

Plan of Management

Greys Beach and The Grotto,
North Nowra



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Table of Contents

section	Page
1 Introduction	
1.1 Background	1
1.2 What is a Plan of Management?	1
1.3 Purpose of this Plan	2
1.4 Plan Structure.....	2
1.5 Review.....	3
1.6 Definitions.....	3
2 The Site	
2.1 Land to Which This Plan Applies.....	5
2.2 Description of the Site	8
2.3 Opportunities and Constraints.....	9
3 Basis for Management	
3.1 Consultation	16
3.2 Values	16
3.3 Community Vision and Aspirations.....	18
3.4 Permissible Uses.....	18
3.5 Management Areas	18
3.6 Legislative and Policy Framework.....	18
4 Management Framework	
4.1 Preamble	22
4.2 Traffic and Access.....	23
4.3 Weed Infestation	24
4.4 Recreation Facilities	25
4.5 Maintenance.....	25
4.6 Flooding.....	26
4.7 Flora and Fauna	26
4.8 Erosion	27
4.9 Safety	28
4.10 Festival activities	29
4.11 Heritage.....	29
4.12 Commercial Use Opportunities	30
4.13 Tourism	31
5 Action Plan	
6 Landscape Master Plan	

7 Implementation

7.1	Works Schedule	61
7.2	Community Involvement in Plan Implementation	63

8 Copyright and Usage Note

List of Illustrations

Illustration 1.1	Site Locality	4
Illustration 2.1	Land to Which this Plan Applies	11
Illustration 2.2	Existing Facilities at Greys Beach	12
Illustration 2.3	Existing Facilities at The Grotto	13
Illustration 2.4	Site Analysis Greys Beach	14
Illustration 2.5	Site Analysis The Grotto	15
Illustration 6.1	The Grotto - Master Plan Sheet 1 of 2	57
Illustration 6.1	The Grotto - Master Plan Sheet 2 of 2	58
Illustration 6.2	Greys Beach - Master Plan Sheet 1 of 2	59
Illustration 6.2	Greys Beach - Master Plan Sheet 2 of 2	60
Illustration 7.1	Staging Plan	62

List of Tables

Table 2.1	Land Parcels to Which this Plan of Management Applies	5
Table 3.1	Requirements of the Local Government Act with Respect to the Management of Community Lands	19
Table 3.2	Local Government Act Objectives for Natural Areas and General Community Use areas	20
Table 4.1	Management Issues and Goals	22
Table 4.2	Threatened Species in the Locality	27
Table 5.1	Traffic and Access Management	33
Table 5.2	Weed Management	36
Table 5.3	Recreation Facilities Management	37
Table 5.4	Maintenance Management	42
Table 5.5	Flooding Management	44
Table 5.6	Flora and Fauna Management	45
Table 5.7	Erosion Management	47
Table 5.8	Safety Management	48
Table 5.9	Festival Management	52
Table 5.10	Heritage Management	53
Table 5.11	Commercial Use Opportunities Management	54
Table 5.12	Tourism Management	55
Table 7.1	Schedule of Priority Works	61

List of Appendices

- A** Greys Beach Shared Access Options.....
- B** Weed Control Plan
- C** Location of Interpretive Attractions in The Grotto.....
- D** Legislation and Policy Summary.....

Introduction

1.1 Background

In March 2002, GeoLINK was engaged by Shoalhaven City Council (Council) to prepare a Plan of Management and Landscape Master Plan for land known as Greys Beach and The Grotto at North Nowra.

Greys Beach and The Grotto are significant recreational areas within the Shoalhaven region, located on the banks of the Shoalhaven River at North Nowra. The reserve areas are utilised for a wide range of active and passive recreational activities

North Nowra is under serviced in terms of the amount and quality of recreation opportunities and facilities. Therefore, Greys Beach and The Grotto are essential components of the open space and recreational area available in the locality. In recognition of the importance of the areas in providing for the recreational needs of the North Nowra and wider Shoalhaven population, Council has commenced upgrading the facilities at Greys Beach through the erection of a fully accessible toilet block and provision of a fully accessible pontoon to provide access to the River.

This Plan of Management follows on from the planning and works already carried out in the reserve area by Council. Council already has generic Plans of Management in place for Community Land that act as the current management tools for the site. However, a more detailed management plan, including a Landscape Master Plan, is required for the combined areas of Greys Beach and The Grotto to facilitate site improvements to better meet the recreational needs of the North Nowra, and wider Shoalhaven, population.

The development of the Plan of Management was jointly funded by the NSW Department of Lands and Council given that the site comprises both Community Land and Crown Land.

1.2 What is a Plan of Management?

A Plan of Management is a document that provides a framework for the management of a land resource.

The Plan of Management for Greys Beach and The Grotto is based on an analysis of the sites and on the community values and visions associated with the reserve areas. Identified management issues were considered with respect to community values and visions, and objectives were then developed to address matters of concern and improve the management of the area. Management objectives are realised through the implementation of the action plan set out in this Plan and are subject to regular review and

revision to ensure that the evolving needs and views of the community are catered for in the short and long term.

1.3 Purpose of this Plan

The purpose of this Plan of Management is to:

- guide the future use, development and management of Greys Beach and The Grotto;
- provide a Plan which integrates with Council's overall strategic direction and open space and recreational land management program;
- guide Council programs and community volunteer activities on the land;
- provide appropriate and affordable management actions to improve the reserve areas in accordance with the needs of the community;
- maintain the environmental character of the reserve areas;
- facilitate the progression of Greys Beach into an icon park for the Shoalhaven region; and
- meet the requirements of the *Local Government Act 1993* and the *Crown Lands Act 1989*;

1.4 Plan Structure

The Plan has the following sections:

Section 1 Introduction - Outlines the purpose of the Plan and its structure and use.

Section 2 The Site - Provides a description of the reserve areas, and an analysis of their constraints and opportunities.

Section 3 Basis for Management - Provides an overview of the community consultation program undertaken and describes the values of the site and the community vision for the area developed from that consultation. It also sets out the legislative framework applicable to the site along with an outline of the scale and intensity of future improvements on the land.

Section 4 Management Framework - Provides a discussion of the management issues and suggested site improvements developed from the consultation process and the site analysis work.

Section 5 Action Plan - Sets out specific objectives and performance targets for each management issue relating to the land. The means of achieving and assessing these targets are also included.

Section 6 Landscape Master Plan - Contains the Landscape Master Plan for the site.

Section 7 Implementation - Includes details with respect to priorities and scheduling with respect to the management actions outlined in Section 5.

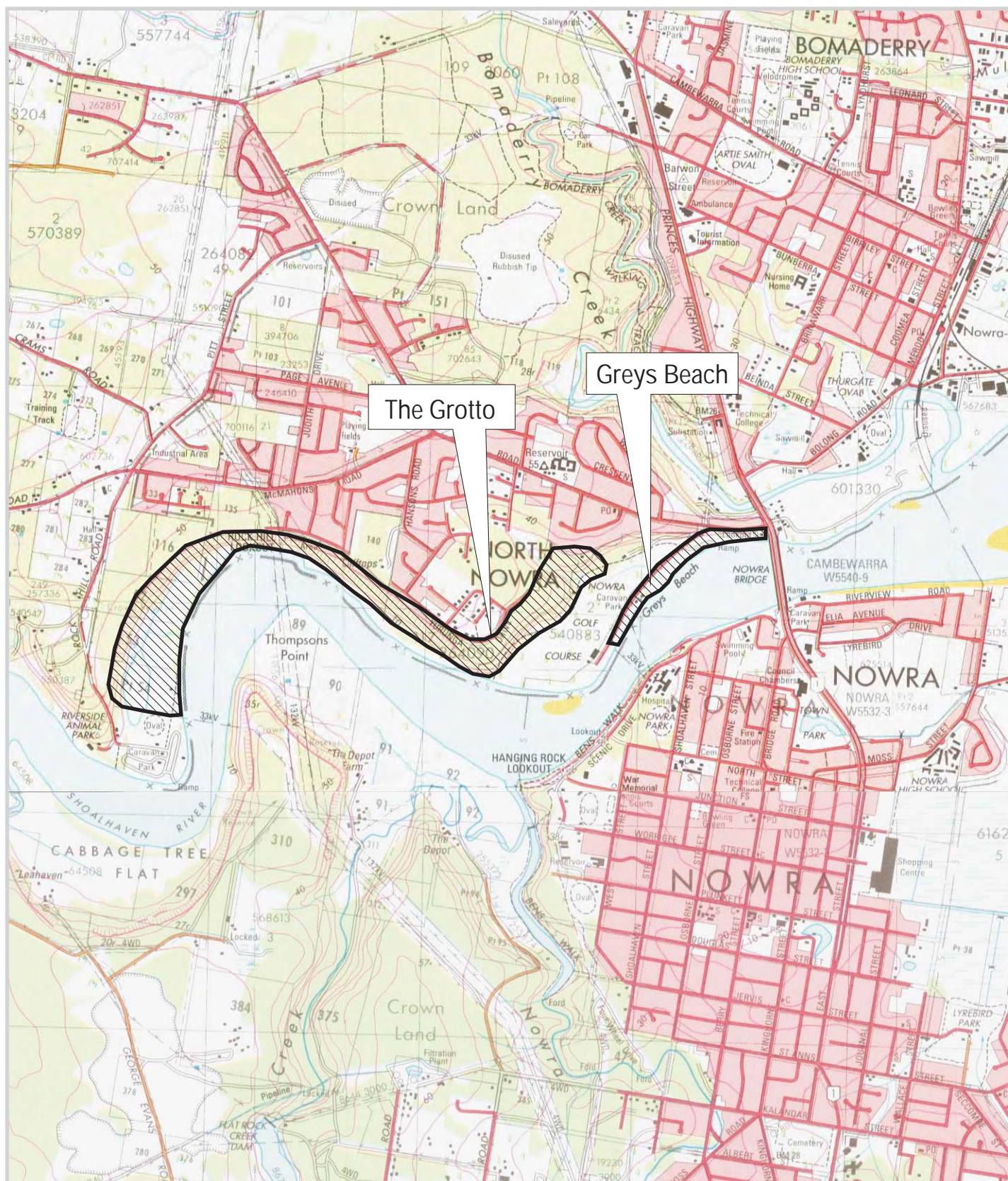
1.5 Review

This Plan should be reviewed at least every five years to ensure that it remains relevant and useful. Implementation of the action plan is to be monitored on an annual basis.

1.6 Definitions

The Reserve	Greys Beach and The Grotto as per Table 2.1
SCC	Shoalhaven City Council
NPWS	National Parks and Wildlife Service
The Plan	Plan of Management – Greys Beach and The Grotto

Plan of Management
Greys Beach and The Grotto



00275027
Source: CMA Topographic
Date: January 2004
quality solutions sustainable future

Illustration 1.1
Site Locality

The Site

2.1 Land to Which This Plan Applies

Greys Beach and The Grotto are located on the northern banks of the Shoalhaven River just west of the Highway Bridge at North Nowra (Illustration 1.1). While the areas have separate identities, geographically they are close, and are therefore being considered together for the purposes of a specific Plan of Management.

The trust that manages Crown Reserve (68918) is the “Greys Beach Reserve Trust”.

Table 2.1 provides the Real Property description of each parcel of land the subject of the Plan of Management as well as information in relation to land type and classification. The study area is shown in Illustration 2.1. A more detailed description of the study area is found in Section 2.2.

Table 2.1 Land Parcels to Which this Plan of Management Applies

Real Property Description	Land Type	Classification	Category	Council Role
Greys Beach (Crown Reserve No.68918)				
Lot 7009 DP 1002407	Crown Land	R68918	Public Recreation	Trust Manager
Lot 239 DP 728005	Crown Land	R68918	Public Recreation	Trust Manager
Lot 7010 DP 1002411	Crown Land	R68918	Public Recreation	Trust Manager
* Lot 7014 DP 751258 (UPN 90264)	Crown Land	R68918	Licensed to Nowra Golf Club	Trust Manager
* Lot 7015 DP 751258 (UPN 90263)	Crown Land	R68918	Licensed to Nowra Golf Club	Trust Manager
* Lot 7016 DP 751258 (UPN 90262)	Crown Land	R68918	Licensed to Nowra Golf Club	Trust Manager
* Lot 7017 DP 751258 (internal reserve access road)	Crown Land	R68918	Public Recreation	Trust Manager
Lot 226 DP 751258 (Por 226)	Crown Land	N/A	Special Lease (1966/51) Nowra Golf Club	N/A
Lot 2 DP 540883	Public Land (SCC)	Community Land	Sportsground	Licensed to Nowra Golf Club

Real Property Description	Land Type	Classification	Category	Council Role
Lot 3 DP 528318	Public Land (SCC)	Community Land	Sportsground	Licensed to Nowra Golf Club
The Grotto				
Lot 117 DP 264090 Yurunga Drive Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 47 DP 771465 Hansons Road Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 68 DP 245408	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 43 DP 44302	Crown Land	R22764	Public Recreation	Care, Control & Management
Lot 44 DP 44302	Crown Land	R22764	Public Recreation	Care, Control & Management
Part Lot 45 DP 44302	Crown Land	R22764	Public Recreation	Care, Control & Manager
Part Lot 135 DP 751258 (Por 135)	Crown Land	R22764	Public Recreation	Care, Control & Manager
Lot 7004 DP 1002405	Crown Land	R22764	Public Recreation	Care, Control & Management
Lot 1 DP 747836 Rockhill Road Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 2 DP 747836 Rockhill Road Reserve	Public Land (SCC)	Part Community and Part Operational Land	General Community Use	N/A
Lot 5 DP 747836 Rockhill Road Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 6 DP 747836 Rockhill Road Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A
Lot 7 DP 747836 Rockhill Road Reserve	Public Land (SCC)	Community Land	Natural Area - Bushland	N/A

* Please note that Lots 7014, 7015, 7016 and 7017 in DP 751258 are property descriptions used by the Department of Lands.

