



Warringah Council

Dee Why Lagoon Wildlife Refuge

Plan of Management



Adopted August 2002

Amended 27 April 2021: This Dee Why Lagoon Wildlife Refuge Plan of Management was amended on 27 April 2021 to replace Action 63 in relation to the Dee Why Surf Life Saving Club. Details of the amendment as adopted by Council resolution can be found at Appendix F.

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EXECUTIVE SUMMARY

This Plan of Management provides the framework for managing Dee Why Lagoon Wildlife Refuge. The Refuge, designated as a Specific Area by Warringah Council, has high conservation value for flora and fauna and provides an area of open space within an urban setting. The Refuge plays an important role in Warringah's open space system and is a valuable conservation area for migratory birds and estuarine flora and fauna. The Refuge consists of Community Land, Crown Land and Crown Reserve. Council is trustee of the two Crown Reserve land parcels which have been reserved for the purpose of "Public Recreation". The Crown however remains the administrator of the Crown Land parcel which includes the lagoon bed as well as a portion of the adjacent James Meehan Reserve and sand dunes.

The Plan of Management aims to satisfy the requirements of both the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998, as well as the Crown Land Act 1989. It takes a values-based approach to land planning and management, identifying the Refuge's key values, role and purpose so that these assets may be protected and enhanced. Issues for the Refuge have also been identified, however it is recognised that issues will change over time. The values identified for the Refuge should be carefully considered during management of the Refuge as they are potentially far longer lasting.

As part of the process of preparing this Plan of Management, extensive community consultation has been carried out. Public meetings and workshops, meetings with key stakeholders, distribution of a questionnaire to determine values for the Refuge, Council working group meetings and consultation with relevant State Government Departments have been carried out during the preparation of this Plan of Management. This consultation process has identified a number of values for the Refuge which fall into the broad categories of:

- Natural Environment
- Recreation
- Education
- Aesthetics
- Social
- Heritage
- Access

The values and subsequent issues have been addressed by a series of management actions within the Actions Plan. A set of core objectives, as determined by the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998, along with additional objectives developed during the community consultation process have also been addressed within the Actions Plan.

In addition to the management actions, a vision for Dee Why Lagoon Wildlife Refuge was developed following the community consultation process.



The vision for Dee Why Lagoon Wildlife Refuge is to preserve the natural appearance of the lagoon edge and it's original natural perimeter and to:

- *Conserve a significant natural area supporting a diversity of native aquatic and terrestrial flora and fauna; and*
- *Provide a range of low key, predominantly passive, recreational and educational opportunities that are complementary to the Refuge's natural heritage values.*

It is recognised that a number of supporting plans have been developed, or are currently being developed, in respect to the Refuge. The other plans provide more detailed information in relation to vegetation management, estuary processes and urban design. This Plan of Management, in combination with these plans, will provide direction and management recommendations for the Refuge. This Plan of Management is however the governing plan, recommendations of the other plans must not be in conflict with the recommendations of this Plan of Management.

A Masterplan for Dee Why Lagoon Wildlife Refuge, see Figure One (overleaf), has been developed in conjunction with this Plan of Management. The Masterplan is based on the values and the key management actions identified for the Refuge. The Masterplan identifies the physical locations of the proposed actions within the Refuge. Indicative costs for the key proposed works has been provided within Table Nine (page 54) of the Plan of Management.



Figure 1: Dee Why Lagoon Wildlife Refuge Masterplan

LEGEND

- Dune
- Bushland
- Regeneration Areas
- Beach
- Road
- Grassed Area
- Saltmarsh
- Water
- Boundary
- Walking Track
- Multi-use pathway

Boundaries:

- Develop boundary fences on all remaining unfenced bushland perimeters.

Dune Areas:

- Fences, accessways & other structures to be maintained.
- Dune blowouts to be stabilised.
- Bitou bush clumps & seedling regrowth to be treated annually.
- Weeds to be effectively controlled.
- Informal tracks to be closed.

Management Actions:

- Regularly maintain boundary fence & remove vines & litter.
- Investigate dredging of lagoon.
- Conserve & rehabilitate saltmarsh & aquatic plant communities.
- Investigate closure of informal tracks.
- Develop walking track to link track behind dunes with multi-use pathway.
- Investigate possibilities of reinstating foreshore.
- Regularly mow turfed area to reduce seeding into bushland areas.
- Construct public amenities block.
- Investigate the development of a low key viewing platform which is accessible by frail and mobility impaired people.
- Liaise with NP&WS to discuss revocation of SLSC, carpark, playground & landscaped area from Wildlife Refuge.
- Relocate fenceline to reduce turfed area. Remove fill to regenerate reclaimed area. (Greenlink Grant Site)
- Picnic tables & bins to be installed where necessary.
- Upgrade security lighting along entrance.
- Enforce ban on dogs within the Wildlife Refuge in accordance with the National Parks & Wildlife Act 1974.
- Regularly mow turfed area to reduce seeding into bushland areas.
- Construct periodic boardwalk, 'gateway' & informal rests in accordance with the 'Bicentennial Coastal Walkway' document.
- Provide interpretive signs along walking tracks within the dune system.
- Install regulatory signs.
- Long Reef SLSC carpark.
- Gradually move mowing barriers to reduce amount of turfed area.
- Remove existing informal pathway become a multi-use pathway.
- Investigate regeneration reduction of turfed area.
- Monitor & maintain sedimentation basin gross pollutant trap.
- Viewing Platform: boardwalk and viewing platform to be constructed through bushland to lagoon edge.
- Location to be determined by migratory and resident bird study.
- To incorporate interpretive signs.

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- Investigate possibilities of reinstating foreshore.
- Investigate closure of informal tracks.
- Gradually move mowing barriers to reduce amount of turfing area.
- Existing bridge.
- Future pedestrian link to town centre.
- Relocate fence line to reduce turfing area. Remove fill to regenerate reclaimed area. (Greenlink Grant Site)
- Picnic tables & bins to be installed where necessary.
- Upgrade security lighting along entrance.
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- Fence walking tracks within Wildlife Refuge.
- Provide interpretive signs along walking tracks within the dune system.
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- Westmordland Ave
- Hadleigh Ave
- Lismore Ave
- Clarence Ave
- Richmond Ave
- Avon Rd
- Clyde Rd
- Dee Why Pde
- The Strand
- SLSC
- Playground
- Dee Why Lagoon
- Dee Why Beach
- Dee Why Lagoon Wildlife Refuge Masterplan
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Liaise with NP&WS to discuss revocation of SLSC, carpark, playground & landscaped area from Wildlife Refuge.

Upgrade security lighting along entrance.

Picnic tables & bins to be installed where necessary.

Relocate fenceline to reduce turfed area. Remove fill to regenerate reclaimed area. (Greenlink Grant Site)

Future pedestrian link to town centre

Existing bridge

Hawkesbury Ave

Clarence Ave

Richmond Ave

Avon Rd

Clyde Rd

Dee Why Pde

The Strand

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1. INTRODUCTION

1.1 What is a Plan of Management?

A plan of management provides the framework for managing public land. Warringah Council has designated Dee Why Lagoon Wildlife Refuge as a *Specific Area* in recognition of its key values, role and purpose within the reserves system.

It is a general requirement for Council to prepare plans of management for all land classified as "Community Land". This classification means that the land is owned by Council and is managed for use by the community. Plans of management are being prepared for all parcels of Community Land within Warringah. The plans are to be consistent with the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998, the Crown Lands Act 1989 and other relevant legislation.

1.2 What are the aims of this Plan of Management?

This Plan of Management aims to provide a clear, concise and practical framework for the management of Dee Why Lagoon Wildlife Refuge. It aims to be performance oriented in order to contribute towards Council achieving its strategic goals, vision, mission and strategic outcomes. As a means of 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.

The primary purpose of this Plan is to provide the community, users and Warringah Council with a clear statement on the future use and management of the Refuge. The efficient and appropriate management of this land is essential if its value to the community is to be maintained and enhanced.

In accordance with Council's broader goals and objectives, this Plan of Management aims to provide the following strategic outcomes for Dee Why Lagoon Wildlife Refuge:-

- Identify and assess the Refuge's values and uses;
- Define the Refuge's role within the Local Government Area and regional context;
- Identify and assess key issues affecting the resource base;
- Develop an understanding of the resource at an organisational level;
- Set a vision for the Refuge spanning the next 10 years;
- Establish management strategies and their resourcing implications;
- Assign directions and priorities in a strategic plan (5 years); and
- Develop a Masterplan.

1.3 Location & Area Description

Dee Why Lagoon Wildlife Refuge is located approximately 16 km north east of central Sydney within A ward of the Warringah Local Government Area (see Figure Two, page 5). The Wildlife Refuge incorporates an area of 77 hectares of which approximately 30 hectares is the waterbody of Dee Why Lagoon itself. The remaining 47 hectares are above the high water mark and the non-flood water levels of the lagoon and include remnant native bushland, grassed landscaped areas, James Meehan Reserve, carparking, Dee Why



Surf Life Saving Club, the dune system and a portion of Dee Why beach. The Refuge is bounded by Pittwater Road in the west, the southern boundary of the access road to Long Reef beach in the north, Astronomical High Water Mark in the east and the northern boundary of residential properties in the south.

Dee Why Lagoon Wildlife Refuge is a major scenic and open space feature of the Northern Beaches. The Refuge is adjacent to Pittwater Road, a main arterial road in Warringah, and is therefore a highly visible feature - particularly for travellers heading south who gain sweeping views across the lagoon, bushland and beaches as they round Long-Reef bends. Consequently, much of Warringah's community is aware of the changing natural conditions within the Refuge and any changes in the waterbody itself.

1.4 Background Information

The high conservation values of Dee Why Lagoon and the adjacent areas of natural vegetation were recognised in 1973 when the area was gazetted a Wildlife Refuge under the Fauna Protection Act, 1948 (a forerunner of the current National Parks and Wildlife Act 1974). The bushland and wetlands of the Refuge contain a sequence of coastal ecosystems rarely found in an urban environment and as such represent an important regional environmental and educational resource. Dee Why Lagoon Wildlife Refuge and the nearby Long Reef Aquatic Reserve are significant conservation areas and together are an important resource for resident and migratory wildlife. The Refuge provides habitat for endangered migratory bird species listed under international conservation agreements, as detailed in Appendix A.

1.5 History of the Dee Why Lagoon Wildlife Refuge



Photo 1: Black Swans on Dee Why Lagoon, early 1900's.
(source: Local Studies Warringah Library Service)

Table One (overleaf) provides a summary of key historical events, since European settlement, related to Dee Why Lagoon Wildlife Refuge. For further information refer to the Bibliography, Section 10, or visit the Local Studies Warringah Library Service, Dee Why.

Table 1. History of the Wildlife Refuge.



Year	Event
1814-1819	William Cossar received two grants – one of 500 acres which included the northern part of the Refuge and one of 200 acres which included the southern part of the Refuge. The northern grant was made in 1814/15 and the southern grant in 1818/19.
1825	James Jenkins acquired the entire 700 acres, being the original 500 acre and 200 acre grants. This land completely surrounded the Lagoon.
1876	During the so-called Dandenong Gales, enormous seas washed the dunes into the Lagoon, creating the flat portion of land currently behind the dunes. Prior to 1876 this hind dune area was waterbody.
Post 1876	The Lagoon had two entrances for a period after 1876 as the seas actually broke through into the Lagoon at the approximate position of the current Dee Why Surf Life Saving Club. Confirmatory evidence of this was obtained in 1977.
1894	Elizabeth Jenkins (James Jenkins' daughter), in accordance with her Will of March 1894, conveyed all her real and personal property to the Salvation Army.
1909 & 1910	The Salvation Army claimed ownership of Dee Why Lagoon on the basis that the Lagoon was not open to the sea and the Salvation Army owned land on either side. A High Court challenge however, decided the Lagoon bed was in fact Crown Land. The Salvation Army retained ownership of surrounding lands.
1937	Council purchased the land surrounding the Lagoon from the Salvation Army. The purpose of the acquisition was to set aside the land for public recreation. A covenant was placed on the sale by the Salvation Army.
Early to mid 1940's	The dune system of Dee Why beach was flattened to allow an open vista of the ocean for defence purposes during World War II. The construction of a tank trap and defence network also occurred during World War II. Remains of the tank trap are present today in the form of wooden pylons in the South East corner of the Lagoon.
1950	Council prepared a plan for intensive development of the southern portion of the Lagoon. The proposal included provisions for a number of sporting facilities. The full scope of this Plan was not realised and by 1968 the cleared areas were covered with regenerating bushland.
1964	The Dee Why Lagoon Conservation and Preservation Committee developed a Management Plan for the Lagoon. The emphasis of this Plan was on wildlife conservation and low key passive recreation.
1968	A proposal was submitted to Council by Dee Why Bowling Club to develop 1.4 hectares of land for bowling greens and Club house. Following overwhelming public outcry and discussion this proposal was abandoned. It was subsequently established that there existed strong public support for the management of the reserve for conservation and passive recreation purposes.
Late 1960's	The south-eastern corner of Dee Why Lagoon Wildlife Refuge was used as a garbage tip, this area is now known as James Meehan Reserve.
1969	The National Parks and Wildlife Service prepared a Plan of Management for the Refuge. The Plan recommended that Council enter an agreement with the Service for Dee Why Lagoon to become a Wildlife Refuge in order to give the Refuge the protection of the then Fauna Protection Act (1948).
1973	The Dee Why Lagoon Wildlife Refuge (Number 373) was officially gazetted.
1977	On a request from the Crown Lands Office the Department of Public Works prepared a report on a dredging proposal from Warringah Council. Due to technical and administrative problems dredging was not carried out by Council.



1980	The community based group Friends of Dee Why Lagoon was established with a focus on the environmental management of the Refuge and its catchment. The Friends have initiated and participated in Lagoon enhancement activities such as the annual 'Clean-a-goan' day, extensive bush regeneration projects, tree planting, dune revegetation and general litter clean ups.
Early 1980's	The dunes of Dee Why beach were reshaped and planted with native species. The sustained efforts of the Friends of Dee Why Lagoon over a period of eight years almost completely eradicated bitou bush infestation of the dune system.
1981	Council contracted the National Trust of NSW to carry out a bushland survey of the Refuge. Council then funded works by professional bush regenerators with the first contract let in March 1982.
1989	The two Crown Road Reserves (Reserve 100181) were reserved from sale for the purpose of "Public Recreation". NSW Government Gazette No. 48.
Early 1990's	Bush-regeneration work carried out by professional contractors concentrated on the Pittwater Road drainage lines and the fenced boundary. The Friends of Dee Why Lagoon also carried out a successful program of bush-regeneration along the Richmond Avenue/Avon Road edge.
1997	Dee Why Lagoon Wildlife Refuge was registered on the Register of the National Estate Database due to its natural heritage values.
2000	Two vegetation communities present within the Refuge, Sydney Freshwater Wetlands and Sydney Coastal Estuary Swamp Forest Complex, were listed as endangered ecological communities under the Threatened Species Conservation Act.



WARRINGAH COUNCIL LOCAL GOVERNMENT AREA

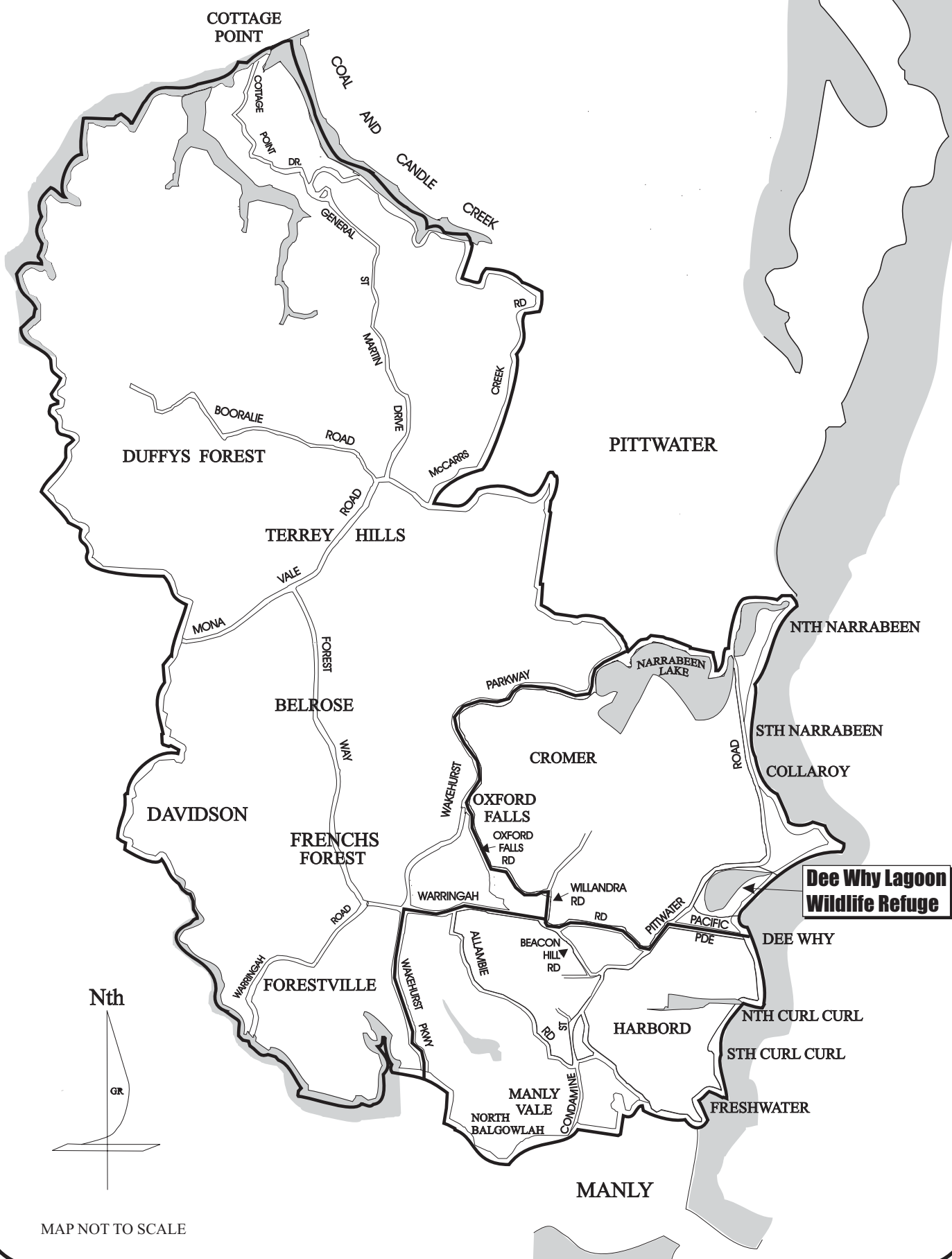


Figure 2: Location of Dee Why Lagoon Wildlife Refuge within a Regional Context

1.6 Land Status and Ownership

Ownership

Dee Why Lagoon is considered to be a non-tidal lake - the Crown therefore owns the bed of the lagoon as at the date of the grant. Due to natural processes and movement of the lagoon over time, the Crown owns the bed of the lagoon as well as a portion of James Meehan Reserve and a portion of the Dee Why beach sand dunes. This land parcel is under the administration of the Crown (Crown Land Reserve 56146).

