000.00	101,000.00	5,000.00
L1-L6 (Main Bush track)	45,000.00	1,000.00	35,000.00	2,000.00	45,000.00	3,000.00		4,000.00		4,000.00	125,000.00	14,000.00
M1-M6 (South Creek Open Space)			3,000.00		25,000.00	2,000.00	3,000.00	3,000.00		3,000.00	31,000.00	8,000.00
Totals (\$)	132,000.00	46,000.00	279,000.00	70,000.00	200,000.00	78,000.00	93,000.00	82,000.00	25,000.00	88,000.00	729,000.00	364,000.00



EXISTING

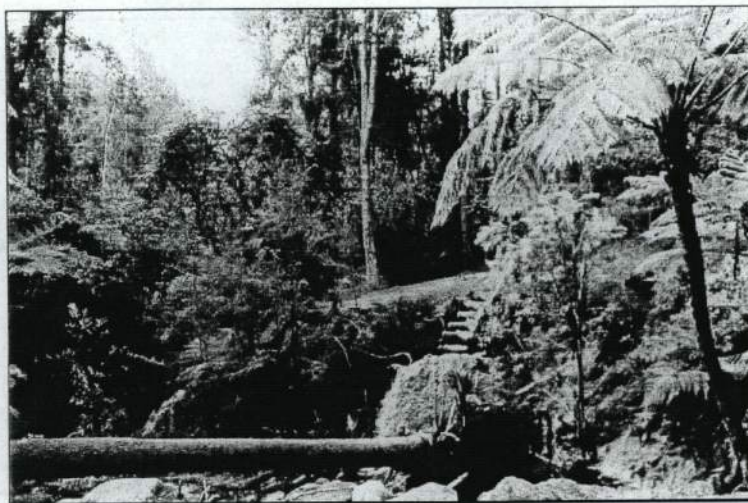
PHOTO 10: Main Carpark/ Picnic, Barbeque Area & Sailing Club.



PROPOSED

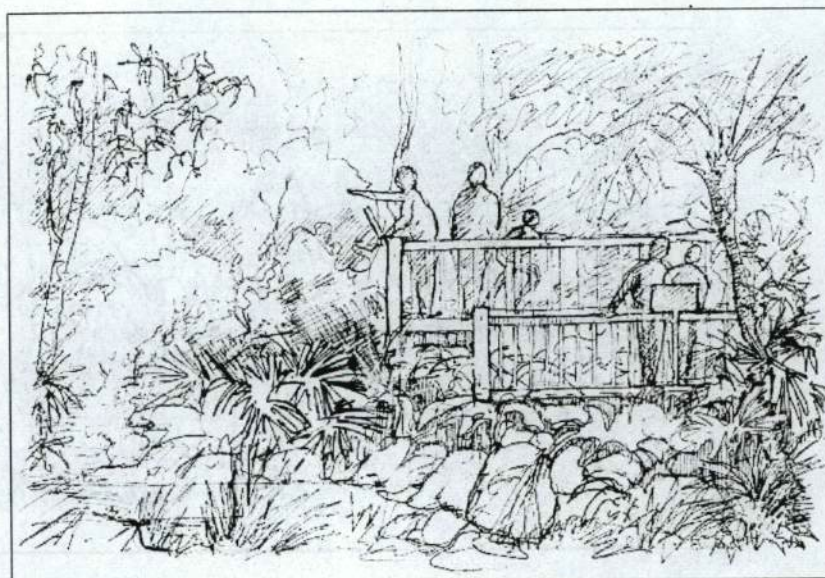
Perspective Sketch 1: Proposed asphalt bikepath/ pedestrian loop-track, electric BBQs (left background) and bollard lighting in main picnic area.

(for details refer to Management Strategies tables: items H1-9)



EXISTING

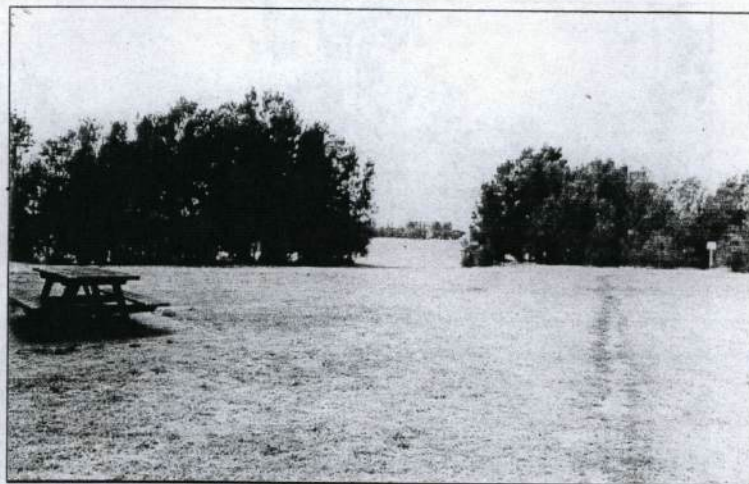
PHOTO 11: The "Cascades" south of the main picnic area



PROPOSED

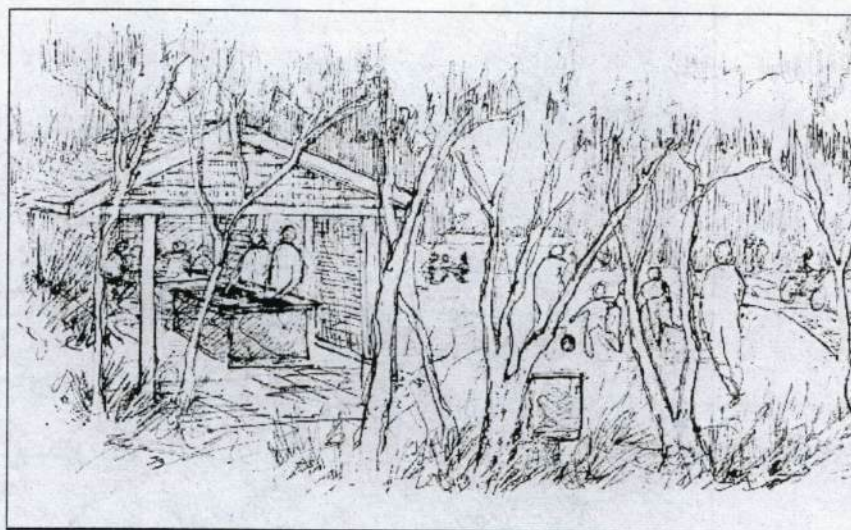
Perspective Sketch 2: Proposed sandstone rockwork and backfilling to creek bank, rehabilitation with locally-sourced, indigenous rainforest species and timber decking/interpretive signage for visitor viewing area.

(for details refer to Management Strategies tables: items 11-2)



EXISTING

PHOTO 12: Reclamation Area - eastern paddock.



PROPOSED

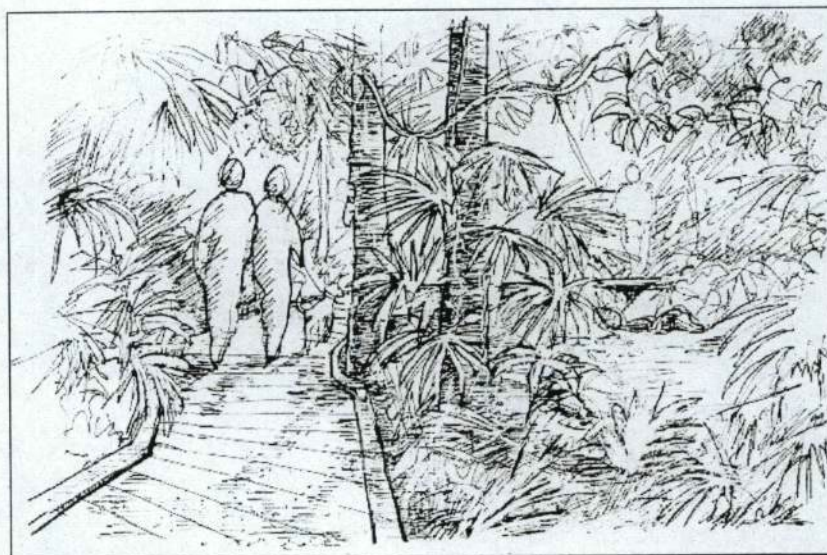
Perspective Sketch 3: Proposed picnic/ BBQ shelter for larger groups, landscape rehabilitation (foreground), bikepath/ pedestrian loop-track (background) and enhanced open space for informal play.

(for details refer to Management Strategies tables: item J1)



EXISTING

PHOTO 13: Main bush track at creek crossing showing existing damaged bridge and erosion from multiple tracking.



PROPOSED

Perspective Sketch 4: Proposed low-key timber foot-bridge/ boardwalk with raised kick-rail edge over creek in palm woodland.

(for details refer to Management Strategies tables: item L3)

Appendix I

- (a) Summary of Meeting Issues*
- (b) Exploring Issues Papers*
- (c) Community Issues Discussion Paper*
(Issue Date: 6 April 1999)

Jamieson Park: Public Meeting/ Workshop

Community Issues: Summary of Comments

Venue: Tramshed Arts & Community Centre, Lakeview Hall
Date: Monday 12th October 1998
Time: 7.30pm - 10.00pm

The public meeting/ workshop was opened with an introduction to the Plan of Management process by Kylie Vytopil, Principal Strategy Co-ordinator for Warringah Council. This overview emphasized that for this Plan, the southern boundary of Jamieson Park had been extended to include important linkages with the South Creek corridor. It was then followed by a brief presentation of photo-boards and drawings of Jamieson Park by Noel Ruting, partner of LandArc, consultants on this Plan of Management. The three drawings included the following:-

- ☐ Environmental Context;
- ☐ Recreation, Access & Circulation;
- ☐ Values & Impacts Analysis.

The meeting was then opened for public discussion, questions and comments on the issues affecting Jamieson Park as follows:-

1. History & Park Dedication

- the importance of Jamieson Park's history was initially highlighted;
- it was stated that the park is 110 years old this week (12.10.98);
- dedicated as a "centennial park" in 1888, it is believed to be as old as the Royal National Park, Australia's first national park and one of the oldest dedicated national parks in the world.

2. 1995 Visitor Survey

- question regarding the use of the 1995 visitor survey and its quantitative data for this Plan;
- question asked: what data has been used in this study?

Jerry Allan, President Collaroy Plateau Progress Association (Issues 1-2)

Noel Ruting confirmed that the 1995 data will be used in the development of the Plan but there would be no further recreational surveys carried out as part of this Plan.

3. War Veterans Development

- question asked: 'what is the status of the War Veteran's development application?'

John Baird, Northern Beaches Bikers

Kylie Vytopil confirmed the proposed development has been before the Land & Environment Court in May this year, where approval was granted, however it is believed that the development is now on hold. It was further pointed out that Council cannot guarantee that the development will or will not go ahead. The current masterplan for the War Veterans development application was displayed and briefly outlined. KV informed the meeting that Council cannot change the decision, but it will impose conditions to the development.

4. Plan of Management: Process & Terms of Reference

- question asked: 'what are LandArc's terms of reference for this Plan of Management and what

is the process?'

David Cleland, Resident

Noel Ruting further explained LandArc's terms of reference for the preparation and process of achieving the final Plan of Management. Each of the prime objectives, as described in the Brief, were discussed in length, highlighting opportunities for community involvement and preparation of the Draft for public exhibition before an amended Final Draft was adopted by Council.

5. Cycling Facilities in the Warringah Area

- comment made that Warringah Council is poorly served for cyclists;
- Dee Why to Narrabeen Caravan Park offers off road cycling which is low impact;
- opportunities for a continuous circuit and Jamieson Park could offer this facility;
- considers it important that a cycleway extends through this area.

Neil Austen, Northern Beaches Bikers

6. Protection of Natural Values

- opinion that the western area should be maintained as a passive, natural area as the rest of Narrabeen Lagoon has been built up with residential and recreation development;
- only the western edge in Jamieson Park 'gives natural cover from the ridge to the lake';

7. Existing Pedestrian & Bike Access Track

- maintain the existing quality of the track;
- a 2.4m asphalt pathway is not considered appropriate in this location, however there are no objections to a low-key, environmentally sensitive bike track in Jamieson Park;
- it was stressed that formalisation of the pathway (to allow other uses such as skateboards and roller-bladers) would lead to an increase in use and recreational pressures on the area, causing other problems and impacts on the natural environment.

- this statement received considerable support by attendees

8. Lake Dredging & the Reclamation Site

- this area has a history of dredging since 1911;
- there are still opportunities to reverse the filled (reclaimed) area which is not yet established;
- the processes of natural colonisation have never occurred on the site so the sand could be removed and foreshore reclaimed back to its original shoreline;
- as a result recreation alternatives could be created, although they would need to be carefully considered and should be appropriate to the location (eg. Narrabeen School has requested a sportsground be established in this location which would lead to an increase in formalised recreational facilities and uses and subsequent environmental impacts).

Phil Coleman, Narrabeen Lagoon Committee (Issues 6-8)

9. Existing Pedestrian & Bike Access Track (continued - item 7)

- shared the same opinion that formalisation of the bike path will ruin its natural quality;
- in the 1995 survey 70% of people said "don't do anything";
- agreed that the path should remain unaltered;
- wants to see the existing level of recreational use maintained;
- the present use is considered appropriate with the surfacing and narrowness reducing speeds;
- used for recreational biking and if it is improved children will not be able to use it;
- opinion expressed that multiple tracking is not a bad thing; these meandering tracks allow walkers the choice to walk through bushland and watch the wildlife;
- no objections to dogs in the park;

10. **Bridge Construction & Floods**
 - the bridge had a filtration system which is good in theory, but poorly constructed which caused the bridge to fail & collapse in the last flood;
 - a properly constructed bridge is needed;
11. **Fire Control & Fuel Areas**
 - opinion that the neighbours need to take responsibility for fuel reduction; if it is all to be within Jamieson Park nothing will be left;
 - request that control burning should not be done every year as its impact on habitat should be carefully considered, eg. no burning in the nesting season.
12. **Possible Land Swaps**
 - concern expressed that all public land in Jamieson should remain as public land; there should be no land swaps or boundary changes (reference to Council's earlier proposal, pre-Land & Environment Court decision, to swap a parcel of public land on Colooli Road for the protection of another larger natural area belonging to the War Veterans Homes).
13. **Board Walks & Habitat Values**
 - opinion expressed that if access needs to be maintained, wait until the War Veterans Homes begin development of their land near the lagoon edge;
 - increased use of the foreshore edges restricts habitat for bird life;
 - at present birdwatching is excellent as the path does not go too close to their habitat, concern that a board walk will destroy this.
14. **Bush Regeneration**
 - bush regeneration efforts by council are appreciated.

Richard Hunter (Issues 9-14)
15. **Existing Pedestrian & Bike Access Track (continued - items 7 and 9)**
 - the bike track in Berry Reserve originally received many objections, but its value can be seen today with its high level of usage;
 - the bike track along the lagoon edge is a fabulous form of relaxation;
 - concern however that low-key natural picnic areas will be destroyed by speeding cyclists;
16. **Existing Facilities: Barbeques**
 - wood provided for BBQ's encourages children to burn wood for fun creating fire risks, electric or gas BBQ's need to be provided.
17. **Foreshore Habitat Protection**
 - reed-beds should not be touched as it will destroy the habitat for ducks, other birds and fish.

Jack Steer, Resident (Issues 15-17)
18. **Existing Facilities & Access (continued - items 16 and 15)**
 - observation that if there is no wood for the BBQ'S people break the branches off the trees;
 - agreed there is a need for gas or electric BBQ'S;
 - oppose any bike tracks like the one in Berry Reserve as it only encourages more people which increases maintenance and damage costs;
 - recommended maintaining existing facilities.
19. **Reclamation Site (continued - item 8)**
 - reclaimed land is utilized by kids playing football, walking dogs, fishing;
 - increased people and uses means added stress and threat to a sensitive area, particularly on

the sand spit which provides important habitat values;
- walking after rain is difficult and this causes people to go off the track into sensitive areas.