Aboriginal Land Claims (ALC) exist over a number of the above parcels of land. Claims pertain to:

- Lot 43 DP 44302 (ALC 6281)
- Lot 44 DP 44302 (ALC 6282)
- Lot 45 DP 44302 (ALC 6283)
- Lot 135 DP75125 (ALC 6384)

Land claims confer an interest in the land claimed by the Nowra Local Aboriginal Land Council.

The two reserves are separated by an area of community and crown land that is currently licensed and leased to the Nowra Golf Club (Illustrated 2.1). That land is comprised of:

- Lot 2 DP 540883 (SCC Community Land - Sportsground)
- Lot 3 DP 528318 (SCC Community Land- Sportsground)
- Lot 7010 DP 1002411 (Crown Land - R68918)
- Lot 7014 DP 7511258 (Crown Land - R68918)
- Lot 7015 DP 7511258 (Crown Land - R68918)
- Lot 7016 DP 7511258 (Crown Land - R68918)
- Lot 226 DP 751258 (Por 226) (Crown Land)

This Plan of Management does not apply to any of the land licensed or leased to the Nowra Golf Club. Golf Club land is managed in accordance with the provisions of the licence or lease with Council and/or the Department of Lands.

Land licensed to the Nowra Golf Course is accessible to the general public.

The Licence Agreement between the Greys Beach (R68918) Reserve Trust and the Nowra Golf Club, in part states, under the subheading of Rights of access that:

- " 17. The Licensee shall ensure that the land with the exception of fairways, greens and tees and areas adjacent thereto likely to be dangerously exposed shall be available to the public for the purpose of passive recreation PROVIDED THAT the club shall have the right to require members of the public to remove themselves from any location on the course where there is likely to be any danger or where they are interfering with the act of the playing of golf or where there is likely to be damage to golf facilities in tees, greens or fairways PROVIDED FURTHER THAT members of the public shall be permitted to enter the links in company of a player for the purpose of watching the playing of golf provided that they comply with any reasonable direction which may be given to them by any player using the links and as may be confirmed by an employee or officer of the Licensee.*
- 18. (1) The car park within the licensed area must be available for general public use. Car park spaces for the exclusive use of members of the Licensee is not permitted.*
- (2) The Licensee acknowledges that the rights of contained in this agreement are not rights of exclusive possession and that the public may traverse the land.*
- (3) The Licensor reserves the right to incorporate part of the land with a scenic walk of the adjoining land Shoalhaven River provided that such reservation does not unreasonably interfere with the Licensee's use of the land."*

The Deed of Licence between Council of the City of Shoalhaven and Nowra Golf Club for Community Land, in part states, under the subheading of Scenic walk and public access that:

- "29. (1) The Licensor and Licensee acknowledges to each other that they have a shared interest along with Department of Land and Water Conservation in the establishment of a walkway adjacent to the Shoalhaven River and all share an interest in ensuring that any walkway is not prejudicial to the sound practices for the management of the riverbank and provided the construction of walkway does not unreasonably interfere with the licensee's current use of the land for the playing of golf according to the course layout current at the date of this agreement..*
- (2) The Licensee specifically acknowledges that the Licensor is desirous of ensuring that the public have access to the Shoalhaven River provided that the risks from the adjoining Golf Course by users of the walkway are acceptable."*

The road that forms the entry from Illaroo Road to Greys Beach Reserve does not constitute legal access to the Crown reserve lands, Crown lease or community lands. This road is considered to be an internal reserve access road.

Section 48 of the Local Government Act devolves all land in Reserve 22764 to Council responsibility for Care, Control & Management. It is recommended, following the adoption of this plan of management, that Council take action to be appointed Trust Manager for the purpose of providing a stronger form of management over the reserve i.e. the ability to lease and licence the reserve.

2.2 Description of the Site

Greys Beach and The Grotto are located on the northern embankment of the Shoalhaven River at North Nowra. The reserve area is bounded to the south by the Shoalhaven River, with the North Nowra residential area located to the north, the Princes Highway to the east and rural lands and natural vegetation generally to the west. Greys Beach comprises the eastern component of the reserve area whilst The Grotto forms the western portion of the reserve system. Both areas are bound on one side by the river and on the other by an escarpment separating the reserves from residential areas to the north. Greys Beach and The Grotto are separated by the Nowra Golf Club. The Shoalhaven Ski Park and Nowra Animal Park are located at the south western extent of The Grotto.

The areas form an important open space and recreational resource within the Shoalhaven, and in particular, North Nowra, which is under serviced in terms of high quality recreational areas and community facilities. The areas currently serve a wide range of local and tourist recreational pursuits including swimming, fishing, boating and water skiing in conjunction with activities such as picnicking, walking and site seeing. The areas also facilitate large cultural events such as the Shoalhaven's annual River Fest.

Greys Beach is located below the escarpment on the river foreshore and primarily functions as an open space recreation area and an access point to the Shoalhaven River. Facilities currently available at Greys Beach include

car and boat parking, a two lane boat ramp, six picnic tables, a jetty, a fish cleaning table, a pontoon for disabled access to the River and a disabled access toilet block (Illustration 2.2).

Facilities within The Grotto are limited given the relatively natural state of the area. However, some seven lookouts are located on the escarpment, and a small picnic ground is located below the escarpment on the River foreshore containing four picnic tables. Two other picnic tables are also located at the western end of the eastern portion of Yurunga Drive (Illustration 2.3).

The Grotto is characterised by a scenic escarpment and significant stands of vegetation, both on the escarpment and along the river foreshore area. A number of lookouts are located at the top of the escarpment, providing vantage points for highly scenic views across the Shoalhaven River. The Grotto also contains a number of walking tracks, along the top of the escarpment, down into the foreshore area below the escarpment and through the foreshore area.

Greys Beach has the potential to be upgraded to become an icon park within the Shoalhaven. Improvements and additions to the facilities currently available at Greys Beach will provide the North Nowra community with improved recreation facilities. Such an area in North Nowra will also improve the range of recreational facilities available to the wider Shoalhaven population and tourists.

2.3 Opportunities and Constraints

A site analysis has been undertaken for both the Greys Beach and The Grotto sites in order to identify existing opportunities and constraints. These analyses are presented in Illustrations 2.4 and 2.5. The opportunities and constraints of the reserve areas are summarised below:

Greys Beach

Opportunities

- River based recreation
- Ease of access to water
- Passive shore based recreation
- Festival space
- Visual quality
- Location close to population base
- Relatively flat terrain allows parts of the site to be fully accessible

Constraints

- Narrow steep access road and difficult pedestrian access
- Presence of, and access to, Nowra Golf Course
- Flooding
- Riverbank erosion

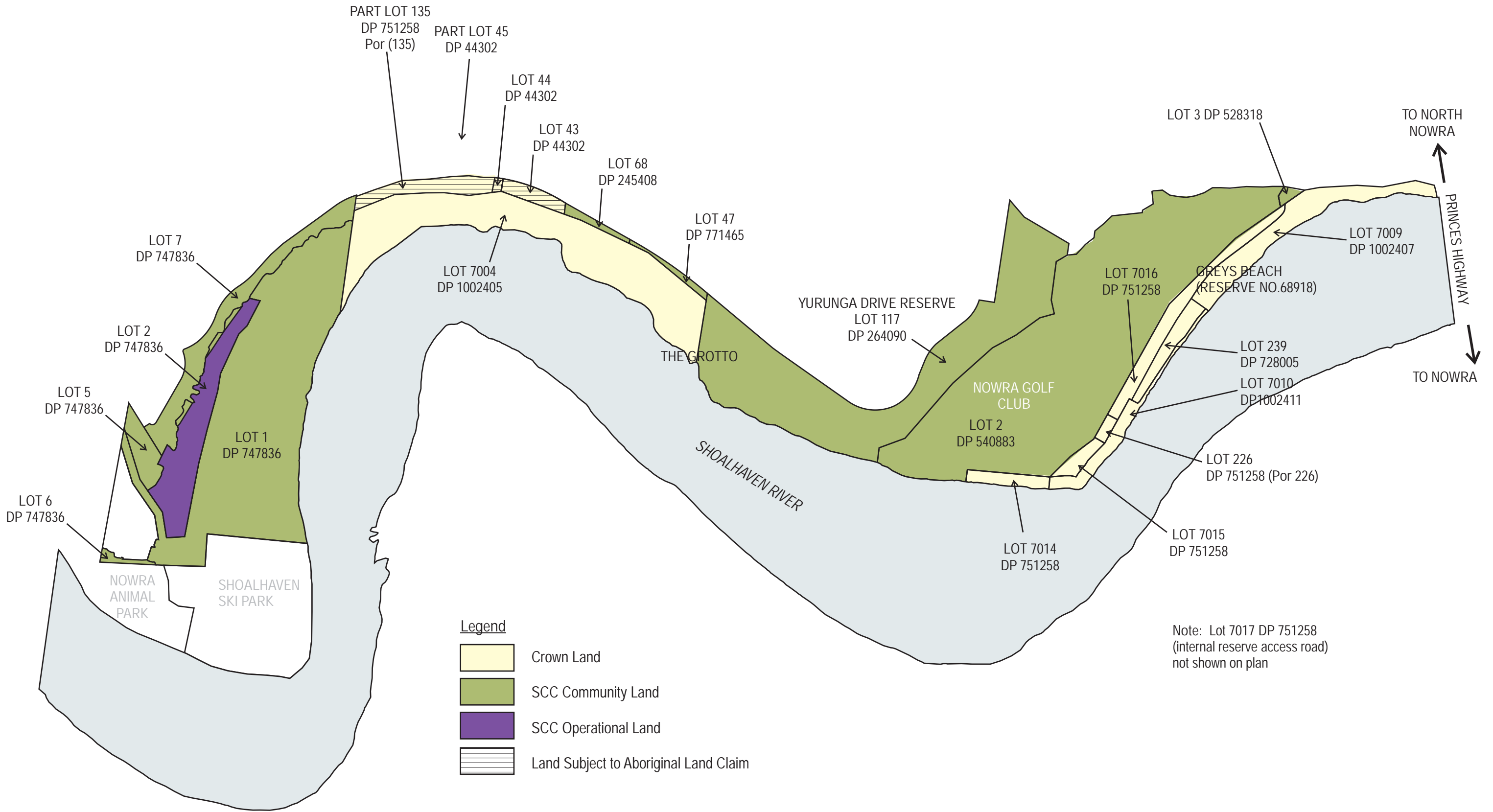
The Grotto

Opportunities

- Scenic lookouts
- Natural state
- Bushland
- Proximity of natural systems so close to urban areas
- Unusual natural features (e.g. caves)
- Variety of natural attributes provide educational opportunities
- Rich cultural (European and Indigenous) provides educational opportunities

Constraints

- Very steep escarpment
- Limited access to, and through, the area
- Flooding
- High portion of weeds in the understorey