The majority of the Refuge is Community Land which is freehold land owned by Warringah Council. This Community Land parcel, Lot 2 DP 233606, contains the majority of the Refuge surrounding the Lagoon.

As discussed, in Section 1.5, it is this parcel of land which is subject to a covenant. The covenant states that:

“the land shall not be subdivided into building sites or allotments but at all times hereafter be used only as a public and recreation area provided however that anything herein contained shall not prevent the transferee from constructing over the said land a Marine Drive connecting the Strand, Dee Why with the land known as Griffith Park.”

“the transferee shall not sell or permit to be sold or consumed or connive at or be a party to the sale or consumption of any wines, beers, ales, spirits or any other intoxicating liquors of any kind whatsoever on the land hereby transferred.”

Two Crown Reserves, for which Council has care, control and management, are also included within the Refuge and this Plan of Management. These Reserves (reserve numbers 100181) were once Crown Road Reserves however they were closed in 1988, NSW Government Gazette No. 77, and reserved from sale for the purpose of Public Recreation in the NSW Government Gazette No. 48, April 1989.

Figure Three (overleaf) maps the ownership of the land parcels within the Refuge.

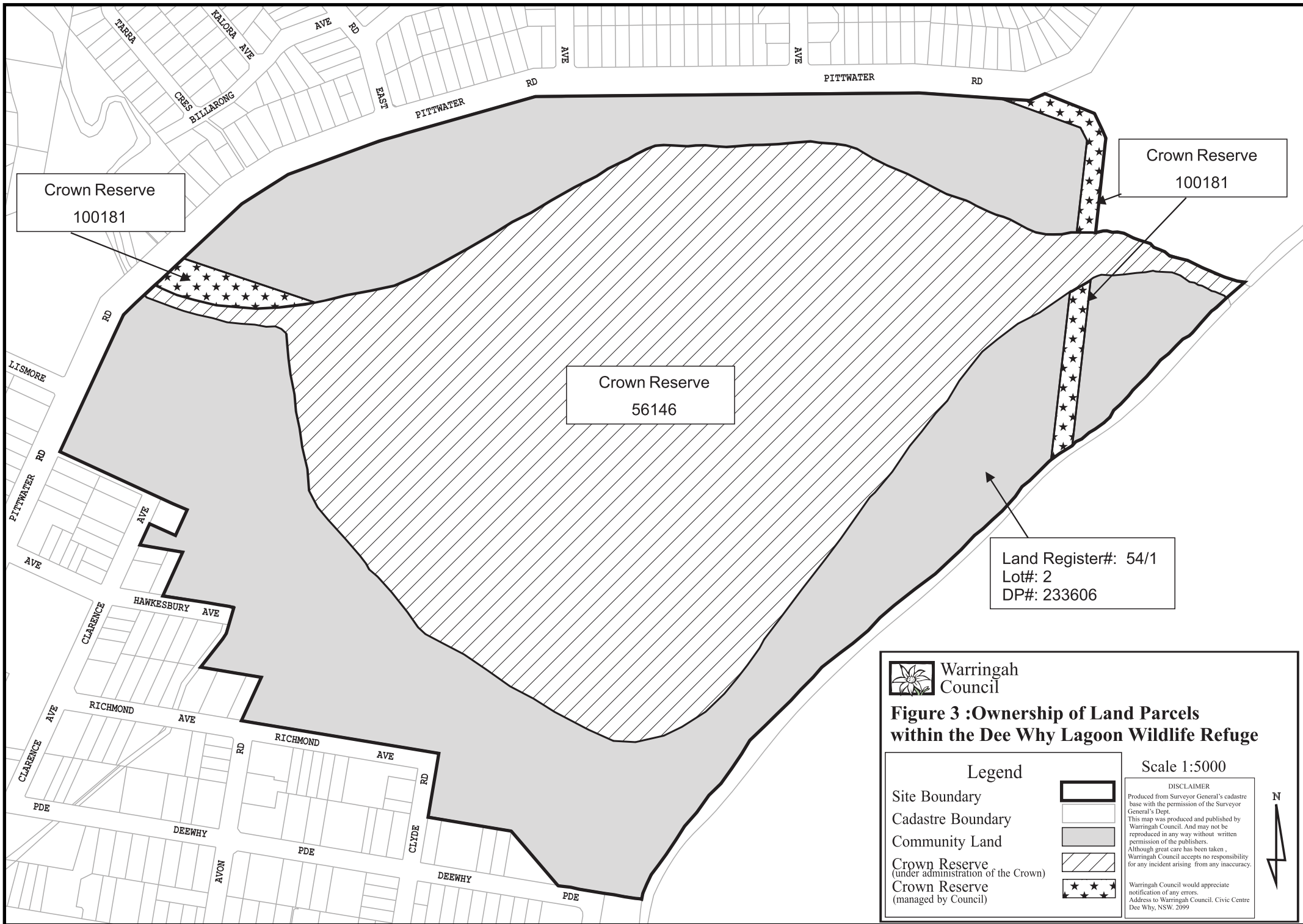
Wildlife Refuge

The area has been declared a Wildlife Refuge under the National Parks and Wildlife Act 1974. Lands within a Wildlife Refuge are dedicated for the purposes of:-

- Preserving, conserving, propagating and studying wildlife;
- Conserving and studying natural environments; and
- Creating simulated natural environments.

This Plan of Management has taken into account the above purposes when defining the management actions for the Refuge.





National Estate

The Australian Heritage Commission is a Federal Government body which maintains the Register of the National Estate. This Register has an educational and advisory role and listing in the Register, in most cases, has no legal force.

The “Dee Why Lagoon Reserve” was registered in the National Estate Database on 24 June 1997. Following is the Statement of Significance as detailed in the database.

“Dee Why Lagoon is one of the best examples, in the Sydney Region, of an estuarine lagoon. It is one of the few large estuarine barrier lagoons, remaining in a good condition, in the Sydney Region. The saltmarsh of the lagoon area is a regionally uncommon remnant of saline marshlands, which were formerly more widespread in the Sydney Region. The diversity of saltmarsh plants found at Dee Why Lagoon is high in comparison to other saltmarsh communities in the region. Dee Why Lagoon is also an important site for teaching and research associated with biological zonation, estuarine barrier lagoons and estuarine wetlands.”



Photo 2: Aerial photograph of Dee Why Lagoon Wildlife Refuge, 2000.

Threatened Species Conservation Act

In December 2000 a final determination of the NSW Scientific Committee was made to list the “Sydney Freshwater Wetlands” and the “Sydney Coastal Estuary Swamp Forest Complex” as endangered ecological communities on Part 3 of Schedule 1 of the Threatened Species Conservation Act. These two endangered ecological communities are present within the Dee Why Lagoon Wildlife Refuge. The communities have been categorised as Natural Area: Wetland which provides protection under the core objectives for this category. Any works within these communities will require a Section 91 licence from the National Parks and Wildlife Service. Appendix B provides a copy of the final determinations for these communities whilst Appendix A provides a list of threatened fauna which are known to occur within the Refuge.



2. HOW LEGISLATION RELATES TO DEE WHY LAGOON WILDLIFE REFUGE

2.1 What are Community Land “Categories”?

Community Land must be categorised in accordance with the Local Government Amendment (Community Land Management) Act 1998. A category describes the land and each category has a set of core objectives. All current and intended uses of the land must comply with the core objectives whilst the categories reflect existing or desired use and management of the land. Appendix C provides further information on legislative and statutory requirements for plans of management.

The definition of each Community Land category, as described in the Act, is provided below.

General Community Use

Land should be categorised as general community use if the land:

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

Park

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

Sportsground

Land is used or proposed to be used primarily for active recreation involving organised sports or the playing of outdoor games.

An Area of Cultural Significance

Land described as an area of Aboriginal, aesthetic, archaeological, historical, technical or research, or social significance.

Natural Area

Land which, whether or not in an undisturbed state, possesses a significant geological feature, geomorphological feature, landform, representative system or other natural feature or attribute that would be sufficient to further categorise the land as bushland, wetland, escarpment, watercourse or foreshore. Community Land that has been declared critical habitat or which is directly affected by a recovery plan or threat abatement plan under the Threatened Species Act 1995 or the Fisheries Management Act 1994 must be categorised as a Natural Area.

Natural Area: Bushland

Land that contains primarily native vegetation and that vegetation is:

- the natural vegetation or a remainder of the natural vegetation of that land; or
- is still representative of the structure and/or floristics of the natural vegetation in the locality.



Natural Area: Wetland

Land that includes marshes, mangroves, backwaters, billabongs, swamps, sedgelands, 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.

Natural Area: Watercourse

Land described as:

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

Natural Area: Foreshore

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

Natural Area: Escarpment

Land that includes features such as a long cliff-like ridge or rock and includes significant or unusual geological, geomorphological or scenic qualities.

2.2 Categorisation of Land within Dee Why Lagoon Wildlife Refuge

A combination of categories may exist over one parcel of land. Accordingly this Plan of Management has identified the following categories within the study area:

- Natural area - bushland
- Natural area - wetland
- Natural area - watercourse
- Natural area - foreshore
- General Community Use
- Park

The entire study area has been categorised, that is both Community Land and Crown Land. It is not a requirement to categorise Crown Land, however the categories are useful in determining management actions for the Refuge.

Figure Four (overleaf) illustrates the location and extent of these categories of land within the Refuge.





2.3 What is Council's role in managing Dee Why Lagoon Wildlife Refuge?

2.3.1 Community Land

The Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998 requires that Council classifies public land as "operational" or "community" and that plans of management are prepared for Community Land. The ways in which Community Land can be used and managed are strictly governed in accordance with an adopted plan of management and any law permitting the use of the land for a specified purpose or otherwise regulating the use of the land. Appendix C of this Plan of Management provides detail on the principles of Community Land management, what dealings a Council can have in Community Land and information regarding the granting of a lease or licence. A description of the existing facilities and improvements on Community Land at the date of preparation of this Plan of Management, and in accordance with the Local Government Amendment (Community Land Management) Act 1998, is provided in Table Two.

Table 2: Community Land Description

Register No.	Lot No.	DP No.	Community Land Categories	Existing Facilities/ Improvements	Condition
54/1	2	233606	General Community Use	Dee Why Surf Life Saving Club (including public amenities) Carpark	Good Good
			Park	Playground Picnic tables Multi-use pathways	Good Fair Good
			Natural Areas: Bushland, Wetland, Watercourse & Foreshore.	Fencing Walking trails Bridge	Fair Fair Good

Interpretation of Building Condition Rating:

Good - Building is in good condition and is well maintained for it's age. It does not meet all Building Code of Australia standards. It requires ongoing maintenance work due to it's age.

The Dee Why Surf Life Saving Club building does not meet the strict guidelines set out in the Building Code of Australia. The Dee Why Surf Life Saving Club building has been recently renovated. Some areas can be considered 'very good' whilst other areas of the building can be considered 'poor'. Maintenance of the building and upgrading of certain areas is required to accommodate a 'fit for purpose' (ie renovation of the building to ensure it is fit for it's current purpose).

Condition of vegetation

Dee Why Lagoon Wildlife Refuge contains ten described vegetation communities, all with high priority conservation status, two of these communities are listed as Endangered Ecological Communities under the Threatened Species Conservation Act 1995. Appendix A provides information regarding flora within the Refuge. The Dee Why Lagoon Wildlife Refuge Vegetation Management Plan (December 2000) provides an assessment of the health of bushland (including wetland vegetation) throughout the Refuge. The results of



the assessment are as follows, more detail can be found in the Vegetation Management Plan:

- Approximately 26 ha of bushland is healthy with very few weeds;
- Approximately 12 ha have a moderate level of weeds; and
- Approximately 5 ha have severe infestation of weeds or are virtually entirely weedy.

2.3.2 Crown Land

Warringah Council manages two parcels of Crown Land within the Refuge that are reserved for public recreation. Management of this land is devolved on Council in accordance with Section 48 of the Local Government Act 1993. Council has the ongoing responsibility to provide care, control and management of these two Crown Land parcels in this Refuge, consistent with the Crown Lands Act 1989. It is important that all parcels of Crown Reserve are managed within the broader context of all the land under Council's control. Moreover, the Act requires that a plan of management must identify the public purpose of the Crown Reserve to provide the basis for planning and management. In accordance with the Act, all land uses must either support or be ancillary to the Reserve's public purpose. Table Three defines the public purpose of the Crown Reserve within the Refuge.

Table 3: Crown Reserve Description

Land Description	Existing Public Purpose	Existing Facilities
Reserve 100181 (lots 7056 & 7055 DP 752038)	Reserved for Public Recreation.	Includes southern tip of Long Reef Car Park. The remainder of the parcels are natural areas.

The Crown Land parcel which consists mostly of the lagoon bed, see Figure Three (page 7), is under the administration of the Crown. Council does not have management control of this parcel. The management objectives for this parcel have been defined in accordance with the current uses of the land, the community values and the objectives of a Wildlife Refuge. Works carried out within this area will require consultation with and consent by the Department of Land and Water Conservation.

It is appropriate that Council has direct management control over this land parcel (Crown Land Reserve 56146 from sale or lease). The most appropriate action for this land is to have a new reserve created for the purposes of Public Recreation and Environmental Protection under the Crown Lands Act. It would also be appropriate to expand the public purpose for the other Crown Reserve (100181) to include Environmental Protection and have Council appointed as Trust Manager of these parcels of Crown Reserve (100181 and 56146). In order for this land to be reserved accordingly a land assessment under the Crown Lands Act would be required. The Crown Lands Act however, allows for the waiver of the land assessment requirement where it can be proven that:

- i) it is in the public interest to do so; and
- ii) the waiver is consistent with the principles of Crown Lands Management (Section 11 of the Crown Lands Act, see Appendix C).

The public interest is gauged by the support for the Plan of Management and its actions. In general, expansion and assignment of the public purposes for the Crown Reserves will be consistent with the community values for the area. In addition, affording direct management control of the Crown Reserves to Council will be consistent with the current management practices for the Refuge.



The majority of Crown Reserves (100181 and 56146) are categorised Natural Area. Only a small portion is categorised as Park and General Community Use where this more adequately reflects the activities carried out on that land. The parcels are to be managed in accordance with the Crown Land principles and the objectives as described by the categories on the land. Table Four has been developed to address the principles of Crown Lands Management.

Table 4: Consistency with Principles of Crown Land Management of the proposal to create new Reserve and expand Public Purpose for existing Crown Reserve.

Principles of Crown Land Management	Consistency with Principles
That environmental protection principles be observed in relation to the management and administration of Crown Land;	<ul style="list-style-type: none"> • The land will be maintained in public ownership. • Future development of this land will be in accordance with the Plan of Management and conditions therein.
That the natural resources of Crown Land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible;	<ul style="list-style-type: none"> • The majority of Crown Land included within the Plan of Management is categorised as Natural Area. The core objectives for these categories are for the protection and enhancement of the natural values of the Refuge.
That public use and enjoyment of appropriate Crown Land be encouraged;	<ul style="list-style-type: none"> • The Plan of Management ensures that the lands are to have free public access. • The majority of the Crown Land parcels are to be protected for their natural values, public use is therefore encouraged though use of existing walking trails.
That, where appropriate, multiple use of Crown Land be encouraged.	<ul style="list-style-type: none"> • The Refuge will continue to be used for public recreation and environmental protection.
That, where appropriate, Crown Land should be used and managed in such a way that both the land and its resources are sustained in perpetuity.	<ul style="list-style-type: none"> • The land is to be managed in accordance with the core objectives for the land as set out within the Plan of Management, these are mainly for the protection of the Refuge's natural values.
That Crown Land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.	<ul style="list-style-type: none"> • The Plan of Management provides purpose and conditions for granting of leases, licences and other estates over the land. This is to be for the purpose of public recreation only. • Proposal to create new Reserve and expand public purpose for other Reserve is consistent with above Principles.