Nicholas Ciko, Resident (Issues 18-19)

20. Bush Regeneration Issues: Fire Management (continued - item 11)

- the work of bush regeneration volunteers in the park is appreciated;
- fire management should consider its impact on habitat and not be done all at once; particularly, the management of Pampas Grass and Lantana since the fires should consider the wrens which use these thickets as habitat.

21. Motor-bikes

- concern that the motor-bikes, that use the track, particularly on Saturday afternoons, disturb the wildlife and present a safety risk to the public; suggested way to control this is by better policing of the track.

22. Facilities & Public Safety Issues: Telephones

- concern raised that there are no telephones within Jamieson Park for emergencies and that it is a long way to the ambulance station.

Robert McPherson, Resident (Issues 20-22)

23. Park Signage

- the natural park environment should be maintained and not formalised;
- the cluster of parking signs, seven within a couple of metres are an 'eye sore'.

Unidentified participant

24. Protecting Natural Values/ Park Management

- opinion expressed that suitable 'permaculture' and conservation techniques be used to better preserve the park and its flora & fauna;
- use low cost maintenance techniques such as sandbags in eroded areas;
- no more bitumen, use only low-key and low maintenance materials.
- suggestion that volunteers should become more engaged in park maintenance (eg. providing temporary access at the collapsed bridge, suggestion of a more permanent structure;
- reinforce community involvement.

Chris Lengel, Resident

25. Bikepath/ Pedestrian Access: Protecting Park Values (continued - items 7, 9 and 15)

- wish to address negative comments and clarify that bikers also consist of families groups;
- the existing park has been used by cyclists for a long time and they should not be prohibited;
- the sensitivity of the western side has been recognised and NBB against multi-tracking;
- the NBB understands that there are problems associated with relocation of the pathway (eg. site disturbance, weed management, habitat values);
- a formal path does not have to be bitumen, crushed gravel will not encourage roller blades;
- no formal path means no solution to multi-tracking during times of inundation;
- people travel across Sydney for this opportunity and it is very hard to stop this;
- the park offers opportunities currently for only 'all terrain' enthusiasts;
- need for properly constructed bikepath and better education;
- motor-cyclists not the same as bicyclists;
- suggestion to limit child access to the northern area;

- expressed opinion 'it is the parents responsibility to supervise children, not the other cyclists'.

John Baird, Northern Beaches Bikers

- the existing 'low-key' path is shared by walkers, runners & cyclists;
- the path is ideal to run on as it is easy on leg joints;
- ideal opportunity to appreciate the bird life;
- opinion expressed that an improved wearing surface will not discourage multiple tracking;
- children have adventurous instincts and will explore the bushland and not stick to the path;
- 'why do children have to have paved pathways which they must stay on?; they need to be able to get dirty and explore the bush;
- shared opinion to 'leave as is' not only for people but the wildlife;
- need to preserve the bushland not just put in more facilities for people.

Deborah Stokes, Resident

- comment that the 1995 Visitor Survey did not quantify or take into account the demographics of the users of the park and in particular the main track;
- opinion expressed that the present track is satisfactory;
- question asked: 'will improvements and multiple uses create liabilities for Council?'
- suggestion of centre lines on the track to avoid conflicts between the users.

Geoff Bown, Resident

- concern expressed about the impact and conflict of bikes and dogs on the park;
- emphasized merits of the natural environment, to maintain seclusion and to be 'left as it is';
- maintain the 'self limiting' quality of the track;
- suggested possibility of incorporating speed traps & humps into drainage lines;
- enjoyable to take dogs and bikes through as long as there is no impact;
- not in support of a second track.

Fiona Van Dort, Resident

- suggested the possibility of a bike-path on the northern side of the lagoon beside Wakehurst Parkway, while the southern side is kept for conservation.

Frank Gleason, Narrabeen Lagoon Committee

28. Litter and Pollution

- pointed out the pollution and litter problem along the South Creek corridor where there are lots of broken bottles where children and teenagers drink, break bottles and build fires;
- need to protect, restore & keep secluded.

Fiona Van Dort, Resident

29. Board-walks (continued - item 13)

- concern expressed over use of board-walks along lake foreshores;

30. Reclaimed Site (continued - items 8 and 19)

- opinion that Council has vandalised the park through creating the reclaimed area/ fill site.

John Lawler, Resident (Issues 29-30)

- laboratory soil testing may be required to confirm the acidity of the soil and why this sterile area

has become a permanent problem;
- site filling created drainage problems on the path which now require an engineering solution.

Marcus Lincoln-Smith, Resident

Noel Ruting stated that reclamation has lowered the water table causing die-back in the Swamp Oaks and poor regeneration while allowing invasion by exotic weeds (Smith, 1997).

31. Motor-bikes (continued - item 21)

- trails in Wheeler Heights are being destroyed by motor bikes;
- careful management of this park is required;
- suggestion for a properly constructed track for motor-bikes as the solution for trail erosion;

Frank Gleason, Narrabeen Lagoon Committee

32. Habitat Corridors & Open Space Linkages

- wants to see Jamieson Park linked to Dee Why Lagoon which is a similar narrow parcel of land surrounded by urban development;
- suggestion that tracks should be kept to the park boundaries as they cause bush destruction of 25 metres either side of the track.

Richard Mitchell, Friends of Dee Why Lagoon

33. Protecting Natural Values

- responsibility to look after & maintain this area as it is;
- question asked: 'Why do we have to change & fix it?'
- the school has its own land and it would be just another user group;
- the area should 'stay natural'.

Jerry Allan, Collaroy Plateau Progress Association

- importance of the reedland as habitat.

Unidentified Participant

34. Water Quality

- raised the issue of land-based recreational impacts on water quality in the lagoon.

Robert McPherson, Resident

Noel Ruting responded that the opportunities to conserve identified values will extend to the lake even though this area is outside the scope of the Plan of Management.

35. Enforcement of Regulations

- opinion that if recreation is increased there will need to be an increased level of enforcement with rangers stationed in the area to enforce dog laws, littering, parking and maintenance issues;

Unidentified Participant

36. **Bikepath/ Pedestrian Access (continued - items 7, 9, 15 and 25)**
- opinion that there is no way to prevent the bikers from using this area;
 - emphasized again safety issues relating to the multi-use of the path which is quite dangerous;
 - need to make it safe for all users;
 - when path is inundated there is no cycleway.

Neil Austen, Northern Beaches Bikers

37. **Reconciliation between Competing User Groups**
- issue of seemingly irreconcilable competing uses of the pathway; some people say leave it vs. development of the path;
 - question raised: 'Who's interest prevails? To achieve reconciliation between the users how and who makes the decision?'

Hon Bronwyn Bishop MP, Federal Member for Mackellar

Noel Ruting stated that we want to hear all the competing interests at this meeting. From this meeting a community issues discussion paper will be produced. Although some of these issues may appear irreconcilable, our main objective is to help the community and Council identify the values worthy of protection in Jamieson Park. Essentially, it is a values based exercise rather than issues based. Our task is to find a balance which best reflects the community's and future generation's needs. The identified values and the issues impacting these values will determine the basis for management during preparation of the Draft Plan. The community will continue to be consulted throughout the preparation of the Draft and again during the public exhibition period before final adoption.

38. **Pathway Surfacing Materials**
- if pathway has shared use, options need to be addressed in relation to environmental impact;
 - selected path material needs to reduce impact eg. Mt Kosciuszko paths are raised metal grills reducing wear from foot traffic and multiple tracking, while allowing rain, snow and light through to plants resulting in low environmental impact.

Fiona Van Dort, Resident

39. **War Veterans Involvement**
- comment made that the War Veterans have not had a chance to comment, could this be arranged?

Jerry Allan, Collaroy Plateau Progress Association

Noel Ruting stated that focus groups or further workshop opportunities can be arranged. It was also emphasized that we were available to discuss any of the issues throughout the preparation of the Draft Plan.

40. **Environment & Water Quality (continued - items 33 and 34)**
- the park provides an important buffer zone to the lagoon as it filters stormwater;
 - the health of the lagoon should be considered;
 - work to educate and eliminate the 'yuk' factor and maintain these natural processes;
 - proposals to improve the park could destroy its natural quality.

Blair Gilmore, Anglers Action Group

41. **Crown Land/ Park Ownership**
- comment that the park is Crown Land owned by all Australians and the broader community;
- not locally owned but managed by Warringah Council as the trustee.
42. **Environmental Impacts**
- concern over Warringah Bush Fire Brigade wanting to put a fire trail for trucks into the park and it was considered far more invasive than a cycleway;
- raised the issue of stormwater runoff from the dredged area;
- War Veteran development should address nutrient runoff through detention ponds.

John Baird, Northern Beaches Bikers (Issues 41-42)

43. **Community Consultation**
- comment that the community would like another public meeting before the Jamieson Park Plan of Management was finalised.

Frank Gleason, Narrabeen Lagoon Committee

44. **Gross Pollutant Traps**
- comment that gross pollutant traps are being considered in surrounding urban areas.

Richard Deighton, Resident

45. **Pathway Regulatory Controls (continued - items 35 and 36)**
- suggestion for signage to be installed along the walking track enforcing bikers to ring bells;
- speed limits on bikes need to be imposed;
- if the signage is not enough there needs to be policing.

Unidentified Participant

46. **Youth-based Recreation**
- expressed concern that the youth are unrepresented yet blamed for everything;
- opinion that policing is no solution and it is better to be pro-active;
- associated problems with the youth such as lighting BBQ's or fires, drinking, motor cycling will not be stopped by policing, they will still get into the park;
- the park is not a single entity, youth recreation facilities need to be considered;
- need to find alternatives for the youth in other areas and parks;
- even employing two rangers at \$60 000 a year would not be enough to solve the problems.

The meeting/ workshop was formally brought to a close at 10.00pm after all comments from participants appeared to have been raised. It was requested that further written comments on the Exploring Issues Paper be returned to LandArc by 22nd October 1998.

Meeting/ Workshop Attendees Registered for Mailing List: 35

Distributed Items: Council's Principles of Community Land Management in Warringah
Council's Brochure: "What are Community Land Plans of Management?"
Exploring Issues: Written Comments
LandArc's reduced A3 sheet: Values & Impacts Analysis

Exploring Issues - Yellow Papers

Distributed at public meeting/ workshop on 12th October 1998.
For return to LandArc by no later than 22nd October 1998.

Total Responses: 24 & 2 submission.

Summary Sheets:

Sheet: 1 of 24
Age Group: > 65
Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ for the natural look that still remains & compliments the lake;
- ☐ "that the area does not become one of red roofs & bricks- another Bondi."

ISSUE 1

- ☐ more trees;

ISSUE 2

- ☐ some recreation area;

ISSUE 3

- ☐ publicity & education re- the area.

Sheet: 2 of 24
Age Group: 50-65
Sex: M/F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ Jamieson Park has still kept its natural beauty & this area has abundance of native birds & water birds;
- ☐ there are various possums, bandicoots, small tree rats;
- ☐ it is country so close to town that makes Warringah so unique;
- ☐ in the 26 years we have lived in this area a lot of the native plants have been destroyed.

ISSUE 1

- ☐ the public have proven too often to be unappreciative of bushland;
- ☐ if this area is to be used for bushwalking the public should be advised to keep to the tracks & not wander all over the bushland, even signs could be erected to indicate bush regeneration areas as Pittwater Council erects in its shire;
- ☐ also only dogs on leashes as nesting birds in the grasses & low bushes are under threat as well as the ducks & water birds.

ISSUE 2

- ☐ "As residents of 26 years in this area we have seen the bushland abused- the flannel flower & native heathers have depleted in number. There used to be an abundance of Grevilleas, dillwynias- locals pick the flowers & then there are no seeds left to germinate more plants."

ISSUE 3

- ☐ residents whose property backs onto council reserves should be discouraged from treating the land as an extension of their backyard;
- ☐ the constant mowing of the natural grasses just causes weed infestation and it robs the native birds of the natural seeds;
- ☐ they should be encouraged to grow native shrubs & native ground covers.

Sheet: 3 of 24
Age Group: -
Sex: -

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ Jamieson Park is an integral part of Dee Why to Narrabeen cycleway;

- ☐ the wooded areas, reed beds & views across the lake provide a pleasant destination for local cyclists & for touring cyclists from other areas.
- ISSUE 1
- ☐ council needs to formalise the existing 'low level' perimeter track to accommodate use by cyclists & pedestrians such that the path surface is even & the alignment provides good sight lines.
- ISSUE 2
- ☐ Jamieson Park is a public reserve owned by the broad community & hence access to this park should be improved;
- ☐ with increasing population & its consequent demands on open space recreation areas Jamieson Park needs urgent attention to its management needs.
- ISSUE 3
- ☐ the west shoreline boundary adjacent to South Creek & James Wheeler reserve is very narrow & requires careful planning of access into the park from James Wheeler Reserve;
- ☐ any formal path alignment should be along the boundary with the reserve & that land held in trust by Collaroy War Veterans Inc.

Sheet: 4 of 24
 Age Group: > 65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ it is public open space, readily accessible to all;
- ☐ it is valuable habitat for flora & fauna & provides an important buffer for the aquatic environment of the lagoon;
- ☐ Jamieson Park is large enough to provide quiet serenity away from urban noise & pressure.
- ISSUE 1
- ☐ the area must be protected from development especially Disneyland like recreational areas;
- ☐ while protecting the park is important it must not be the excuse for regimented access & use- eg. 'Keep Out' & 'Don't stray from the path'.
- ISSUE 2
- ☐ the sandy filled area to the west of the car park & picnic area should be made more user friendly by tree planting & turfing.
- ISSUE 3
- ☐ continue & extend weeding;
- ☐ replanting of degraded areas of bushland.

Sheet: 5 of 24
 Age Group: 36-50
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "as Commodore of Narrabeen Lake Sailing Club (NLSC) the future of the club depends on the use of Jamieson Park & the usability of the lake."
- ISSUE 1
- ☐ **vandalism:** the club has suffered increasing damage over the years.
- ISSUE 2
- ☐ **parking:** members who even live on the opposite side of the lake have to pay.
- ISSUE 3
- ☐ **quality of water:** especially drainage storm water outlets.

Sheet: 6 of 24
 Age Group: 50-65
 Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ it is important that it is kept in as near natural state as possible for the community to use for recreation & for the wildlife;
- ☐ "no more poles or formalising of the areas- keep it natural."
- ISSUE 1
 - ☐ "Please get rid of the visual pollution -7 signs within metres of one another at the entrance. The awful signs really detract from the naturalness of the area. Put more than 1 sign on a pole if necessary instead of continuing sticking in a pole and putting a sign on it! Nice wooden signage, only what is necessary."
- ISSUE 2
 - ☐ "the pathway stops abruptly at the bottom of Nioka Road -could it please be continued a bit further to link it up?"
 - ☐ no formal pathway to the west of the Sailing Club.
- ISSUE 3
 - ☐ perhaps the wooden storage areas could be tidied up- natural looking containers.

Sheet: 7 of 24
 Age Group: > 65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ valuable open space & scenic area.
- ISSUE 1
 - ☐ track maintenance required- especially difficult after wet weather.
- ISSUE 2
 - ☐ weed infestation.
- ISSUE 3
 - ☐ board walks in low lying areas.

Sheet: 8 of 24
 Age Group: 20-35
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "Parklands are important demograph to the area, enhancing living & recreational activities. It looks nice and feels good."
- ISSUE 1
 - ☐ conservation of existing areas, maintaining flora & fauna from destructive activities & weeds, erosion prevention (sand bagging) in some areas of the streams, litter traps at street level preventing pollution, trees falling over the track.
- ISSUE 2
 - ☐ volunteers.
- ISSUE 3
 - ☐ low maintenance construction.
- ISSUE 4
 - ☐ cheaper cost.

Sheet: 9 of 24
 Age Group: 50-65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ because it is a natural green oasis in a built up suburban area;
- ☐ it is a buffer between the ever expanding War Veterans home & the lake.
- ISSUE 1
 - ☐ "I wish to see a cycleway constructed around the lake. This is part of the missing link of what could be one of the great cyclepaths in Sydney (from Dee Why Beach to Narrabeen Caravan Park.) It offers cyclists the opportunity to travel north/south in the peninsula without using Pittwater Road."
- ISSUE 2

- ☐ "The surface of the cycleway has to be aesthetically appealing but not subject to regular damage from the roots."
- ISSUE 3
- ☐ no comment.