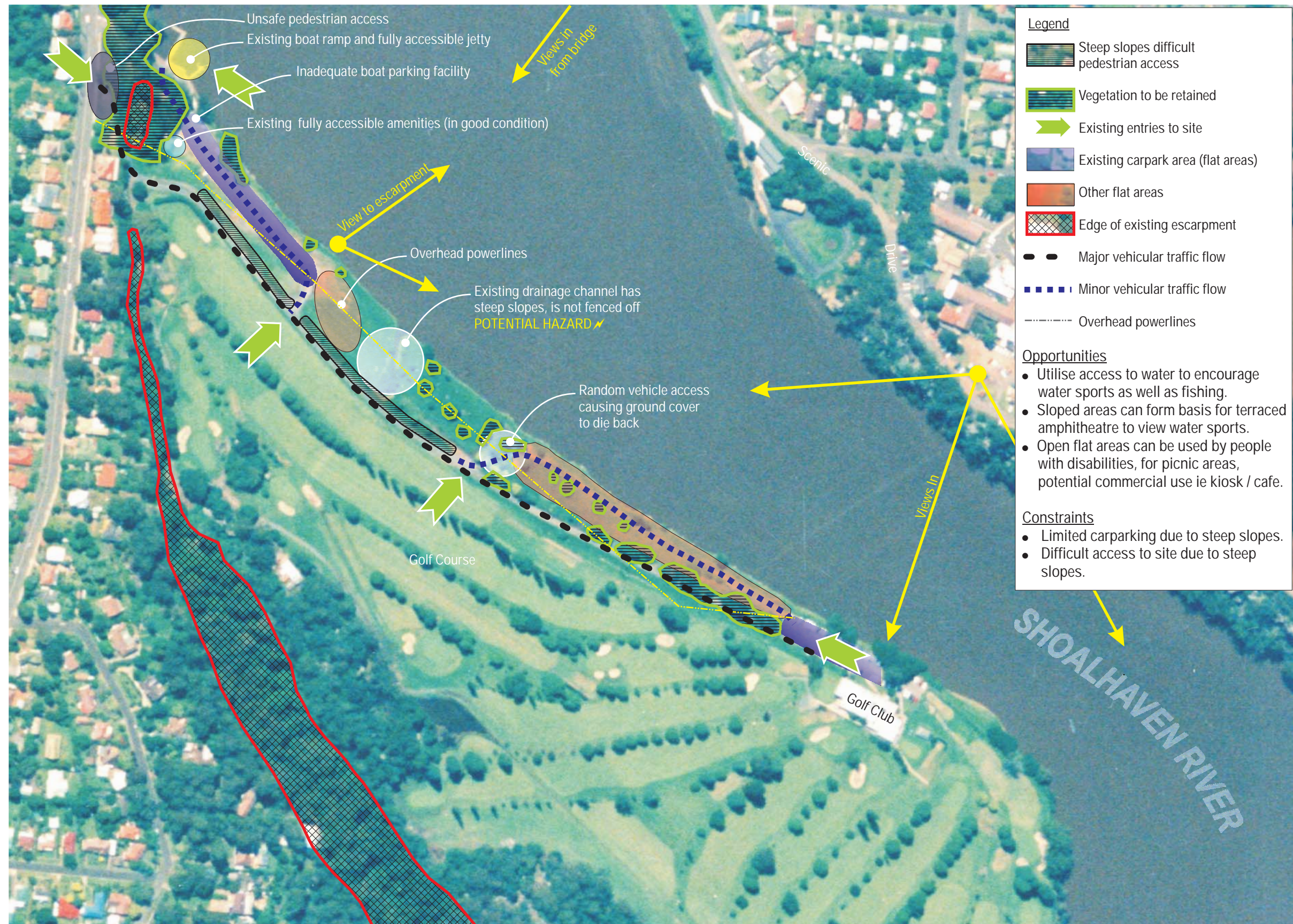
Legend

- ① Boat ramp
- ② Jetty
- ③ Fully accessible pontoon
- ④ Amenities
- ⑤ Fishing table
- ⑥ Picnic tables (total of 6)
- ⑦ Car park
- ⑧ Spotted Gum-Blackbutt Forest
- ⑨ Fairway Drive
- ⑩ Drain

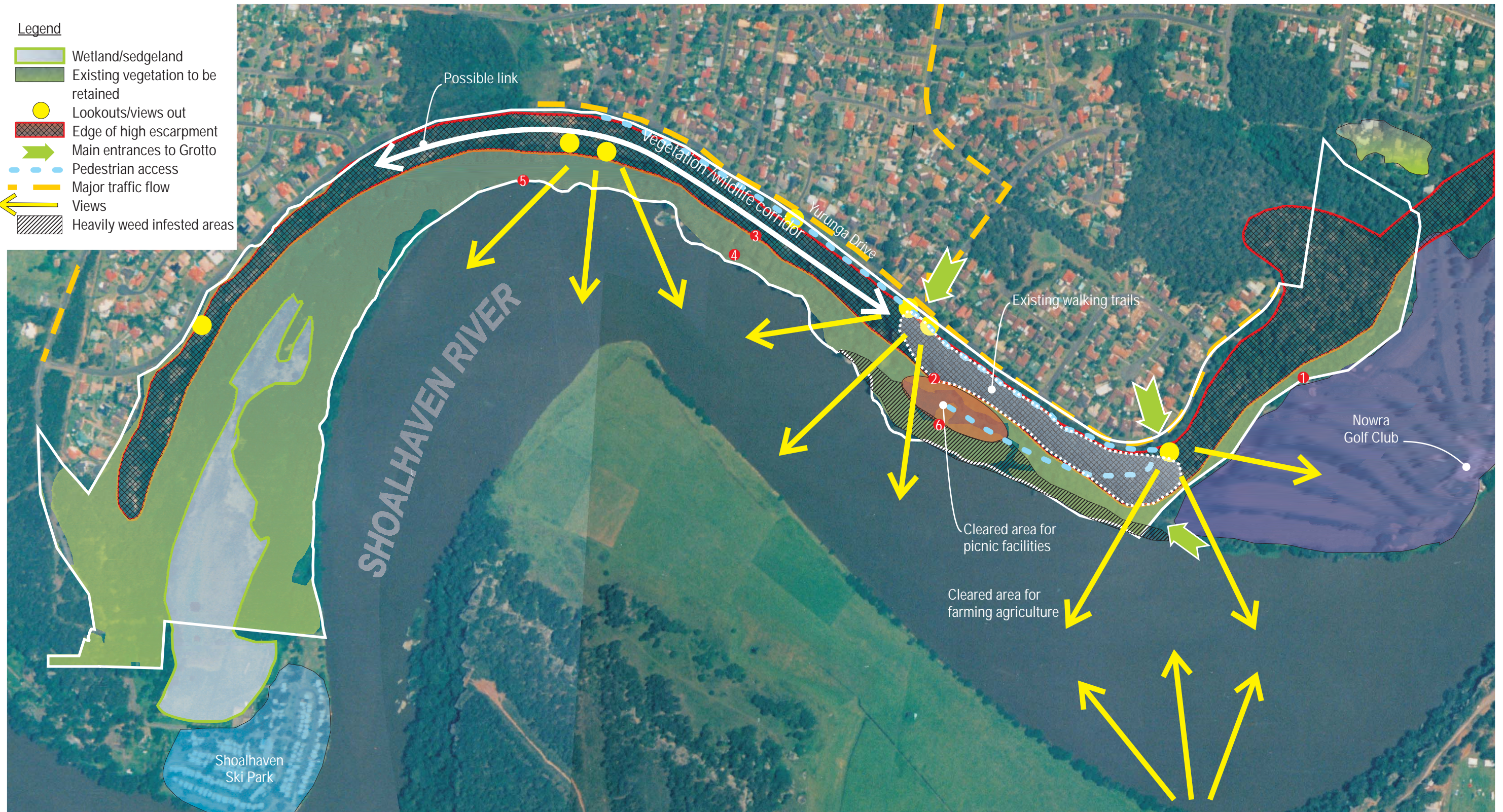


Note: The Grotto is characterised by a high escarpment area (generally running along the urban boundary of the site) with a foreshore area along the river





- Legend**
- Wetland/sedgeland
 - Existing vegetation to be retained
 - Lookouts/views out
 - Edge of high escarpment
 - Main entrances to Grotto
 - Pedestrian access
 - Major traffic flow
 - Views
 - Heavily weed infested areas



Source: GeoLINK
Date: January 2004
00275047

- Key**
- ① Escarpment cave site used by local Aboriginal
 - ② Cave Site
 - ③ Cave workshop used by European residents of homestead
 - ④ Homestead and water tank ruin
 - ⑤ Wharf site
 - ⑥ Market garden remnant

- Opportunities**
- Opportunity to upgrade facilities.
 - Education opportunities with heritage features/heritage trail.
 - Link each end of Yurunga Drive.

- Constraints**
- Access is difficult near Golf Club due to steep slopes.
 - Site is bordered by escarpment.

Basis for Management

3.1 Consultation

This Plan of Management was prepared based on a community consultation program designed to identify the community's long term visions and aspirations for the site and determine the issues of importance to the community relevant to the reserve areas. Community visions, aspirations and issues were identified through two community workshops. The first workshop, held on 13 March 2002, was designed primarily to determine the community's visions and aspirations for the site along with the identification of significant issues that needed to be addressed. The second workshop, held on 12 December 2002, involved the presentation of the draft Plan of Management and Landscape Master Plan for preliminary community comment to ensure that all issues were appropriately addressed and that the community's vision for the site was reflected in the management actions of the Plan and the associated Landscape Master Plan.

The consultation program also involved discussions and workshop activities with representatives from State Government agencies and Shoalhaven City Council, along with submissions from the broader community.

The issues raised during the consultation program, along with other matters relevant to the development of the Plan of Management, are discussed below, with associated management actions detailed in Section 5.

3.2 Values

From the consultation undertaken, it is apparent that Greys Beach and The Grotto have a number of important values for the community. These relate to their principle functions as a recreational area and natural area respectively. The values of the reserves identified through community consultation are:

Recreation

Greys Beach and The Grotto provide numerous opportunities for a range of active and passive recreation pursuits for locals and tourists. They serve a wide range of water, bushland and park related activities including, fishing, boating and water skiing, picnicking, walking, art and site seeing. The recreational values of Greys Beach and The Grotto are significant to the Shoalhaven and are highly valued by the community.

Social and Economic

The scenic and aesthetic qualities of Greys Beach and The Grotto are significant as they provide opportunities to relax from urban pressures within a short distance of the Nowra and North Nowra town centres. The use of Greys Beach and The Grotto for social gatherings and recreation contributes to the identity and well being of the community. The community values the natural beauty of the reserve and such areas are a major tourism resource, contributing to the local economy. Given the social value of the natural areas within Greys Beach and The Grotto, it is important that they are conserved.

Natural and Conservation

Greys Beach and The Grotto are significant in that they contain escarpment and foreshore environments within close proximity. The Grotto contains a range of significant vegetation, providing habitat for a wide variety of fauna. The reserve area is particularly valuable as it assists in the maintenance of biodiversity and in the conservation of the often unique flora and fauna associated with escarpment and foreshore areas.

Cultural Heritage

Greys Beach and The Grotto have significance to both the local Aboriginal and European communities as both Aboriginal and European people are known to have used the area. In particular, Europeans utilised the reserves for farming and recreational activities, with items of European cultural heritage located in The Grotto. The maintenance of Aboriginal and European heritage values of the site is important to the identity of the reserve area and the community.

Scenic

The environment in and around Greys Beach and The Grotto is characterised by the interface between the Shoalhaven River, rock escarpments and forested foreshore areas which combine to create particularly high scenic values in the reserve area.

Educational and Scientific

The natural areas within Greys Beach and The Grotto provide opportunities for education and scientific research. The area provides an opportunity to gain a further understanding of the mixed escarpment and foreshore environment and such opportunities should be maximised and made available to current and future generations.

3.3 Community Vision and Aspirations

The preparation of this Plan of Management has been driven by the visions and aspirations of the local community. Based on the community consultation undertaken in preparing this Plan, the community's aspiration for the site is:

To continue to use Greys Beach and The Grotto as multi-functional recreation areas (with a focus on the river) and to ensure that these areas are suitable for use by the entire community. More specifically, the community desires improved access, improved maintenance, improved recreational facilities and retention of the natural qualities of the area.

These community aspirations form the basis of the Plan of Management.

3.4 Permissible Uses

The Greys Beach and The Grotto reserve is to be improved and/or used for:

- general community recreation, both active and passive;
- regional festival activities;
- low intensity commercial activities consistent with the Plan of Management;
- activities and works associated with the installation or maintenance of public utilities; and
- other uses approved by Council and consistent with the Plan of Management.

The above permissible uses are described in more detail in the Management Framework and Action Plan.

3.5 Management Areas

Greys Beach and The Grotto are generally treated as a single entity for the purposes of this Plan. However, in addition to a range of management actions common to both areas, a range of specific management actions for each area have also been developed given that Greys Beach is intended as an icon park and will function as the primary recreation area in the reserve system, with The Grotto being maintained as a natural area.

3.6 Legislative and Policy Framework

Given that the Greys Beach and The Grotto reserves consist of both Community Land and Crown Land, both the *Local Government Act 1993* and the *Crown Lands Act 1989* apply to the preparation of this Plan.

The *Local Government Act 1993* is the principle legislation that applies to the management and use of Council owned land. Council land that is classified as 'Community Land' (i.e. for community use) must have a Plan of Management, which must categorise land as either a natural area, a sportsground, a park, an area of cultural significance, or an area of general community use. Further, it must identify the category of land, objectives and performance targets for the land, the means proposed to achieve identified

objectives and methods to assess performance in implementing the Plan's objectives. The requirements of the *Local Government Act 1993* are set out in Table 3.1 below.

Table 3.1 Requirements of the Local Government Act with Respect to the Management of Community Lands

Local Government Act Requirement for Plans of Management	Section of this Plan where the matter is addressed
<i>Categorise the Land</i>	2.2 & 3.6
<i>Contain Objectives for the Management of the Land</i>	4 and 5
<i>Contain Performance Targets</i>	5
<i>Specify the Means of Achieving the Objectives and Performance Targets</i>	5
<i>Specify How Achievement of the Objectives and Performance Targets is to be Assessed</i>	5
<i>Describe the Condition of the Land as at the Adoption of the Plan</i>	2.2
<i>Describe the Buildings on the Land as at Adoption</i>	2.2
<i>Describe the Use of the Buildings and the Land as at Adoption</i>	2.2
<i>State the Purposes for Which the Land will be Allowed to be Used, and the Scale and Intensity of that Use</i>	3.4 & 5

As detailed in Section 2.1, the reserve contains Community Land categorised as Natural Areas and General Community Use. It also contains Crown Land and land classed as "Operational Land" for the purpose of the *Local Government Act*.

The core objectives for the management of the community land under the *Local Government Act 1993* are contained in Table 3.2 below. These objectives overarch all management actions contained within this Plan that relate to lands categorised as Natural Areas or General Community Use areas.