3. ADDITIONAL STUDIES

This Plan of Management has been developed to consider all management issues in relation to the Dee Why Lagoon Wildlife Refuge. It is recognised that a number of additional studies have been prepared for the Refuge. The Dee Why Lagoon Wildlife Refuge Plan of Management is designed to be the primary planning document for the Refuge. Works as proposed in the other planning documents must not conflict with the objectives of this Plan of Management.

3.1 Vegetation Management Plan

A Vegetation Management Plan for the Dee Why Lagoon Wildlife Refuge has been prepared by Kate Low & Associates. The area of study has the same boundaries as this Plan of Management.

The Vegetation Management Plan is a supporting document to this Plan of Management and its objectives (in relation to vegetation management) are to:

- Identify major management issues;
- Carry out a site assessment;
- Develop a bush regeneration plan; and
- Develop a monitoring program.

The Vegetation Management Plan has been developed to provide specific information that fulfils some of the objectives of this Plan of Management. The recommendations developed as part of the Vegetation Management Plan should be adhered to when managing the Refuge, as long as they are not in conflict with management objectives of this Plan of Management.

3.2 Estuary Processes Study, Estuary Management Study and Estuary Management Plan

An Estuary Processes Study has been undertaken for Dee Why Lagoon. The investigations cover an area greater than that covered by this Plan of Management as catchment processes have been taken into account. The study area comprises the estuarine areas of Dee Why Lagoon and its catchment. This includes the foreshore, wetland surrounding the lagoon, remnant wetland within Cromer Reserve, tidal waterway, lagoon entrance, dunes, tributaries and drainage features.

Investigations have also been conducted on the physical, chemical and biological processes that operate within the lagoon and its catchment. An Estuary Management Study and an Estuary Management Plan are currently underway subsequent to the Estuary Processes Study.

The Studies and Plan will provide specific information in relation to estuary processes and management that fulfils some of the objectives of this Plan of Management. The recommendations developed as part of the Estuary Management Plan should be adhered to when managing the Refuge, as long as they are not in conflict with the management objectives of this Plan of Management.



A study of migratory and resident water birds has been developed as a component of the Estuary Processes Study. The study is to be consulted when determining a suitable location for the proposed boardwalk and viewing platform.

3.3 Bush Fire Risk Management

The Rural Fires Act 1997, requires a Bush Fire Management Committee to be formed in each Local Government Area containing a rural fire district or a fire district with a bush fire risk. The Warringah/Pittwater Bush Fire Management Committee has prepared a Bush Fire Risk Management Plan for it's area of responsibility. The Bush Fire Risk Management Plan includes the Dee Why Lagoon Wildlife Refuge.

The purpose of bush fire risk management is to protect the community and its assets 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. The strategies established in the Bush Fire Risk Management Plan address the following issues:

- Bush fire hazard;
- Vulnerability of assets to fire;
- Safety of the community and fire fighters;
- Protection of the land and environment from fire; and
- Biodiversity management through the application of appropriate fire regimes upon the landscapes.

Bush fire risk management priorities are to be allocated according to the bush fire risk ratings. Those areas faced with an extreme bush fire risk are 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.

A series of bush fire management zones, described in Table Five, have been identified in the Bush Fire Risk Management Plan. 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).

Table 5. Bush Fire Risk Management Zones.

Asset Protection Zone	To protect human life, property and highly valued public assets.
Strategic Fire Advantage Zone (Fire Management Access Zone)	To provide strategic areas of fire protection which will reduce the speed and intensity of bush fires, and reduce the potential for spot fire development.



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.

A “Management Strategy for Weed Control and Fire Management Access Zones (Urban Bushland Boundaries)”, has also been produced by Warringah Council. The fire management aim of the Strategy is to *“identify areas of urban bushland boundaries within Warringah that are a fire hazard and that require access for fire fighting organisations to undertake fire management operations”*. The Strategy outlines the procedures for the implementation of fire management access zones along urban bushland boundaries.

The Strategy provides professional and operational staff with the relevant guidelines and understanding of the criteria and constraints for both weed and fire management principles.

Investigation into bush fire risk and fire management access zones for the Refuge should be carried out in accordance with the Warringah Pittwater Bush Fire Risk Management Plan and the Management Strategy for Weed Control and Fire Management Access Zones (Urban Bushland Boundaries), 1996. Investigations should be carried out in consultation with the NSW Rural Fire Service (Warringah – Pittwater District).

3.4 Heritage Assessment of the Timber Piles, Dee Why Lagoon

Consultants Mayne-Wilson & Associates were engaged to carry out a Heritage Assessment of the timber piles in Dee Why Lagoon. This was deemed necessary as a plan of management must determine any areas of Cultural Significance. Preliminary investigations indicated that the piles were constructed between the early to mid 1900’s, however a conflict in accounts of their previous purpose was apparent.

The assessment of the significance of the piles was made on the basis of the criteria contained in the Burra Charter and the State Heritage Manual. The following is an extract from the “Heritage Assessment of the Timber Piles, Dee Why Lagoon” (pp.4-5, June 2000).

“The timber piles have a *moderate degree of historical significance* as remnant items of the extensive coastal defence network that extended across Sydney’s northern beaches during World War II. Whilst many WWII concrete fortifications, including gun emplacements and bunkers, are available for public examination along the Sydney and NSW coastline, most anti-tank structures were removed at the conclusion of the war for public safety, access and aesthetic reasons. These piles, therefore, are the only remaining physical evidence that demonstrate part of the beachfront military defence fortifications along Dee Why. The original structure, which linked into the beach fortifications, was an essential component of the defence scheme designed for the Dee Why beachfront.

The piles have a *negligible degree of aesthetic significance*, and cannot be considered to have a landmark quality, many locals being unaware of their



existence. Restrictions on pedestrian movement along the northern and western edges of the Lagoon mean that the piles can only be experienced from a small segment along the southern shore. They do, however, have a somewhat evocative quality as ‘ruins’, and provide good roosting points for local waterbirds.

The timber piles have a *low to moderate degree of social significance* being remembered by some older residents as distinctive, defence items during World War II. Some have advised of their involvement in supplying the timber piles and witnessing the laying out of these beach and lagoon fortifications. Numerous present and former residents of Dee Why have confirmed that as children they used to fish from, or jump from pile to pile, and/or tie their small boats to them.

The piles have a *negligible degree of technical significance*. The techniques used for the construction and placement of anti-tank and personnel beach fortifications were simple, practical and cost-effective. Moreover, they do not serve any functional role for the Lagoon today.”

The Heritage Assessment recommended two options (p.5), given that the piles have only a moderate degree of historical and social significance, that they are no longer ‘intact’ enough to demonstrate their original role as an anti-tank system, and that they are largely ignored or unnoticed by the present community:

- “they could either be left in their present condition, where they will continue to deteriorate. While they remain, however, they will serve to remind some members of the community of the defensive measures of World War II, especially if a conspicuous plaque explaining their role was set up in a place where the public could read it; or
- they could be removed altogether (which some people, and waterbirds, may regret).”

Section 7 of this Plan of Management defines the management actions for the timber piles.



Photo 3: Tank Trap in Dee Why Lagoon.



4. PREPARING THE PLAN OF MANAGEMENT

4.1 The Planning Process

The planning process for this Plan of Management is based on a number of principles. These are:

- Using community values as a basis for management;
- Adopting a consultative approach, incorporating input from stakeholders; including Council officers, government authorities and the local community to ensure the plan reflects the visions and values of all;
- Providing site specific analysis information to add value;
- Providing practical recommendations which are achievable in the short term;
- Incorporating the Masterplan; and
- Incorporating the findings of other studies for the Refuge.

The process undertaken to prepare this Plan of Management follows the guidelines as set out in the handbook, “Succeeding with Plans of Management - *A Guide to the Local Government Act and Crown Lands Act*” (DLWC & Mandis Roberts, 1996).

4.2 Community Consultation

Warringah Council actively seeks the involvement of the community in the preparation of its plans of management to ensure the plans address community desires, values and needs and to ensure they comply with the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998. The main advantages of involving the community in the process are that it:

- Creates a sense of ownership;
- Taps into the large amount of local knowledge about the site; and
- Advises and keeps the community informed.

The methods used during the development of this Plan of Management were as follows:

- Community consultation with the general community and interest groups such as the Friends of Dee Why Lagoon and Dee Why Surf Life Saving Club;
- Letter box drop to neighbouring residents inviting input into the Plan of Management;
- Consultation with Council staff and Service Units;
- Consultation with the Department of Land and Water Conservation;
- Liaison with the Metropolitan Local Aboriginal Land Council regarding Aboriginal Sites; and
- Liaison with the National Parks and Wildlife Service regarding management of the Wildlife Refuge and to determine if any Aboriginal Heritage Sites are recorded within the Refuge.

The consultation process resulted in the identification of long term values for the area, along with current issues. The values are detailed in Section 5.3 of this Plan whilst the issues are summarised in Section 6. Appendix D provides further detail in relation to the consultation undertaken during the preparation of this Plan of Management.



5. BASIS FOR MANAGEMENT

5.1 Council's Management Goals

Warringah Council recognises the need to plan ahead and provide management frameworks to meet the challenges of today and the future. Council's Warringah PLAN 2001-2004 outlines Council's visions and mission statement.

Warringah Council's **Vision** statement is:

" Warringah is a community which values its quality of life and strives to care for its special bush and beach environment."

5.2 Council's Principles for Community Land Management

The way in which Community Land is managed by Council is about creating a safe and healthy living environment, thereby influencing the quality of life of residents and visitors to Warringah.

The following principles have been developed to guide Council and the community in the management of Community Land:

- To ensure Warringah's community has an opportunity to be involved in the planning and management of public open space;
- To plan, maintain and enhance a diversity of recreational public open space opportunities;
- To plan and maintain a hierarchy of quality, multi-use public open space facilities;
- To conserve and enhance the natural environment and rehabilitate degraded areas of public open space;
- To recognise the importance of culture and heritage;
- To ensure a high standard of risk management in the provision, maintenance and management of public open space and facilities; and
- To apply the above principles in an economically responsible manner.

5.3 Community Values

The Dee Why Lagoon Wildlife Refuge Plan of Management takes a values-based approach to land planning. This approach allows the key values, role and purpose to be identified so that these assets may be protected and enhanced. "Values" can simply be described as "what is important about a place" (DLWC & Mandis Roberts, 1996). The values identified for the Refuge are outlined below, whilst the issues are summarised in Section 6. Appendix A provides background information into the values and issues identified in this Plan of Management.

The process of community consultation has confirmed that the Dee Why Lagoon Wildlife Refuge is a highly valued area. The consultation provided Council with information of how the community values the Refuge and subsequently the way in which it should be managed. Management of the Refuge should ensure the protection of the significant natural, conservation and aesthetic values of the area whilst also taking into account the cultural, recreational, access and educational values.



The main consideration for management of the study area is its status as a Wildlife Refuge and in particular a refuge for migratory birds. Any concept of management must therefore consider its conservation value as being paramount to all other values.

Table 6. Level of Significance for each value identified.

Values	Level of Significance				
	Local	District	Regional	State	National
Natural Environment	*	*	*	*	*
Recreation	*	*	*		
Education	*	*	*		
Aesthetic	*	*			
Social	*	*			
Heritage	*				
Access	*	*			



Photo 4: Track behind sand dunes.



Photo 5: Lagoon Entrance.

Natural Environment

The Dee Why Lagoon Wildlife Refuge is valued as a unique and special area with high conservation value due to the following:-

- The uncommon combination of habitats and landforms in an urban situation;
- The Refuge is home to large numbers of bird species, including migratory birds listed under the Threatened Species Conservation Act 1995, the Japan-Australia Migratory Birds Agreement 1974 (JAMBA) and the China-Australia Migratory Birds Agreement 1986 (CAMBA). A list of birds found within the Refuge and listed within these Agreements or Act can be found in Appendix A;
- The remaining vegetation habitats are remnants of vegetation types that were common before development;
- Two vegetation communities that exist within the Refuge, “Sydney Freshwater Wetlands” and “Sydney Coastal Estuary Swamp Forest Complex”, are listed as endangered ecological communities under the Threatened Species Conservation Act; and
- The aquatic ecosystem itself has particular environmental significance. Dee Why Lagoon is home to an abundant population of marine invertebrates which is the basis for the habitat value of the lagoon for water birds.



Recreation

The Refuge provides for a wide range of passive recreational uses including walking, nature appreciation and bird watching. The area contains a playground, grassed area of James Meehan Reserve, Surf Life Saving Club, and beach which are all valuable recreational areas.



Photo 6: Relaxing on park bench.



Photo 7: Playground at James Meehan Reserve.

Education

Dee Why Lagoon provides an area for education in ecological processes. It's proximity to schools, colleges and universities, in combination with its natural features is of considerable interest to a range of research disciplines. These include geography, geomorphology, ecology, botany, zoology, aquatic biology and ornithology.

Aesthetic

The open space of the water body and adjacent bushland contribute significantly to the areas visual amenity. Management of the Refuge should seek to retain this visual amenity and thereby maintain and promote a positive community perception of the natural values of the Refuge. Effective management of the boundary is necessary to reduce the incidence and impacts of edge effects and consequent effect on aesthetic value.

Social

The grassed open spaces around the Refuge, such as James Meehan Reserve, makes the reserve an attractive place for social gatherings and events.

Heritage

The lagoon's history has seen the area protected as a valuable conservation area. Public support for it's conservation and protection was noted in the late 1960's when a development proposal in the reserve was heavily opposed by the public. The Black Swan, the symbol of Dee Why, is a reminder of the lagoon's condition in the early 1900's. Remains of a World War II tank trap are also present. An independent Heritage Assessment however, has concluded that the remains of the tank trap are of local significance only and do not require protection.

Access

The availability and opportunity to easily access the related recreational, cultural and natural resources of beaches and surrounding open space, such as the Dee Why Lagoon Wildlife Refuge, is valued by the community.



5.4 Roles of the Area

The Dee Why Lagoon Wildlife Refuge plays a significant role in the conservation of migratory birds, wetlands and remnant stands of native vegetation. Of particular significance is the habitat and feeding areas it provides for migrant water birds. The Lagoon also has a regional role in the provision of opportunities for passive recreation, particularly walking, nature appreciation and bird watching.



Photo 8: Multi-use pathway.



Photo 9: Beach access.

5.5 Vision Statement

The principles in Section 5.2 have been taken into account during the preparation of this Plan of Management. A site specific vision, significant role and additional values and management objectives have also been adopted for the Refuge due to the Refuge's significant conservation values and aesthetic appeal to the Warringah community. The positive perceptions of Dee Why Lagoon Wildlife Refuge are largely due to the natural appearance of the Lagoon and its surrounds. This fortunate situation sets the scene for the vision of Dee Why Lagoon Wildlife Refuge.

The vision for Dee Why Lagoon Wildlife Refuge is to preserve the natural appearance of the lagoon edge and it's original natural perimeter and to:

- **Conserve a significant natural area supporting a diversity of native aquatic and terrestrial flora and fauna; and**
- **Provide a range of low key, predominantly passive, recreational and educational opportunities that are complementary to the Refuge's natural heritage values.**

5.6 Management Objectives for the Refuge

To help achieve the vision for the Refuge a number of management objectives have been developed. Council recognises that the Dee Why Lagoon Wildlife Refuge's inherent conservation value is the paramount consideration in the management of this Refuge. Accordingly, the management objectives emphasise the management of recreational activities so that inherent conservation values are maintained and enhanced. The legislative management objectives are detailed in Section 7 of this Plan of Management.



6. COMMUNITY ISSUES

6.1 What Are the Issues?

Through consultation with the community, including the Friends of Dee Why Lagoon, and experts in the field, including the National Parks and Wildlife Service and Council Staff, key management issues in relation to the Dee Why Lagoon Wildlife Refuge have been identified. The issues have been grouped into several broad areas, following is a summary of the main issues. The issues have been addressed through the management actions in Section 7. Background information to the values and issues identified in this Plan of Management is detailed in Appendix A.

Lagoon Waterbody Management

- Maintenance of a “natural regime” for the lagoon water-level;
- Water quality objectives;
- Need to identify a range of acceptable water levels in the lagoon and frequency of variations;
- Management of lagoon opening events;
- Potential damage to claybed when artificially opening the lagoon entrance;
- Maintenance of the lagoon’s aesthetic appeal.

Vegetation

- Maintenance of native vegetation communities of significance;
- Impact on western edge of the Refuge by the stormwater drains which are a source of nutrient and sediment pollution;
- Segmentation of the core bushland area;
- High level of ongoing maintenance of estuarine vegetation communities;
- Ongoing maintenance is required even once areas have been regenerated;
- Naturalisation of weeds within the bushland;
- Stability and re-establishment of dune vegetation;
- Use of fire within the Refuge;
- Weed management;
- Illegal dumping of vegetation rubbish and fill within the Refuge;
- Proliferation of tracks compromise the conservation values of the Refuge.

Fauna

- Management proposals are to meet international and legislative requirements;
- Habitat value for migratory bird species, especially those of international and national significance;
- Further research into habitat and impact of urbanised catchment on bird species;
- Loss of habitat due to segmentation of the core bushland area;
- Management of habitat for aquatic fauna;
- Control of feral animals;
- Enforce ban on dogs within the Wildlife Refuge, in accordance with National Parks and Wildlife Act 1974, Section 70;
- Encourage Black Swans to use the lagoon as they are recognised as a symbol of Dee Why due to their abundance during the early 1900’s.