Sheet: 10 of 24
 Age Group: 36-50
 Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ the natural bushland: a pleasure for walkers, joggers & dog lovers.
- ISSUE 1
- ☐ no more building development.
- ISSUE 2
- ☐ no roads.
- ISSUE 3
- ☐ no more car access (parking).
- ISSUE 4
- ☐ many more garbage bins in the park & not bunched together.
- ISSUE 5
- ☐ the lake needs dredging if it is not to silt up.

Sheet: 11 of 24
 Age Group: 50-65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "No more controlling of the areas. Let the area just do its thing. Fencing by all means just to keep human beings from area destruction."
- ISSUE 1
- ☐ children forcing play areas through the bush;
- ☐ bike riding on pathways.
- ISSUE 2
- ☐ "We need burn offs."
- ISSUE 3
- ☐ stop multiple tracking.

Sheet: 12 of 24
 Age Group: >65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "The retirement village cottage my wife & I occupy borders the park & overlooks Narrabeen Lagoon."
- ISSUE 1
- ☐ control of bushfire.
- ISSUE 2
- ☐ control if not eradication of exotic weeds eg. Lantana & Privet.
- ISSUE 3
- ☐ "Control of further development of the park lands & lands adjoining. I am well aware of Council's efforts to deny development applications by the RSL Veterans Retirement Village Ltd & very much regret that its efforts were not successful."

Sheet: 13 of 24
 Age Group: 50-65
 Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ it is a unique park with many endangered habitats in an urban environment;

- ☐ it offers recreation opportunities which if managed properly would not be inconsistent with preservation of the park & opportunities to conserve natural habitats.
- ISSUE 1
- ☐ protection of the micro-habitats through conservation;
- ☐ restoration of damaged areas to natural ecosystems.
- ISSUE 2
- ☐ provision of better facilities for recreation such as walking paths.
- ISSUE 3
- ☐ creation of a committee including local citizens to oversee management of the park.

Sheet: 14 of 24

Age Group: -

Sex: -

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ public open space- readily accessible to all;
- ☐ it is a valuable habitat for flora & fauna;
- ☐ important buffer for aquatic environment of lagoon;
- ☐ it provides quiet serenity away from urban noise & pressure.
- ISSUE 1
- ☐ protect area from development especially 'Disneyland like' recreational areas;
- ☐ nor does it mean 'keep out' signs regiment access.
- ISSUE 2
- ☐ sandy reclaimed area should be made more user friendly by tree planting & turfing.
- ISSUE 3
- ☐ continue & extend weeding;
- ☐ replanting of degraded bushland.

Sheet: 15 of 24

Age Group: 50-65

Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "I like to explore it in its natural state with not a lot of development."
- ISSUE 1
- ☐ no comment.
- ISSUE 2
- ☐ no comment.
- ISSUE 3
- ☐ no comment.

Sheet: 16 of 24

Age Group: 50-65

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ it creates a break from development;
- ☐ provides a unique recreational facility.
- ISSUE 1
- ☐ **"Encroaching development from War Veterans Homes:** this development, even the existing, no doubt because of the fire hazard reduction is becoming more over bearing of the subject area. The new development will create similar concern."
- ISSUE 2
- ☐ **"Over use of the recreational facilities:** I agree that the filled area needs more shading to encourage use & take pressure off the congested closer area. Parking will restrict numbers."
- ISSUE 3
- ☐ **"Proper selection of park furniture & utilities:** not the 'dwarf loos' placed in berry Reserve please. A recognition that the barbeques that replaced the open grilling pits

have not met the need. The wood that is encouraged to be dumped will not fit in the steel enclosure. Consequently, the 'night marauders' have set up their own fires and it is starting to look like an Indian camp."

Sheet: 17 of 24

Age Group: 50-65

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ beautiful natural area with, to date, minimum intrusive development;
- ☐ several small but significant habitats eg. Eucalyptus robusta.

ISSUE 1

- ☐ **encroachments & invasions:** development encroachments & encroachments into views;

- ☐ **weed invasions & human invasions:** overuse or insensitive use.

ISSUE 2

- ☐ no comment.

ISSUE 3

- ☐ no comment.

Sheet: 18 of 24

Age Group: 20-35

Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ conservation of flora & fauna;
- ☐ recreational use: walking & sailing.

ISSUE 1

- ☐ minimize 'pressures' upon the bushland of Jamieson Park;
- ☐ restoring bushland to as near to original condition as possible;
- ☐ providing diverse habitat;
- ☐ War Veterans development: concerns & impacts.

ISSUE 2

- ☐ **recreation:** providing access to facilities, tracks that will 'channel' visitors, without the impact that 'side' tracks create;
- ☐ tracks that are 'safe' for both walkers & cyclists without 'formalising'.

ISSUE 3

- ☐ water quality as a result of development, runoff, recreation, dogs, etc.

Sheet: 19 of 24

Age Group: >65

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ very important recreation facility.

ISSUE 1

- ☐ area should be kept as natural as possible;
- ☐ it should not be over-developed.

ISSUE 2

- ☐ open barbeque fires should be eliminated;
- ☐ electric barbeques should be installed.

ISSUE 3

- ☐ "Natural reed beds on water line should not be disturbed. These are vital to the health for the lake."

Sheet: 20 of 24

Age Group: >65

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "The rapidly contracting & degrading of this area for native wild life. I would be happy to think that what little is left is protected. The environs of the lagoon are probably as important as the lagoon itself."

ISSUE 1

- ☐ as above

ISSUE 2

- ☐ "The board walk option should only be taken from the esplanade west & around no further than Wimbledon Ave. Nothing will be achieved by taking it past residents (rate payers back yards)."

ISSUE 3

- ☐ no comment.

Sheet: 21 of 24

Age Group: 50-65

Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ "Scenic beauty, undeveloped, a haven for flora & fauna complementing the lagoon, a reminder of what we had that is last!"

ISSUE 1

- ☐ need to keep it in pristine condition to preserve & support the native fauna & flora;
☐ eradicate weeds, stop fertilisers, polluted water & dumping of exotics;
☐ improve walking tracks which are often waterlogged leading to public 'bush bashing'.

ISSUE 2

- ☐ "Raise public awareness: educate by means of walking tracks with informative signs. Much damage & destruction is done because of careless ignorance. Public hence able to enjoy & appreciate this precious remnant."

ISSUE 3

- ☐ "Stop any further encroachment & buy back from the War Vets! Stop the current planned development! No more building on the escarpment! No bicycles!"

Sheet: 22 of 24

Age Group: 36-50

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ recreation: passive for myself & family.

ISSUE 1

- ☐ **dogs & utilisation of area:** should allow access for unleashed dogs to the 'under-utilised' area on a time share basis, say unleashed dogs allowed between 8pm & 8am;
☐ Warringah Shire Council needs to provide bags/bins for disposal of dog wastes.

ISSUE 2

- ☐ **drainage patterns:** the reclamation has probably caused the demise of the casuarinas between the track & the open spaced park;
☐ also poor drainage prevents access & destroys tracks after heavy rain- this is a major priority of the Plan of Management.

ISSUE 3

- ☐ **parking traffic:** on busy days this represents an accident waiting to happen;
☐ "Maybe the area is fully utilised by virtue of the limited access afforded to cars. We should not provide for further utilisation of the park if it means congestion at the periphery."

Sheet: 23 of 24

Age Group: 50-65

Sex: M

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ proximity to my home;
 - ☐ I value the unspoilt nature of the area.
- ISSUE 1
- ☐ a small area of the park near the yacht club is over used;
 - ☐ the area across the footbridge is under used;
 - ☐ reclaimed area needs careful grassing;
 - ☐ Lantana & Tall Spear Pampas Grass needs eradication, clover should be allowed to seed before mowing.
- ISSUE 2
- ☐ no comment.
- ISSUE 3
- ☐ no comment.

Sheet: 24 of 24

Age Group: 36-50

Sex: F

WHY IS JAMIESON PARK IMPORTANT TO YOU? WHAT DO YOU VALUE ABOUT THE AREA?

- ☐ **recreation:** access for fishing & canoeing, walking, cycling, dog walking, picnic & watersports (NE end);
 - ☐ **habitat:** diversity from estuary to scrub & forest, especially rare communities;
 - ☐ **scenic:** vistas from & to the park.
- ISSUE 1
- ☐ **weed invasion:** in connection with tracks, previously cleared areas & especially stormwater;
 - ☐ the extra nutrients & runoff of stormwater from developed areas (eg. in the north east section) is having a major impact with local weed invasion & soil erosion, leading further to pollution & sedimentation of the lake.
- ISSUE 2
- ☐ **fire management:** needs to be well researched, to ensure the best frequency & intensity of fire for various vegetation communities, for both safety & the ecology;
 - ☐ fuel levels are one consideration, but if fires are too frequent or too hot plant diversity will reduce, further affecting animal communities;
 - ☐ need to aim for a patchwork of areas burned at different times to ensure fauna always has food & refuge during any burn;
 - ☐ War Vets other development should have appropriate fire break on their land the reserve should not lose bushland to fuel free/fuel reduced zones.
- ISSUE 3
- ☐ **rubbish dumping:** is a problem in parts along the track & South Creek;
 - ☐ worst areas are at the point/spit of South Creek, and near the jetty remains;
 - ☐ plastic bottles, fishing line & broken glass are hazards to people & fauna;
 - ☐ in both areas above there are remains of recent campfires with broken glass on the ground & sandy beaches.

Submission: 1 of 2

Received From: Northern Beaches Bikers.

- ISSUE 1
- ☐ two of our members attended the Jamieson Park Plan of Management meeting on 12 October 1998;
 - ☐ they expected that they would be participating in a structured meeting with the objective of achieving a consensus on the methods to resolve the various problems associated with the management of the park;
 - ☐ they experienced a concerted attack on the concept of the multi-use pathway planned for the park to the exclusion of all other matters of concern to the management of the park;
 - ☐ the meeting as would be expected was well attended by residents of properties

adjacent to the park and it seems they were the most vocal in opposition to the multi-use pathway.

ISSUE 2

- ☐ the concept of the multi-use pathway through Jamieson Park is not new, it was part of the Warringah Pathways Network Plan 1980, the Dee Why Valley Open Space Corridor Geographic Plan of Management 1996 & the Warringah Bicycle Plan 1998 all of which concluded that a multi-use pathway linking Dee Why to Narrabeen via South Creek was highly desirable.

ISSUE 3

- ☐ the consensus of the Jamieson Park Plan of Management meeting of stake-holders convened by Warringah Council on 18 October 1994 was that with respect to the track/pathway form & route (quote);
- ☐ "(that there was a) need for & desirability of a link track & issues relate to its route & form";
- ☐ "raised walkways in sensitive wet areas (are) desirable";
- ☐ "a low maintenance, informal, natural surface path most desired";
- ☐ "bike riders will need to modify their usage to suite walking pace. Track design is important to encourage slow riding";
- ☐ "track design should discourage 'commuter' biking";
- ☐ "track should be positioned well back from shoreline to discourage informal access to sensitive areas";
- ☐ "track should avoid low lying areas subject to occasional inundation";
- ☐ "consideration should be given to separate bike/walker tracks in certain sections";
- ☐ "track: dual role for fire control access needs careful design to avoid duplication of trails & insensitive engineered treatment";

ISSUE 4

- ☐ we believe that the pathway through Jamieson Park will continue to be used by cyclists;
- ☐ to ensure the protection of the flora & fauna & improve the amenity for all users Warringah Council must proceed with a formal pathway constructed with the above concerns being considered.

ISSUE 5

- ☐ the education of all users is the only way an effective & safe pathway can be realised;
- ☐ this education must proceed through appropriate signs, school education, the news media & brochures distributed to households;
- ☐ this is the same process used in the education of all road users which includes pedestrians, cyclists & motor vehicle drivers.

ISSUE 6

- ☐ we hope that further community consultation will take place & that all management matters will be considered including the construction of the multi-use pathway;
- ☐ members of our group are always available for consultation with respect to bicycle facilities in Warringah Council area;
- ☐ for safe cycling & a better environment.

Submission: 2 of 2

Received From: Neil Austen (Representative of the Northern Beaches Bikers)

ISSUE 1

- ☐ as you are aware local residents dominated the meeting;
- ☐ in general they were happy to retain the existing rough track through the reserve but they did not wish to encourage further usage that would follow from the construction of an all weather cycleway;
- ☐ "I think the residents had very narrow & selfish interests- basically they want to keep the Reserve to themselves or at worst limit its accessibility."

ISSUE 2

- ☐ as I understand it Council will be building a cycleway through St Mathews Farm;
- ☐ we will have a cycleway north & south of Jamieson Park, but, if this does not proceed, not through it;

☐ there is no way that the existing track through Jamieson Park can be classified as a cycleway- it is not accessible for about a third of the year because of flooding.

ISSUE 3

- ☐ I believe we need to provide cycling facilities in Warringah, particularly for the safety of kids;
- ☐ at present the only option to cycle between Dee Why beach & Narrabeen is via Pittwater Road or the steep Veteran's Parade- hardly acceptable alternatives;
- ☐ to get a decent north couth cycleway in Warringah there must be access through Jamieson Park- *there is no alternative.*

ISSUE 4

- ☐ yes more cyclists will use this area, a lot more, if a cycling path is constructed;
- ☐ isn't it a positive thing to encourage people to get out of their cars take up healthy, low impact activity;
- ☐ cycleway's can be constructed to limit speed & off road motor bikes are not interested in anything but rough dirt tracks.

ISSUE 5

- ☐ I can assure you that I would have no difficulty in getting dozens of signatures from people who would like to see a cycleway constructed through Jamieson Park;
- ☐ please advise me if you think such a petition would assist;
- ☐ I would be prepared to undertake this task as I feel this is an important community issue having particular benefit for youth.

2.0 Community Issues Discussion Paper

Appendix I(c)

A.1 Community Consultation

Introduction

Community consultation is a vital component in the preparation of the Draft Plan of Management as well as in the Public Exhibition/ submission period following release of the Draft. The purpose of the public meeting/ workshop is to assist Council and the community to identify the important values attached to this community land and to provide a forum for discussion of community issues. These issues form the basis for the following Community Issues 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.

The initial public meeting/ workshop for Jamieson Park was held as follows:-

Venue: The Tramshed Arts & Community Centre, Lakeview Hall
Date: 12 October 1998
Time: 7.30pm - 10.00pm

Distributed Items:

- ▶ Council's Principles of Community Land Management in Warringah;
- ▶ Council's Brochure: "What are Community Land Plans of Management?"
- ▶ Exploring Issues: Written Comments;
- ▶ LandArc's reduced A3 sheets: Recreation, Access and Circulation

Publicity

The public meeting/ workshop was advertised in the local press, Warringah's libraries, the Tramshed Arts & Community Centre and at selected points throughout the carpark, picnic areas, the boat ramp and Narrabeen Lakes Sailing Club in Jamieson Park. More than 175 invitations were distributed to residents, schools, councillors, local members of parliament, stakeholders and members of local community groups. Invitations were also available at the Berry Reserve Plan of Management Public Meeting held on the 28th September 1998.

Scope of Study

Jamieson Park is a significant area of natural bushland, extending along the southern foreshores of Narrabeen Lakes, including the Pipeclay Point area. Gazetted as Crown Land in 1888, the park covers an area of approximately 32 hectares with a southern boundary extending westward from Colooli Road. For this Plan of Management the southern boundary has been extended to address important habitat, recreational linkages and proposed developmental impacts within the South Creek corridor. This extended area includes the un-made road reserve section of South Creek Road and the reserve adjacent to James Wheeler Place, adding a further 12 hectares to the total area covered in the Plan.