Table 3.2 Local Government Act Objectives for Natural Areas and General Community Use areas

Category	Objectives
Natural Area	<p><i>(a) to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and</i></p> <p><i>(b) to maintain the land, or that feature or habitat, in its natural state and setting, and</i></p> <p><i>(c) to provide for the restoration and regeneration of the land, and</i></p> <p><i>(d) to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and</i></p>
Natural Area (cont)	<p><i>(e) to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.</i></p>
General Community Use	<p><i>(a) in relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public, and</i></p> <p><i>(b) in relation to purposes for which a lease, license 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).</i></p>

The *Crown Lands Act 1989* applies to Crown Land. The Act is not prescriptive about the content of a Plan of Management, but details when a plan is required and how it should be adopted.

This Plan of Management has been prepared in accordance with the requirements of the *Local Government Act 1993* and the *Crown Lands Act 1989*.

Other legislation and policy which must be considered include the:

- Environmental Planning and Assessment Act 1979;
- Protection of Environment Operations Act 1997;
- State Environmental Planning Policy No. 71 – Coastal Protection;
- Commonwealth Native Title Act 1993;
- The Fisheries Management Act 1994;
- Native Vegetation Conservation Act 1997;
- Threatened Species Conservation Act 1995;
- Rural Fires Act 1997;
- Water Management Act 2000;

- Environment Protection and Biodiversity Conservation Act 1999;
- NSW Rivers and Estuary Policy;
- River and Foreshores Improvement Act 1948;
- Crown Reserves Food & Beverage Policy;
- Shoalhaven Local Environment Plan 1985;
- Shoalhaven City Council Development Control Plans; and
- Shoalhaven City Council Recreation Strategy (1999).

A description of these, and other relevant legislation and policy, is provided in Appendix D

Council's generic plans of management for community land were also used as a guide during plan development.

Management Framework

4.1 Preamble

As outlined in Section 3.1, the community was consulted in the development of the Plan of Management. Based on discussions and workshop activities held with members of the community, State Government authorities, Shoalhaven City Council staff and other key interest groups and submissions from the broader community, the following management issues (summarised in no particular order) and goals were identified:

Table 4.1 Management Issues and Goals

Issue	Goal
Traffic and Access	<i>To improve access to and between Greys Beach and The Grotto for both pedestrians and vehicles</i>
Weed Infestation	<i>To reduce weed infestation throughout the reserve area</i>
Recreation Facilities	<i>To establish Greys Beach as an Icon Park for the Shoalhaven Region To maintain the Grotto as a high quality recreation area</i>
Maintenance	<i>To ensure that the reserve area is kept in a condition suitable for use by the community</i>
Flooding	<i>To ensure that infrastructure can withstand or be replaced at minimal cost when flooded, and that evacuation routes are unobstructed</i>
Flora and Fauna	<i>To conserve and enhance the flora and fauna attributes of the area</i>
Erosion	<i>To reduce erosion throughout the reserve area</i>
Safety	<i>To provide a safe environment for reserve visitors and users.</i>
Festival Activities	<i>To provide facilities at Greys Beach for city wide festival activities</i>
Heritage	<i>To highlight the European and Aboriginal history of the reserve area</i>
Commercial Use Opportunities	<i>To allow commercial use opportunities at Greys Beach that is compatible with recreational user needs and increases user enjoyment of the reserve</i>
Tourism	<i>To establish Greys Beach and The Grotto as a recognised and highly utilised tourist destination</i>

Please note the management goals have been developed with regard to protecting the values of the reserve identified in Section 3.2.

4.2 Traffic and Access

Future control over traffic and access is a major issue relating to the management of Greys Beach and The Grotto as it involves a number of sub issues including pedestrian access, vehicle access, car and boat trailer parking, and access for persons with disabilities.

With regard to Greys Beach, access to the site is currently only available off Illaroo Road west of North Nowra Rotary Park, via Fairway Drive that runs through a cutting in the escarpment and into Greys Beach. The internal reserve road runs the length of Greys Beach and provides access to the boat ramp, picnic areas and Nowra Golf Club. The access point to Greys Beach is of high significance as it services a range of vehicle types and provides access to Greys Beach for a range of uses. No formal pedestrian or bicycle access is provided to the reserve.

A sealed car parking area is located at the eastern end of Greys Beach near the boat ramp. However, there are no areas delineated specifically for boat trailer parking and there are no marked car parking facilities provided in the reserve. Those using the southern end of Greys Beach are able to park virtually unrestricted on grassed areas via a network of informal roads running throughout the foreshore.

Facilities for persons with disabilities are provided at Greys Beach in the form of a fully accessible amenities block and a fully accessible pontoon to facilitate access to the River. Access to the site for persons with disabilities is generally limited to cars or boats given the lack of formal pedestrian access to the site, and the steep nature of the escarpment.

The community and key interest groups identified the existing access point as being inadequate for vehicle and pedestrian access, citing safety as a concern in relation to the relatively narrow and steep access off Illaroo Road. Further, the community identified a lack of defined car and boat trailer parking spaces at Greys Beach as a significant management issue. Unlawful traffic activity such as speeding and overnight camping (i.e. caravans) was also identified as an important matter to consider within Greys Beach.

Traffic and access arrangements at Greys Beach may require further investigation following the completion of the Waterways Infrastructure Strategy and the Shoalhaven Waterways Users Study which are currently being undertaken by Council.

The Grotto is accessed primarily from several points off Yurunga Drive, but is also accessible via Rockhill Road. Walking tracks run across the top of the escarpment, linking lookout areas, with access to the foreshore area below the escarpment available via a small number of walking tracks that wind down the face of the escarpment. The foreshore area can only be accessed on foot, and the existing access tracks into the foreshore area are generally steep, meaning that the foreshore area of The Grotto is not easily accessible from the escarpment. An alternative access exists through the Nowra Golf Club on relatively flat ground and leads into the defined picnic area within The

Grotto. However, this access poses risks associated with parallel activity of golfers.

It is evident that the community requires improved access into this area. The provision of access between Greys Beach and The Grotto around, or through, the golf course would improve the link between these two areas and provide a means for highly improved and disabled access into The Grotto.

However, access via the Nowra Golf Club is problematic as an access trail would need to be protected from golf balls via fencing and a geotechnical assessment of the riverbank around the boundary of the golf course does not support the placement of a walking track along the foreshore. Alternatively, it may be possible to establish a link between Greys Beach and The Grotto along the bottom of the escarpment at the rear of the golf course. However, this option is also problematic due to the lack of available space between the playing areas of the golf course and the steep escarpment. This option would require additional investigation.

No formal parking areas currently exist at The Grotto, however, there are opportunities at the top of the escarpment near the formal entry points for formalised car parking.

4.3 Weed Infestation

Greys Beach and The Grotto have been subject to significant disturbance since European settlement in the Shoalhaven. Farming and recreational activities in the reserve have resulted in native vegetation clearing and the introduction of weed species into the area.

Several weed species are found at Greys Beach, including lantana along the riverbank and near the boat launching area. However, no significant areas of weed infestation are located within Greys Beach.

With regard to The Grotto, weed infestation is a significant management issue with many areas infested with a number of weed species. Major weed species identified in The Grotto include Lantana, Moth Vine, Morning Glory, Wandering Jew, Crofton Weed, Cobblers Pegs and Black Wattle. Weeds are found throughout The Grotto, with significant infestations evident in the vicinity of cleared areas (i.e. picnic area and near the Ski Park) and in areas of previous European activity (i.e. near the old jetty) (see Master Plan).

Local Bushcare groups currently undertake weed removal and vegetation planting in The Grotto. The Nowra Golf Club Bushcare Group is also active in the locality, undertaking vegetation restoration activities on the golf club's riverbank frontage.

The removal of weed infestations is particularly important in the reserve areas given their environmental qualities. Reducing weed infestation will facilitate the reestablishment of native species, improving fauna habitat, leading to the maintenance and improvement of the significant ecological values of the area.

Care should be taken when removing weeds from the riverbank so that the overall structural integrity of the bank is not compromised. Weed removal should occur in small sections and be replanted with appropriate native species. These replanted areas will require regular maintenance to aid their establishment prior to the removal of other small weed infested areas.

4.4 Recreation Facilities

As outlined in Section 1.6, Greys Beach and The Grotto contain facilities for a range of land and water based recreational activities. The open space and recreational qualities of the area are highly significant to the local community and for tourism.

A major objective of the Plan of Management is to establish Greys Beach as an icon park for the Shoalhaven (i.e. a major recreation area for the local community and for tourists). Given this, facilities should be provided to cater for a range of age groups. Playground equipment for children, walking/cycling tracks, facilities for active recreation, facilities for young adults and general picnicking facilities have been identified as requiring consideration in the future planning for the reserve area.

In particular, the community identified a lack of BBQ facilities at Greys Beach, and more so in The Grotto. The community also indicated concern in that there are no amenities such as toilets in The Grotto.

4.5 Maintenance

Greys Beach is currently maintained as a Category 2 reserve by Shoalhaven City Council. Category 1 and 2 parks are subject to the highest standards of maintenance employed by Council. Grassed areas are kept healthy, broadleaf weeds and bindii are controlled and the areas are regularly cleared of rubbish and mown (grass kept to 35-80 mm at Greys Beach).

The Grotto is maintained as a Category 4 reserve which only necessitates maintenance to the extent that fuel loads are kept at a safe level, noxious weeds are controlled and grass is maintained below 250 mm.

In addition to Council's maintenance activities, local Bushcare groups operate in the area, reducing weed infestation and establishing vegetation.

However, despite Council's current maintenance program in the reserve, the community was of the view that both Greys Beach and The Grotto are currently not maintained to an acceptable standard. The community indicated that Greys Beach is in need of more regular mowing and additional landscape works are required.

With respect to The Grotto, the community suggested that maintenance should be improved around the existing cleared areas of the site, with the remainder of The Grotto retained in its natural state which would include environmental improvement works aimed at controlling weed infestations.

4.6 Flooding

The areas of Greys Beach and The Grotto located below the escarpment are classified by Council as a high hazard floodway. The 1% flood level at Greys Beach ranges from 6.4 m AHD to 7.5 m AHD. Given this, it is important that facilities and infrastructure within the locality are able to withstand flooding events or be of a nature which makes them easy to replace at minimal cost.

In the event of specific flood warning for the area being issued, and the reserves are at risk of being flooded, all pedestrian and vehicle access to these reserves will be closed. Upon receiving this information all persons on these reserves will be evacuated by emergency services and the reserve closed until flooding subsides.

4.7 Flora and Fauna

Greys Beach is generally cleared of native vegetation apart from an area of Spotted Gum – Blackbutt Forest at its eastern extent in the vicinity of the boat ramp (Illustration 2.2). The riverbank is generally devoid of vegetation aside from grasses and weeds, whilst the foreshore area contains scattered trees, many of which are not endemic to the area. Therefore, Greys Beach has little habitat value for fauna species at present.

The Grotto, however, contains significant stands of Spotted Gum – Blackbutt Forest, Grey Gum – Stringybark Forest/Woodland, Fresh Juncus Rushland and Spike-rush Sedgeland (Illustration 2.3). Various rainforest species are also located within The Grotto. These vegetation stands cover the majority of The Grotto, with the area characterised by thick vegetation along the escarpment and foreshore, with a wetland area in the western portion of the reserve. In terms of fauna, The Grotto, being a relatively natural bushland area, provides significant habitat for a range of fauna, particularly given the rock, rainforest and foreshore environments contained within it. In particular, the escarpment area provides habitat for bat species, whilst the foreshore area is significant habitat for waterbirds.

The NPWS Wildlife Atlas indicates that the threatened species listed in Table 4.2 are known to occur in the general locality of the reserve area, although no threatened species have been recorded in the reserve area.

Table 4.2 Threatened Species in the Locality

Fauna	
Greater Broad-nose Bat (<i>Scoteanax rueppellii</i>)	Masked Owl (<i>Tyto novaehollandiae</i>)
Brush-tailed Rock-wallaby (<i>Petrogale penicillata</i>)	Powerful Owl (<i>Ninox strenua</i>)
Parma Wallaby (<i>Macropus parma</i>)	Glossy Black Cockatoo (<i>Calyptorhynchus latham</i>)
Long-nosed Potoroo (<i>Potorous tridactylus</i>)	Hooded Plover (<i>Thinornis rubricollis</i>)
Yellow-bellied Glider (<i>Petaurus australis</i>)	Bush Stone-curlew (<i>Burhinus grallarius</i>)
Koala (<i>Phascolarctos cinereus</i>)	Square-tailed Kite (<i>Lophoictinia isura</i>)
Spotted-tailed Quoll (<i>Dasyurus maculatus</i>)	Black Bittern (<i>Ixobrychus flavicollis</i>)
Pink Robin (<i>Petroica rodinogaster</i>)	Australasian Bittern (<i>Botaurus poiciloptilus</i>)
Regent Honeyeater (<i>Xanthomyza phrygia</i>)	Freckled Duck (<i>Stictonetta naevosa</i>)
	Giant Burrowing Frog (<i>Heleioporus australiacus</i>)
Flora	
Bomaderry Zieria (<i>Zieria baeverlaii</i>)	Leafless Tongue-orchid (<i>Crypto stylis hunteriana</i>)
Nowra Heath-myrtle (<i>Triplarina nowraensis</i>)	Eucalyptus langleyi (<i>Nowra malee</i>)

Several Rare or Threatened Australian Plants (ROTAP) species have also been recorded in the locality and include *Acacia subtilinervis*, *Genoplesium baueri*, *Leptospermum epacridoideum*, *Grevillea macleyana*, *Leptospermum sejunctum* and *Rulingia hermanniifolia*.