Landscape Maintenance

- Frequent mowing of grassed areas;
- Regular maintenance of water detention basins;
- High boundary/area ratio;
- Landscape plantings in the park area are “scrappy”;
- James Meehan Reserve filled area;
- Unnatural and abrupt shoreline in the south-east corner of the Refuge where land has been reclaimed;
- High visual amenity for Dee Why and Long Reef;
- Shoreline reedland and rushland communities in the landscaped areas are narrow and often effected by lawn grasses and mowing practices;
- Grassed area near Clarence Street is not a functional park area and is negatively impacting the surrounding bushland areas;
- Maintenance of grassed areas can cause damage to tree trunks, intrude on unfenced bushland and spread grass clippings and seeds into bushland edges.

Environmental Education and Research

- Educational use of the Refuge should not compromise the conservational values, guidelines for use of the Refuge are required;
- Council should encourage research of topics where gaps in data occur;
- Improved relationship between industry within the catchment and environmental groups;
- Education of beach users regarding the undesirability of opening of the lagoon entrance;
- Lack of interpretative/educational material on site;
- Potential educational value of coastal system in an urban environment and as part of a larger complex of coastal wetland on the northern beaches.

Recreation

- Boardwalk and viewing platform incorporating interpretive signage is desired;
- Recreational pursuits are not to compromise the conservational values of the Refuge;
- Access link from Dee Why Park across Pittwater Road to the Refuge;
- Minimise access within the core of the Refuge;
- Clear directions for walking track locations.

Administration

- Lack of communication and coordination between service units;
- Improved communication between Council and volunteer groups;
- Improved community involvement in management;
- Coordination of the actions should be carried out by one Council unit.

A number of issues in relation to catchment management and sedimentation of the lagoon were raised during community consultation for this Plan of Management. Investigations during the development of the Estuary Processes Study, Estuary Management Study and Estuary Management Plan will take into account catchment processes. The catchment issues raised have been listed below and will be addressed within the Estuary Management Plan.



Catchment Management

- Total catchment management approach to maximise water quality of lagoon;
- Sedimentation of the lagoon and the desirability of dredging;
- At source control of nutrient input into the lagoon;
- Maintenance of drains and water detention basins;
- Potential for flooding of properties and Pittwater Road during heavy rain events;
- Rubbish entering the lagoon via drainage channels;
- Links adjoining catchments;
- Establish environmental indicators;
- Monitoring and measuring pollution in catchment;
- Use of qualitative and quantitative data to identify the catchment.



7. ACTION PLAN

This section of the Plan of Management outlines the direction for the management of the Dee Why Lagoon Wildlife Refuge and has the following objectives:-

- To formulate management strategies (desired outcomes);
- To ensure consistency with core objectives for Community Land categories;
- To develop means of achievement (management actions);
- To provide means of assessment (of the actions);
- To assign priorities for each of the actions; and
- To develop a Masterplan and improvements program for implementation.

The desired outcome of this Plan is for the values of the area to be protected, upheld and enhanced with no deterioration in the community's values and satisfaction levels in relation to the Refuge.

7.1 Implementation

The Plan of Management is to be reviewed on a yearly basis and revised after the fifth year of implementation. Each of the management actions have been given a priority which can be linked to the following time frame:

High	Commenced within next 2 years
Medium	Commenced in 2–5 years
Low	Commenced after 5 years

It should be recognised however that the commencement and completion of the management actions will be dependent on available Council resources and funding.

7.2 Action Tables

Each land parcel included within the Dee Why Lagoon Wildlife Refuge Plan of Management has been categorised in accordance with the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998. Some parcels may have more than one category and the location of each category is shown in Figure Four (page 11).

The Local Government Amendment (Community Land Management) Act 1998 describes a set of “core objectives” for each category and it is a requirement under the Act that the plan of management describes how it will achieve each of the core objectives. The following Action Tables have been developed to address each of these objectives.

The actions within the tables have been grouped by category. All of the natural area categories have been grouped together and a separate table has been created for general objectives which apply to the whole study area. As the Plan of Management has taken a values based approach to land planning the value of each relevant management issue has been noted. The relevant management issues are a consolidation of the issues detailed in section 6.3 of this Plan of Management.



Action Table 1. Category - Natural Areas

The actions listed within this table are in relation to the areas of the Refuge categorised as Natural Areas. The actions are in accordance with the core objectives for Natural Areas. Additional objectives derived from the National Parks and Wildlife Act 1974 and community values are also listed.

Natural Area: Bushland - Core Objectives:

- 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;
- To protect the aesthetic, heritage, recreational, educational and scientific values of the land;
- 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;
- To restore degraded bushland;
- To protect existing landforms such as natural drainage lines, watercourses and foreshores;
- 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
- To protect bushland as a natural stabiliser of soil surface.

Natural Area: Wetland - Core Objectives:

- 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;
- To restore and regenerate degraded wetlands; and
- To facilitate community education in relation to wetlands and the community use of wetlands, without compromising the ecological values of the wetlands.

Natural Area: Watercourse - Core Objectives:

- 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;
- To manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability;
- To restore degraded watercourses; and
- To promote community education and community access to and use of the watercourse, without compromising the other core objectives of the category.

Natural Area: Foreshore - Core Objectives

- 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
- To facilitate the ecologically sustainable use of the foreshore, and to mitigate impact on the foreshore by community use.



Additional Objectives in accordance with the National Parks and Wildlife Act 1974:

- Conservation of wildlife;
- Preservation of the Wildlife Refuge and the protection of the special features of the Refuge;
- Prohibition of the execution of any works adversely affecting the natural condition or special features of the Refuge;
- Preservation of each historical site or subject within the Wildlife Refuge; and
- Encouragement and regulation of the appropriate use, understanding and enjoyment of the Refuge.

Additional Objectives:

- To facilitate community education in relation to bushland, without compromising the ecological values or the core objectives;
- To manage the Refuge for the protection of waterbirds and their habitat; and
- To preserve and manage the beaches and coastal open space as the peoples space, ensuring broad community access and availability to a diversity of recreational settings and opportunities for current and future generations.

Action Table 1. Category - Natural Areas

Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment and Aesthetics	Protect bushland from impacts of surrounding land and infrastructure.	1. Undertake a landscape maintenance program within the Dee Why Lagoon Wildlife Refuge which protects the bushland from impacts of the surrounding land use. This relates to areas categorised as Natural Area and Park.	1. Turf areas are to be mown regularly to avoid grass seeding into bushland.	Record and monitor frequency of mowing.	High
			2. Where necessary mowing barriers between bushland and turf areas are to be constructed.	Mowing barriers implemented.	Medium
			3. Review current mowing techniques to prevent grass clippings going into natural areas.	Monitor mowing techniques and impact on surrounding natural areas.	High
			4. Landscaped beds outside the bushland area should be heavily mulched, regularly weeded and contain only plants which are endemic to the Refuge. Ongoing replacement planting of aging species.	Record and monitor landscaped beds.	Medium
			5. Trees growing within the park areas should be endemic to the Refuge, and suited to their micro-environment location. Care should be taken during mowing and weeding to avoid damage to the tree trunks.	Assess trees within park area and replace where necessary. Liaison with maintenance staff to ensure trees are not damaged.	High
			6. Weed vines are to be regularly removed from boundary fences.	Record and monitor removal of weeds.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment and Aesthetics			7. 'Cubby houses' and other dwellings are to be removed from bushland and the site rehabilitated within one month following detection.	Monitor response time and rehabilitation of areas disturbed.	Medium
			8. Informal access paths through bushland are to be blocked using cut vegetation and temporary fencing if required, within one month of detection.	Monitor response time and effectiveness of blocking informal access paths.	Medium
		2. Reduce impacts from sediment detention basins, gross pollutant traps and stormwater outlets.	9. Sediment detention basins and gross pollutant traps located within the Refuge are to be monitored and maintained at least every three months and following heavy rain events.	Record and monitor maintenance of sediment detention basins and gross pollutant traps.	High
			10. Review current maintenance of stormwater outlets and increase monitoring and maintenance where necessary.	Review complete. Appropriate monitoring and maintenance of outlets followed.	High
			11. Investigate consolidation of drains along Pittwater Road to reduce fragmentation of bushland and investigate directly piping stormwater into the lagoon.	Investigations complete, recommendations implemented.	Medium
		3. Discourage public recreation which damages the natural bushland areas of the Refuge.	12. This Plan of Management expressly authorises the erection of boundary fences, which are of similar design to existing boundary fences of the Refuge, on an as needs basis. Priority should be given to those areas where recreational or bushland management activity has increased or usage changed. Inconspicuous accessways/gates should be included to allow for bush-regeneration and other management activities and low-key use by the Friends of Dee Why Lagoon, Council staff and the public.	Fences installed. Monitor reduction of public access to natural bushland areas.	Medium
Natural Environment	Protect the natural habitats and lagoon waterbody from negative impacts of public recreation.	4. Discourage public recreation which damages habitat and the lagoon waterbody.	13. Limit access to the waterbody to ensure protection of natural area values, in particular to prevent damage to habitat. Refer to the Estuary Management Plan for guidance on specific waterway and refuge zones to minimise conflict between recreational activities and fishery and bird habitats.	Record infringements against waterway and refuge zones. Monitor impact of access to waterbody on habitat.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment and Education	Identification of vegetation.	5. Identify and assess aquatic and wetland vegetation.	14. Undertake a study of the aquatic and saltmarsh vegetation which addresses the following: <ul style="list-style-type: none"> • Classification of vegetation communities; • List of native and weed species; • Local and regional conservation status of the vegetation communities; • Identification of the causes of long term degradation; • Management priorities and recommendations; and • Mapping and incorporation of data in a Geographic Information System. 	Study complete, management priorities and recommendations developed and information incorporated into a Geographic Information System.	High
			15. Based on the results and recommendations of the aquatic and saltmarsh vegetation study, develop management actions to conserve and rehabilitate the saltmarsh and aquatic plant communities. Ensure that habitat for water birds remains the primary objective.	Management actions developed and implemented. Monitor impact of actions once implemented.	Medium
Natural Environment, Aesthetic and Education	Bush regeneration.	6. Undertake bush regeneration.	16. This Plan of Management expressly authorises the gradual movement of mowing barriers to reduce amount of turfed area along Clarence Avenue (see Masterplan). This work is to be in accordance with the Vegetation Management Plan.	Monitor effectiveness of reducing grassed areas. Ensure adjacent bushland is not negatively impacted by weeds.	Medium
			17. This Plan of Management expressly authorises revegetation works at the end of Richmond Ave, near Clyde Ave. This is a Greenlink Grant Site. Works include the removal of fill and the restoration of a combination of brackish and freshwater wetland conditions and subsequent revegetation.	Completion and successful implementation of works in accordance with the grant.	High
			18. This Plan of Management expressly authorises regeneration works in accordance with the Vegetation Management Plan.	Regeneration works undertaken.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Aesthetic and Education		7. Develop a long term bush regeneration program.	19. In consultation with bush-regeneration contractors currently working within the Refuge, and consistent with the Vegetation Management Plan, plan and cost a long-term bush regeneration program. The program is to be undertaken by professional bush regeneration contractors. It should be based on a rolling five year time frame and reviewed annually by Council and the Friends of Dee Why Lagoon.	Council to oversee the implementation of the five year bush regeneration program and revise the objectives if necessary. All areas which have been worked under the five year bush regeneration program are to receive annual monitoring and maintenance.	High
			20. A brief bi-annual bushland management report (in accordance with contracts) for Dee Why Lagoon Wildlife Refuge is to be produced to document: <ul style="list-style-type: none"> • All bush regeneration undertaken by contractors, Council and volunteers; • Other bushland and dune management works; and • Bushland management objectives for the following year. 	Report produced and reviewed.	Medium
		8. Encourage bush regeneration.	21. Council to continue to assist and support community based volunteer regeneration groups working in the Refuge and ensure that both the professional and volunteer regeneration programs are complementary.	Monitor level of support provided by Council.	High
Natural Environment	Bushfire Management and fire management activities.	9. Develop a fire management regime and encourage ecological burns where appropriate.	22. Using available knowledge and results from fire trials carried out in the Dee Why Lagoon Wildlife Refuge, develop a fire management regime to conserve the structure and species diversity of the Refuge's vegetation communities.	Ecological burns undertaken subject to the fire regime and existing vegetation communities.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment			23. When the dual objectives of protecting life and property and protecting environmental values cannot be achieved then, in accordance with the Rural Fires Act 1997 and Bush Fire Coordinating Committee Policy, management priority is to be given to the protection of life and property.	Appropriate management priority given.	High
			24. Before any fire management activities (eg ecological burns) can proceed a Review of Environment Factors is required in accordance with the Warringah Pittwater Bush Fire Risk Management Plan which is a legislative requirement of the Rural Fires Act 1997. This is the responsibility of the land manager.	Review of Environmental Factors undertaken before any fire management activities.	High
	Dune System.	10. Management of Dune System.	25. Council to devise and cost an annual maintenance program for the Dee Why Beach dunes. The program is to include the following objectives: <ul style="list-style-type: none"> Fences, accessways, and other structures are to be maintained in good repair; Dune blowouts are to be stabilised as soon as possible following detection; Bitou bush clumps and seedling regrowth are to be treated annually; Other weed species are to be effectively managed; Closure of informal tracks; and Ongoing replacement planting using a diverse range of indigenous species. 	Program devised and costed. Objectives to be effectively implemented.	High
			26. Maintenance is to ensure minimal disturbance to adjoining natural areas. Use of the existing track behind the dune system by maintenance vehicles is to be discouraged and only to be used when no other route is available and maintenance is essential for emergency events.	Monitor disturbance from maintenance.	Medium



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment			27. Extend existing dune and stabilisation works in front of the northern end of Dee Why Surf Life Saving Club and existing amenities. Fence and maintain existing tracks, or similar.	Completion and effective implementation of dune stabilisation works.	High
Natural Environment, Aesthetic and Cultural	Lagoon foreshore.	11. Reinstatement of wetland vegetation communities along the foreshore adjoining James Meehan Reserve.	28. Investigate possibilities of reinstating the foreshore adjoining James Meehan Reserve. Develop management actions based on the investigations.	Investigation complete and management actions developed.	Medium
		12. Wooden pylons in south east corner of Lagoon.	29. Remains of WWII tank traps to be left in their present condition unless they become a safety hazard or require removal for improvement of the natural environment.	Tank traps remain unless they become a safety hazard or require removal for environmental purposes.	Low
Natural Environment	Conservation and enhancement of the biodiversity of the lagoon.	13. Dredging of lagoon.	30. Undertake a dredging feasibility assessment as part of the Dee Why Lagoon Estuary Management Study and Management Plan.	Studies and Plan complete.	High
			31. This Plan of Management expressly authorises the dredging of Dee Why Lagoon should it be a recommendation of the Estuary Management Plan, so long as it is not in conflict with this Plan of Management. Dredging of the lagoon may only be carried out with approval from NSW Fisheries and other appropriate regulatory authorities.	Recommendations of the Plan implemented.	Medium
		14. Improve water quality.	32. This Plan of Management expressly authorises the recommendations of the Estuary Management Plan and the construction of water quality treatment devices in accordance with the Estuary Management Plan.	Recommendations of the Plan implemented.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment		15. Manage lagoon entrance to ensure long-term sustainability of lagoon and environs.	33. Appropriate environmental assessment conducted to determine the impact of the current entrance opening regime.	Assessment complete.	High
		16. Adhere to Threatened Species Conservation Act 1995.	34. Any works which may impact on vegetation or vegetation communities listed under the Threatened Species Conservation Act 1995 must apply for a Section 91 licence issued by the National Parks & Wildlife Service.	Applications for Section 91 licence submitted when appropriate.	High
Natural Environment Education	Conservation of indigenous fauna.	17. Conserve and manage indigenous fauna including invertebrates within the Dee Why Lagoon Wildlife Refuge.	35. Undertake a fauna study of mammals, birds, reptiles, and amphibians within the Dee Why Lagoon Wildlife Refuge. Existing records should be reviewed. The study should also identify feral animals, their impact upon wildlife and include wildlife management recommendations. Determine the requirements for on-going surveys (monitoring regimes).	Fauna study complete. Management actions recommended and implemented by Council.	High
			36. Following the study of waterbirds, develop a set of management actions which reflect the high conservation status of water birds utilising Dee Why Lagoon Wildlife Refuge. Actions to be in accordance with the National Parks and Wildlife Act 1974 for the management of Wildlife Refuges.	Management actions developed in consultation with the National Parks and Wildlife Service.	High
			37. Undertake a survey of selected aquatic and terrestrial invertebrates and fish utilising the Dee Why Lagoon Wildlife Refuge. The study is to include a review of existing records, an assessment of the impact of fishing and bait collection activities carried out by amateur fishermen and invertebrate management recommendations.	Survey complete.	Medium