This open space forms a natural buffer zone between the lagoon and surrounding suburban development to the east and south, including Cromer Heights, Wheeler Heights, Collaroy Plateau and Narrabeen. The largest single landholder, adjoining much of the park's perimeter, is the R.S.L War Veterans Retirement Village (WVRV). A further 24 hectares of remnant bushland is contained within this neighbouring area. (Refer to Figure 1: Location Plan)

Presentation and Discussion

The public meeting/ workshop was opened with an introduction to the Community Land Plans of Management Process by Kylie Vytopil, Principal Strategy Co-ordinator for Warringah Council. This overview was then followed with a brief presentation by Noel Ruting, partner of LandArc. A series of three drawings and photo-boards were used to outline this significant area's values and management issues. The drawings included the following:-

- ☐ Environmental Context;
- ☐ Recreation, Access & Circulation;
- ☐ Values & Impacts Analysis.

Reduced copies of these drawings together with a summary of values and issues are tabled in the Draft Plan (refer to Figures 2 & 3 and Appendix II: Preliminary Analysis & Management Issues).

The meeting/ workshop was formally brought to a close at 10.00pm after all comments from participants appeared to have been raised. It was requested that further written comments on the Exploring Issues Paper be returned to LandArc by 22 October 1998.

There was a total of 35 attendees who registered at the desk for the Mailing List. A copy of the Summary of Public Meeting Issues (Appendix I(a)) was mailed to each of the registered attendees. A further 25 written submissions were received on the Exploring Issues Papers. Table A -1: Exploring Issues Demographics shows a simple breakdown of respondents' age group and sex. Two members of the Northern Beaches Bikers also sent letters re-confirming issues raised at the public meeting and in the Exploring Issues Papers.

TABLE A-1: EXPLORING ISSUES DEMOGRAPHICS

AGE GROUP Years	SEX	
	Male	Female
< 20	-	-
20-35	1	1
36-50	2	2
50-65	7	4
> 65	6	0
Total	16	7
+ 2 respondents provided no details of sex.		

A.2 Community Values and Issues

A. Protection of Community Values

Jamieson Park is a highly valued remnant parcel of bushland retaining many of its natural processes and a diverse range of vegetation communities and wildlife habitats. The area is Classified as Category One Bushland Reserve by Warringah Council (ie. reserves of national/ regional conservation significance in generally good condition and/ or those that offer a high diversity of recreational opportunities). It has significant ecological, recreational, educational, historic and scenic importance at a local, regional and national level. The value and significance of this natural bushland reserve to the local community was highlighted in the public meeting/ workshop and further developed in the "Exploring Issues Papers." Furthermore, the community discussion supported earlier results from the stakeholders' meeting held in October 1994 and the "Jamieson Park Visitor Survey" conducted in 1995 (refer to section 3.0 Basis for Management: Recreation Values).

The local community and visitors are attracted to Jamieson Park's natural environment and lake-side qualities, as well as its relaxed and informal character. Together they provide unique recreational opportunities in a relatively pristine and idyllic setting only a short distance away from surrounding suburban development. The physical nature and shape of the park, together with the range of edge conditions, altered hydrology and run-off, presence of feral and domestic animals, rubbish dumping and extent of adjoining developments have seriously compromised many of the park's natural and environmental values. Nevertheless, Jamieson Park retains significant vegetation communities and vital habitat for rare and threatened species worthy of conservation. With such an important area of urban bushland in such close proximity to residential development it is vital that the park's values are protected and managed effectively. This means that present recreational uses, public access and proposed developments should not in any way compromise identified values or potentially limit opportunities for future generations.

The community workshop/ meeting defined a strong sense of community ownership in this parkland with the desire to ensure the protection of natural, ecological, scenic and recreational values. It was strongly expressed that there should be appropriate management and protection measures for this significant area. The following points identify the values and importance attached to this land by the participants at the public meeting/ workshop:-

- ❖ Jamieson Park's "quiet serenity away from urban noise and pressures" and its tranquillity beside a beautiful lake;
- ❖ its unique natural and scenic beauty, undeveloped qualities, free of intrusive developments;
- ❖ "a reminder of [the natural values] which have been lost" in much of this area;
- ❖ a "natural green oasis in a built-up suburban area" which is "readily accessible to all";
- ❖ the park provides an important natural buffer, "a break from development";
- ❖ the bushland protects the aquatic environment from the impact of adjoining suburban development;

- ❖ the area provides valuable and threatened habitat for a range of native birds, mammals, reptiles, frogs and invertebrates;
- ❖ the importance as public reserve "owned by the broad community";
- ❖ the park offers opportunities for a range of water and land-based recreational uses and user groups, including walkers, cyclists, joggers, dog owners, sailing, canoeing and so on.
- ❖ the importance of the lagoon environs which are "probably as important as the lagoon itself";
- ❖ significance of flora and fauna and their conservation.

The public meeting/ workshop and Exploring Issues Papers highlighted a number of community issues and identified the need for management and protection of these values as follows:-

- ❖ to acknowledge the park's environmental fragility, particularly with respect to past clearing and development along its edges, altered hydrology and nutrient enrichment, habitat fragmentation, weed invasion, dredging and reclamation activities and so on;
- ❖ to minimize existing and possible pressures upon the bushland and address outstanding environmental issues;
- ❖ to protect and restore valuable and threatened habitats and ensure the long-term viability of the park's biodiversity;
- ❖ to better manage sustainable use of the park's resources through encouraging appropriate recreational activities;
- ❖ to restrict and control unsympathetic uses and developments, particularly with regard to an ever-increasing range of demands and growing population base;
- ❖ to ensure fire management addresses safety issues as well as environmental and ecological values with respect to threatened species, populations and habitats (ie. determination of fuel reduced/ exclusion zones, fire management frequency and intensity);
- ❖ to ensure that proposed development along the park's boundaries adequately addresses fragmentation, loss of habitat values and scenic qualities, possible nutrient loadings, stormwater runoff, weed invasion, pollution of the lake and sedimentation.

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

B. Environmental Issues

Importance of Natural Values

The participants at the public meeting/ workshop stressed the important link between the health of terrestrial and aquatic systems within the lagoon catchment area and the recreational opportunities it provides for the community. For the community, Jamieson Park is a unique bushland and lake-side environment which supports a variety of vegetation communities and habitats, some of which are poorly represented in local national parks. In terms of its regional significance, Jamieson Park plays an important representative role and reservoir of genetic diversity.

It was repeatedly reinforced at the public meeting/ workshop and Exploring Issues Papers that the protection of natural values was considered of paramount importance. The conservation, sustainable management and enhancement of the park's threatened biodiversity were believed to be the park's primary management objective and a major consideration in determining the future land use of the park. Moreover, it was stressed that these values should determine the appropriate recreational uses for the park. Furthermore, concerns were expressed that the park should be preserved intact and questions were raised over the need for change or "fixing" it. These points essentially were aimed at the need for protection of natural values rather than a comment on the application of appropriate management practices.

Landscape Character & Recreational Impacts

Jamieson Park's bushland and lake-side environment provides a place for relaxation and recreation away from a highly urbanized environment. It was stressed that most of Jamieson Park, beyond the carpark area, should be maintained in its natural state, allowing these values to take precedence over issues of recreation and developmental pressures. The management of current passive recreational activities was considered desirable in order to reduce points of conflict and environmental damage. Although representations were made for formalizing recreational activities for bicyclists, there was considerable argument against such a proposal on the basis of its incremental impact on the natural character and resource base (refer to D. Recreational Facilities & Amenities).

Scenic Quality

The public meeting/ workshop confirmed the visual and scenic significance of the Pipeclay Point ridge-line, with its largely undisturbed bushland extending from the War Veterans' Homes boundary down to the lake shoreline. The bushland of this prominent ridge and foreshores provide a natural buffer and foil to the residential development along much of the lagoon's eastern foreshores. The natural character of this point and surrounding vegetation reinforces the "sense of place" not only for this location but for all of Narrabeen Lakes. It also serves to highlight the important relationship with the western shoreline and adjoining Garigal National Park.

Protecting Biodiversity

The meeting also discussed the importance of the park's estuarine wetland complex of Swamp Oak Forest, Reedland and Seagrass beds, which are not well represented within the Sydney reserves system. These areas provide valuable habitat for a diverse range of faunal species, including some which are endangered. The Swamp Oak Forest is now heavily weed infested, reedland has been significantly depleted and the seagrass beds reduced through past dredging.

Furthermore, the regional significance of the Swamp Mahogany Forest (*Eucalyptus robusta*) as a threatened and poorly represented habitat was highlighted, particularly with respect to the proposed development of the adjoining War Veteran's Homes property (refer to F. Adjoining Development). Similarly, the conservation values of significant Cabbage Palm Woodland, Bangalay Forest and Peppermint Forest are all threatened by a range of developmental impacts. These environmental values and the issues affecting each of these areas are discussed in detail in later sections of the Plan.

Urban Run-off & Nutrients

The park's ridge-lines are surrounded by urban development. Stormwater run-off and nutrient loading from development in the upper catchment is having a major impact on the environmental quality of the park's bushland. The north-eastern part of the park below Colooli Road, particularly along the creek-line and around the cascades, is now highly degraded. The upper areas are affected by Eucalypt die-back with almost the total loss of canopy cover since the wildfires (refer to *Fire History*). Remnant rainforest along the creek-line is highly disturbed, and there is massive weed invasion. The public meeting/ workshop supported measures to reduce nutrient loading and control stormwater discharge entering the park from adjoining urban development. It was suggested that these measures should include education programmes, monitoring the dumping of garden refuse and weeds, local volunteer involvement in weed control and improved nutrient catchment management.

Bush Regeneration

As discussed, the integrity and long-term viability of the park's bushland is threatened by a range of urban impacts. Weed management has become an important issue affecting the park. Since 1990 the National Trust of Australia (NSW) has undertaken a bush regeneration programme in the eastern sector of the reserve bounded by The Esplanade and Veterans Parade. During the public meeting it was suggested that community involvement be further encouraged and supported by the Council through volunteer "bushcare" and low cost community maintenance programmes. Priorities for contract and volunteer bush regeneration programmes were also discussed. These need to be more clearly defined, working towards habitat conservation priorities and managed on a more integrated basis with fire management policy.

Bush regeneration efforts by the Council and the Trust were widely appreciated by participants at the public meeting/ workshop and respondents in the Exploring Issues Papers. However, it was suggested that the reduction management of exotic Pampas Grass and Lantana, since the wildfires, should consider the wrens which use these thickets as habitat. Issues related to opening of areas to public access and subsequent multiple tracking also need to be addressed, particularly in sensitive habitat such as the Swamp Mahogany Forest near the South Creek estuary.

Fire History

Bushfires are an integral component of the Australian landscape, shaping vegetation communities and habitats, species composition, structure, diversity and regeneration strategies. The wildfire which swept through the park on the 8th January 1994 burnt out all but the eastern section. It also burnt through the undeveloped bushland on the adjoining War Veterans Homes property. Regeneration and growth since the fire has again transformed the park however it will be some time before the bushland returns to its state before the fires.

Notably, the combination of urban impacts and fire has seriously degraded a large section of bushland along the north-eastern ridge and this area has been slow to regenerate. However, for much of the park's bushland the fire may have been a positive force in removing or helping to control some exotic species. Fire management policy needs to be properly integrated with the objectives of bush regeneration programmes and habitat management (refer to G. Fire Management).

Reedland/ Seagrass Management

The reedland and seagrass beds along the foreshores and South Creek estuary should not be further disturbed as they are vital to the health of the lagoon. Participants expressed concerns that the conservation of the park's reedland still has to overcome entrenched community perceptions that these areas are undesirable. The need for a community education programme was suggested in order to establish the importance of reedland in protecting foreshores from erosional damage and their role in improving water quality. Reedlands contribute to the health of the lagoon by maintaining natural processes and they also provide important habitat for aquatic animals and wading birds.

Seagrass beds occur as submerged aquatic vegetation beyond the reedland edges of Jamieson Park. They play a crucial ecological role in providing food and shelter for many aquatic animals and contribute large amounts of organic matter to the estuarine food chain. Protection of seagrasses is vital for maintaining the ecological health and fisheries productivity in estuaries and waterways.

Water Quality

Surrounding urban development along the ridgelines and foreshores has significantly altered the pattern of local hydrology and adversely affected water quality in the lake. A range of pollutants, sediments and nutrients continue to be flushed into the system through urban run-off and stormwater outlets, further exacerbating pollution and sedimentation problems in the lagoon. As a result, many people in the community believe the lagoon needs further dredging to maintain water levels and encourage flushing of stagnant areas. The impact of boat ramps, motor-powered boats and jet skis on water quality was also raised as an issue.

Lagoon Sedimentation & Dredging

Dredging has been a highly contentious environmental issue since the 1970's and although it remains outside the scope of this Plan of Management it will be discussed in more detail in following sections (see H. Dredging & Reclamation Area). Continued sedimentation of the lagoon reduces water depth, affecting a range of recreational activities including boating, kayaking, canoeing, sailing, sailboarding and fishing. Views were expressed by the Narrabeen Lakes Sailing Club that sedimentation of the lagoon is having a significant impact on its activities and loss of membership. Concerns have also been expressed by the NSW Academy of Sport.

Unleashed Dogs & Companion Animals

While many participants stated that there was no problem with unleashed dogs using the park, other people expressed serious concerns. It was suggested at the public meeting and in the Exploring Issues Papers that there should be more regulatory signage and better enforcement of environmental values by rangers. The impact of unleashed dogs on wildlife, particularly waterbirds and their nesting sites amongst the wetlands, faecal contamination and nutrient loading were all identified as important issues requiring attention. It was suggested that dog faeces receptacles be installed to encourage responsible action by dog owners and that unleashed dogs be prohibited. Furthermore, it was believed that Council should rigorously monitor and enforce any infringement. If unleashed dogs are to be permitted within the park, it was felt that they should be confined to only the reclaimed area on a time basis (eg. unleashed dogs use the area between the hours of 8pm and 8am only).

Companion animals, particularly cats and uncontrolled dogs, belonging to owners in adjoining properties, is another issue requiring attention. These domestic pets have a continuing negative impact on small native animals and birds in the park. It was suggested that greater controls and even prohibition of pets in adjoining properties be considered by Council.

Rubbish Dumping

Rubbish dumping was raised as an issue, particularly in the southern section of the park, on the beach near the old jetty remains, the spit and in the South Creek bushland corridor adjacent to James Wheeler Place. The remains of campfires, broken glass, plastic bottles, fishing line are all frequent hazards for people and wildlife. It was suggested that these issues should be addressed with a greater level of ranger support and enforcement. Parts of the main bush track, especially around Pipeclay Point, are also subject to the deposition of "flotsam and jetsam" from the lagoon during periodic inundation.

It should be noted that an improved level of regulatory controls and Council ranger enforcement of environmental issues needs careful consideration of associated costs to return for the community.

C. Public Access

Carparking Area

Public access to Jamieson Park was highlighted in the community meeting/ workshop and Exploring Issues Papers as a particularly important issue. The park's accessibility is highly valued by the local community and visitors alike. Its location in close proximity to a highly urbanised environment with good road access and a large, well-integrated carpark, boat ramp and picnic/ BBQ facilities in the shade of Swamp Oaks make this park a popular destination point. This easy access and facilities tend to concentrate larger family groups and gatherings in this area, particularly on week-ends and holidays, while fewer people use the reclaimed area and more distant parts of the park. This concentration of use and pressures placed on existing resources were of particular concern at the public meeting/ workshop. It was stressed that the park's natural assets need to be protected and the popular recreation areas of the picnic/ BBQ area and boat ramp were showing signs of environmental degradation. These issues are discussed in more detail in later sections of the Plan.

Reclaimed Area & Informal Tracks

The reclaimed area beyond the creek bridge offers few facilities, other than picnic tables and water. Although this area has some beautiful small beaches there is little shade and the open grassed areas become very hot in summer, limiting recreational opportunities for many user groups. A network of minor tracks skirt this reclaimed area. Some of these link up to the main bush track to form a popular loop track or circuit. One minor track leads through remnant rain forest to the upper creek and cascades. There is very little formalized infrastructure beyond the reclaimed area.