The significance of the ecological values of the site in environmental and social terms has been reinforced by the community who identified the retention of flora and fauna in the locality as being of importance. Further, the community indicated that they value the natural and peaceful characteristics of the reserve area. Given the social and ecological values associated with flora and fauna on the site, vegetated areas along with other environments suitable for fauna habitat (e.g. escarpment) should be conserved. Such areas are not considered suitable for intensive landscape changes and should be maintained in their natural state.

4.8 Erosion

It is evident that both riverbank erosion and erosion of walking tracks is occurring in the reserve area. With regard to riverbank erosion, a geotechnical report relating to the reserve foreshore found that the riverbank is subject to erosion which undermines the stability of the bank.

In terms of existing walking tracks at The Grotto, stormwater flows combined with the steep nature of the trails provides an ideal environment for erosion to occur. As a result, some walkways are becoming degraded. Therefore, the erosion of walking tracks down the escarpment at The Grotto is an issue requiring an ongoing management commitment.

4.9 Safety

The issue of safety relates to a number of matters including the risk of falls and injury, vandalism, fire hazards, water hazards, traffic and golf ball hazards. Safety issues with regard to falls and injury relate mainly to The Grotto where a number of lookouts and tracks are located on the escarpment. Lookout areas are currently fenced and signage is located in the area to alert site users of dangers. The walking tracks from the top of the escarpment to The Grotto are also areas of safety risk as they are generally steep. As with tracks at the top of the escarpment, signage is provided to alert users of risks.

Consolidation of the existing safety and directional signage system would be appropriate to reduce risk. This approach is supported by Council's April 2001 report on walking tracks at The Grotto.

The vandalism of facilities at Greys Beach has been cited as an ongoing problem. Strategies to reduce the appeal of Greys Beach to vandals may be useful in reducing negative activities in the area.

In terms of lighting, the community indicated that the reserve area is not well lit at night. Increased night lighting may improve the appeal of the area and reduce vandalism.

Fire hazards are also present in the reserve area. In particular, The Grotto is subject to fire hazard given the vegetation present. Bushfire risks should be minimised through maintenance activities so as to not expose reserve users to avoidable fire hazard.

Water hazards include the boat ramp and drain areas at Greys Beach along with the river foreshore. Signage encouraging water safety should be erected and the drain area at Greys Beach could be filled to reduce water hazards in the reserve.

For traffic, Greys Beach is a shared zone between vehicles and pedestrians. Strategies need to be implemented to protect pedestrians from vehicles and ensure that vehicle usage is not unnecessarily impeded by pedestrian activity. A balance between vehicle and pedestrian uses must be identified.

The proximity of the Nowra Golf Course to Greys Beach also presents a safety issue requiring consideration. The close proximity of open golf fairway areas to Greys Beach may result in golf balls being hit into public recreational lands. This may result in personal injury or damage to property (e.g. vehicles) for people using the reserve. Council and the Nowra Golf Club should work together to develop a risk management strategy and mitigation measures such as fencing and/or vegetation screening to address this matter.

4.10 Festival activities

Accommodating festival activities in the Greys Beach area has been highlighted as a significant issue for the reserve. Greys Beach provides a unique gateway to the Shoalhaven River and provides for the launching of watercraft to facilitate a range of water sports. Greys Beach also provides a serviced viewing area for the public to engage in festival activities. Management strategies need to be developed to ensure the ongoing use of the site for festival activities. Such activities may also improve the areas status as an icon park.

Given the traffic and access constraints of Greys Beach the reserve has a limited carrying capacity to host large activities and events. Dependent on the proposed festival, appropriate arrangements would need to consider and manage issues such as river access for boating, parking and access to the golf course. Festival applications for Greys Beach should be assessed on a case by case basis to ensure that arrangements can meet the above issues.

The Grotto is less suitable for festival uses and viewing given that it is relatively heavily vegetated. Therefore, it would be more appropriate to concentrate festival activities in the Greys Beach area, leaving The Grotto to function primarily as a natural area for walking or passive recreation activities.

4.11 Heritage

Greys Beach and The Grotto are known to have Aboriginal and European cultural heritage values. Greys Beach was farmed between the early 1900s and 1953 when the land was purchased for the Nowra Golf Club and recreational purposes. Boat building also occurred in the early 1900s. Greys Beach functioned as a popular camping area through the 1900s, with Council developing the Riverbank Caravan Park on the site in 1956. The camping and caravan park areas were removed in the 1990s following flooding of the site. No remnants of previous farming, recreational or boat building activities are visible within Greys Beach.

The Grotto was also farmed during the 1900s with the remnants of market gardens and an orchard still visible on the site. The caves in the escarpment were also significant to early European settlers as they provided shelter for those living on the farm in times of flood. An old wharf was also located within The Grotto and may have facilitated the removal of cedar from the area.

Aboriginal communities are also known to have utilised the area in the past. The NPWS's Aboriginal Sites Register indicates that two artefacts have been found at Greys Beach, with two artefacts and artwork identified in The Grotto. In more recent history, an Aboriginal man is known to have lived in the caves at the base of the escarpment in the reserve area. In addition, the area between the divided portions of Yurunga Drive is currently the subject of Aboriginal Land Claims. Therefore, management actions within The Grotto should be sensitive to the interests of the local Aboriginal community.

The introduction of the Commonwealth Native Title legislation in 1993 recognised the existence of native title and made provision for Aborigines and Torres Strait Islanders to lodge claims over Crown land. The legislation also sets out the requirements for the Crown and appointed Crown reserve trusts in dealing with Crown land in the future unless it can be clearly established that any native title rights and interests that may have existed have been extinguished.

Native title may have been extinguished over parts or the whole of this Crown reserve by the construction of authorised public works or by lawful use of the land that is wholly inconsistent with the continuation of native title rights and interests. It is the responsibility of the Trust to ensure that, prior to any works being undertaken in accordance with the Plan of Management, the issue of native title is addressed.

The Greys Beach and The Grotto reserves are not currently the subject of a Native Title Claim.

European and Aboriginal cultural relics should be preserved as part of the management of the reserve area, with both the European and Aboriginal history associated with the site providing an opportunity to educate the community through signage and provide a cultural theme for the area.

4.12 Commercial Use Opportunities

There are currently no commercial facilities available to users of Greys Beach and The Grotto aside from the Nowra Golf Club. Site users must leave the reserve area in order to access commercial facilities in North Nowra.

Given the unique environment of the reserve area provided by the escarpment and the Shoalhaven River, opportunity exists to combine recreational activities with commercial uses which are consistent with the nature and character of the area. Such commercial enterprise may be beneficial to the management of Greys Beach in that operators may be able to assist in the maintenance of portions of the site.

Any commercial facility must be consistent with the reservation of public recreation, provide a service to the users of the reserve and be mobile. The mobile requirement will enable a facility to be removed off the site when not required or when specific flood warnings for the area are issued.

Potential commercial use opportunities may include a temporary (drive on/drive off) kiosk/café facility or other activities such as boating, sale of bait, tackle, etc. To facilitate such a service a hardstand area with road access is required.

Subject to further investigations, a proposed commercial use such as a temporary kiosk/café facility would seat up to twenty people and provide takeaway food, drinks, etc for the enjoyment of users of the reserve. It is not intended that the facility will be the main attractor to the reserve but remain

incidental, and the reserve will remain the main focus in line with the Crown reserve Food and Beverage policy.

Any proposed commercial use of Greys Beach (Crown reserve) would require approval of the Minister administering the Crown Lands Act and the relevant Council approvals and permits.

Given that The Grotto is largely a natural area and that the community has indicated a desire to retain the ecological qualities of the site, pursuit of commercial activities within the reserve area should be restricted to Greys Beach only.

4.13 Tourism

The Shoalhaven experiences high volumes of tourists annually. Tourists visit the region for its natural qualities and recreational opportunities. As a result, the reserve area has significant potential to be an integral component of the natural and recreational tourism network within the Shoalhaven Local Government Area. In particular, Greys Beach has the potential to be a major land and water based recreational facility for the Shoalhaven region and The Grotto has potential to accommodate tourists wishing to experience the natural qualities and scenic values of the locality.

The significance of tourism to the local community and the Shoalhaven region is an important consideration in planning for Greys Beach and The Grotto.

5

Action Plan

This section of the plan sets out management objectives, actions, targets, indicators, cost and responsibilities with regard to each issue. Each goal in this plan is aimed at protecting the community values previously identified in this Plan of Management (Section 3 – Basis for Management)

The Action Strategy is framed to incorporate requirements of the *Local Government Act 1993* (i.e. objectives, performance targets, means of achievement and assessment criteria), and the *Crown Lands Act 1989* and more detailed information about how the strategy will be implemented. Components of the Action Strategy are defined as follows:

COMPONENT	DEFINITION
Issue	<i>Defines the primary issue. For each issue a generic goal is identified</i>
Management Objective*	<i>Intended to expand upon the generic goal by relating to management issues specifically identified for the land</i>
Performance Target*	<i>Quantitative Targets that are set to achieve Management Objectives</i>
Means of Achievement*	<i>More detailed steps needed to meet the Performance Target</i>
Performance Indicator*	<i>Quantifiable measure that may be used to assess the extent to which a Performance Target has been met</i>
Priority	<i>Each Management Action is provided with a timeframe to demonstrate priority. (High – complete within 1-2 years, Medium – complete within 2 to 5 years, Low – complete in 5 years or more as resources become available)</i>
Cost	<i>A broad estimate for planning purposes, subject to detailed design. (Very Low (LL) < \$20,000, Low (L) \$20,000 - \$50,000), Medium (M) \$50,000 to \$100,000, High (H) \$100,000 to \$250,000, Very High (HH) > \$250,000)</i>

** These components are required by Local Government Act 1993*

Table 5.1 Traffic and Access Management					
Goal: To improve access to and between Greys Beach and The Grotto					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach</i>					
Improve pedestrian safety for access to Greys Beach from Illaroo Road.	Separation between cars and pedestrians on the access road.	Investigate options presented in Appendix A for improved shared access to and from Greys Beach.	Detailed investigations with respect to the provision of a defined pedestrian/cycleway way into Greys Beach.	Medium	L
Improve safety for pedestrian movements within Greys Beach.	Established pedestrian crossing points across vehicle circulation areas.	Implement pedestrian crossing points as shown on the Master Plan.	Provision of defined pedestrian crossing points.	Medium	LL
Rationalise internal roadways.	Provide clearly identifiable roadways within the area based on existing alignments.	Implement the vehicle circulation and car parking layout shown in the Master Plan, providing a defined vehicle circulation system, with holding bays for boating traffic.	Clear separation between roads and grassed recreation areas. Provision of signed roadways and marked temporary parking bays for vehicles and boats trailers. Defined car parking areas for those using Greys Beach and those using the Nowra Golf Club.	High	H
Rationalise car and boat trailer parking.	Formalised car parking areas within Greys Beach for cars and boat trailers.	Implement the vehicle circulation and car parking layout shown in the Master Plan, providing for increased and defined car, boat and disabled parking.	Marked parking bays delineating those available for boat trailers and those available for vehicles. Provision of defined disabled access car parking bays near the existing amenities block and recreational areas.	High	H

Table 5.1 Traffic and Access Management

Goal: To improve access to and between Greys Beach and The Grotto					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Provide access between Greys Beach and The Grotto.	Define a link between Greys Beach and The Grotto.	Consider the broad options shown on the Master Plan for an accessway between the reserves. Continue discussion with the Nowra Golf Club to discuss management arrangements that could facilitate a defined accessway between the reserves.	Detailed investigations with respect to the provision of a pedestrian walkway between Greys Beach and The Grotto	Medium	L
Reduce traffic speed.	Establish a vehicle speed limit of 40 km/h. Establish Greys Beach as a shared vehicle and pedestrian zone.	Implement signage and traffic calming systems in appropriate locations.	Erection of speed limit and shared access zone signs. Construction of traffic calming devices.	High	LL
Provide for improved disabled access into and within Greys Beach.	Greys Beach fully accessible to all members of the community.	Implement the car parking layout in accordance with the Master Plan. Provision of fully accessible pathway and timber deck facilities in accordance with the Master Plan. Investigate the provision of a fully accessible walk/cycleway into Greys Beach.	Provision of formal disabled car parking bays. Provision of a fully accessible pathway and timber deck areas. Detailed investigation into the provision of a fully accessible pedestrian/cycle pathway into Greys Beach from Illaroo Road.	Medium - High	M

Table 5.1 Traffic and Access Management					
Goal: To improve access to and between Greys Beach and The Grotto					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>The Grotto</i>					
Provide adequate car parking at the top of the escarpment.	Formalised car parking areas on Yurunga Drive.	Provide formal car parking spaces at the main entry points to The Grotto as shown on the Master Plan.	Marked car parking bays at significant entry points to walking tracks.	Low	LL
Improve access into The Grotto.	Formal and accessible walking trails.	Investigate provision of a walkway between Greys Beach and The Grotto (see Master Plan). Establish safe formal walking tracks and close informal dangerous tracks. Provide access for persons with disabilities to an existing viewing platform on the escarpment (see Master Plan).	Detailed investigations into the provision of a pedestrian walkway between Greys Beach and The Grotto. Establishment of formal walking tracks and a fully accessible viewing platform above the escarpment.	Medium	M