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment Education			38. All bush regeneration projects and other works taking place within the Dee Why Lagoon Wildlife Refuge are to be planned to cause minimal impact upon wildlife and habitat.	Impact on wildlife recognised when planning bush regeneration projects and other works within the Refuge.	High
			39. Identify and where appropriate enhance wildlife corridors between the Dee Why Lagoon Wildlife Refuge, Long Reef Headland and other natural areas.	Wildlife corridors identified and areas to be enhanced identified.	High
			40. Undertake a feral animal control program within Dee Why Lagoon Wildlife Refuge. Consideration must be given to the dynamic relationship between different feral species.	Monitor feral animal and native wildlife populations.	High
			41. Effectively enforce the ban on dogs in the Dee Why Lagoon Wildlife Refuge through a program of community education and ordinance policing. The ban on dogs is in accordance with the National Parks and Wildlife Act, 1974 and the designation of the area as a Wildlife Refuge. Install regulatory signs to this effect.	Survey percentage reduction of dogs within the Refuge.	High
Natural Environment, Education	Increase community awareness.	18. Increase community awareness of the value of Dee Why Lagoon Wildlife Refuge.	42. Notify the community when the results of studies are available.	Community notified.	Medium
			43. Develop a coordinated environmental education marketing plan(s) for increasing awareness of key values within the Refuge.	Survey increase in community awareness.	Medium
			44. Encourage tertiary students to carry out further research by providing Council resources to assist in undertaking their project. Disseminate research information through Council's public outlets. Encourage particularly in areas where there are data gaps.	Research projects undertaken. Information available through Council's public outlets.	Medium
			45. This Plan of Management expressly authorises interpretive signage throughout the Refuge. The signs should be developed in a consistent format for the entire Refuge and should also complement signs developed for the Bicentennial Coastal Walkway and not impact on the aesthetics of the lagoon. It is preferable for signs positioned near the Lagoon or wetland areas to be at or close to ground level.	Interpretative signs developed and implemented.	High



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Education	Further Studies.	19. Integrated Planning.	46. Set up a working party to: <ul style="list-style-type: none"> • Review the results of the further studies recommended in this Plan of Management. • Develop priorities from the studies. • Develop management actions to achieve these priorities. 	Working party convened, results of studies reviewed and priorities developed.	Medium
Natural Environment, Recreation, Access	Passive Recreation.	20. Low key recreation.	47. This Plan of Management expressly authorises the construction of a board walk leading to a public viewing platform with associated interpretive signage on the lagoon shoreline. The boardwalk and viewing platform are to enable disabled and elderly access. The exact location of the boardwalk and platform is to be determined in accordance with the study of migratory and resident water birds. The location should take into account environmental and social issues and values and should be consistent with designs for the Bicentennial Coastal Walkway.	Viewing platform, boardwalk and interpretive signage constructed in accordance with study of migratory birds and environmental and social values.	Medium
			48. This Plan of Management expressly authorises the development of a multi-use pathway between Hawkesbury Avenue and Pittwater Road, to connect with the existing pathway. The bushland interface must be fenced prior to the development of pathways adjoining bushland.	Multi-use pathway developed.	Medium
			49. This Plan of Management expressly authorises the provision of low key lighting of the proposed multi-use pathway between Hawkesbury Avenue and Pittwater Road. Install lighting with minimum spill of light to ensure it does not negatively impact on surrounding residents.	Lighting upgraded. Monitor complaints.	Low



Action Table 1. Category - Natural Areas					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Recreation, Education, Aesthetic, Social, Heritage, Access	Development.	21. Ensure all development complies with the Local Government Act 1993 and is for use by the community.	50. Investigate the development of a low key viewing platform near the Dee Why Surf Life Saving Club which is accessible by frail and mobility impaired people. The viewing platform is to be located near the existing disabled parking area and the proposed amenities block. The viewing platform should not negatively impact on the environmental integrity of the dune system or the functions of the Dee Why Surf Life Saving Club. The platform should be not be visually intrusive.	Assess development and it's purpose against policies.	Medium
			51. This Plan of Management expressly authorises the development of a low key viewing platform if the investigation concludes that the platform will not negatively impact on the environmental integrity of the dune system or the functions of the Dee Why Surf Life Saving Club.	Assess against investigation.	Low
			52. This Plan of Management expressly authorises development of the periodic boardwalk, 'gateway' and informal rests in accordance with the 'Bicentennial Coastal Walkway' document. These improvements are for the existing track behind the dunes (see Figure 1, Masterplan). The periodic boardwalk is to be constructed in areas prone to waterlogging to reduce the creation of informal tracks through the dunes.	Improvements to existing track complete.	Medium.



Action Table 2. Category - Park

The actions listed within this table are in relation to that area of the Refuge categorised as Park. The actions are in accordance with the core objectives for Park. Additional objectives derived from the community values area also listed.

Core Objectives:

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

Additional Objectives:

- To manage any use, including recreational use, of Warringah's coastal open space in a manner which protects and enhances its environmental, aesthetic, cultural, heritage and recreational qualities.

Action Table 2. Category - Park					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Recreation	Passive Recreation.	22. Provide for a range of passive recreational opportunities within the park which complement the natural values of the Wildlife Refuge.	53. Ensure the open space area of James Meehan Reserve is available to all. Passive recreational pursuits are to be encouraged.	Monitor recreational use of James Meehan Reserve.	Medium
Recreation, Aesthetic, Social, Access	Embellishment.	23. Embellishment of park areas.	54. This Plan of Management expressly authorises the installation of picnic tables and bins where necessary within James Meehan Reserve and in the park area opposite Clyde Road. Ensure picnic tables and bins are sympathetic to the designs of the Dee Why Beach region and the designs identified within the "Dee Why Beach / The Strand Urban Design Study, 1995" and the "Design Guidelines – Public Open Spaces (in preparation)."	Picnic tables and bins installed and design is sympathetic to those of the Dee Why Beach Region.	Medium



Action Table 2. Category - Park					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Recreation, Aesthetic, Social, Access			55. This Plan of Management expressly authorises the provision of low key lighting to the existing multi-use pathway and children's playground. Install lighting with minimum spill of light to ensure it does not negatively impact on surrounding residents.	Lighting upgraded. Monitor complaints.	Low
			56. This Plan of Management expressly authorises the development of a tree shaded plaza with tables and chairs at the southern end of Dee Why Surf Life Saving Club, as described in the "Dee Why Beach/The Strand Urban Design Study". This area must be for use by the whole community.	Tables and chairs available for whole community.	Low
		24. Link with Town Centre.	57. This Plan of Management expressly authorises the installation of low key recreational features such as seating, bubbler and shelter in the park area opposite the Avon Road / Richmond Avenue junction. This action is to be implemented once the Dee Why Parade to Richmond Avenue boardwalk is constructed (over the existing drain) to this point.	Low key recreational features installed.	Low
Natural Environment, Recreation, Education, Aesthetic, Social, Heritage, Access	Development.	25. Ensure all development complies with the Local Government Act 1993 and is for use by the community.	58. This Plan of Management expressly authorises the development of a public amenities block on the land adjacent the existing disabled car parking area. The building is to be no greater than one storey in height and the dimensions of the building are to be no greater than 13 metres by 9 metres.	Assess development and it's purpose against policies.	High
		26. Link with existing pathways.	59. This Plan of Management expressly authorises the development of a low key pathway to link the existing track behind sand dunes to the existing multi-use pathway (near the Clyde Rd and Richmond Ave junction). The pathway must not negatively impact on the natural or recreational values of the Reserve or the riparian environment.	Pathway developed.	Medium



Action Table 3. Category – General Community Use

The actions listed within this table are in relation to that area of the Refuge categorised as General Community Use. The actions are in accordance with the core objectives for General Community Use.

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

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

Action Table 3. Category – General Community Use					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Access Aesthetic	Car park.	27. Safer use of car park at night.	60. This Plan of Management expressly authorises the upgrading of security lighting along the existing entrance road leading to the car park for greater utilisation of the car park after dark. Install lighting with minimum spill of light to ensure it does not negatively impact on surrounding residents.	Lighting upgraded. Monitor complaints.	Medium
		28. Reconfiguration of car park.	61. This Plan of Management expressly authorises the reconfiguration of the existing car park in accordance with the “Dee Why Beach / The Strand – Urban Design Study, 1995”. This reconfiguration is not to increase the size, in area, of the car park.	Reconfiguration complete.	Medium
		29. Shade trees.	62. This Plan of Management expressly authorises the planting of tree species endemic to the Refuge for provision of shade areas to the car park.	Shade trees planted.	Medium



Action Table 3. Category – General Community Use					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Recreation, Aesthetic, Social, Access	Development.	30. Ensure all development complies with the Local Government Act 1993 and is for use by the community.	63. This Plan of Management expressly authorises the development of the Dee Why Surf Life Saving Club of up to an additional 30% of floor space. The Surf Life Saving Club is to remain a 2-storey building. Development is for the purposes of surf life saving activities, storage and a kiosk. The development may also incorporate an area for a commercial activity such as a food & beverage outlet or a gym. The 30% increase in floor space is to include the conversion of the existing amenities to an alternative use and development over the first floor of the existing amenities, including a balcony extending eastwards from the first floor. The amenities however are to be replaced on the northern side of the Club building, across the beach access road. *	Assess development and it's purpose against policies.	High
			64. In approving any modifications to the Surf Life Saving Club Building consideration must be given to: <ul style="list-style-type: none"> • Minimising the further loss of open space; • Principles of shared use (including the appropriate placement of lifeguard facilities for Council's operations, eg areas for storage and first aid); • Maintenance burden to Council & the community; • Impact on neighbouring properties; and • Council's Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah. 	Assess development and it's purpose against policies.	High

* Action 63 was amended on 27 April 2021. See details of the adopted resolution of the amendment at Attachment F. Amended Action 63 is as follows:

This Plan of Management expressly authorises an extension to the northern end of the Dee Why Surf Life Saving Club building of not more than 6.5 metres by 14 metres on the ground floor for storage space and 6.5 by 17 metres for a balcony overhead. There is to be no roof or screening on the balcony in order to retain ocean views and amenity from the surrounding area. The Dee Why Surf Life Saving Club building is to remain a two storey building.

Safe general public pedestrian access around the building is to be integrated into the design. Development is for the purposes of Club storage particularly for surf lifesaving equipment and surf craft and a balcony to meet the current and future needs of the Dee Why Surf Life Saving Club.



Action Table 4. General Objectives

The actions listed within this table are in relation to the whole Refuge and are derived from the community values and consultation with Council staff.

Objectives – To apply to all land parcels covered by this Plan of Management

- To establish guidelines for assessing leases, licences and other estates;
- To establish guidelines for assessing development proposals and impacts; and
- To enhance the recreational experience of beach and coastal open space users through provision of quality recreation facilities and settings which cater for all groups in the community.

Action Table 4 - General Objectives					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment	Wildlife Refuge	31. Revocation of Wildlife Refuge under Section 68 of National Parks & Wildlife Act from SLSC, carpark, playground and landscaped area.	65. Liaise with National Parks and Wildlife Service to discuss revocation of the SLSC, carpark, playground and landscaped area from the Wildlife Refuge. Ensure this will not adversely impact on the natural areas or the intent of this Plan of Management.	Liaison carried out, subject area revoked from Wildlife Refuge.	Medium.



Action Table 4 - General Objectives					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Access	Access	32. To encourage increased access to, and use of, Community Land by all members of the community. To improve access and use for those members who are restricted due to age, limited mobility and other physical or social barriers.	66. Address the objectives of the Disability Discrimination Act 1992 and Warringah Council's Disability Discrimination Action Plan when constructing accessways and new facilities.	Assess new accessways and facilities against the objectives of the Disability Discrimination Act 1992 and the Disability Discrimination Action Plan.	High
Natural Environment, Education, Social	Waste Management	33. Major events for which Council requires an official booking of a Council reserve shall be required to submit a waste management plan with their application.	67. Upon application for a reserve booking, Council shall provide copies of the Waste Boards' education materials, such as 'Seven Steps to a Waste Wise Event'. Council will provide advice on ways in which waste may be reduced for events.	Survey waste reduction during events and compliance with the Waste Minimisation Act 1995.	Medium
Natural Environment, Recreation.	Management of Crown Land	34. Address public purpose issues for Crown Land parcels.	68. Expand existing Crown Reserve 100181 designated Public Purpose from "Public Recreation" to "Public Recreation and Environmental Protection".	Subject land provided appropriate status.	Medium
			69. Create a new reserve for Public Recreation and Environmental Protection in place of Crown Reserve 56146. A survey plan may be required to define the parcel of land required for the new reserve.	Subject land provided appropriate status and reserve defined.	Medium



Action Table 4 - General Objectives					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Recreation.		35. Council to manage Crown Reserve 100181 and 56146.	70. Request to Department of Land and Water Conservation for Council to be appointed trust manager of Reserve 100181.	Application submitted and Council appointed trustee of Crown Reserve 100181.	Medium
			71. Request to Department of Land and Water Conservation for Council to be appointed trust manager of new Reserve for Public Purpose and Environmental Protection (existing Reserve 56146).	Application submitted and Council appointed trustee of new Reserve (existing Reserve 56146).	Medium
Aesthetics	Embellishment	36. Enable embellishment of pre-existing facilities.	72. This Plan of Management expressly authorises the embellishment of pre-existing facilities. Ensure embellishment is in accordance with the Local Government Act 1993 and is for use by the community.	Assess embellishment and it's purpose against the Local Government Act 1993 and policies.	High
			73. This Plan of Management expressly authorises recommendations of the "Dee Why Beach / The Strand Urban Design Study, 1995" to the extent that such recommendations are not in conflict with this Plan of Management.	Works carried out in accordance with Study.	High



Action Table 4 - General Objectives					
Value	Relevant Management Issues	Performance Target (strategies)	Means of Achievement (Management Actions)	Means of Assessment (of the actions)	Priority
Natural Environment, Recreation, Education, Aesthetic, Social, Heritage, Access	Development	37. Ensure all development complies with the Local Government Act, 1993 and is for use by the community.	<p>74. Any development should be in accordance with the development control guidelines as stipulated within the Warringah Local Environment Plan 2000. Development proposals should also address the following:</p> <ul style="list-style-type: none"> • Environmental sustainability and protection of identified values; • Consistent with character and scale of existing facilities and intensity of use; • Adequately provide for public access, equity and broad community use; • Ensure future permitted uses, scale and intensity of use are consistent with Refuge's existing natural, environmental and scenic values; • Ensure that open space is not alienated or fragmented by development; • Maintain amenity and public safety in relation to noise emissions and pollutants, building surface glare and reflection; • Maintain and enhance public safety and security; • Minimise 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. 	Assess development and it's purpose against policies.	High



8. LEASES, LICENCES AND OTHER ESTATES

In accordance with Section 46A of the Local Government Act 1993 a plan of management is to specify in relation to Community Land any purpose for which a lease, licence or other estate may be granted. This section of the Plan of Management describes the leases, licences and other estates permitted on the land covered by this Plan, ie Community Land and Crown Land. Although such authorisations are not a requirement of the Crown Lands Act 1989, the authorisations have been provided to ensure a consistent approach to the management of the Refuge.

The Local Government Act requires Council to consider what activities may require granting of a lease, licence or other estate during the life span of a plan of management. The authorisation allows for the consideration, and granting if appropriate, of the prescribed activity. The Action Tables, Section 7.2 of this Plan of Management, detail the purposes for which buildings and improvements are permitted to be used and purposes, scale and intensity of any further development. Development must also be in accordance with the Local Government Act 1993, the Crown Lands Act 1989 and the Warringah Local Environment Plan 2000. The following Section provides information regarding existing lease and licences, restrictions to commercial activities and authorisations of leases, licences and other estates considered appropriate for the land covered by this Plan.

8.1 Existing Lease and Licence Details

Dee Why Surf Life Saving Club holds a Deed of Grant with Council that provides for the continuing use and occupation of the Dee Why Surf Life Saving Club - a two storey brick and concrete building located in the South East corner of James Meehan Reserve. The Deed does not incorporate the public toilets and dressing sheds and the upstairs function hall, although the Club has use of the hall and responsibility for hiring the hall to members of the public. The Deed commenced in April 1969 and is valid while Dee Why Surf Life Saving Club continues to exist or for the life of the building itself and any replacement building. The Deed was entered into prior to the Local Government Act 1993. Current legislative restrictions on the life of such a Deed (ie maximum of 21 years) are therefore not applicable.

There are no other current leases or licences held over the land covered by this Plan of Management.

8.2 Commercial Activities

A Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah has been developed to manage the commercial use of open space and the buildings thereon. The Policy provides a list of objectives and management principles to be considered when assessing commercial use applications. It also provides a number of conditions that can be selected as required to condition individual commercial use activities and an assessment system for determining the impact of commercial use activities. In general, only those activities that have a clear link between the recreational use, reservation or categorisation and values of the Refuge will be considered.



The Policy provides guidelines for what kind of activities may be considered appropriate for inclusion within a plan of management. Dee Why Lagoon Wildlife Refuge (excluding the developed area of James Meehan Reserve and Dee Why Beach) has been listed as a restricted area within the Policy. Under this restriction, commercial use of the Refuge (excluding the developed area of James Meehan Reserve and Dee Why Beach) may only be considered for educational activities. Where the commercial use requires the granting of a lease, licence or other estate it must be authorised within this Plan of Management.

In accordance with the Policy, the commercial use of the Refuge has been assessed. A guide for the level of commercial use of the Refuge is provided in Table Seven (overleaf). Commercial use of the area has been divided into two areas:

1. *Dee Why Beach* includes James Meehan Reserve and Dee Why Beach, from the entrance of Dee Why Lagoon to the rockpool. This area is covered by this Plan of Management and the draft Coastal Lands Plan of Management however the area is to be considered as one area when assessing commercial use applications against the scoring system described in Table Seven.
2. *The Wildlife Refuge* includes the bushland, dune, wetland and waterbody areas of the Refuge, excluding James Meehan Reserve, the Dee Why Surf Life Saving Club and Dee Why Beach.

The Dee Why Surf Life Saving Club is to be managed in accordance with the current Deed of Grant or lease should a lease be entered into.

A scoring system has been developed within the Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah. Applications are to be assessed and identified as being low (1), medium (2) or high (3) impact activities according to a list of criteria. A total impact score is then assigned for an area for a given period which allows for a number of various combinations of activities to proceed as long as the total score is not exceeded. The scores are intended as a guide only and the practicality of the system is to be reviewed with the review of the Policy. The proposed assessment system for determining the impact of one or a series of commercial use activities has been provided at Appendix E, which is an extract from the Policy.