Main Bush Track: Maintain status quo vs Formalization

The main bush track is narrow, unsealed and can be difficult to negotiate in wet weather, reducing the numbers of people using the greater part of the park. The existing track nevertheless provides for specific recreational uses and user groups whilst restricting others. The natural sandy to clay surfaces and narrowness reduces cyclists speeds, is comfortable for joggers and is excellent for bird watching as it does not disturb foreshore habitat. It currently retains a level of protection for the park's natural resources, while offering a more remote, natural recreational experience which is highly valued by the local community.

Issues related to enhancing accessibility for all, including bicyclists, versus current low-key and informal usage were the subject of considerable debate at the public meeting/ workshop as well as in the Exploring Issues Papers. These issues were the subject of two further letters from members of Northern Beaches Bikers (NBB). It was made very clear that upgrading of access along the main bush track is a particularly contentious and challenging issue due to community expectations, safety issues and recreational orientations. The issues are further complicated by the constraints and sensitivity of the park's physical environment. Opposing views were expressed that protection of the park's significant environmental values should remain the key to determining the type of uses, restricting those considered inappropriate (see section 3.0 Basis for Management).

The current use of the bush track as a "multi-use track" and the associated safety issues were stressed by participants representing the Northern Beaches Bikers (NBB). It was stated that the Warringah area was currently poorly served for cyclists despite the growing demand for cycling facilities. However, the recent Recreation Needs Assessment of the Warringah Community, undertaken by the UTS School of Leisure and Tourism for Warringah Council found that only two percent of almost 600 survey respondents considered cycleways as a recreational priority (June 1998, p.8).

In one of the NBB's submissions, it was re-confirmed that "the concept for a multi-use pathway through Jamieson Park is not new. It was part of the Warringah Pathways Network Plan (1980), the Dee Why Valley Open Space Corridor Geographic Plan of Management (1996) and the Warringah Bicycle Plan (1998), all of which concluded that a multi-use pathway linking Dee Why to Narrabeen via South Creek was highly desirable". This NBB submission further stated that a stakeholders meeting convened by Council on 18 October 1994 had reached a consensus as follows:-

- ▶ "that there was a need for and desirability of a link track and issues relate to its route and form;
- ▶ raised walkways in sensitive wet areas [would be] desirable;
- ▶ a low maintenance, informal, natural surface path [would be] most desired;
- ▶ bike riders [would] need to modify their usage to suit walking pace. Track design is important to encourage slow riding;
- ▶ track design should discourage "commuter" biking;
- ▶ track should be positioned well back from shoreline to discourage informal access to sensitive areas;
- ▶ track should avoid low lying areas subject to occasional inundation;
- ▶ consideration should be given to separate bike/ walking tracks in certain sections; and

- ▶ dual role [of track] for fire control access needs careful design to avoid duplication of trails and insensitive engineered treatments".

It was stated by one member of the NBB in a formal submission that Jamieson Park must be developed with this facility to provide access as "there is no other alternative". While both representatives from the NBB acknowledge that the main bush track should be kept relatively low-key and sensitive to its environment, they believe that the

existing natural surface material, location, susceptibility to inundation and width of the track are unsuitable, limiting bicyclists' usage of the park and creating potential safety hazards.

It is important to note the wide range of needs by cyclists and the types of facilities preferred including "all-terrain", speed sprinting and long-distance exercise through to relatively passive riding for pleasure and relaxation. The track is currently popular with young families travelling at a slow and safe speed in keeping with the nature of this area, however it also attracts the full range of cyclists described. This range of cyclists' preferences places significant demands upon the capabilities of the existing track. In particular, speeding cyclists potentially place walkers and joggers at risk. The existing track is very narrow in most places with many blind-spots due to rapid plant growth and regeneration along its edges since the wildfires. There has been no attempt to control and manage understorey growth at this stage.

Both members of the NBB supported a shared bikepath design which encourages slower, safer riding, located away from sensitive areas. However, the question was raised whether a wider track would indeed only encourage faster speeds by cyclists, making their way from "A to B" along the bikepath corridor. Concerns were also raised over use by off-road motorbike riders who already use the clearings and multiple tracks in the area near South Creek. The NBB supports a design which has an all-weather "natural" surface while discouraging speeding and commuter use.

The nature of the park with its low wetland areas and, in places, relatively steep topography, has largely determined the development of the existing track. There are many low, soft spots, subject to periodic water-logging which concentrate erosional damage from walkers and bikers going "off-track", particularly around creek-lines and within the lowland Swamp Oak Forest. These problems can be compounded by "all-terrain" enthusiasts, who often prefer to take the challenge rather than easiest and most sensitive approach through these areas. Community education was stressed by the NBB as an important component of improving the safety of the facility.

Any upgrading of the track to a designated "multi-use" pathway would first require detailed site-specific planning and a botanical/ ecological assessment of route options. Surfacing options may include a combination of solutions ranging from raised timber decking or boardwalks over sensitive wetland areas to compacted and stabilized decomposed aggregate through less sensitive areas. It could be argued that all lowland areas may be sensitive to an imported compacted fill/ aggregate option which would alter local hydrology and potentially impose an unacceptable level of site disturbance and weed management problems. Furthermore, it is important to note that a raised boardwalk option for both bikes and pedestrians may also further complicate risk management issues for Council.

Bush Tracks on War Veterans' Property

Other points for discussion relating to public accessibility included the proposed War Veterans' Homes Development adjacent to the narrow park corridor at the southern end of the park. The main bush track and a number of smaller feeder tracks radiating from this track are on the War Veterans' Homes property, not on Crown Land. The main track through this area provides the only available public access between the South Creek Corridor and the northern parts of the park. Although the proposed development would be required to create an easement for public access, the existing recreational experience of bushland isolation would be significantly altered. A possible option for the diversion of public access, via a timber boardwalk, was raised at the public meeting/ workshop. However, this option was considered premature in light of possible deferment of the adjoining development. Views were also expressed that a boardwalk would interfere with bird nesting sites in this area (refer to F. Adjoining Development).

Multiple Tracking

Other areas of concern included multiple tracking and subsequent erosional damage along the main bush track. This problem has been exacerbated by people seeking alternative tracks through bushland, parallel with and adjacent to the main track during times of flooding. This alternate tracking also occurs at sensitive creek crossings, particularly where bridges may have been damaged and at other crossings over intermittent watercourses. Alternate views were expressed that the community should be allowing and accepting of such behaviour, particular regarding the opportunities for children's play "off-track" within the bush. It was further stated that the park's bushland offers important developmental play opportunities for children and it should be largely free of restrictions and controls.

Bush regeneration practices by volunteers in some areas have also provided greater accessibility into sensitive habitats, such as the remnant Swamp Mahogany Forest adjacent to South Creek and nearby reedland. The South Creek sand spit is also vital habitat and a significant bird-nesting area which is subject to unrestricted and easy access. Similarly, the sensitive sand spit/ micro-lagoon area near the park's northern reclaimed area has significant biodiversity values which should not be compromised by recreational activities. Participants at the public meeting and respondents in the Exploring Issues Papers stressed that these sensitive areas should be managed carefully to ensure they are protected for future generations.

D. Recreational Linkages & Faunal Corridors

The public meeting/ workshop and Exploring Issues Papers highlighted the community support for a continuous southern foreshore link around Narrabeen Lakes from the entrance to Berry Reserve, onto Jamieson Park and then continuing along the South Creek corridor to Dee Why. It was also suggested that there may be opportunities for a further connection with Garigal National Park along the western foreshores. A number of areas where linkages could be reinforced were discussed. Opportunities include the following:-

- ▶ consolidate link with Berry Reserve adjacent to The Esplanade by continuing the existing sealed asphalt bikepath/ footpath into the carpark area (currently the path terminates near the intersection with Nioka Road);

- ▶ provide appropriately designed low-key timber bridges/ decking over creek-lines and intermittent watercourses (including replacement of the existing flood-damaged bridge);
- ▶ rationalize minor bush tracks and reduce opportunities for multiple tracking, particularly within sensitive habitat areas;
- ▶ reinforce recreational linkages along South Creek corridor, ensuring protection of important habitat values. This open space corridor has the potential to enhance recreational opportunities from Dee Why Lagoon to Narrabeen. It could also provide important benefits for wildlife, particularly arboreal fauna, through the increase in habitat values and opportunities for genetic exchange;
- ▶ provide a recreational connection and enhanced faunal corridor across South Creek. A western link would require bridge construction over South Creek and a pathway along the foreshore edge of Cromer Golf Course and the NSW Academy of Sport and Recreation before linking with Garigal National Park. Public access would need to address a range of issues including existing uses and important habitat values;
- ▶ enhanced faunal corridors would provide opportunities for isolated "island" habitats, such as Jamieson Park and Dee Why Lagoon to be enriched with a much larger gene pool in Garigal National Park;
- ▶ create a well-designed and integrated system of directional, interpretive and educational signage throughout the park.
- ▶ representatives of the Northern Beaches Bikers stressed at the meeting and in their submissions, that Jamieson Park is an integral link in the Dee Why to Narrabeen cycleway. The park offers opportunities to form a "low-impact", off road continuous cycling circuit which could be one of the greatest cycle paths in Sydney (refer to C. Public Access).

E. Existing Recreation Facilities & Amenities

The public meeting/ workshop and Exploring Issues Papers identified Jamieson Park as a major recreational resource to the local and regional community, providing a range of active and passive family-based recreational opportunities. These range from children's sand-play on the many beaches, sailing, windsurfing, canoeing, kayaking and fishing on the lagoon to relaxing, picnicking and barbequing under the canopy of casuarinas near the carpark. The reclaimed area is used for unstructured family-based sports activities such as kicking a ball or playing football during picnics. Bike riding, bushwalking, jogging, bird-watching, walking the dog or simply appreciating the bushland/ lake views along the 2.6km bush track were also highlighted as important and highly valued uses by the community. The opportunities for combining recreational activities were considered important (eg. bike-riding while walking the dog or sailing/ boating and picnic/ BBQ).

As previously discussed, Jamieson Park is considered an important community asset which should be protected. The recreation activities within the park are dependent upon the quality of the natural environment in which they occur, however not all recreational activities are compatible with the long term viability of the asset base. As in the issue of formalizing the main bush track (refer to previous section), the low key and informal character of recreational facilities was considered by most participants as the most appropriate solution. Most contributions to discussion reaffirmed

protection of these desired qualities with a marked preference to "leave [the park] as it is" and for it to "remain natural", free of formal pathways and other facilities. It was stressed that any changes to the existing facilities, in particular the formalization of the main bush track, upgrading of picnic sites or new facilities and amenities should continue to reflect these natural qualities. It is important to note that these views are the same as those expressed in the "Jamieson Park Visitor Survey" (1995).

Carparking Area

It was generally believed by participants at the public meeting and respondents in the Exploring Issues Papers that there should be no additional parking areas provided as the limited parking available restricts numbers of park users during peak periods. This is seen by many as an important limiting factor for the protection of park values.

Picnic/ BBQ Areas

Picnic and BBQ facilities are provided in the shaded areas adjacent to the carpark and Narrabeen Lakes Sailing Club. This area was believed to have suffered increasing vandalism over recent years. There are a number of problems with existing wood-fuelled barbeques. The wood stockpile area is untidy and visually obtrusive. Supplied wood is dumped in long, uncut lengths including chip-board and painted off-cuts. This wood will not fit into the steel BBQ enclosures and this has created further problems with people building fires on the grassed areas. If there is no wood provided in the stockpile area, people break branches off surrounding trees causing serious long-term damage to natural vegetation. Children also make fires on the beaches and around the carpark creating potential fire hazards. It was suggested that electric or gas BBQs be provided which would reduce fire hazard and visual clutter from wood stockpiles and limit the impact on existing vegetation.

Litter Bins

Rubbish dumping, particularly in the more remote areas of the park, was identified as a problem requiring attention (refer to B. Environmental Issues: *Rubbish Dumping*). Comments were made that more litter bins were required and that these should be spread evenly throughout the park. This would have obvious management difficulties in terms of collection in the more remote areas.

Upgrading Facilities

At the public meeting/ workshop, it was suggested that there were opportunities to improve recreational facilities in the open space adjacent to James Wheeler Place. This large, relatively flat grassed area has good access and is in a pleasant location near South Creek, at the southern end of the main bush track. However, there are currently no recreational facilities such as picnic tables, seating, water, litter bins or shelter. Similar opportunities were identified for the reclaimed area west of the Sail School building. Views however were expressed that new facilities may create further pressure on the natural qualities of the park and that any facilities would need to be site-sensitive and low key.

Communications

The need for a public telephone in the picnic area was raised at the public meeting/ workshop. There are currently no public telephones in the park. This is particularly important if there was an emergency requiring the SES, police or an ambulance.

Information & Signage

Jamieson Park contains very little identification and directional signage. The standard National Trust bush regeneration signage provides the only interpretive or educational signage in the park. Existing signage is poorly integrated and has an ad hoc approach. Traffic and regulatory signage dominates the recreational experience particularly at The Esplanade park entrance where there are seven parking signs within a couple of metres of each other. There are opportunities to strengthen both local and visitor awareness and values through a signage system.

An integrated system of identification, interpretive and directional signage could be sensitively designed and sited to improve access and knowledge of the area and its systems. It could be used to highlight the recreational opportunities and linkages with other local reserves around the lake and along the South Creek corridor. There are opportunities for encouraging safer and more sensitive use of the park, particularly in locations where there has been damage caused by ignorance.

Youth-oriented Facilities

It is important to note that younger age groups were poorly represented at the public meeting/ workshop and in the Exploring Issues Papers. Youth were widely blamed for many of the problems affecting the park including lighting of open fires, alcohol and substance abuse, smashing bottles and off-road motorcycle riding. The solutions suggested at the public meeting/workshop included greater regulation, controls and increased policing by rangers. However, a youth representative believed that these measures were draconian and they would not prevent this behaviour. There was need for a more pro-active approach with a greater emphasis on youth-based recreational opportunities.

F. Adjoining Development

"Land-swap" Discussions

The War Veterans' Home is the major adjoining development to the park. Participants at the public meeting/ workshop and respondents in the Exploring Issues Papers expressed serious concern over the proposed development by the RSL Veterans' Retirement Villages limited. In particular, there were still concerns raised in relation to an earlier land-swap option, first discussed in 1995. In this option, a section of degraded bushland on Crown Land, adjoining Colooli Road, was identified as a potential land-swap site for development. The fuel-free fire protection area within the park, adjacent to Cutler Village, was also proposed for transfer to the War Veterans' Home. In exchange, the proposal included the transfer of a substantial section of Cabbage Palm Woodland, Bangalay and Swamp Mahogany Forest, currently located on the War Veterans' property, which would become part of the park. During the public meeting/ workshop it was expressed that all land in Jamieson Park should remain as public land and that the community was fundamentally opposed to the idea of "land swaps" or boundary changes.

"Greenhaven" Development Proposal

The land-swap option failed to achieve agreement and the new village development proposal of "Greenhaven" on part of portion 2611 Lantana Avenue, Collaroy Plateau

was lodged by the village administration, RSL Veterans' Retirement Villages Limited and subsequently rejected by Council. A scaled-down development application was later lodged and again rejected by Council. Issues related to this refusal of consent included accessibility of the site, visual impact, flooding, water quality and drainage, impact on flora and fauna, site disturbance and bush fire control measures.

The matter was referred to the Land & Environment Court with Council filing a set of draft conditions should development consent be granted. In May 1998, approval was granted by the judge, Justice Pearlman, to the RSL Veterans' Retirement Villages Limited to develop "Greenhaven", including 130 two-bedroom self-care units and common clubhouse facility. In Justice Pearlman conclusions it was stated that: "the site is sensitive, particularly in terms of its vegetation and its proximity to Narrabeen Lagoon. I have concluded, however, that the sensitivity of the site has been satisfactorily dealt with in the evidence which has been presented, and that, on balance and with the imposition of appropriate conditions, the impact of the proposed development is not unacceptable".

During the public meeting/ workshop the masterplan for the development application was displayed and briefly outlined. It was further advised at the public meeting that the proposed development has been deferred and that there had been indications from the applicants that the project was unlikely to proceed in the near future.