Table 5.2 Weed Management

Goal: To reduce weed infestation throughout the reserve area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach and The Grotto</i>					
Control weed species to assist regeneration of native flora species.	Reduce prevalence of weed species in the reserve area.	Implement the weed control plan contained in Appendix B.	Removal of weed species and regeneration of native vegetation.	Medium	L
Increase Bushcare activities within the area.	Reduce prevalence of weed species within the reserve area. Revegetate weed infested areas with native vegetation.	Encourage Bushcare groups to continue and expand activities in accordance with best practice landcare native vegetation regeneration actions. Cease the planting of non endemic species in regeneration areas.	Removal of weed species and regeneration of native vegetation.	Medium	LL

Table 5.3 Recreation Facilities Management

Goals:					
To establish Greys Beach as an Icon Park for the Shoalhaven Region					
To maintain The Grotto as a high quality natural recreational area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach</i>					
Develop a theme for Greys Beach based on natural site features	Establishment of infrastructure and facilities that reflect the natural and recreational qualities of the reserve.	Implementation of the themed elements of the Master Plan, including: <ul style="list-style-type: none"> ▪ River promenade ▪ River amphitheatre. Provision of information signage at the entrance to Greys Beach highlighting the natural, historical and recreational qualities of the site.	Completion of the riverside promenade and amphitheatre. Implementation of an information signage system.	High - Medium	H

Table 5.3 Recreation Facilities Management

Goals:					
To establish Greys Beach as an Icon Park for the Shoalhaven Region					
To maintain The Grotto as a high quality natural recreational area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Improve the level of facilities available at Greys Beach.	A range of facilities suitable for use by all age groups. Facilities that complement the natural and recreational values of the site. Development Greys Beach as a recreational destination. All recreation facilities to be sited at least two metres from the top of the riverbank.	Construction of: <ul style="list-style-type: none"> ▪ additional formalised car parking facilities ▪ a formal pedestrian/cycle way ▪ promenade ▪ an amphitheatre ▪ two additional timber deck fishing areas ▪ additional BBQs, seating and designated picnicking areas ▪ a children's playground ▪ fitness trail ▪ kiosk / café hardstand area. Implementation of the relevant components of the Master Plan for Greys Beach relating to improved facilities.	Construction and implementation of the facilities components of the Master Plan. All recreation facilities to be sited at least two metres from the top of the riverbank.	High	HH
Improve facilities available for children.	Children's playground and bicycle track.	Construct an integrated playground at Greys Beach as shown on the Master Plan.	Provision of a childrens playground and bicycle track.	High	L

Table 5.3 Recreation Facilities Management

Goals: To establish Greys Beach as an Icon Park for the Shoalhaven Region
To maintain The Grotto as a high quality natural recreational area

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Avoid conflict between different site uses.	Accommodate all appropriate recreational uses within the reserve area.	Implement the Master Plan which accommodates the range of recreational activities viable at Greys Beach, whilst providing for delineation between the various water and land based activities and passive and active recreation. Erect signage highlighting areas used for fishing and boating.	Establishment of precinct areas for particular recreational activities.	High	LL
Provide improved facilities for water based recreation.	Additional boat tie up points. Improved access to the boat ramp.	Provide timber fishing platforms and formal car parking and traffic circulation (including boat trailer holding bays) as shown in the Master Plan.	Provision of two additional timber deck fishing areas, including boat tie up points Marked car and boat parking bays and formalised traffic circulation arrangements.	High	H

Table 5.3 Recreation Facilities Management

Goals: To establish Greys Beach as an Icon Park for the Shoalhaven Region
To maintain The Grotto as a high quality natural recreational area

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Provide for improved disabled access into and within Greys Beach.	Greys Beach fully accessible to all members of the community.	Implement the car parking layout in accordance with the Master Plan. Provide formal pedestrian crossing points as shown in the Master Plan to provide access to the amenities building from other areas within the reserve. Construct fully accessible pathway and timber deck facilities in accordance with the Master Plan. Investigate the provision of a fully accessible accessway into Greys Beach (see Master Plan).	Provision of formal disabled car parking bays. Provision of a fully accessible pathway and timber deck areas. Detailed investigation into the provision of a fully accessible pedestrian/cycle pathway into Greys Beach from Illaroo Road.	Low – Medium	M

Table 5.3 Recreation Facilities Management					
Goals: To establish Greys Beach as an Icon Park for the Shoalhaven Region To maintain The Grotto as a high quality natural recreational area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>The Grotto</i>					
Improve the level of facilities available for recreational use within The Grotto without impacting on the natural values of the area.	A formalised picnic area.	Provide seating and gas fired BBQs in accordance with the Master Plan. Upgrade the existing picnic area as shown in the Master Plan.	Provision of new seating and gas fired BBQs. Provision of a formalised picnic area.	Low	M
Improve walking trails within The Grotto.	Formal walking trails, both on top of the escarpment and through the foreshore area of the reserve.	Formalise the walking trails shown on the Master Plan. Create destinations for walking track users to move between. Create a new walking trail through The Grotto connecting the eastern and western ends of the reserve. Cover formal trails with gravel (or similar).	Provision of formalised walking trails in The Grotto. Provision of signage to mark significant destinations along the walking trails.	Low	LL

Table 5.4 Maintenance Management

Goal: To ensure that the reserve area is kept in a condition suitable for use by the community

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Greys Beach					
Provide a high standard of maintenance at Greys Beach.	Maintain the environment and facilities at Greys Beach to facilitate continual recreational use of the site. Have Greys Beach recognised as a well maintained, clean, well serviced recreational area.	Maintenance of Greys Beach as a Category 1 reserve under Council's maintenance policy. Encourage Bushcare Groups to assist Council in the maintenance of the reserve.	Healthy grass, low levels of weed infestation (no bindii and less than 10% broadleaf weed growth), even surface, turf length between 35mm and 60 mm (maximum 50mm beyond hard edging), repair of bare patches, no use of herbicides around trees or posts, regular litter removal.	Medium	L (on a per annum basis)
Reduce bushfire hazards within the reserve.	Minimal bushfire risk in the vicinity of picnicking areas.	Ensure that recreational areas are consistently kept mown and that access tracks are kept clear of vegetation. Erect signs advising that the lighting of fires is not permitted.	Turf length between 35mm and 60 mm, litter and debris free environment.	High	LL (on a per annum basis)

Table 5.4 Maintenance Management

Goal: To ensure that the reserve area is kept in a condition suitable for use by the community

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>The Grotto</i>					
Provide a standard of maintenance in The Grotto that facilitates site access consistent with the natural character of the area.	Retain and enhance existing vegetated areas in the reserve. Retain the cleared area within The Grotto for passive recreational purposes.	Implement the weed management program detailed in Appendix B. Maintain the existing cleared area as a Category 3 reserve under Council's maintenance policy. Investigate opportunities for improved access for maintenance vehicles into The Grotto.	Healthy grass, less than 30% weed cover in grass cover, turf length between 50mm and 100mm (maximum 75 mm beyond hard edging), repair bare areas in excess on 1m ² , regular litter removal.	Medium	L (on a per annum basis)
Reduce bushfire hazard within the reserve.	Minimal bushfire risk around the existing picnic area. No open fires within The Grotto.	Maintain The Grotto as a Category 3 reserve. Regularly reduce fuel loads around the picnic area. Provide only gas fired or electric BBQs within the picnic area. Clear access tracks of vegetation and debris. Erect signs indicating that open fires are not permitted.	Turf length between 50mm and 100mm. Access tracks free of debris. Restrictions on open fires. Low fuel loads.	Medium	LL (on a per annum basis)

Table 5.5 Flooding Management

Goal: To ensure that infrastructure can withstand or be replaced at minimal cost when flooded, and that evacuation routes are unobstructed					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach and The Grotto</i>					
Provide facilities within the reserve area which are able to tolerate flooding.	Minimal asset losses within the reserve area due to flood impacts.	Provide facilities in accordance with those shown on the Master Plan. Flood tolerant materials and facilities to be utilised for all future site improvements.	Asset losses due to flood events and replacement costs.	High	L
Provide unobstructed flood evacuation routes.	Ensure that vehicle and pedestrian routes remain accessible to both reserves.	Should road or track maintenance be undertaken an unobstructed evacuation route will be provided (if the reserve remains open to the public).	In the event of a road or walking track undergoing maintenance, at least one unobstructed evacuation route will be signed to facilitate public access (if the reserve remains open to the public).	High	LL

Table 5.6 Flora and Fauna Management

Goal: To conserve and enhance the flora and fauna attributes of the area

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Greys Beach and The Grotto					
Retain and enhance native vegetation	Retention of all significant native vegetation in The Grotto. Retention or replacement of all significant native vegetation at Greys Beach. Increase in the area and diversity of native vegetation at Greys Beach. Reduction in the levels of weed infestation.	Undertake site improvements at The Grotto within existing cleared areas only. Replace native vegetation where it is necessary for it to be removed to facilitate site improvements at Greys Beach. Implement vegetation plantings at Greys Beach in accordance with the Master Plan. All landscape plantings to be endemic to the local area. Implement the weed management plan contained in Appendix B Provide signage to educate site users of the value of the native vegetation in the reserve area.	Area of native vegetation. Plantings of new native vegetation. Reduction in weed infestation. Provision of educational signage.	Medium	M

Table 5.6 Flora and Fauna Management

Goal: To conserve and enhance the flora and fauna attributes of the area

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Enhance habitat available for native fauna.	<p>Retain all significant native vegetation in The Grotto.</p> <p>Retain or replace all significant native vegetation at Greys Beach.</p> <p>Increase the area and range of native vegetation at Greys Beach.</p> <p>Reduce levels of weed infestation.</p>	<p>Implement the weed management plan contained in Appendix B to encourage regrowth of native flora.</p> <p>Implement vegetation plantings at Greys Beach in accordance with the Master Plan. All landscape plantings to be endemic to the local area.</p> <p>Provide formalised walking tracks through The Grotto and close and rehabilitate informal tracks.</p> <p>Formalise car parking areas at significant track entry points into The Grotto to direct users to these areas.</p>	<p>Area of native vegetation.</p> <p>Plantings of new native vegetation.</p> <p>Reduction in weed infestation.</p> <p>Closure and rehabilitation of informal walking tracks.</p>	Medium	M

Table 5.7 Erosion Management

Goal: To reduce erosion throughout the reserve area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach and The Grotto</i>					
Improve the stability of the riverbank.	Replace existing vegetation cover on the foreshore by 10% per annum.	Progressively remove and replace weed species on the riverbank with native plant species suitable for bank stabilisation in accordance with best practice foreshore restoration.	Area of Riverbank rehabilitated with native bank stabilising vegetation.	Medium	L
Minimise erosion of walking tracks caused by stormwater.	No further degradation of walking tracks.	Surface formal walking tracks with gravel (or similar) or boardwalks. Provide minor drainage channels parallel to walking tracks to collect and divert runoff. Close and rehabilitate informal walking tracks.	Reduction in degradation of walking tracks.	Medium	L
Minimise erosion of walking tracks caused by human activities.	No further degradation of walking tracks.	Designate formal walking tracks and surface with gravel overlay (or similar). Provide signage to direct users along designated tracks. Close informal walking tracks.	Reduction of degradation of walking tracks.	Medium	L

Table 5.8 Safety Management					
Goal: To provide a safe environment for reserve visitors and users					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach</i>					
Reduce vandalism.	Reduce asset destruction and degradation. Reduce unlawful vehicle activity.	Erect additional low level lighting at Greys Beach. Implement traffic calming devices to deter unlawful uses of the area. Erect signage encouraging people to report incidences of vandalism. Facilitate the development of a café on the foreshore. Encourage increased evening/night usage of the site to increase surveillance through the implementation of the Master Plan. Vegetation planting to allow for passive visual surveillance.	Reduction in the level of vandalism.	Medium	M

Table 5.8 Safety Management

Goal: To provide a safe environment for reserve visitors and users

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Provide a safe area for recreation activities.	<p>Increase the appeal of Greys Beach for day and night time recreational pursuits.</p> <p>Reduce the hazard presented to Greys Beach users by golf balls leaving the golf course area.</p> <p>Reduce drainage hazards to users of Greys Beach.</p>	<p>Erect additional low level lighting at Greys Beach, particularly along the foreshore promenade and between the existing amenities and the amphitheatre.</p> <p>Facilitate the development of a café on the foreshore.</p> <p>Provide landscape plantings that do not reduce casual surveillance opportunities.</p> <p>Provide a public phone.</p> <p>Investigate risk management options/ strategies including fencing and/or vegetation screening along the northern side of Fairway Drive to reduce the hazard associated with golf balls leaving the golf course area.</p> <p>Reduce drainage hazards by reclaiming the open drain that divides the reserve.</p>	<p>Increase in the level of lawful day and night usage.</p> <p>Provision of mitigation measures to reduce golf balls entering the Greys Beach reserve by the Nowra Golf Club and Council.</p> <p>Opened drain filled and the reserve land reclaimed.</p>	Medium	M