Commercial use activities confined within the Dee Why Surf Life Saving Club building (eg. food and beverage outlet) are excluded from the scoring system. However, those activities based within the building, yet undertaken in the surrounding Reserve, will be considered in the total impact system.

The scores are to assist staff in determining the appropriate use, and levels of use, of the Refuge and Dee Why Beach and to determine the immediate and cumulative impacts of commercial use activities. The scores take into account seasonal demand of commercial use and community use of the area as well as the resilience of the natural areas of the Refuge and Dee Why Beach. A maximum score for any one day is provided along with a monthly maximum per season. A combination of low, medium and high impact activities may be carried out at any one time at Dee Why Beach. The only commercial activities permitted within the Refuge (ie bushland, dune, wetland and waterbody areas) are educational activities. It is recommended that only one low impact activity be carried out at any one time with a maximum of 5 low impact activities per month.



Table 7. Recommended upper limit of commercial use for Dee Why Lagoon Wildlife Refuge and Dee Why Beach (total impact scores developed in accordance with Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah).

High Use Period (Summer School Holidays*)	Shoulder Period (October to April*)	Low Use Period (May to September*)
<i>Dee Why Beach (includes James Meehan Reserve and Dee Why Beach, from the entrance of Dee Why Lagoon to the rockpool)</i>		
Any day <ul style="list-style-type: none"> • Maximum of 2 high impact activities for the period (up to 6 points for the period). • Maximum of 3 points per day for medium & low impact activities (up to 126 points for the period). • This represents 100% of the available days for the six week period for commercial use within the limits prescribed above. 	Weekends <ul style="list-style-type: none"> • Maximum of 1 high impact activity per month (up to 3 points per month). • Maximum of 3 points per day for medium & low impact activities (up to 24 points per month). • This represents 100% of the available weekend days per month for commercial use within the limits prescribed above. Weekdays <ul style="list-style-type: none"> • Maximum of 4 high impact activities per month (up to 12 points per month). • Maximum of 3 points per day for medium & low impact activities (up to 42 points per month). • This represents 60% of the available weekdays per month for commercial use within the limits prescribed above. 	Any day <ul style="list-style-type: none"> • Maximum of 4 high impact activities per month (up to 12 points per month). • Maximum of 3 points per day for medium & low impact activities (up to 18 points per month). • This represents 25% of the available days per month for commercial use within the limits prescribed above.
<i>Dee Why Lagoon Wildlife Refuge (includes bushland, dune, wetland and waterbody areas)</i>		
<ul style="list-style-type: none"> • Maximum of 1 point per day (up to 5 points per month). 	<ul style="list-style-type: none"> • Maximum of 1 point per day (up to 5 points per month). 	<ul style="list-style-type: none"> • Maximum of 1 point per day (up to 5 points per month).

* High use period is defined as that period that coincides with the summer school holiday period. This has been calculated on a six week period from mid – December to the end of January.



- * The Shoulder period is defined as the period that covers the beach patrol season by Council's professional lifeguards, from October to April, excluding the High period.
- * Low use period is defined as the non-patrol period of Council's professional lifeguards. This is generally May to September.

Dee Why Surf Life Saving Club

The location of Dee Why Surf Life Saving Club generates the potential for revenue raising activities. Operation of commercial activities within the building must be carried out in accordance with the Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah. Commercial use must ensure multi-use of the existing shared hall (function hall), or similar, and only those activities that are considered ancillary to the use of the area will be considered. A lease may need to be renegotiated with the Surf Life Saving Club in place of the current Deed of Grant before commercial activities can be carried out within the club building. Table Eight (overleaf) provides detailed authorisation for the granting of a lease, licence and other estate for commercial use activities within the club building.



Photo 10: Dee Why Surf Life Saving Club.

8.3 Authorisations

Table Eight (overleaf) provides a list of all leases, licences and grants of estates which are authorised through the Dee Why Lagoon Wildlife Refuge Plan of Management. These authorisations relate to the land covered by this Plan of Management. The granting of a lease, licence or other estate must:

- Be in keeping with the purpose, category and core objectives of the land;
- Have no negative impact on natural areas, threatened species, habitat, historical or cultural sites;
- Not alienate the reserve unreasonably;
- Be ecologically sustainable;
- Have a component of community benefit;
- Demonstrate a clear nexus between the activity and the Refuge;
- Not result in overuse of the area or conflict with community use of the area;
- Ensure traffic and parking implications are addressed; and
- Be in accordance with relevant Council policies and procedures governing the use of open space.



Additional conditions for licences for commercial purposes include:

- The level of use is managed in line with the guide shown in Table 7 (above) on impact assessment as developed through the Interim Policy on the Management of Commercial Uses of Beaches, Reserves and Buildings/Facilities in Warringah.
- Any commercial use licence is limited to 5 years including any renewal period.

Additional conditions for use of Dee Why Surf Life Saving Club include:

- The shared hall (function hall) area as defined in the existing Deed of Grant, must remain available to the public for general community use. Any use of the building must permit reasonable community use of the area allowing for activities such as parties, functions and community meetings on a regular basis for times including weekend use where not reasonably required for purposes associated with volunteer life saving.
- Where an application to Council is required for further commercial uses a business plan may be requested that includes, but is not limited to, detail regarding the financial viability of the proposal, demand for the service/activity and future cost and maintenance expectations.

Table 8: Authorisations of leases, licences and other estates for the land and buildings covered by this Plan of Management (to be read in conjunction with conditions listed above).

1. Dee Why Surf Life Saving Club	
1.1	This Plan of Management expressly authorises the granting of a lease, licence or other estate for purposes: <ul style="list-style-type: none"> • associated with the operation of a volunteer life saving and beach patrol service and associated training and club activities; • a food & beverage outlet; &/or • recreation uses such as a gym, beach equipment hire or similar.
2. Natural Areas of the Refuge	
2.2	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of educational activities. This would include activities such as educational walking tours and scientific research.
3. James Meehan Reserve	
3.1	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of weekday market activities from which there is significant public benefit. This activity is limited to two weekdays per month.
3.2	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of occasional cultural festivals/events.
4. James Meehan Reserve & Dee Why Beach	



4.1	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of recreational, social or educational activities. This would include activities such as educational walking tours, scientific research, sightseeing and lunch stops.
4.2	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of hiring of recreational equipment (eg surf craft, umbrellas, sun beds) or beach related services from which there is significant public benefit (eg learn to surf/ body board, water safety classes, fishing lessons, locker hire, mobile food & beverage vendors).
4.3	This Plan of Management expressly authorises the granting of a licence or other estate for the purpose of occasional beach related events, such as surf carnivals/contests, triathlons/fun runs, ocean swimming races, beach volleyball tournaments and school events.

8.4 Easements

There are currently no easements over the area covered by this Plan of Management.

This Plan of Management expressly authorises the granting of easements over the land for the purpose of providing pipes, conduit or other connections under the surface of the ground. This is limited to easements that connect premises adjoining Community Land to an existing water, sewer, drainage or electricity facility of Council or other public utility provider that is situated on Community Land

The granting of easements above, on or under the surface of Community Land or to land that is not Community Land is not within the authority of this Plan of Management. This includes but is not limited to:

- Piping to a natural watercourse;
- Piping to a facility through Community Land to a facility on land under private ownership; and
- Private access, vehicular or pedestrian.



9. SCOPE OF WORKS

The Masterplan (see Figure One, page iii) for Dee Why Lagoon Wildlife Refuge has been developed as a result of community consultation and the identification of values for the Refuge. The Masterplan represents and identifies the key management objectives for the Refuge and shows the physical locations of the key actions.

A number of actions proposed for the Dee Why Lagoon Wildlife Refuge are the result of other studies carried out for the area. This Plan of Management and Masterplan links these other studies together to define a comprehensive list of key actions for the Refuge within the one document.

It should be noted that the Masterplan indicates that a boardwalk and viewing platform is proposed to provide access through bushland to the lagoon edge. The exact location of this is yet to be defined. A study of migratory and resident birds has been carried out by Peter Smith and Associates. The study recommends possible locations for the boardwalk and viewing platform and the final location is to take into account social and environmental issues and values of the Refuge.

Similarly the exact location of the viewing platform for Dee Why Beach is yet to be defined. The platform is to be visually unobtrusive and should not negatively impact on the functions of the Dee Why Surf Life Saving Club or the environmental integrity of the sand dunes. It is desirable, both economically and environmentally, to locate the platform along the northern embankment in front of the Dee Why Surf Club. This location must be investigated to ensure it will not impact on the functions of the Dee Why Surf Life Saving Club. This location would also be easily accessible for the aged and mobility impaired.

The indicative costs for the key works proposed through this Plan of Management are detailed in Table Nine (overleaf). The exact location of work is to be defined during the detailed design phase. With this in mind, prices for works as described may vary. It is for this reason that a cost/unit price has been identified to enable a more accurate cost estimate during the detailed design phase.

An annual maintenance fee of 5% has also been included in Table Nine. This figure is an estimated percentage of the total cost of works proposed which should be set aside annually for maintenance. The type of development will effect the amount of funding to be set aside each year. Some works may require high maintenance during their establishment, such as landscaping, whilst other works, such as footpaths, may require minimal maintenance for the first few years.



Table 9. Summary of costs for proposed works

Item (funding source)	Unit	Cost / unit	Number of units	Total cost	Annual Maint.
Multi-use pathway - Pittwater Road to Hawkesbury Avenue (Section 94)					
• Site Preparation	-	-	-	\$2,000	
• Earthworks	-	-	-	\$11,250	
• Drainage	-	-	-	\$7,575	
• Cycleway - 2.5m wide colour concrete					
Pittwater Road to Clarence Avenue, 108m	m ²	\$60	270	\$16,200	
Clarence Ave to Hawkesbury Ave, 204m	m ²	\$60	510	\$30,600	
• Landscaping	-	-	-	\$6,640	
• Miscellaneous	-	-	-	\$2,000	
• Signs and Entrances					
Information/directions signs	ea	\$750	4	\$3,000	
Bollards/fencing at entrances	ea	\$750	2	\$1,500	
• Lighting					
Solar lighting of multi-use pathway (312 metres)	ea	\$5,000	2	\$10,000	
• Contingency	10%	-	-	\$9,077	
• Professional Costs	10%	-	-	\$9,984	
Sub Total				\$109,826	
Annual Maintenance	5%				\$5,491
Lighting of existing multi-use pathway – Hawkesbury Avenue to The Strand (Section 94)					
• Lighting					
Solar lighting of multi-use pathway (approx. 475 metres)	ea	\$5,000	2	\$10,000	
• Contingency	10%	-	-	\$1,000	
Sub Total				\$11,000	
Annual Maintenance	5%				\$550
Timber boardwalk and viewing platform to lagoon edge (Section 94)					
• Timber boardwalk	m	\$500	315	\$157,500	
• Concrete headwall	ea	\$1,500	2	\$3,000	
• Timber viewing platform	m ²	\$250 - \$1,250	4	\$1,000 - \$5,000	
• Contingency	10%	-	-	\$16,150 - \$16,550	
• Professional Costs	10%	-	-	\$17,765 - \$18,205	
Sub Total				\$195,415 - \$200,255	
Annual Maintenance	5%				\$9,771 - \$10,013
Walking track linking multi-use pathway with track behind dunes (Section 94)					
• Crushed sandstone pathway (1m wide)	m ²	\$20	360	\$7,200	
• Drainage	-	-	-	\$3,700	
• Entry bollards	ea	\$750	2	\$1,500	
• Contingency	10%	-	-	\$1,240	
• Professional Costs	10%	-	-	\$1,364	
Sub Total				\$15,004	
Annual Maintenance	5%				\$750



Table 9 continued.

Item (funding source)	Unit	Cost / unit	Number of units	Total cost	Annual Maint.
Dee Why Beach accessible viewing area (Section 94)					
• Site establishment, levelling, equipment and excavation.	-	-	-	\$2,648	
• New retaining wall (brick)	m	\$215	18	\$3,870	
• Cement render	m ²	\$15.80	18	\$285	
• Concrete paving	m ²	\$37.30	15	\$560	
• Brick paving	m ²	\$53.10	35	\$1,860	
• Stainless handrails	M	\$325	8.5	\$2,763	
• Miscellaneous	-	-	-	\$2,200	
• Contingency	10%	-	-	\$1,419	
• Professional Costs	10%	-	-	\$1,560	
Sub Total				\$17,165	
Annual Maintenance	5%				\$858
Public amenities building (partial funding through S94)					
• Construction and fit out of public amenities building (8m x 12.5m)	m ²	\$2,000	100	\$200,000	
Annual maintenance	5%				\$10,000
Boundary fencing (General revenue)					
• Near Long Reef car park	m	\$30	225	\$6,750	
• Along western side of James Meehan Reserve	m	\$30	115	\$3,450	
• From Pittwater Road to Hawkesbury Ave	m	\$30	160	\$4,800	
• Contingency	10%	-	-	\$1,500	
• Professional Costs	10%	-	-	\$1,650	
Sub Total				\$18,150	
Annual Maintenance	5%				\$908
Facilities (Section 94)					
• Installation of picnic tables	Each	\$1,800 - \$8053	Approx. 3	\$5,400 - \$24,159	
• Installation of garbage bins	Each	\$875	Approx. 3	\$2,625	
• Interpretive signage	Each	\$100 - \$150	Approx. 10	\$1,000 - \$1,500	\$28,284
• Contingency	10%	-	-	\$903 - \$2,828	
• Professional Costs	10%	-	-	\$993 - \$3,111	
Sub Total				\$10,920 - \$34,224	
Annual Maintenance	5%				\$546 - \$1,711
Bicentennial Coastal Walkway (Section 94)					
• Entrance	-	-	-	\$21,500	
• Walkway	-	-	-	\$154,000	
• Entrance – Lagoon Mouth	-	-	-	\$12,000	
Sub Total				\$187,500	
Annual Maintenance	5%				\$9,375
TOTAL				\$764,980 - \$793,124	



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APPENDIX A:
BACKGROUND TO COMMUNITY VALUES AND ISSUES



Background to Community Values and Issues

The diverse physical environment, particularly its geographic features, the quality of the marine and inter-tidal environment, rock platforms and headlands, and the standard of adjoining bushland and estuarine areas is of significant value.

A.1 Flora

The Natural Area Survey (NAS) (Smith & Smith, 1997) identified ten vegetation communities within the Refuge. Six communities are of Priority 1 significance according to the NAS, meaning they consistently provide habitat for threatened fauna listed in the Threatened Species Conservation Act 1995. The remaining four communities are Priority 2 significance in the NAS, meaning they have a restricted distribution in the Warringah Local Government Area.

- Priority 1 Communities - Saltmarsh, Estuarine Reedland, Swamp Oak Forest, Swamp Mahogany Forest, Coastal Banksia - Eucalypt Scrub and Coastal Dune Swamp.
- Priority 2 Communities - Seagrass Beds, Estuarine Paperbark Scrub, Spinifex Grassland and Coastal Wattle Heath.

Thirty-nine plant species (associated with the sandy coastal lagoon environment) which occur in the Refuge are not present in either Garigal or Ku-ring-gai National Parks. The Sydney Freshwater Wetlands and Sydney Coastal Estuary Swamp Forest Complex have recently been listed under the Threatened Species Conservation Act. These threatened ecological communities are present within the Dee Why Lagoon Wildlife Refuge and require protection under the Act.

A.2 Fauna

Birds

The major wildlife value of the Refuge is its significance for migratory birds. According to the NPWS (1989) Dee Why Lagoon provides essential sheltering and feeding requirements for a range of migratory birds from the Northern Hemisphere. The value of the area as habitat for wildlife has been recognised through its dedication as a Wildlife Refuge in 1973.

Approximately 100 bird species have been recorded from the Refuge (SPCC, 1978). A number of the migratory wader species that utilise the Refuge are listed under one or both of 'Japan-Australia Migratory Birds Agreement 1974' (JAMBA) and 'China-Australia Migratory Birds Agreement 1986' (CAMBA). The Agreements require the respective governments to protect migratory birds and their environments. A number of species are also listed under the Threatened Species Conservation Act 1995 including those listed in table A1.



Table A1: Bird species recorded within the Refuge which are listed under the TSC Act, JAMBA or CAMBA.

Common name	Latin name	TSC Act	JAMBA	CAMBA
Little Tern	<i>Sterna albifrons</i>	Endangered	↔	↔
Caspian Tern	<i>Hydroprogne caspia</i>	-	↔	-
Crested Tern	<i>Sterna bergii</i>	-	↔	-
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	Vulnerable	-	-
Brolga	<i>Grus rubicunda</i>	Vulnerable	-	-
Australasian Bittern	<i>Botaurus poiciloptilus</i>	Vulnerable	-	-
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable	-	-
Grey Plover	<i>Pluvialis squatarola</i>	-	↔	-
Eastern Golden Plover	<i>Pluvialis dominica</i>	-	↔	-
Ruddy Turnstone	<i>Arenaria interpres</i>	-	↔	↔
Eastern Curlew	<i>Numenius madagascariensis</i>	-	↔	↔
Common Whimbrel	<i>N. phaeopus</i>	-	↔	↔
Bar-tailed Godwit	<i>Limosa lapponica</i>	-	↔	↔
Grey-tailed Tattler	<i>Tringa brevipes</i>	-	↔	↔
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	-	↔	↔
Red-necked Stint	<i>C. ruficollis</i>	-	↔	↔
Japanese Snipe	<i>Gallinago hardwickii</i>	-	↔	↔
White Egret	<i>Egretta alba</i>	-	↔	-
Cattle Egret	<i>Ardeola ibis</i>	-	↔	-
Reef Heron	<i>Egretta sacra</i>	-	-	↔
White-breasted Sea Eagle	<i>Haliaeetus leucogaster</i>	-	-	↔

P & J Smith Ecological Consultants are currently undertaking a study of migratory and resident birds of the Refuge as part of the Estuary Processes Study. The study will identify the birds present habitat values and relevant management techniques to ensure the bird population and diversity is conserved and enhanced. The study will be undertaken over a 12 month period to ensure seasonal variations to bird populations are taken into account.