As previously discussed, there was considerable concern raised at the public meeting/ workshop and in the Exploring issues Papers that the natural values of the park should not be compromised by development within or adjacent to the park boundary. Participants still expressed concerns that if the development did go ahead in the future that it would have a serious impact on these values. Although the proposed development footprint is largely over previously cleared agricultural land, one of only two remnant Swamp Mahogany stands in the park would be reduced substantially in size and further fragmented. Other vegetation communities and habitats, adjacent to the park, would also be substantially modified by the new village and associated infrastructure.

It was believed that the "new village" would significantly alter sensitive habitat values, landscape character, natural scenic values and the sense of isolation in this southern section of the park. Existing reedland, Swamp Oak Forest and the Swamp Mahogany Forest occurring within the narrow park corridor would be further compromised by developmental impacts. These areas would be subject to changes to public access, drainage disturbance, nutrient loading, weed invasion and fire management requirements. Existing opportunities for access and recreation would be significantly disrupted by the proposed development. Although an easement through the site for public access was required in the draft conditions set by Council, an alternative option for a bushland boardwalk was suggested at the public meeting/ workshop. This would need to be routed through a narrow wetland corridor rather than passing through the War Veterans' Homes village (refer to C. Public Access: *Main Bush Track - Maintain status quo vs Formalization*).

Concerns were raised over the increased levels of fertilizers, herbicides, pesticides and added nutrients required for the type of preferred exotic gardens and lawns of the new village. Although detention basin details would be required by Council, these

chemicals and nutrients are still likely to find their way into foreshore habitats and the lagoon. Concerns were also expressed in regard to the preferred design of retirement village gardens using many exotic species. This urbanized landscape character would have a significant impact on the bushland experience of park users. It would also add to the problems of habitat fragmentation and lead to increases in weed invasion in the lower catchment of the park.

Participants in the public meeting/ workshop and Exploring Issues Papers expressed concerns over the attitudes of some property owners adjoining Jamieson Park. It was believed that residents should be discouraged from treating the park as an extension of their backyard. Constant clearing and mowing of natural understorey and native grasses along the park edges causes weed infestation and reduces habitat values. It was further suggested that these residents be encouraged to grow locally indigenous plants and employ conservation techniques to better protect the parks flora and fauna, while still addressing fire management concerns.

G. Fire Management

In the event that the "Greenhaven" development proceeded, the narrow corridor of bushland between the lagoon and park boundary would be substantially modified by the legislative requirements of the Rural Fires Act 1997. Under these requirements, the proposed location for the clubhouse facility would have a devastating impact on the integrity of bushland in this part of the park.

The NSW Rural Fire Service, while acknowledging the importance placed upon the park's bushland values, nevertheless stresses that there is currently an unacceptable level of bush fire risk to residents and dwellings in the War Veterans' Home. The NSW Rural Fire Service has made a recommendation, as a matter of urgency, to Council that all development including, the proposed new village of "Greenhaven" should have a 40 metre wide fire protection zone (ie. 20 metres fuel free zone and 20 metres fuel reduced zone.)

There was a strong community opinion at the public meeting/ workshop and Exploring Issues Papers that neighbouring property owners need to take responsibility for fuel reduction in accordance with these requirements. It was believed that the 40-metre protection zone should fall within neighbouring property boundaries. There was considerable concern expressed that if Jamieson Park had to absorb combined fuel free and fuel reduction zones "there would be nothing left" in the park. Unfortunately, under current park boundaries and the close proximity of existing and proposed buildings to these boundaries, this option is not possible.

Notably, there were also requests that control burning should not be carried out every year or all at once as these actions have a devastating impact on habitat and nesting sites. Fire management needs to be well researched to ensure the best frequency and intensity of fire on natural vegetation and regeneration patterns. It was acknowledged that fuel levels need monitoring and management but if fires are too frequent or hot plant diversity and habitat values may be seriously compromised. It was suggested that fire management should aim to create a "patchwork of areas" burned at different times to ensure a diversity of edge conditions, refuge and food for fauna during and after any burn. Concerns were also raised regarding the construction of any further fire trails within the park.

H. Dredging & Reclamation Area

The lagoon has a history of dredging since 1911, however dredging proposals since the 1970's have created fierce public debate over the impact of such option. Past lagoon dredging had created a large, open and highly degraded reclamation site on the shoreline of Jamieson Park. In 1992, Warringah Council's Conservation Branch received funding for rehabilitation from the Department of Urban Affairs and Planning under the Metropolitan Greenspace programme. The works proposed included an extension to the existing picnic area and rehabilitation of the Narrabeen Lagoon foreshores to create a passive recreation area.

There was considerable comment about this reclamation area at the public meeting/workshop and in the Exploring Issues Papers. Some people were of the opinion that the reclaimed/ fill site has been an example of environmental vandalism. The area is still largely barren and open with very little vegetative growth. Weed species dominate much of the site. It is believed that fill material altered drainage conditions. It may have lowered the water table causing the current die-back and poor regeneration in the Swamp Oak Forest. Exotic weed species have proliferated under the disturbed conditions. It was also believed that site filling and reclamation has caused drainage problems near the main track which after heavy rain prevents access and causes degradation through multiple tracking. It was suggested that the problem now requires an engineering solution.

The open grassed nature of much of the site has also raised interest from various groups for active sports development. Narrabeen Primary School has made a written request to Council for a sportsground in this location, however this would introduce a new, formalized active sports component into the park. It changes the park's use and its emphasis on the protection of natural values. Such a proposal would lead to increased usage, the need for more land-based recreational facilities and inevitably, greater recreational pressures within the park. The public meeting/ workshop and Exploring Issues Papers did not support this proposal and found it incompatible with the park's values. Unfortunately, however the open site was seen as an invitation to these kind of proposals.

A number of participants and respondents believe there are still opportunities to reverse the decision to reclaim this area as the processes of natural colonisation are still very early and tentative. It was suggested that the sand could be removed and the foreshore reclaimed back to its original shoreline.

However, it should be noted that the area is indeed supporting the natural colonisation of young, developing mangroves and the formation of a new estuarine habitat within the northern spit and micro-lagoon area. It was suggested that another alternative may be found in further consolidation of the site's natural regeneration and re-vegetation. This would, in time, improve the site's natural values and character, providing much needed shade and an additional resource for further recreational activities beyond the existing picnic area. Suitable low-key, passive recreational facilities could be provided, alleviating some of the recreational pressures in the main carpark/ picnic area, which is becoming degraded through over-use.

I. Sailing School

The Sailing School has operated from Jamieson Park since 1978. Operations were transferred to Warringah Council in 1984 and continued for a further 12 years. The Jamieson Park Sail School was extremely popular with over 4000 local children and adults participating in the comprehensive learn to sail and sail board program. However, in 1996, an Occupational Health and Safety report identified a number of risk management, public safety and liability issues related to the operation of the school. A number of issues were highlighted. The programme was failing to attract experienced and skilled sailing instructors, the rescue craft needed replacement and other equipment was either inappropriate for learn to sail clinics or needed extensive repairs or replacement. It was recommended that the school could not continue in its present form and properly address its obligations for public safety and risk management without a significant increase in funding and allocation of staff resources. Following this review by Council officers it was recommended that Council should investigate leasing or licensing the facility to either a commercial operator or community sailing group.

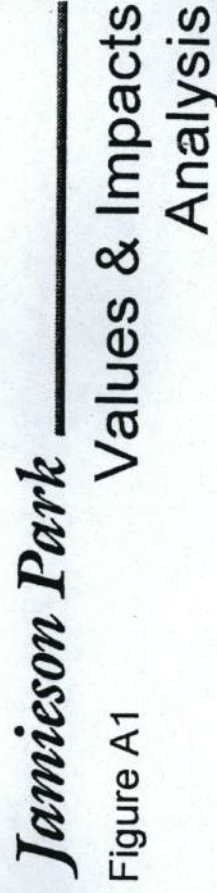
It was noted that any leasing or licensing issues needed to be addressed in the Plan of Management. As a consequence, the facility has remained closed pending further recommendations and adoption of the Plan. Equipment was audited and valued in March 1998 by an accredited Australian Sailing Instructor. This exercise confirmed the outdated and inappropriate nature of the equipment for teaching of sailing and recommended its sale before further depreciation. On 28 April 1998, an interim report was tabled and adopted by Council, providing recommendations on the current state of the building, repairs and equipment as follows:-

- ▶ that sailing equipment currently being stored in the Sailing School is disposed of through the appropriate Council processes;
- ▶ that the building be repaired to meet safety standards; and
- ▶ that the building be made available for hire by community sailing groups until the implementation of the Plan of Management.

Community sailing groups, including the Narrabeen Lakes Sailing Club who currently uses these facilities on Sundays, were invited to the public meeting/ workshop. No facility leasing issues were raised at either this meeting/ workshop, the Exploring Issues Papers or in subsequent correspondence by any of the parties. The Narrabeen Lakes Sailing Club (NLSC) however highlighted concerns over increasing vandalism of the club's facility. The NLSC also raised the issue of future recreational use of the lagoon which is being threatened by the decreasing depth of water. It was further suggested that the lagoon needs dredging if it is to remain viable as a sailing facility (refer to B. Environmental Issues: *Lagoon Sedimentation & Dredging*).

Appendix II

Preliminary Analysis & Management Issues



Appendix III

Supplementary Data:

- (a) Physical Context
- (b) Historic Context

(a) Physical Context

A. Climate

Jamieson Park, located on the south-western foreshores of Narrabeen Lagoon, has a climate which is characterized by warm to hot summers and cool to mild winters with no frosts. The park's coastal location adjacent to Narrabeen Lagoon and its north-easterly to north-western aspect below adjoining ridges and plateaus, ensures a relatively mild to warm, moist microclimate. Air temperature is tempered by sea-breezes. Rainfall is generally spread throughout the year with no distinctive wet or dry period. Fluctuations are subject to the effects of El Nino with periods of drought followed by excessively wet periods which may lead to temporal and localized flooding along the park's foreshores. Records from the Cromer Meteorological Station taken over the past 100 years confirm an average annual rainfall of 1269mm for this area, however significantly lower or much higher rainfall can be experienced in any given year.

Wind patterns are varied and complex with the dominant wind pattern typified by colder, drier offshore westerlies and south-westerlies in winter changing to moister north-easterly to south-easterly sea-breezes in summer. Afternoon southerly changes are common throughout summer. Wind conditions are also affected by topography and aspect. For example, visitors to the park during the summer months may experience significantly hotter conditions along the western foreshores as compared to areas east of Pipeclay Point.

B. Topography, Geology and Soils

The topography of Jamieson Park ranges from low alluvial flats bordering Narrabeen Lagoon to the adjacent sandstone slopes and ridges which form part of the Wheeler Heights/ Collaroy Plateau escarpment. The lower section of South Creek and sand spit define the south-western boundary of the park. Quaternary alluvial deposits dominate much of the southern, western and north-eastern foreshores. These soils consist of deep marine and fluvial sediments dominated by quartz sands and include varying amounts of organic matter. These alluvial soils typically have a high water table and are subject to periodic inundation. For much of the western section of Jamieson Park, the boundary follows the two metre contour line, traversing the base of two upland spurs and through two small valleys. This boundary effectively provides severe limitations on public access during periods of flooding.

The main ridge-line extending to Pipeclay Point and the eastern escarpment are major geological and topographical features of the park's landscape. The ridge rises to over 40 metres within the park, bisecting the lowland alluvial flats of the western foreshores and reclaimed north-eastern shoreline. Parent rock varies from overlying Hawkesbury Sandstone on the upper slopes, characterised by scarps and sandstone outcrops, to inter-bedded shales and sandstones of the Narrabeen Group (Newport sub-formation) on the lower slopes. Soils derived from Hawkesbury Sandstone are generally shallow and sandy while the Newport sub-formation soils are deeper with more clay present. The combination of deeply dissected sandstone plateaus, relatively steep terrain and highly erodible soils creates a high to extreme soil erosion hazard.

Narrabeen Lagoon formed as a shallow barrier lagoon estuary at the head of a drowned bedrock embayment behind a narrow coastal sand barrier (now Collaroy-Narrabeen Beaches). It is the largest of the estuarine lagoons along Sydney's northern beaches

and is connected to the open ocean by a narrow entrance channel which is flushed by tidal currents. The lagoon is virtually non-tidal except in its entrance channel. Unlike smaller lagoons, such as Dee Why Lagoon, the entrance to Narrabeen Lagoon is not ephemeral, however it is still subject to extensive marine sedimentation (refer to Narrabeen Lagoon Entrance Management Policy).

C. Narrabeen Lagoon Catchment & Hydrology

Jamieson Park is located within the Narrabeen Lagoon Catchment, an area which drains approximately 5,430 hectares (Beeh 1991). The lagoon area covers approximately 207 hectares and is generally shallow, characterised by surface sediments predominantly of mud and sandy mud (>50% mud) with extensive areas of clean sand (<10% mud), particularly in the eastern estuary. Small sandy beaches are found along much of Jamieson Park's northern foreshores and to a lesser extent, the western shoreline.

Narrabeen Lagoon is fed by short, irregularly flowing watercourses. South Creek, Middle Creek and Deep Creek are the three main creeks draining the northern, western and southern valleys and plateaus. Mullet Creek is a smaller watercourse entering the eastern arm of the lagoon. The South Creek sub-catchment is almost totally developed with only small pockets of undisturbed bushland remaining in the lower reaches. The fluvial deposits of South Creek have formed a typical delta in the southern section of the park. These are primarily mud to sandy mud. Similar fluvial deposits occur at Deep Creek and Middle Creek as they enter Narrabeen Lagoon.

Anecdotal accounts suggest that lagoon deposition and in-fill have increased significantly since development of the catchment. These impacts are being managed under the Northern Beaches Total Catchment Management programme and the Narrabeen Lagoon Entrance Management Policy. The Narrabeen Estuary Management Plan will be completed in 2001.

D. Biodiversity

Biodiversity or biological diversity is defined in the NSW Biodiversity Strategy as "*the variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form*". Jamieson Park is significant as an important reservoir of biodiversity. This remnant bushland contains a rich mosaic of vegetation communities and wildlife habitats. However, these values are under serious threat from urban development, fragmentation of viable habitat, altered hydrology, urban stormwater run-off and erosion, nutrient enrichment, weed invasion, recreational activities, pollution, sedimentation, dredging and reclamation of the lake and fire management practices.

Vegetation Communities

Vegetation communities are grouped according to the vegetation map units established by Benson and Howell (1994). Jamieson Park contains three of these vegetation map units under this broad classification:

- (a) Sydney Sandstone Complex;
- (b) Coastal Swamp Forest Complex; and
- (c) Estuarine Complex.

These vegetation units can be further subdivided into distinctive communities. Peter & Judy Smith (1995), used this methodology in their Vegetation Survey of Jamieson Park for Warringah Council. This survey included the lagoon seagrass beds, all of Jamieson

Park's bushland and a further 24 hectares of adjoining bushland occurring in the RSL War Veterans' property. A total of 307 local indigenous species of plants were identified, including species of national, regional and local significance. Furthermore, 142 exotic/introduced weed species were recorded confirming the importance of maintaining an effective regeneration and rehabilitation strategy.

Seagrass Beds (dominated by *Zostera capricorni*) in Narrabeen Lagoon and Scribbly Gum Woodland (dominated by *Eucalyptus haemastoma*) in Lantana Avenue were also included in the original survey. However, these two communities are not represented within the boundaries of Jamieson Park. The remaining seven vegetation communities are listed in Table 4 and mapped in Figure 2: Environmental Context.