Table 5.8 Safety Management

Goal: To provide a safe environment for reserve visitors and users

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Provide for the safe movement of pedestrians within the site.	Establish movement systems in areas of conflicting uses (e.g., areas shared by vehicles and pedestrians, swimmers and boats).	Consider options presented in Appendix A for improved shared access to and from Greys Beach. Provide defined pedestrian walkways and road crossing points as shown on the Master Plan. Provide signage indicating that the area is a shared pedestrian and traffic zone. Provision of signage delineating boating and fishing areas.	Detailed investigations with respect to the provision of a defined pedestrian/cycleway way into Greys Beach. Provision of defined pedestrian crossing points and walkways. Provision of signage.	Medium	L

Table 5.8 Safety Management

Goal: To provide a safe environment for reserve visitors and users

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
The Grotto					
Provide for the safe movement of pedestrians within the site.	Improved standard of walking trail, accessway and lookout safety.	Provide formalised walking tracks treated for erosion. Close informal and dangerous walking tracks. Maintain fencing around lookout areas. Erect signage warning of safety dangers using international symbols (include signage at major entry points highlighting night dangers).	Improvements in safety levels of walking tracks. Continued maintenance of fenced lookout areas. Closure of informal and dangerous tracks. Erection of safety signage.	High	L
Reduce bushfire hazard.	Minimal bushfire hazard near picnic area No open fires within the reserve Maintain a property protection along Yurunga Drive in accordance with Shoalhaven District Bushfire Management Committee – Bush Fire Risk Management Plan.	Maintain The Grotto as a Category 3 reserve. Provide only gas fired BBQs within the picnic area. Clear access tracks of vegetation and debris. Erect signs indicating that open fires are not permitted. Investigate opportunities for improved access for maintenance/emergency services vehicles into The Grotto. Provide a clear firebreak of 1.5m from the road shoulder of Yurunga Drive.	Maintain turf length between 50mm and 100mm. Access tracks free of debris. Restrictions on open fire. Maintain a clear firebreak of 1.5m from the road shoulder of Yurunga Drive.	Medium - High	L (on a per annum basis)

Table 5.9 Festival Management

Goal: To provide facilities at Greys Beach for city wide festival activities

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach</i>					
Provide festival activities at Greys Beach.	Continued use of site for festival activities such as the Shoalhaven River Fest.	<p>Provide improved facilities in accordance with the Plan of Management to encourage increased recreational usage of the site.</p> <p>Provide a central gathering point for festival administration and displays.</p> <p>Promote Greys Beach as an Icon Park with supporting site facilities and landscaping.</p> <p>Provide limited parking and circulation in accordance with the Master Plan.</p> <p>Provide area along the riverbank for river viewing as shown on the Master Plan.</p> <p>Festival applications for Greys Beach should be assessed on a case by case basis to ensure that arrangements manage issues such as river access for boating, parking and access to the golf course.</p>	<p>Continued usage of the site for the Shoalhaven River Fest and similar events.</p> <p>Provision of car parking and recreation facilities in accordance with the Master Plan. Additional off site car parking should be supported.</p> <p>Implementation of a Traffic Management Plan.</p>	High	H

Table 5.10 Heritage Management

Goal: To highlight the European and Aboriginal history of the reserve area					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach and The Grotto</i>					
Protect areas of Aboriginal cultural significance.	Highlight areas of Aboriginal cultural significance where appropriate to the Local Aboriginal Community. Protect sensitive areas of Aboriginal cultural significance from degradation.	Ensure areas of Aboriginal cultural significance remain relatively undisturbed through measures acceptable to Council and the Local Aboriginal Land Council. Liaison between Shoalhaven City Council and the Local Aboriginal Land Council. Erection of signage along an interpretive trail to educate the community about the presence and significance of Aboriginal cultural sites, where deemed appropriate by the Local Aboriginal Land Council (see Master Plan).	Erection of educational signage. Conservation of sensitive Aboriginal sites.	Medium	LL
Protect areas of European heritage in the locality.	Establish a signage system highlighting the European history of the reserve area.	Erection of signage along an interpretive trail to educate the community about the presence and significance of European cultural history (see Master Plan).	Erection of educational signage.	Low	LL

Table 5.11 Commercial Use Opportunities Management

Goal: To allow commercial use opportunities at Greys Beach that is compatible with recreational user needs and increases user enjoyment of the reserve

Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
<i>Greys Beach</i>					
Provide commercial use opportunities at Greys Beach.	Establish commercial use opportunities at Greys Beach that are compatible with recreational user needs and increases user enjoyment of the reserve.	<p>Subject to further investigations encourage a temporary (drive on/drive off) kiosk/café facility with supporting hardstand area, road access and seating for up to twenty people.</p> <p>The temporary (drive on/drive off) kiosk/café facility to be sited near or on the site shown on the Landscape Master Plan.</p> <p>Encourage a commercial user to take on reserve management responsibilities in the vicinity of their premise. Responsibilities could include general maintenance, funding for festival activities and contribution towards the establishment of recreation facilities in return for operating at Greys Beach.</p>	<p>Operation of a temporary (drive on/drive off) kiosk/café facility consistent with the reservation which provides a service to the users of the reserve.</p> <p>A mobile facility which can be removed off the site when not used or when specific flood warnings for the area are issued.</p> <p>A facility that will meet the requirements of the Crown reserve Food and Beverage policy and the relevant Council approvals and permits.</p>	Low - Medium	LL

Table 5.12 Tourism Management

Goal: To establish Greys Beach and The Grotto as a recognised and highly utilised tourist destination					
Management Objectives	Performance Targets	Actions / Means of Achievement	Performance Indicators	Priority	Cost
Greys Beach					
Provide improved facilities for tourist use.	Increase tourist usage of the site.	Upgrade Greys Beach in accordance with the Master Plan to provide formal walking trails, improved picnic areas, formalised car and boat parking, an amphitheatre for events, a riverside promenade, a commercial enterprise, playground equipment, signage and other defined recreational spaces. Encourage festivals at Greys Beach. Erect signage on Highways and local roads to alert travellers to the recreational facilities available at Greys Beach and its location.	Level of tourist usage.	Medium	HH
The Grotto					
Establish The Grotto as a destination for tourists seeking interaction with the natural environment.	Increase tourist usage of the site.	Improve access to the site by formalising walking tracks. Formalise car parking at the main entry points to the area. Upgrade the existing picnic area as shown on the Master Plan. Erect signage to highlight the natural qualities of the area at the main entry points to The Grotto. Erect directional signage to guide tourists to The Grotto.	Level of tourist usage.	Low	M

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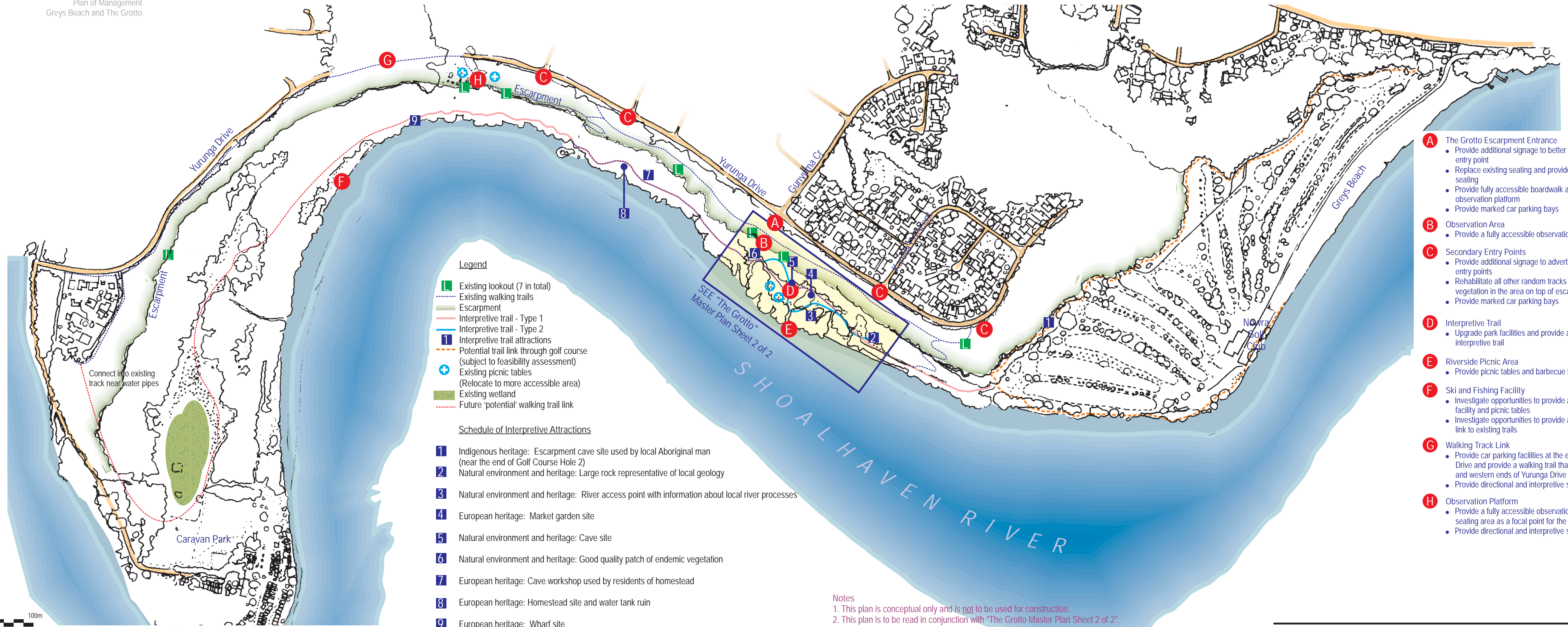
Landscape Master Plan

The Landscape Master Plan is designed to be consistent with the management actions outlined in Section 5 so that its implementation will lead to the achievement of the majority of management objectives. The Master Plan provides a visual and spatial representation of management actions to assist in their implementation. Improvements to the reserve in accordance with the Plan of Management will provide for improved access, facilities, site usage, safety and site recognition on a wide scale.

The Landscape Master Plan was developed based on the broad community vision for the site outlined in this report and on discussions held with Council staff. As such, the Master Plan seeks to improve the range of recreational facilities available within the reserve area to allow for continued and improved use of the site. Improvements to the reserve are designed to be consistent with the existing natural, social and economic values of the locality.

The Landscape Master Plan seeks to achieve the community's aspirations for the area by establishing a river theme throughout Greys Beach, providing improved facilities for use by the community, an enhanced natural environment and infrastructure to facilitate festival activities. With respect to The Grotto, the Master Plan seeks to achieve the community's visions by providing enhancements to the existing picnic area, improved site access and safety, and retention of the significant natural qualities of the area. The Master Plan seeks to provide a wide section of the community with the opportunity to experience The Grotto's natural and historical values by providing a traditional picnic area as well as opportunities to undertake bush walking and exploration activities.

Preliminary cost estimates have also been prepared to accompany the Master Plan.



Legend

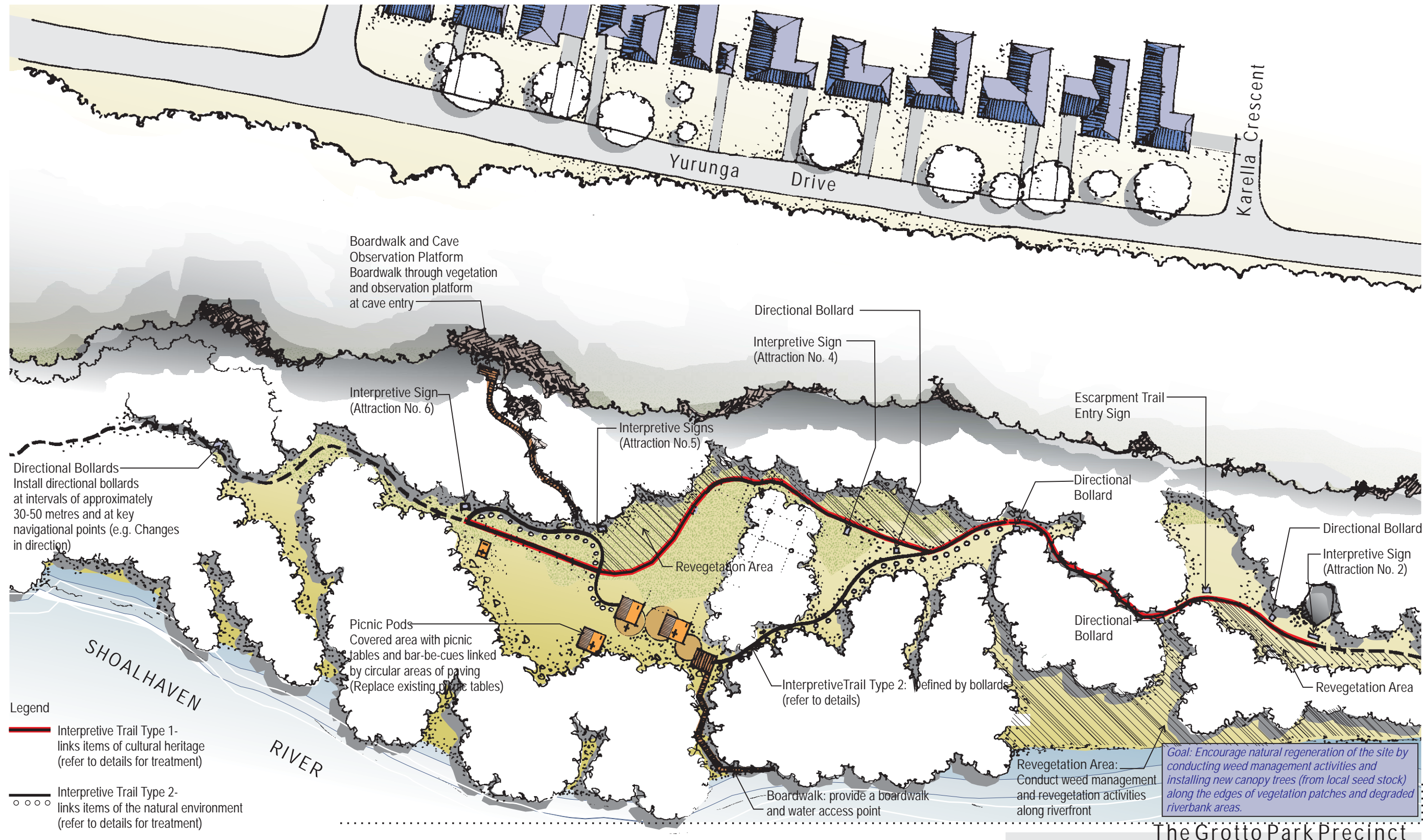
- Existing lookout (7 in total)
- Existing walking trails
- Escarpment
- Interpretive trail - Type 1
- Interpretive trail - Type 2
- Interpretive trail attractions
- Potential trail link through golf course (subject to feasibility assessment)
- + Existing picnic tables (Relocate to more accessible area)
- Existing wetland
- Future 'potential' walking trail link