Fish

Three surveys in the late 1970's and early 1980's recorded 53 species of fish in the lagoon. The number of permanent resident species was constant between 10 and 14, however the number of temporary species ranged from 12 in 1978 to 29 in a 1982 survey. The increase in 1982 may have been due to improved sampling techniques and the lagoon mouth being open to the sea for a lengthy period of time which may have resulted in increased recruitment from the ocean.

Two distinct fish habitats exist in the lagoon. The central lagoon area and entrance channel with a strong marine influence, greatest depth, a high percentage of sand in the sediment and some seagrass patches is one habitat. The southern section of the lagoon is



shallower, has more variable salinity, a higher clay content in the sediment and supports less seagrass and is regarded as another distinct habitat.

Fish species diversity and abundance is restricted by the small size of the lagoon, limited habitats and the harshness of the environment - lagoon opening events often result in extreme variation in water level and salinity and the lagoon bed drying out completely. Dredging the lagoon is likely to improve fish habitat but result in increased numbers of existing species rather than a marked increase in species diversity (Allen, 1985). Artificial opening of the lagoon to enhance fish or prawn stocks is regarded as an extremely difficult exercise on a lagoon specific or regional basis.

Invertebrates

The Lagoon's terrestrial and aquatic microfauna are mostly unknown and hence its conservation significance poorly understood.

The occurrence of benthic organisms was once regarded as similar to that of other coastal estuaries (SPCC, 1978). Prawn numbers depend largely on how long the lagoon remains closed. An early opening of the lagoon during the season (November to March) usually results in poor prawning as many mature prawns have moved out to sea.

Pets / Feral animals

Cats and foxes have been recorded in the Refuge, however their impact on native fauna populations, particularly birds, has not been quantified. Common Starlings and Black Rat are also found within the Refuge. Cats and foxes are capable of hunting and killing native fauna. The presence of feral animals and birds however can also impact upon native fauna through the competition for habitat and food.

The new Companion Animals Act 1998 allows Council to trap and impound cats found in bushland reserves. Baiting of feral animals, such as foxes, can now take place within 150m of residential property. Control and reduction of feral animals and pets within the Refuge is necessary in order to maintain a biodiversity of native species.

A.3 Conservation

The Dee Why Lagoon Wildlife Refuge is valued as a unique and special area with high conservation value due to the following:-

- The uncommon combination of existing habitats and landforms in an urban situation;
- The Refuge is home to large numbers of bird species, with the available bird habitat identified as having outstanding value and importance;
- The remaining vegetation habitats are rare remnants of vegetation types that were common before development; and
- The aquatic ecosystem itself has particular environmental significance. Dee Why Lagoon is home to an abundant population of marine invertebrates which reinforces the habitat value of the lagoon for water birds.

A.4 Catchment

Dee Why Lagoon Wildlife Refuge is located wholly within an urban context with the southern and western boundaries being bordered by urban development. The catchment of Dee Why Lagoon is defined by the Collaroy Plateau ridge to the north, Narraweena ridge



to the west, Dee Why ridge to the south and sand dunes to the east. The catchment has an area of approximately 5.1km².

Drainage of the northern and western parts of the catchment is along residual parts of a tributary (Dee Why Creek) flowing through a sub-catchment area referred to as Dee Why Valley. Parts of Dee Why Creek have been straightened to ensure more efficient drainage. In addition, there are a number of earthen drains which enter the lagoon on its northern edge and twelve drainage pits located on the eastern side of Pittwater Road. The southern parts of the catchment are drained by the Dee Why Main Drain (which exits into the lagoon at Hawkesbury Avenue), the Avon Road Drain, part of a creek to the east of the Avon Road drain and a drain in the south eastern corner of the lagoon.

From the catchment area the drains transport sediments, nutrients and pollutants which are consequently deposited in the Lagoon. Sedimentation and pollution of the lagoon are obvious signs of the impact of urbanisation. Nutrient input into the Lagoon is a less visible sign, but its effects would become apparent in the form of algal blooms. Water quality control devices such as detention basins and gross pollutant traps have been constructed to reduce the deposition of sediment, nutrients and rubbish in the Lagoon.

Coastal lagoon systems are dynamic geological environments, the evolution of which usually involves their gradual infilling to eventually result in freshwater swamps. Dee Why Lagoon's evolution has been dramatically accelerated through increased rates of sedimentation. The size of the waterbody of Dee Why Lagoon has been reduced as sediment deposited at drainage channel outlets has created delta formations which are in turn colonised by sedges and reeds.

The rate of sedimentation may be accelerated by a number of processes including channel bank erosion and urban development in the catchment. The accelerated process of sedimentation of Dee Why Lagoon was initially observed in 1977 when Gordon and Cooke (1977) noted that "from the sedimentological evidence and an examination of aerial photographs it is apparent that the lagoon is infilling with sediments". An Estuary Processes Study, Estuary Management Study and Estuary Management Plan is currently being undertaken which will provide a more accurate description and interpretation of current catchment processes.

A.5 Lagoon Waterbody

Various water quality measurements have been taken in the lagoon since 1978 and are best described in terms of physical, chemical and biological descriptors. The Dee Why Lagoon Data Compilation Study (MHL, 1997) contains a summary of previous surveys on aspects of these parameters, for example annual loads of litter and floatables, turbidity levels, dissolved oxygen, salinities, phosphorous and nitrogen, stormwater loads, faecal coliform levels, etc.

Opening of the lagoon can result from water overtopping the sand bar and scouring a channel, mechanical opening or by wave action scour from the ocean side. The difference in water level between the lagoon and the ocean can range between zero at high tide to as much as 3 metres during a combination of a low tide and a high lagoon water level. This difference in water levels is the driving force in the draining of the lagoon once open to the



sea. The barrier level at the lagoon mouth is also a contributing factor in lagoon openings - the average crest level of the barrier is 2.05m AHD.

Council has produced a Dee Why Lagoon Entrance Management Policy (1996) which sets out procedures and responsibilities for natural and authorised openings of the lagoon as well as strategies to prevent unauthorised openings of the lagoon. The aquatic flora and fauna of the Refuge have evolved in association with the lagoons natural breakout regime. The time for natural closure of the lagoon can vary from a few days to several weeks depending on wind, tide and weather conditions.

A.6 Landscape and Aesthetics

The Refuge has a high boundary to area ratio making it susceptible to edge effects such as weed invasion as well as offering increased opportunities for rubbish dumping and other forms of undesirable public access. Effective management of the boundary will be necessary to reduce the incidence and impacts of edge effects.

The open space of the water body and adjacent bushland contribute significantly to the visual amenity of the Dee Why area and for the northern beaches as a whole. Management of the Refuge should seek to retain this visual amenity and thereby maintain and promote a positive community perception of the natural values of the Refuge. In turn a positive community perception may assist in reducing the incidence of unsympathetic community behaviour such as rubbish dumping.

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APPENDIX B:

NSW SCIENTIFIC COMMITTEE FINAL DETERMINATIONS FOR

VEGETATION COMMUNITIES WITHIN DEE WHY LAGOON WILDLIFE

REFUGE



NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list the Sydney Coastal Estuary Swamp Forest Complex in the Sydney Basin Bioregion as an ENDANGERED ECOLOGICAL COMMUNITY on Part 3 of Schedule 1 of the Act. The listing of Endangered Ecological Communities is provided for by Part 2 of the Act.

The Scientific Committee has found that:

The Sydney Coastal Estuary Swamp Forest Complex is the name given to the plant community characterised by the assemblage of species listed in paragraph 3 that is a mosaic of vegetation types occurring on waterlogged estuarine alluvial soils and strongly influenced by periodically poor drainage conditions. All sites are within the Sydney Basin Bioregion.

Sydney Coastal Estuary Swamp Forest Complex includes vegetation described as Coastal Swamp Forest Complex (Map unit 27a) in Benson & Howell (1994), and referred to in Adam & Stricker (1993) and Smith & Smith (1997). Sydney Coastal Estuary Swamp Forest Complex is part of the alluvial forest of Chafer (1997).

Sydney Coastal Estuary Swamp Forest Complex is characterised by the following assemblage of plant species

<i>Acacia longifolia</i>	<i>Baumea juncea</i>
<i>Blechnum camfieldii</i>	<i>Blechnum indicum</i>
<i>Calochlaena dubia</i>	<i>Carex appressa</i>
<i>Casuarina glauca</i>	<i>Darwinia procera</i>
<i>Dodonaea triquetra</i>	<i>Eucalyptus botryoides</i>
<i>Eucalyptus robusta</i>	<i>Gahnia clarkei</i>
<i>Gahnia sieberiana</i>	<i>Glochidion ferdinandi</i>
<i>Hydrocotyle peduncularis</i>	<i>Hypolepis muelleri</i>
<i>Imperata cylindrica</i>	<i>Isachne globosa</i>
<i>Livistona australis</i>	<i>Melaleuca biconvexa</i>
<i>Melaleuca ericifolia</i>	<i>Melaleuca linariifolia</i>
<i>Melaleuca styphelioides</i>	<i>Persicaria strigosa</i>
<i>Phragmites australis</i>	<i>Pteridium esculentum</i>
<i>Triglochin procera</i>	<i>Typha orientalis</i>
<i>Villarsia exaltata</i>	<i>Viola hederacea</i>

The total species list of the flora and fauna of the community is considerably larger than that given in 3 (above), with many species present in only one or two sites or in very small quantity. In any particular site not all of the assemblage listed above may be present. At any one time, propagules and seeds of some species may only be present in the soil seed bank with no above-ground individuals present. Invertebrate species may be restricted to sediments or canopy trees and shrubs for example. The species composition of the site will be influenced by the size of the site and by its recent disturbance history. The number of species and the above-ground composition of species will change with time since fire, and may also



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change in response to changes in fire frequency. The community includes animals and invertebrates many of which are poorly known.

Sydney Coastal Estuary Swamp Forest Complex is a mosaic ranging from forest to scrub to reedland and includes open-forest with *Eucalyptus robusta* and *Eucalyptus botryoides*, woodland with *Livistona australis*, scrub with *Melaleuca* species including *Melaleuca linariifolia*, *Melaleuca styphelioides* and *Melaleuca ericifolia*, herbland with waterferns and reedland with *Phragmites australis*. *Casuarina glauca* may occur as a component of this community [but pure *Casuarina glauca* forests are a separate community, as are mangroves and saltmarsh].

Sydney Coastal Estuary Swamp Forest Complex occurs on waterlogged estuarine alluvial soils strongly influenced by periodically poor drainage conditions such as soils of the Cockle Bay, Tacoma Swamp and Warriewood Soil Landscapes (Chapman & Murphy 1989, Murphy 1993). It may grade into Sydney Coastal Riverflat Forest which generally occurs on higher land or away from the estuary. It may grade into *Casuarina glauca*, *Juncus* saltmarsh and mangrove communities in areas subject to regular tidal inundation. It differs from Sydney Coastal Freshwater Swamp in having a more silty site and higher nutrients, and generally less open standing water.

Sydney Coastal Estuary Swamp Forest Complex is or has been known to occur in the local government areas of Lake Macquarie, Wyong, Gosford, Baulkham Hills, Pittwater, Warringah, Liverpool, Rockdale, Sutherland, Wollongong, Shellharbour and Kiama, but may occur elsewhere in the Sydney Basin Bioregion.

Sydney Coastal Estuary Swamp Forest Complex has been reported from Swansea, Porters Creek Wetland, Wyong River floodplains, Lisarow wetlands, Erina Creek, Bensville, Middle and Deep Creeks and Narrabeen Lagoon, Dee Why Lagoon, Voyager Point, Leo Smith Reserve Ramsgate, Kurnell, Bundeena and Mill Creek, Bellambi Lagoon, Fairy Creek, Wollingurrie Swamps (Duck Creek), Dunmore Wetlands (Shellharbour) and Minnamurra Wetlands (Kiama) but may occur elsewhere.

Disturbed remnants are still considered to form part of the community described under this determination where the natural soil and associated seedbank is partially intact. At some sites changes to hydrology or drainage might be required to assist regeneration.

Sydney Coastal Estuary Swamp Forest Complex has been extensively cleared and filled for recreational purposes - playing fields, car parks and roads. Remnants are threatened with waste filling, clearing associated with urban development, urban runoff associated with proximity to urban and agricultural areas, weed invasion including *Ludwigia peruviana*, *Ipomoea cairica* and *Anredera cordifolia*, and by grazing and trampling, including by deer.

Small areas of the Sydney Coastal Estuary Swamp Forest Complex has been reported from Cockle Bay Nature Reserve, and Garigal and Royal National Parks.

Plant species of conservation significance reported for Sydney Coastal Estuary Swamp Forest Complex include *Melaleuca biconvexa* and *Darwinia procera*. As a winter flowering plant *Eucalyptus robusta* is particularly important to fauna. Animals of conservation significance



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include Australasian Bittern, *Botaurus poiciloptilus* and Large Footed Myotis, *Myotis adversus*.

In view of the small size of existing remnants, and the threat of further disturbance and degradation, the Scientific Committee is of the opinion that the Sydney Coastal Estuary Swamp Forest Complex in the Sydney Basin Bioregion is likely to become extinct in nature in New South Wales unless the circumstances and factors threatening its survival or evolutionary development cease to operate.

Dr Chris Dickman
Chairperson
Scientific Committee
Proposed Gazettal date: 22/12/00
Exhibition period: 22/12/00 – 26/01/01

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NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list the Sydney Freshwater Wetlands in the Sydney Basin Bioregion as an ENDANGERED ECOLOGICAL COMMUNITY on Part 3 of Schedule 1 of the Act. The listing of Endangered Ecological Communities is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. Sydney Freshwater Wetlands is the name given to the plant community characterised by the assemblage of species listed in paragraph 2 that is restricted to freshwater swamps in swales and depressions on sand dunes and low nutrient sandplain sites in coastal areas. All sites are within the Sydney Basin Bioregion.
2. Sydney Freshwater Wetlands is characterised by the following assemblage of species.

Banksia robur
Baumea juncea
Callistemon citrinus
Cladium procerum
Empodisma minus
Gahnia sieberiana
Goodenia paniculata
Hypolepis muelleri
Leptocarpus tenax
Lomandra longifolia
Melaleuca linariifolia
Melaleuca quinquenervia
Persicaria decipiens
Philydrum lanuginosum
Pteridium esculentum
Schoenus brevifolius
Typha orientalis
Viminaria juncea

Baumea articulata
Baumea rubiginosa
Casuarina glauca
Eleocharis sphacelata
Gahnia clarkei
Gleichenia dicarpa
Hakea teretifolia
Lepironia articulata
Leptospermum juniperinum
Ludwigia peploides subsp. *montevidensis*
Melaleuca nodosa
Melaleuca styphelioides
Persicaria strigosa
Phragmites australis
Restio tetraphyllus
Triglochin procerum sensu lato
Villarsia exaltata
Xanthorrhoea resinifera

3. The total species flora and fauna list for the community is considerably larger than that given in 2 (above), with many species present in only one or two sites or in very small quantity. In any particular site not all of the assemblage listed in 2 may be present. Invertebrate species may be restricted to sediments for example. At any one time, propagules and seeds of some species may only be present in the soil seed bank with no above-ground individuals present. The species composition of the site will be influenced by the size of the site, recent rainfall or drought conditions and by its recent disturbance history. The community includes vertebrates and invertebrates, many of which are poorly known.



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4. Sydney Freshwater Wetlands are a mosaic community with considerable variation due to fluctuating water levels and seasonal conditions. Characteristic vegetation is sedges and aquatics particularly *Eleocharis sphacelata*, *Baumea juncea*, *Baumea rubiginosa*, *Baumea articulata*, *Gahnia sieberiana*, *Ludwigia peploides* subsp. *montevidensis* and *Persicaria* species. There may be considerable areas of open water particularly where drainage conditions have been altered. There may be patches of emergent trees such as *Melaleuca quinquenervia* and shrubs.
5. Sydney Freshwater Wetlands are restricted to freshwater swamps in swales and depressions on sand dunes and low nutrient sandplain sites in coastal areas. These areas are generally on the sands of the Warriewood and Tuggerah Soil Landscapes (Chapman & Murphy 1989). Coastal Swamp Forest eg. *Eucalyptus robusta* and swamp on alluvium with a saline influence is not covered by this Endangered Ecological Community Determination.
6. Sydney Freshwater Wetlands are or have been known to occur in the local government areas of Lake Macquarie, Wyong, Gosford, Pittwater, Warringah, Woollahra, Waverley, Botany, Rockdale, Randwick, Sutherland and Wollongong- but may occur elsewhere in the Sydney Basin Bioregion.
7. Sydney Freshwater Wetlands were formerly particularly extensive in the Sydney Eastern Suburbs and Kurnell area. Occurrences have been reported to include Jewells Swamp, Wallarah wetland, Budgewoi wetlands, Porters Creek wetland, Wyong Golf Course, Tuggerah Oxbow, Bateau Bay; Iluka Lagoon; Everglades Lagoon Umina, Deep Creek Warringah, Dee Why Lagoon, Lachlan Swamps, Centennial Park, Botany Swamps at Eastlakes, La Perouse, Kurnell, Potter Point, Bundeena and Marley Lagoons and Coomaditchy Lagoon, but the ecological community may also occur elsewhere.
8. Sydney Freshwater Wetlands include vegetation described in Benson & Howell (1994), Adam & Stricker (1993) and Chafer (1997).
9. Disturbed remnants are considered to form part of the community described under this determination where the natural soil and associated seedbank is partially intact. At some sites changes to hydrology or drainage may be required to assist regeneration.
10. Sydney Freshwater Wetlands has been extensively cleared and filled for recreational purposes - playing fields, car parks, roads eg Marton Park Kurnell. Remnants are threatened with illegal filling with commercial, industrial and residential waste, dumping and burning of stolen vehicles, sand extraction and clearing for urban development. Threats include urban runoff associated with proximity to urban and agricultural areas, weed invasion e.g. *Cortaderia selloana*, *Ludwigia peruviana*, *Salvinia molesta*, *Eichhornia crassipes*; off-road vehicles and trail bikes, and introduced deer affecting Marley and Jibbon Lagoons in Royal National Park by grazing and trampling.
11. Small areas of Sydney Freshwater Wetlands have been reported to occur in Wyrabalong, Royal and Botany Bay National Parks.