Conservation Significance

P & J Smith (1995) identified the conservation significance for each of these vegetation communities and further highlighted the point that most of these communities, including component species, are poorly represented in local reserves and national parks. In a further study, "Warringah's Vegetation Communities: Priorities for Conservation and Rehabilitation" for Warringah Council, P & J Smith (1998), identified native vegetation communities for the whole Warringah local government area and assigned priorities for conservation and rehabilitation. This study provided important threatened species data and clear definitions for determining conservation priorities on a Warringah wide or sub-regional basis as follows:

Priority One

Communities which are either listed as an endangered ecological community in the Threatened Species Conservation (TSC) Act 1995 or consistently provide habitat for threatened flora or fauna species as defined by the Act, including:

- Swamp Mahogany Forest
- Estuarine Reedland
- Swamp Oak Forest
- Bangalay Forest

Priority Two

Communities which have a restricted distribution in the Warringah area and are thus important for conservation of local biodiversity. Some stands of these communities provide habitat for threatened flora or fauna species and thus have higher conservation priority. These include:

- Cabbage Palm Woodland
- Angophora Woodland

Priority Three

Communities which are common in Warringah and well represented in Ku-ring-gai Chase and Garigal National Parks. As in priority two, some stands of these communities provide habitat for threatened flora or fauna species and thus may have higher conservation priority, including:

- Peppermint Forest

The conservation priorities and additional data regarding threatened species, shown in Table 4 provides a valuable overview of threatened species on a sub-regional basis. It places Jamieson Park within the context of Warringah's reserves system together with

Sydney northern region and central coast national parks. The threatened species data and conservation priorities confirm that Jamieson Park plays a vital role in terms of conserving regional biodiversity. The Rough Mint-bush (*Prostanthera denticulata*), located on the north-eastern slopes of Jamieson Park, near the corner of Colooli Road and Nioka Road, is of regional significance.

The P & J Smith (1995) vegetation survey records many of the significant plant species as occurring only in bushland in the adjoining RSL War Veteran's Retirement Village. These recorded species include the nationally significant Port Jackson Heath (*Epacris purpurascens* var. *purpurascens*) and regionally significant Large-fruited Red Mahogany (*Eucalyptus scias* subspecies *scias*). A large portion of the regionally significant Swamp Mahogany Forest (*Eucalyptus robusta*) is also located on the War Veteran's property outside the park's boundaries.

Invasive Exotic Weeds

"Weeds" are plants which are out of place; usually plant species which are not native to the site, and introduced either deliberately or accidentally as a result of human activities. The survey by P & J Smith recorded 142 introduced species in and around Jamieson Park. Some of the most common species include Lantana (*Lantana camara*), Blackberry (*Rubus* sp.), Crofton Weed (*Ageratina adenophora*), (*Ludwigia peruviana*), Common Cassia (*Senna pendula*), Wandering Jew (*Tradescantia albiflora*), Balloon Vine (*Cardiospermum grandiflorum*), Kurnell Curse (*Hydrocotyle bonariensis*), Tall Fleabane (*Conyza albida*) and Japanese Honeysuckle (*Lonicera japonica*).

Weed species are largely confined to the understorey throughout much of the park. The communities showing the greatest level of weed invasion include the drier parts of the Swamp Oak Forest, Cabbage Palm Woodland, Swamp Mahogany Forest and the small stands of Peppermint Forest. Weeds in alluvial flat communities tend to decrease with increasing soil moisture. The survey found fewer weeds in the wetter Swamp Oak Forest and reedland communities than in Cabbage Palm Woodland and Swamp Mahogany Forest. The least weed affected community occurs on the Pipeclay Point ridge Angophora Woodland. The most highly weed infested areas are found along the bushland margins and old clearings within bushland, the reclamation area and along creek-lines, alluvial flats and drainage channels. Urban run-off transports weed seeds along these drainage corridors, often increasing nutrient loadings, such as phosphorus. Sydney's bushland communities are not adapted to high phosphorus levels and cannot compete effectively against the weeds which are advantaged under these altered conditions.

The lagoon foreshores are also subject to weed dispersal during flood periods. The lineal nature of the park and exposure to adjoining upland development along the ridges have exacerbated the weed problem. Recreational impacts, erosional damage, path diversions during flooding and multiple tracking through bushland all have further destabilizing impacts. Park visitors unknowingly distribute weed seeds attached to clothing and footwear. Fire has also had a significant impact on the distribution of weeds in the park.

Bush Regeneration & Rehabilitation

Over recent years, weed management, regeneration and rehabilitation programmes have been undertaken in many parts of the park, involving supervised volunteers and contract bush regeneration teams.

Since 1990, the National Trust of Australia (NSW) have been involved in regeneration and rehabilitation programmes in Jamieson Park. The Trust has primarily used the Bradley minimal disturbance method supplemented with follow-up hand-weeding and non-residual, systemic herbicidal "targeting" of selected weed species. Some locally-sourced indigenous planting has also been undertaken to supplement regeneration.

Most of this work has concentrated on high profile areas such as the Swamp Oak Forest south of the main carpark area (adjacent to the unsealed emergency service vehicle access), the area south of the reclamation area and along the main track to Pipeclay Point. Recent work has shifted to the western shoreline Swamp Oak Forest and Swamp Mahogany Forest in response to priorities set by P & J Smith and expanded funding of the programme. In the past, some work was also undertaken along the lower slopes of the eastern escarpment near the "Cascades", the Palm Woodland and along Veterans Parade.

The Trust has found that "non-residual" herbicidal spraying, particularly in the wetter sites (eg. Swamp Oak Forest), tends to have only a marginal impact on persistent weeds like *Rumex* and *Tradescantia*. It appears that Swamp Oak (*Casuarina glauca*) coppicing may also be retarded by herbicides. Depauperate species also appear to be favoured by the maintenance regime. In these wetter sites, low concentration saline solutions in water, sprayed over weeds may prove an effective tool in selective weed management (refer to recent work at Olympic Archery site).

The lower alluvial areas and adjoining slopes south of the main carpark/ picnic area and reclamation area have been severely degraded and fragmented due to the level of past disturbance. They continue to be affected by urban run-off from ridge-line residential development. Although weeds still remain an ongoing management problem, the overall results have been dramatic within a high public profile area, thus helping to raise public awareness in bush rehabilitation.

However, the long term sustainability and effectiveness of the programme in this north-eastern location is dependent upon improved catchment management along Colooli Road and the boundary to the RSL War Veterans Homes. The ecosystem is highly stressed and simplified. It has low durability and will continue to be infested with weeds. In the absence of improved catchment management, the area will require continuing resources just to maintain the status quo. Alternatively, appropriate controls on impacts offer opportunities to develop a clear time-frame for a more sustainable system.

An integrated strategy is required involving co-ordination of the current fire management and resident liaison/ education programme, rationalization of small private drains, weed removal/ re-contouring along the boundaries and planting within sediment control basins. The collected stormwater, high in nutrient levels, could be piped downslope to constructed freshwater wetlands for biological filtering within the reclamation area. This strategy would address many of the impacts seriously affecting the sustainability of bush regeneration. It would potentially provide enhanced biodiversity values and improve recreational opportunities in this area.

The bush regeneration programme also needs to remain flexible to avoid a situation of arrested succession eg. a community dominated by depauperate species like Cheese Tree (*Glochidion ferdinandi*) and Sweet-scented Pittosporum (*Pittosporum undulatum*) with very little of the original diversity. The new system may need to be developed in accordance with higher nutrient loadings (ie. emphasizing local diversity of indigenous rain forest species which are no longer present in the main creek-line, such as *Ficus*

coronata, *Synoum glandulosum*, *Acronychia oblongifolia*, *Ficus rubiginosa*, *Wilkiea huegeliana* and *Cryptocarya glaucescens*). Reinforce existing remnant species such as *Livistona australis*, *Elaeocarpus reticulatus*, *Acmena smithii* and suitable emergent *Eucalyptus* sp.

Soil testing (including pH, EC and complete chemical analysis) and monitoring of changes to vegetation, regeneration/ seedlings, diversity and composition should be undertaken by an independent body (eg. universities). Recommendations for modifying and adapting the programme should be provided as part of the monitoring exercise.

E. Fire

P & J Smith (1995) noted that: "Fire is a natural disturbance in the Sydney bushland and most local plant species are capable of surviving or regenerating after individual fires. However, the long term effects of fires on the vegetation depends on the fire regime - the combination of fire frequency, fire intensity and season of fire occurrence. Plant species may survive in a fire-prone environment and may even be dependent on fires for the survival of the population, but the same species can be eliminated under a changed and inappropriate fire regime". (Smith 1995, p.30)

Studies relating to the Sydney region's sandstone vegetation and its fire ecology have suggested an optimum fire regime to maintain plant species diversity. This may involve moderate to high intensity fires in summer or autumn at intervals of 10-30 years. Burning at intervals of less than 10 years can be expected to have an adverse effect on plant species diversity. Little is known of the fire regime in other vegetation types, however those habitats that are seldom burnt under natural conditions probably require much longer fire-free periods. This would include Jamieson Park's estuarine communities. (Smith 1995, p.30-31).

The bush fire of January 1994 burnt out ninety-five percent of Jamieson Park as well as large tracts of adjoining bushland. Although Jamieson Park is isolated from other bushland areas, the bush fire was ignited by embers from a fire burning to the west across Narrabeen Lagoon. The New South Wales Rural Fire Service acknowledges the importance of threatened species and environmental concerns, however stresses that its legislative responsibility and priority is to provide for the protection of life and property. The preparation and implementation of the Bush Fire Risk Management Plan is a requirement under Section 52 of the Rural Fires Act.

The legislation has the following objectives:

- ▶ "to provide for the co-ordinated prevention, mitigation and management of bush fires for the protection of life, property and the environment within the community; and
- ▶ the protection, maintenance and wherever possible the enhancement of the natural and cultural values of the area through the management of appropriate fire regimes".

The assessment by the Service was site specific, taking into consideration the following:

- ▶ potential bush fire impact;
- ▶ history of bush fire impact;
- ▶ type and quantity of available bush fire fuel;
- ▶ difficulty of suppression;

- ▶ access and egress;
- ▶ the nature of the RSL War Veterans' Village and age of occupants;
- ▶ legislative requirements under the Rural Fires Act 1997;
- ▶ concerns raised by RSLWV management and individuals; and
- ▶ based on the document "Planning for Bush Fire Protection"

The assessment resulted in the recommendation for a 20 metre fuel free and 20 metre fuel reduced zone. Pursuant to section 63 of the Rural Fires Act, it is the responsibility of the land manager, Warringah Council, to prevent the occurrence of and escape of fire from their managed land. The Service has confirmed that there are no proposals for construction of additional fire trails and should any be required in the future, Warringah Council and the community would be consulted.

Prescribed hazard reduction burning would be in consultation with Warringah Council, having regard wherever possible for identified natural and cultural values. In particular, hazard reduction burns should recognize significant conservation values, excluding the recommendations from areas containing significant species and fire sensitive vegetation communities. These communities include Reedland, Swamp Oak Forest, Cabbage Palm Woodland and Swamp Mahogany Forest (refer to 3.0 Basis for Management and G. Fire Management in Appendix 1(c): Community Issues Discussion Paper).

(b) Historic Context

A. Early European Impact

The earliest exploration of the area occurred on 22nd August 1788 when Governor Phillip landed in Manly Cove to explore the coastline as far as Broken Bay. The party was held up for two hours by the tide at the mouth of Narrabeen Lagoon. It was later recorded by Captain John Hunter in 1792 that the lagoon had an entrance in excess of 100 metres. Records of Governor Phillip's exploration of Narrabeen Lagoon at the time call the lagoon Narrabang Narrabang claiming to be of Aboriginal origin referring to the black swans (Manly Daily 21.2.1978).

The predominance of poor, sandy soils of the Hawkesbury sandstone landscape and the low-lying poorly drained estuarine flats of this area held no attraction for early colonists who were seeking more fertile, agricultural lands. Nevertheless, by the early 1820's the areas now known as Narrabeen, Collaroy and Collaroy Plateau were settled by John Ramsay, establishing the "Mount Ramsay Estate". The property covered an area of 161 hectares (410 acres) and extended to the eastern edge of Jamieson Park.

The southern foreshores of Narrabeen Lagoon were settled by James Wheeler in the 1830's. He was drawn to the area for its abundance of wildlife after he surveyed Narrabeen. In 1842 he made two purchases of land on the south side of Narrabeen Lagoon. The first was for 39 hectares (100 acres) adjacent to Father John Joseph Therry's property and the second was 19 hectares (50 acres) upon which he built his house fronting Narrabeen Lagoon. Another property of 6 hectares (15 acres) bought in 1853 offered frontage to the lagoon and linked the previous two properties. The remains of a jetty on this estate are still evident on the western shoreline. Early photographs show many groups who came to the property for hunting and fishing. In later years, the land was cleared and cultivated, with improvements including a saw mill on South Creek, a slaughter yard facing the lagoon and vegetable gardens. (Childs 1993). The cleared and weed infested areas on the adjoining "Greenhaven" site were possibly part of the estate's gardens and orchards.

In October 1888, coinciding with the opening up of this locality, an area north of Colooli Road extending west to the Lakes edge and adjoining Pipeclay Point, was dedicated for recreational purposes. The area became known as Jamieson Park.

During the later part of the 19th century, as Sydney grew rapidly south of the harbour, the north shore remained largely undeveloped, remote and isolated. Further farming allotments gradually increased through the 1880's however these were restricted by the infertile nature of much of this area. Commercial market-gardening, dairying, albeit on a relatively small scale, remained the main land uses prior to the invention of the car.

B. 1901-1945 Developmental Impact

The Warringah Shire rate books for 1907 show that two pottery companies, Bakewell Brothers of St Peters and Ashton & Jayelman of Marrickville, had special crown leases to extract pottery clay from the Pipeclay Point area, hence the name. 1911 was marked by the first residential sub-divisions in the Collaroy area but these were largely "fibro" holiday cottages rather than permanent residences. The tram-line was extended in 1913

from Brookvale to the tram terminus at Narrabeen along Pittwater Road opening the area to further day-trippers and week-end holidays. In 1925, Collaroy Plateau still had much of its shrubby woodland. (Figure:- Benson & Howell 1990, p.133).

During the years between the great wars, social, community and recreational values changed dramatically, however cars were still a relative luxury and roads were unsealed. Trams remained the main form of mass transport until 1939 when they were replaced by buses. Bathing became a popular pastime.

C. Post War Developmental Impact

The end of the Second World War heralded a development boom period which saw broad-scale residential and commercial development throughout the northern beaches. This period was also marked by development of an improved transportation network, better roads and the family car. For the first time, Narrabeen Lagoon and the northern beaches were within the scope of the average family day-tripper, travelling from further afield in the Sydney metropolitan area. Transportation and improved infrastructure provided the opportunity for change from an outlying sea-side and lake-side recreational area to a residential suburb of Sydney. Between 1956 and 1975 residential development spread significantly into the sandstone plateau forming the upper catchment of South Creek. In the 1960's, approximately 39 hectares (100 acres) of land was sold by the Wheeler family to become the suburb of Wheeler Heights. The suburbs of Cromer and Cromer Heights developed around the Cromer Golf Course.

Continued vegetation clearing, exotic weed invasion, altered drainage conditions, the introduction of septic tanks, nutrient enrichment, use of pesticides and herbicides, lagoon dredging and reclamation, damage by feral rabbits, loss of biological diversity and amenity value were by-products of this new era of development. These issues are increasingly being addressed by Warringah Council on a catchment management basis. Regeneration and weed management within the Jamieson Park have become important components of this strategy (refer to relevant sections of the Plan).

Appendix IV

Warringah Land Register

Warringah Land Register - Jamieson Park

Reserve Name:
Reserve/ Registration No:
Property Description:
Owner:
Crown Reserve No:
Tenure/ Acquired from:
Tenure Conditions:
Purpose:
Street Name:
Suburb:
Area (sq m):
File:
Parish:
Lease Type/ No:

Jamieson Park/ Pipeclay Point
306 : including 43/ 1A, 43/ 1B and 43/ 1C.
Crown Reserve
Lot 1214 D.P. 752038
Crown
85849
Council appointed Trustee GG 6 of
20.01.1967 under PTA 1897.
Reserved from sale GG 63 of
24.06.1966 under Sec 28 CLC Act.
Public Recreation & Promotion of the Study
& the Preservation of Native Flora & Fauna
The Esplanade
Narrabeen
Manly Cove
0

Improvements:
Notes:

Assignment of name to Reserve Trust GG of 11.04.1997. Reserved for Public Recreation (R83025) by GG 10 of 27.01.1961. Plan C1209-2030 LF - MS 164 SY SL7. Revocation of reserve from sale (R82171) GG 10 of 27.01.1961. See misc1248.

Reserve Name:
Reserve/ Registration No:
Property Description:
Owner:
Crown Reserve No:
Tenure/ Acquired from:
Tenure Conditions:
Purpose:
Street Name:
Suburb:
Area (sq m):
File:
Parish:
Lease Type/ No:

Jamieson Park/ Reclamation Area
306 : 43/ 3
Crown Reserve
Lot 7180 D.P. 94075 (comprising Pt. 71235)
Crown
71235
Council appointed Trustee GG 132 of 11.9.1998
Acquired 20.1.1967
Reserved from sale GG 16.6.1944.
Public Recreation
The Esplanade
Narrabeen
330.081.004
Manly Cove
0

Improvements:
Notes:

Narrabeen Lakes Sailing Club
Assignment of name to Reserve Trust GG 132 of 11.9.1998.

Warringah Land Register - Jamieson Park (continued)

Reserve Name:
Reserve/ Registration No:
Property Description:
Owner:
Tenure/ Acquired from:
Tenure Conditions:
Purpose:
Community Land Categories:
Street Name:
Suburb:
Area (sq m):
File:
Parish:
Lease Type/ No:

Jamieson Park (South Creek Reserve section)
320 : 49/ 3A
Lot 1 D.P. 225797
Department of Urban Affairs & Planning (DUAP)
CC & M/ Department of Environment & Planning 22.11.1974
CCM from SPA by GG CCM
No. 139 of 22.11.1974 page 4494.
Public Recreation, Public Park, Passive Recreation
Natural Area: bushland/ wetland/ watercourse/ foreshore Park
South Creek Road
Narrabeen
51,598
Manly Cove
0

Improvements:
Notes:

Reserve located on the foreshore of Narrabeen Lakes.

Reserve Name:
Reserve/ Registration No:
Property Description:
Owner:
Tenure/ Acquired from:
Tenure Conditions:
Purpose:
Community Land Categories:
Street Name:
Suburb:
Area (sq m):
File:
Parish:
Lease Type/ No:

Jamieson Park (South Creek prolongation)
Lot 1 D.P. 514798
Department of Urban Affairs & Planning (DUAP)
Public Recreation, Public Park, Passive Recreation
Natural Area: bushland/ wetland/ foreshore Area of cultural significance
South Creek Road
Narrabeen
Manly Cove
0

Improvements:
Notes:

Prolongated reserve located on the foreshore of Narrabeen Lakes between South Creek Reserve (Res No.320) and Jamieson Park/ Pipeday Point (Res No. 306).
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Warringah Land Register - Jamieson Park (continued)

Reserve Name:	
Reserve/Registration No:	
Property Description:	
Owner:	
Crown Reserve No:	
Tenure/ Acquired from:	
Tenure Conditions:	
Purpose:	
Street Name:	
Suburb:	
Area (sq m):	
File:	
Parish:	
Lease Type/ No:	

South Creek Road - unformed northern section
Unformed Crown road reserve
Crown
South Creek Road
Narrabeen
Manly Cove
0

Improvements:	
Notes:	

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Source: Warringah Council & Department of Land & Water Conservation, 1999

Appendix V

Bush Fire Risk Management

Bush Fire Risk Management

Background

The Rural Fires Act, 1997 requires the Bush Fire Coordinating Committee to establish a Bush Fire Management Committee in each local government area containing a rural fire district or fire district with a bush fire risk. One role of the bush Fire Management Committee is to prepare a Bush Fire Risk Management Plan (BFRMP) for its area of responsibility.

Bush fire risk is defined as the chance of a bush fire igniting, spreading and causing damage to assets of value to the community. Assets of value to the community include life, property (including buildings, stock, crops and forests) and our natural and cultural heritage.

Bush fire risk management involves identifying the level of risk posed by bush fires to assets and establishing strategies to protect these assets from the adverse effects of bush fires. The purpose of bush fire risk management is to protect the community and its values from the adverse affects of wildfire. The outcome sought is to achieve better integration of community preparedness and prevention strategies as key elements of bush fire management.

This Bush Fire Risk Management Plan (BFRMP) has been prepared by the Warringah Pittwater Bush Fire Management Committee in accordance with the *Rural Fires Act 1997*. The Warringah Pittwater Bush Fire Management Committee comprises representatives of major land management agencies such as NSW National Parks and Wildlife Service (NPWS), Warringah and Pittwater Councils, fire fighting authorities and community representatives.

The plan identifies the level of bush fire risk across the Warringah and Pittwater Local Government Areas and establishes strategies that the responsible land managers will implement to manage the bush fire risks identified.

The strategies established in the bush fire risk management plan address the bush fire hazard, the vulnerability of assets to fire, the safety of the community and fire fighters, the protection of the land and environment from fire, and recognises that biodiversity can be managed through the application of appropriate fire regimes upon the landscape.

Aims and Objectives

The aim of the Warringah Pittwater bush Fire Risk Management Plan is to provide for the coordinated prevention, mitigation and management of bush fires for:

- The protection of life, property and the environment within the community; and
- The protection, maintenance and wherever possible the enhancement of the natural and cultural values of the area through the management of appropriate fire regimes.

To give effect to this aim, the committee has developed appropriate risk management objectives and strategies.

Bush Fire Risk Management

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Risk Management Objectives

The objectives of the Warringah Pittwater Bush Fire Risk Management Plan are:

- To ensure that the community is well informed of bush fire protection measures and is well prepared for bush fire events;
- To reduce the impact of bush fire smoke on the community;
- To reduce the risk of bush fire damage to life, property and the environment;
- To maintain an effective network of fire trails;
- To ensure the long-term conservation of threatened species, populations and communities and remnant bushland (in relation to fire management);
- To establish effective and efficient local fire fighting resources;
- To effectively manage bush fires for the protection and conservation of the natural, cultural, scenic and recreational features of the area;
- To minimise the risk to the safety of fire fighters and the public by reducing the potential for severe bush fires;
- To minimise soil erosion and sedimentation; and
- To encourage full and open community consultation and participation in the prevention of arson and unplanned fire.

Bush Fire Risk Management Strategies

This plan contains a number of strategies that are directed at addressing the risk to community and environmental assets. This is generally achieved through addressing those factors which comprise the risk being the bush fire hazard (principally the fuel), the sources and pattern of ignitions and the vulnerability of the assets at risk.

Risk management strategies within the District will generally include a combination of individual property protection, boundary assets protection zones, strategic fire management activities and broad ecological and hazard reduction measures. These strategies when combined should provide an appropriate level of asset protection whilst still achieving broad ecological objectives.

Bush fire risk management priorities have been allocated according to the bush fire risk ratings. Those areas faced with an extreme bush fire risk have been given the highest management priority, while those areas with an insignificant risk have the lowest management priority.

The bush fire risk management priority influences:

- When the risk is likely to be treated – high priority areas will be addressed first;
- The resources allocated to the treatment – more resources will be allocated to manage the risk in high priority areas, as more work will be needed to reduce the risk; and
- The range of treatment strategies required to manage the risk – a greater range of management strategies will be implemented to manage the risk in high priority areas, as more factors contribute to the risk.

Bush Fire Risk Management

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Based on the results of the bush fire risk analysis in the Warringah Pittwater Bush Fire Risk Management Plan, a series of bush fire management zones have been identified.

Bush fire management zones identify those areas where the bush fire risk management strategies will focus on the management of the bush fire hazard (or fuel). The type of bush fire management zones identified in this plan reflects those described in the Bush Fire Risk Management Plan, and which are detailed below:

Asset Protection Zone	To protect human life, property and highly valued public assets
Strategic Fire Advantage Zone	To provide strategic areas of fire protection which will reduce the speed and intensity of bush fire
Land Management Zone	To meet relevant land management objectives in areas where Asset Protection or Strategic Fire Advantage Zones are not appropriate
Fire Exclusion Zone	To exclude fires (both bush fire and hazard reduction burning) due to the presence of fire intolerant assets

Bibliography

Beeh, P (1991) Under Attack from Creeping Suburbia, GEO Australia's Geographic Magazine, Vol.13, No.3, pp.31-36.

Benson, D. & Howell, J (1990) Taken for Granted: The Bushland of Sydney and its Suburbs. Kangaroo Press, Sydney.

Browne, L et al (1984) Warringah Council Environmental Impact Statement of Proposed Management Strategy for Narrabeen Lagoon.

Cormack, L.A et al (1975) Environmental Strategy on the Narrabeen Lagoon System. NSW Institute of Technology, Sydney.

Eagles, P.F.J (1984) The Planning and Management of Environmentally Sensitive Areas. Longman, London & New York.

Fairely, A & Moore, P (1989) Native Plants of the Sydney District: An Identification Guide, 1995 Reprint, Kangaroo Press in association with The Society for Growing Plants- NSW Ltd.

Graefe, A.R, Kuss, F.R. and Vaske, J.J (1990) Visitor Impact Management: The Planning Framework, Vol. 2, National Parks and Conservation Association, Washington DC.

Hammit, W.E. & Cole, D.N (1987) Wildland Recreation: Ecology and Management. John Wiley & Sons, New York.

Johnson, D & Gerstle, B (1986) The Urbanisation of Narrabeen Lagoon Catchment: A Case Study, Journal of Soil Conservation Volume 42, Number 1, pp.18-21.

Kuss, F.R, Graefe, A.F & Vaske, J.V (1990) Visitor Impact Management: A Review of Research, Vol.1, National Parks and Conservation Association, Washington DC.

Land & Environment Court of NSW (1998) RSL Veterans Retirement Villages Ltd vs Warringah Council.

National Parks & Wildlife Service (1997) Biodiversity: Draft NSW Biodiversity Strategy.

National Trust of Australia (1998) Bush Regeneration 1997-1998, A report prepared for Warringah Shire Council.

National Trust of Australia (1997) Jamieson Park, Narrabeen: Bush Regeneration 1996-1997, A report prepared for Warringah Shire Council.

National Trust of Australia (1995) Jamieson Park: Report on Work 1994 and 1995, A report prepared for Warringah Shire Council.

National Trust of Australia (1994) Jamieson Park: Summary of Work February to June 1994, A report prepared for Warringah Shire Council.

National Trust of Australia (1992) Jamieson Park, Narrabeen: Annual Report 1992. A report prepared for Warringah Shire Council.

National Trust of Australia (1991) Jamieson Park, Narrabeen: Field Report 1991. A report prepared for Warringah Shire Council.

National Trust of Australia (November 1980) Narrabeen Lagoon Survey Areas 1,2 &4. A report prepared for Warringah Shire Council.

Nature Conservation Council of NSW (1997) On the Brink: Your Bush, Their Habitat. Our Act. Is the Threatened Species Conservation Act Working? Proceedings of the Conference held at the University of Sydney, Camperdown.

Nebb, McKeown & Associates Pty Ltd (1998) Narrabeen Lagoon Review of Water Quality 1985-1998.

New South Wales Department of Land & Water Conservation (1998) Guidelines and Application Form: For Clearing Vegetation Under the Native vegetation Conservation Act 1997.

New South Wales Department of Land & Water Conservation (1996) Succeeding with Plans of Management: A Guide to the Local Government Act and Crown Lands Act.

New South Wales Department of Land & Water Conservation (1997) Definitions and Exemptions: State Environmental Planning Policy No.46- Protection and Management of Native Vegetation Amendment No.2.

New South Wales Department of Mineral Resources (1985) Geology of the Sydney 1:100 000 Sheet 9130. Geological Survey of New South Wales, Dept. of Natural Resources.

New South Wales Institute of Technology School of Life Sciences. Narrabeen Lagoon: A Draft Management Plan for the Southern Foreshores of the Western Basin.

New South Wales Rural Fire Service Warringah-Pittwater District (1998) Bush Fire Hazard Reduction Guidelines.

Pittwater Council (1996) Urban Bushland Plan of Management Number 4.

Smith, P.J (1995) Vegetation Survey of Jamieson Park and Surrounding Bushland.

Smith, P.J (1998) Warringah Vegetation Communities: priorities for conservation and rehabilitation.

Sydney Northern Beaches Catchment Management Committee Inc (1997) Sydney Northern Beaches Management Strategy.

The Narrabeen Lagoon Committee (1992) A Review of Objectives for the Management of Narrabeen Lagoon and its Catchment.

University of Western Sydney School of Applied Environmental Science (1997) Community Values of Narrabeen Lagoon and Community Perception of Recreation Related Issues.

University of Western Sydney (1993) Interpreting the Historical Landscape: The Southern Shore of Narrabeen Lagoon.

Warringah Council (1999) Recreation Strategy Plan, Volume 1: The Strategy Plan.

Warringah Council (1998) Draft Warringah LEP: A Draft Plan for Controlling Development in Warringah.

Warringah Council (1998) State of the Environment Report 1997 - 1998.

Warringah Council (1998) Recreation Needs Assessment of the Warringah Community: Main Report. Prepared by the University of Technology, School of Leisure and Tourism Studies.

Warringah Council (1998) Recreation Needs Assessment of the Warringah Community: Appendices. Prepared by the University of Technology, School of Leisure and Tourism Studies.

Warringah Council (1998) Draft Recreation Strategy for Warringah's Beaches and Coastal Open Space.

Warringah Council (1996) Review of the Warringah Sail School.

Warringah Council (1996) Dee Why and South Creek Open Space Corridor: Geographic Plan of Management.

Warringah Council (1995) Jamieson Park Visitor Survey. Prepared by Roger Nielsen, Conservation Branch.

Warringah Council (1994) Draft Fire Management Plan Jamieson Park - Wheeler Heights. Prepared by Solitech Pty Ltd.

Warringah Council (1992) Narrabeen Lagoon Draft Floodplain Management Study. Prepared by Mitchell McCotter.

WTMA (1997) Protection Through Partnerships: Policies for Implementation of Wet Tropics Plan. Cairns, WTMA.

WTMP (1998) Wet Tropics Management Plan, 1998. Subordinate Legislation 1998 No.161. Queensland Government.

Journal Articles

Buckley, R & Pannell, J (1990) Environmental Impacts of Tourism and Recreation in National Parks and Conservation Reserves. The Journal of Tourism Studies. 1:24-32.

Burden, R.F & Randerson, P.F (1991) Quantitative Studies of the Effects of Human Trampling on Vegetation as an Aid to the Management of Semi-Natural Areas.

Cole, D.N. and Bayfield, N.G (1993) Recreational Trampling of Vegetation: Standard Experimental Procedures. Biological Conservation. 63: 209-215.

Floyd, M.F, Jang, H & Noe, F.P (1997) The Relationship between Environmental Concern and Acceptability of Environmental Impacts Among Visitors to Two US National Park Settings. Journal of Environmental Management 51, 391-412.

Kelly, J.R & Harwell, M.A (1990) Indicators of Ecosystem Recovery. Environmental Management. 14: 527- 545.

Kuss, F.R & Graefe, A.F (1995) Effects of Recreation Trampling on Natural Area Vegetation. National Recreation and Park Association. 17: 715-727.

Liddle, M.J (1975) A Selective Review of the Ecological Effects of Human Trampling on Natural Ecosystems. Biological Conservation 7, 17-35.

Prosser, G (1986) The Limits of Acceptable Change: An Introduction to a Framework for Natural Area Planning. Australian Parks and Recreation. 22: 2: 5-10.

Sun, D & Walsh, D (1998) Review of Studies on Environmental Impacts of Recreation and Tourism in Australia. Journal of Environmental Management 53, 323-338.

Villa, F, Rossi, O & Sartore , F (1992) Understanding the Role of Chronic Environmental Disturbance in the Context of Island Biogeographic Theory. Environmental Management 16 (5), 653-666.

Maps & Aerial Photographs

Central Mapping Authority of New South Wales (1985) Terry Hills U1867-94.

Central Mapping Authority of New South Wales (1985) Frenchs Forest U1869-32.

Central Mapping Authority of New South Wales (1985) Frenchs Forest U1860-31.

Custom Mapping Services (1996) Warringah Council

Surveyor's General's Department New South Wales (1994) Aerial Photograph of Jamieson Park.