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12. Animal species of conservation significance which may occur in Sydney Freshwater Wetlands are Australasian Bittern, *Botaurus poiciloptilus*, Wallum Froglet, *Crinia tinnula*, Green and Golden Bell Frog, *Litoria aurea*, and Large Footed Myotis, *Myotis adversus*.
13. In view of the small size of existing remnants, and the threat of further clearing, disturbance and degradation, the Scientific Committee is of the opinion that the Sydney Freshwater Wetlands in the Sydney Basin Bioregion are likely to become extinct in nature in New South Wales unless the circumstances and factors threatening its survival or evolutionary development cease to operate and that listing as an endangered ecological community is warranted.

Dr Chris Dickman
Chairperson
Scientific Committee
Proposed Gazettal date: 22/12/00
Exhibition period: 22/12/00 – 26/01/01

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APPENDIX C:
LEGISLATIVE AND STATUTORY REQUIREMENTS



Legislative and Statutory Requirements

This Plan of Management consists of *both* Community Land and Crown Land. The Plan of Management must therefore satisfy the:

- Local Government Act, 1993;
- Local Government Amendment (Community Land Management) Act 1998; and the
- Crown Lands Act, 1989.

C.1 What are the requirements of Community Land Management?

Under legislative requirements of the Local Government Act 1993 and the Local Government Amendment (Community Land Management) Act 1998, Section 36 (a)–(n), Councils must prepare and adopt plans of management for all Community Land. 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 Council proposes to achieve the plan's objectives and performance targets;
- The manner in which Council proposes to assess its performance with respect to the plan's objectives and performance targets.

As this is a Specific Area Plan of Management which applies to just one area of Community Land it must also:

- Include a description of 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;
- Include a description of the use of the land and any such buildings or improvements as at the date of adoption of the plan;
- Specify the purposes for which the land, and any such buildings or improvements, will be permitted to be used;
- Specify the purposes for which any further development of the land will be permitted, whether under lease or licence or otherwise; and
- Describe the scale and intensity of any such permitted use or development.

C.2 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; and
- 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; and
- 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.

C.3 What Dealings Can a Council Have in Community Land?

- Council has no power to sell, exchange or otherwise dispose of Community Land, except for the purpose of enabling that land to become, or to be added to, a Crown Reserve or land reserved or dedicated under the National Parks and Wildlife Act 1974;
- Council may grant a lease or licence on Community Land, but only in accordance with the Local Government Act 1993; and
- A Council may grant any other estate in Community Land to the extent permitted by the Local Government Act.

C.4 Leases or Licences on Community Land

Granting a Lease or Licence on Community Land

Leases and licences are a method of formalising the use of Community Land and facilities. Leases or licences can be held by groups such as sporting clubs and schools, by commercial organisations or individuals providing facilities and/or services for public use.

The Local Government Act 1993 allows Council to grant leases or licences over all or part of Community Land. The use of land under a lease or licence must be compatible with the Local Environment Plan or Council requirements and provide benefits and services or facilities for the users of the land. Terms and conditions of a lease should reflect the interests of Council and the public and ensure proper management and maintenance.

Conditions of Granting a Lease or Licence

The following conditions must be met when granting a lease or licence over Community Land:

- The lease or licence must not be granted for a period exceeding 21 years;
- A lease or licence for a period greater than five years may only be granted by tender, unless it is granted to a non-profit organisation; and
- The plan of management must expressly authorise a lease or licence.

In general, where a proposal is for greater than 5 years, Council must:

- Give public notice of the proposal;
- Exhibit notice of the proposal on the land to which the proposal relates;
- Give notice of the proposal to such persons who appear to own or occupy land adjoining the Community Land; and

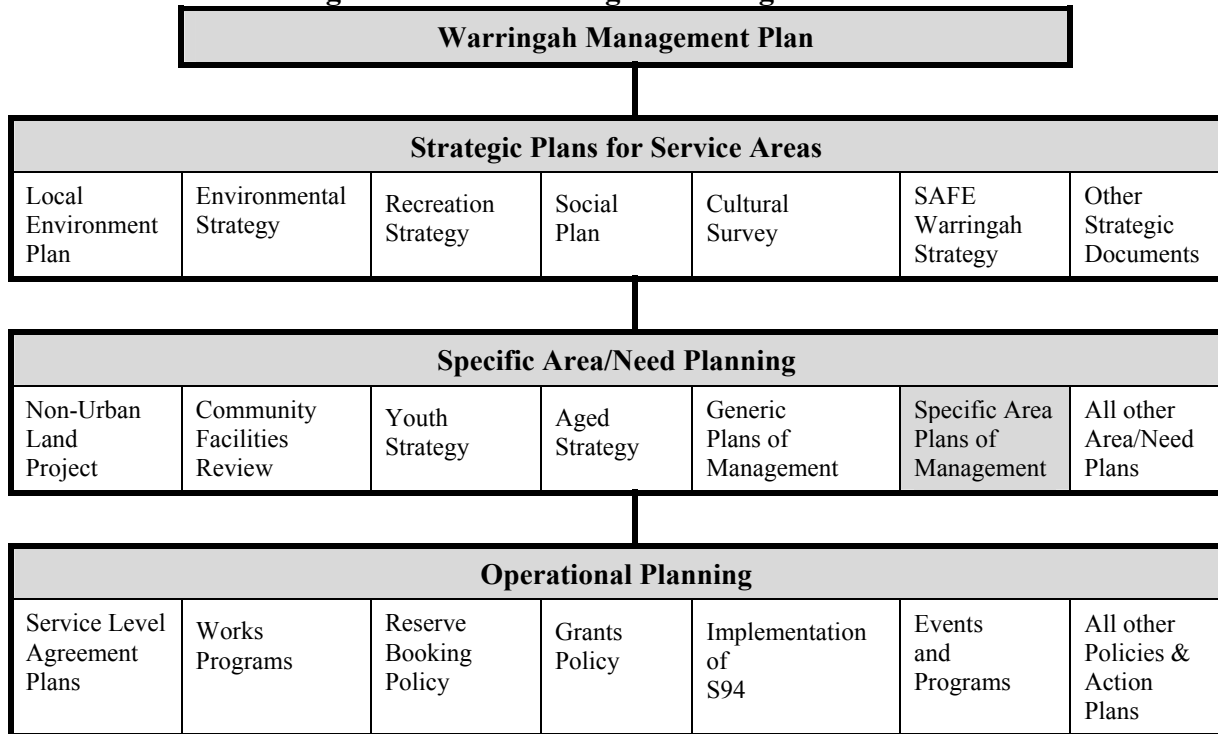


- Give notice of the proposal to any other person (owner or occupier of land in the vicinity of the Community Land), if in the opinion of the Council the subject to the proposal is likely to form the primary focus of the person's enjoyment of Community Land.

C.5 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 PLAN 2001–2004. This Plan of Management 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 C1, Warringah Council's Strategic Planning Documents, illustrates the framework for planning and this Plan's relationship to other strategic documents which share the same guiding principles.

Table C1: Warringah Council's Strategic Planning Documents Flow Chart



C.6 Strategic documents used in the preparation of this Plan

The following Council documents have been used to assist and guide the strategic outcomes of this Plan, ensuring consistency in values, principles and policies:

- Coastal Management Strategy 1985;
- Dee Why Beach/The Strand – Urban Design Study 1995;
- Interim Policy on the Management of the Commercial Use of Beaches, Reserves & Buildings/Facilities in Warringah 2002;
- Warringah Local Environment Plan 2000;
- Recreation Strategy for Warringah's Beaches and Coastal Open Space 1998;
- Recreation Strategy Plan 1999;



- State of the Environment Report 2000-2001;
- Northern Beaches Stormwater Management Plans 1999;
- Urban Bushland Management Plan 1990;
- Warringah Bicycle Plan 1998;
- Warringah Social Plan 2000; and
- Warringah PLAN 2001– 2004.

C.7 Other relevant Legislation and Policies

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

- Australian Heritage Commission Act 1975;
- Catchment Management Act 1989;
- China-Australia Migratory Birds Agreement 1986 (CAMBA);
- Disability Discrimination Act 1992;
- Environmental Planning and Assessment Act 1979;
- Environmental Protection and Biodiversity Conservation Act 1999;
- Fisheries Management Act 1994;
- Japan-Australia Migratory Birds Agreement 1974 (JAMBA);
- Noxious Weeds Act 1993;
- Rare or Threatened Australian Plants 1996;
- Rural Fires Act 1997;
- SEPP No. 19 – Bushland in Urban Areas;
- State Rivers and Estuaries Policy 1993; and
- Threatened Species Conservation Act 1995.

Bibliography

ADAW (Aust) Pty. Ltd, 1995. Dee Why Beach / The Strand – Urban Design Study, Design Report. Prepared for Warringah Council.

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Warringah Council, 1985. Coastal Management Strategy.

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Warringah Council, 2001. Warringah PLAN 2001-2004.



APPENDIX D:
PUBLIC MEETINGS AND WORKSHOPS



Public Meetings and Workshops

Following is a summary of community consultation carried out during the development of the Dee Why Lagoon Wildlife Refuge Plan of Management. Consultation has been carried out with the general public, Friends of Dee Why Lagoon, Dee Why Surf Life Saving Club, Council Officers and State Government Agencies.

Table D1: Community Consultation

Date	Method of Consultation
17 June 1995	Community meeting at Harbord Diggers Club – meeting raised local issues relevant to Dee Why Lagoon Catchment.
19 August 1995	Community workshop at Harbord Diggers Club – workshop identified ‘actions and strategies’ for the Dee Why Lagoon catchment area.
November 1998	Letterbox drop to 700 near neighbours of a comments sheet for the Dee Why Lagoon Wildlife Refuge. The comments sheet was also attached to the Friends of Dee Why Lagoon newsletter dated November 1998. Sixty six submissions were received.
7 November 1998	Article in the Manly Daily’s Mayors message column requesting community comments in relation to the future management of the Dee Why Lagoon Wildlife Refuge.
17 November 1998	Press release/article on page 7 of the Manly Daily.
1995 – 1999	A number of meetings were held with the Friends of Dee Why Lagoon and draft plans were presented to Council’s Dee Why/Curl Curl Lagoon Estuary Management Committee.
1 May 2000	Community workshop was held to discuss the Estuary Management Plan – key issues for the catchment and lagoon were identified, these were also useful for the Plan of Management.
18 May 2000	Presentation of draft Masterplan and discussion of key management actions at the Dee Why Lagoon and Curl Curl Lagoon Estuary Management Committee meeting.
28 August – 9 October 2000	Public exhibition and submission period for draft Plan of Management.
5 October 2000	Public hearing into the categorisation of Community Land, as required by the Local Government Amendment (Community Land Management) Act 1998.



APPENDIX E:

**THE PROPOSED ASSESSMENT SYSTEM FOR DETERMINING THE IMPACT
OF ONE OR A SERIES OF COMMERCIAL USE ACTIVITIES**
(extract from the Interim Policy on the Management of the Commercial Use of
Beaches, Reserves & Buildings/Facilities in Warringah)



Principles for assessment:

Applications will be assessed as low, medium or high impact according to the following criteria:

Criteria	Description
Risk	This includes risk to the participants and public within the area of the activity. Factors such as topography, condition of reserve/beach, degree of maintenance and pollution warnings will be considered.
Space Usage	For consideration is whether it is exclusive use, whole of the beach/reserve or part of beach/reserve.
Noise	What level and how wide spread.
Traffic	Level of disruption and parking needs.
Size	Number of participants.
Weather	Some beaches are less suitable for certain activities due to surf conditions and surf patterns. Reserves will be impacted by wet weather and fire hazards.
Amenities	Availability if amenities required for activity type.
Natural Environment	Level of sensitivity of site and overuse issues.
Present Usage	Number of events already approved.
Cumulative Impact	The frequency of an area's use will affect the impact. The more frequently an area is used, in general, the higher the risk of damage to the area.
Length of operation	The length of time over which an activity is to be conducted will influence the level of impact.



Each criteria is scored by the activity's level of impact as follows:

No Impact – 0

Low Impact – 1

Medium Impact – 2

High Impact – 3

Hence the **overall** level of impact for any proposed activity is scored as follows:

Low Impact Activity – 0 to 11

Medium Impact Activity – 12 to 22

High Impact Activity – 23 and above

To then assess multiple activities at one beach, reserve or facility, the activity is given a score of 1 for low, 2 for medium and 3 for high.

Each beach, reserve or facility is then assigned a total impact score for a given period and then a number of various combinations of activities can proceed as long as the total score is not exceeded. This can be for a number of time frames.

For example: A Beach in the summer season may be assigned a score of 4 for any defined period of time (such as a day or weekend). This means that 4 low impact, two medium impact or 1 low and 1 high impact activities could occur over a defined time (such as a day or weekend). A total score for, say the month, may then also be applied. The value of this approach is that it limits the cumulative impacts of commercial use on any given location. Each plan of management will use this model to develop a scoring system for the areas covered in that plan of management.

Please note that this is intended as a **guide only** and the practicality of the system will be reviewed with the review of the policy.



Following are examples of activities types and category outlines. Some examples may occur in more than one category as variations in the assessment criteria may result in the same type of activity having a different impact. For example, a small photo shoot is listed as low impact while a large film shoot is listed as high impact. The duration of an activity may also result in such variations.

Category	Criteria	Examples
Restricted Areas (low or no commercial use)	Areas that are highly sensitive or already overused.	Includes: Parts of Dee Why Wildlife Refuge, Dee Why Headland Intertidal Area, Long Reef Aquatic reserve. Other areas supporting high conservation bushland, threatened species and sensitive waterways as outlined in Section 1.5.2 of the policy.
Low Impact	Low risk to Council, participants and/or public Minimum space usage or is only passing through an area Low noise No traffic disruption Less than 10 participants Short duration	Rental of beach umbrellas/mats Walking tours Sightseeing tours Diving training Photo shoots Personal Trainers
Medium Impact	Some risk to Council, participants and/or public Exclusive use of part of beach/reserve 10-20 participants Impacted by weather/surf conditions May alienate some parking area	Surf craft rental Surf related course Water safety education Volleyball competitions Mountain Bike tours/courses Corporate sports (eg lunch time activities)
High Impact	20 plus participants Risk to Council & participants and/or public Exclusive use of large are or impact on whole of beach/reserve Traffic disruption Impact on existing events May induce a maintenance 'shut-down' period to allow repair (eg of turf)	Large operation surf craft hire or surf related course Large film shoots Triathlons Markets Festivals/Cultural events (eg rock concert) Surf Contest



APPENDIX F:

Amendment to Action 63 Adopted 27 April 2021

Extract from Report to Ordinary Council Meeting on 27 April 2021

Item No. 13.2 Outcomes of the Public Exhibition to the Dee Why Lagoon Wildlife Refuge Plan of Management (2002)

Proposed Amendment to Action 63:

This Plan of Management expressly authorises an extension to the northern end of the Dee Why Surf Life Saving Club building of not more than 6.5 metres by 14 metres on the ground floor for storage space and 6.5 by 17 metres for a balcony overhead. There is to be no roof or screening on the balcony in order to retain ocean views and amenity from the surrounding area. The Dee Why Surf Life Saving Club building is to remain a two storey building. Safe general public pedestrian access around the building is to be integrated into the design.

Development is for the purposes of Club storage particularly for surf lifesaving equipment and surf craft and a balcony to meet the current and future needs of the Dee Why Surf Life Saving Club.

Extract from Minutes of an Ordinary Council Meeting held on Tuesday 27 April 2021 at the Civic Centre, Dee Why, Commencing at 6:01pm

Item 13.2 Outcomes of the Public Exhibition to the Dee Why Lagoon Wildlife Refuge Plan of Management (2002)

088/21 **RESOLVED**

Cr Ferguson / Cr Bingham

That:

1. The amendment to Management Action 63 of the Dee Why Lagoon Wildlife Refuge Plan of Management (2002) outlined in this report is adopted and the amended Plan of Management incorporate the change to Management Action 63.
2. Council notes that before the proposed alteration and additions to the Dee Why Surf Life Saving Club building facilitated by this amendment is undertaken, a development assessment and determination under Part 4 of the *Environmental Planning and Assessment Act 1979* is required.

RESOLVED BY EXCEPTION