Schedule of Interpretive Attractions

- 1 Indigenous heritage: Escarpment cave site used by local Aboriginal man (near the end of Golf Course Hole 2)
- 2 Natural environment and heritage: Large rock representative of local geology
- 3 Natural environment and heritage: River access point with information about local river processes
- 4 European heritage: Market garden site
- 5 Natural environment and heritage: Cave site
- 6 Natural environment and heritage: Good quality patch of endemic vegetation
- 7 European heritage: Cave workshop used by residents of homestead
- 8 European heritage: Homestead site and water tank ruin
- 9 European heritage: Wharf site

- A The Grotto Escarpment Entrance
 - Provide additional signage to better advertise the entry point
 - Replace existing seating and provide additional seating
 - Provide fully accessible boardwalk access to an observation platform
 - Provide marked car parking bays
- B Observation Area
 - Provide a fully accessible observation platform
- C Secondary Entry Points
 - Provide additional signage to advertise the secondary entry points
 - Rehabilitate all other random tracks through the vegetation in the area on top of escarpment
 - Provide marked car parking bays
- D Interpretive Trail
 - Upgrade park facilities and provide an educational interpretive trail
- E Riverside Picnic Area
 - Provide picnic tables and barbecue facilities
- F Ski and Fishing Facility
 - Investigate opportunities to provide a boat tie-up facility and picnic tables
 - Investigate opportunities to provide a walking track link to existing trails
- G Walking Track Link
 - Provide car parking facilities at the end of Yurunga Drive and provide a walking trail that links the eastern and western ends of Yurunga Drive
 - Provide directional and interpretive signage
- H Observation Platform
 - Provide a fully accessible observation platform and seating area as a focal point for the end of the street
 - Provide directional and interpretive signage

Notes
 1. This plan is conceptual only and is not to be used for construction.
 2. This plan is to be read in conjunction with "The Grotto Master Plan Sheet 2 of 2".



Dulux "Duckweed" 70YY 37/366 (or similar)
Dulux "Midnight Haze" 90BG 08/112 (or similar)

BRICK WORK NOT INCLUDED

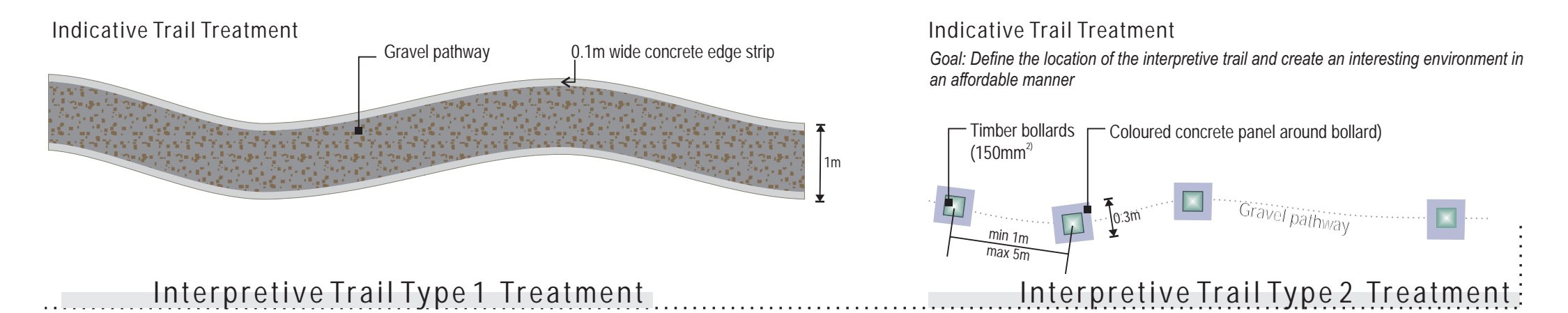
DoSmith Furniture (C0070 and S200 economy seat)
Colour: Dulux "Midnight Haze"

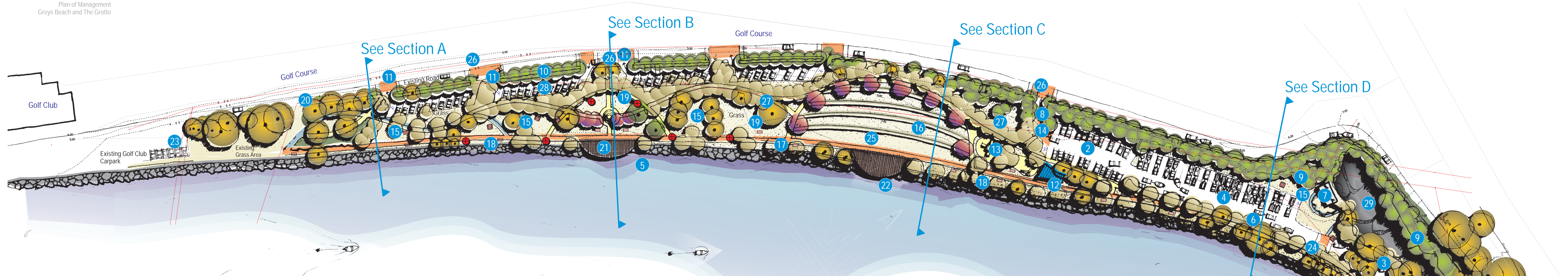
Landmark custom "maitland"

Directional Bollard: 0.70m

Interpretive Trail Information Sign: 1.2m

Barbecues | Seats/Picnic tables | Picnic Shelters | Signage





Legend

- Feature tree (*Brachychiton acerifolia*, Flame tree)
- Primary park trees (with low groundcover or grass understorey)
- Screen planting
- Existing trees
- Fitness trail activity system
- Existing powerlines
- Picnic tables and barbecues
- New seat
- Disabled car parking
- Groundcovers (low)

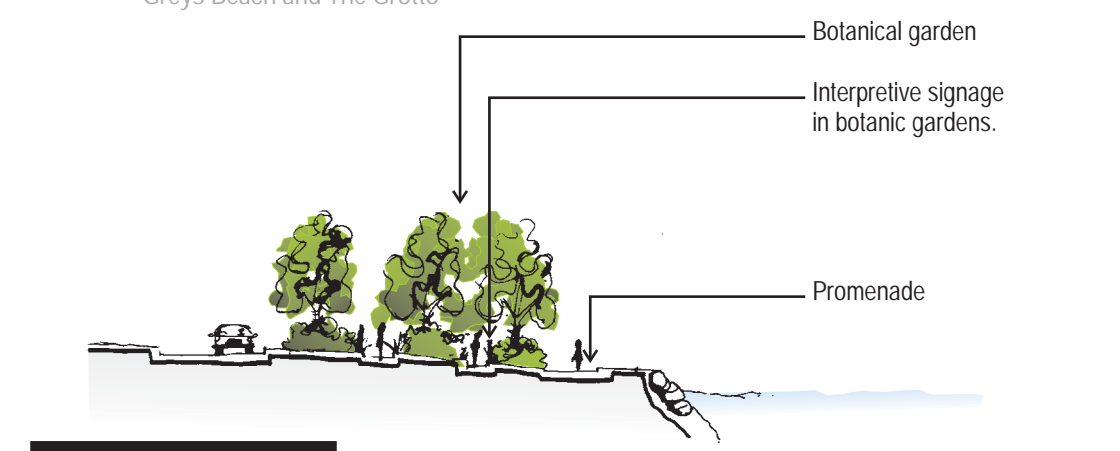
- 1. Existing boat ramp, jetty and fully accessible jetty
- 2. Carparking spaces (30 spaces plus 1 space for people with disabilities)
- 3. Boat launching preparation bay
- 4. Boat and trailer parking on site of existing carpark (29 spaces, plus 1 space for people with disabilities located near toilet block)
- 5. Fish scaling table (to replace existing damaged scaling table)
- 6. Boat returning bay
- 7. Existing amenities and path
- 8. Two-way vehicle entry
- 9. Native vegetation regeneration
- 10. Carparking area (44 spaces plus 4 spaces for people with disabilities)
- 11. One-way vehicle exit
- 12. Space for potential future commercial facility (e.g. café or restaurant) subject to feasibility assessment
- 13. Children's playground (including play equipment, picnic facilities and picnic shelter enclosed within a low fence)
- 14. Feature pavement
- 15. Randomly placed picnic facilities (at regular intervals)
- 16. Terraced multi-purpose space (amphitheatre, market area, school group outdoor education area)
- 17. Pedestrian/bike promenade - Primary path (3m wide) Refer to materials palette
- 18. Seats along promenade (at regular intervals)
- 19. Open grass area (potential use for Tai Chi, fitness trail activities, markets, performances, casual ball games, yoga, etc.)
- 20. Formalise Golf Club entry by installing a hedge and bollards
- 21. Timber deck/fishing area
- 22. Timber deck short term (day use) fishing area
- 23. Existing Golf Club carpark
- 24. Pedestrian crossing
- 25. Fill and pipe existing flood outlet
- 26. Feature paving at entrances as traffic calming
- 27. Secondary path (2m wide) Refer to materials palette
- 28. Tertiary paths (1.2m wide) Refer to materials palette
- 29. Existing rock escarpment

Indicative Planting Schedule

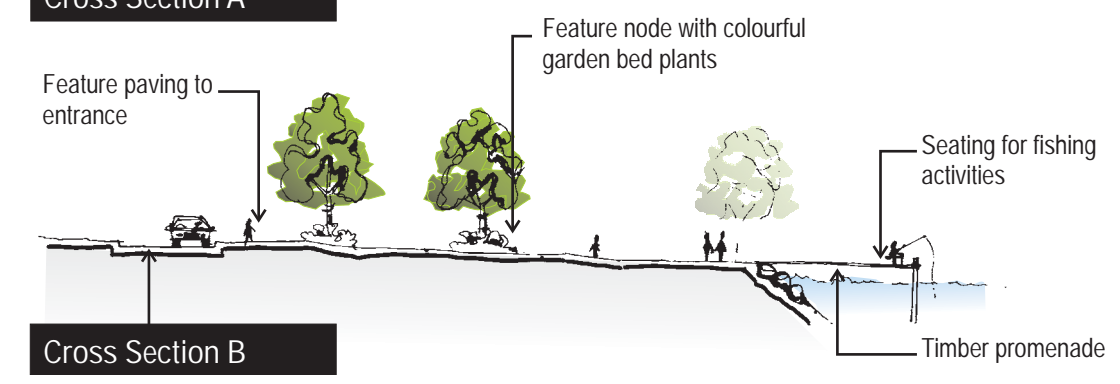
Primary Park Trees	
Botanical Name	
<i>Acmena smithii</i>	Lilly pilly
<i>Alphitonia excelsa</i>	Red ash
<i>Eucalyptus gumifera</i>	Bloodwood
<i>Eucalyptus maculata</i>	Spotted gum
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus robusta</i>	Swamp mahogany
<i>Elaeocarpus grandis</i>	Blue quandong
<i>Glochidion ferdinandi</i>	Cheese tree
<i>Melaleuca leucadendra</i>	Broad leaf Paper Bark
<i>Syzygium oleosum</i>	Blue lilly pilly
<i>Syzygium australe</i>	Bush cherry
<i>Toona australis</i>	Red cedar
Screen Planting (Shrubs)	
<i>Acmena smithii</i> 'dwarf'	Lilly pilly
<i>Syzygium paniculatum</i> 'minor'	Dwarf magenta cherry
<i>Alocasia machortiza</i>	Cunjevoi
Groundcovers	
<i>Dianella caerulea</i>	Flax lilly
<i>Liriope muscari</i> 'Evergreen giant'	Evergreen giant
<i>Lomandra longifolia</i>	Matt rush
<i>Poa poliformis</i> 'Courtney'	Poa courtney
<i>Themeda australis</i>	Kangaroo grass
<i>Themeda australis</i> 'mingo' (dwarf)	Dwarf blue kangaroo grass
Ferns	
<i>Asplenium australasicum</i>	Bird's nest fern
<i>Cyathea australis</i>	Tree fern



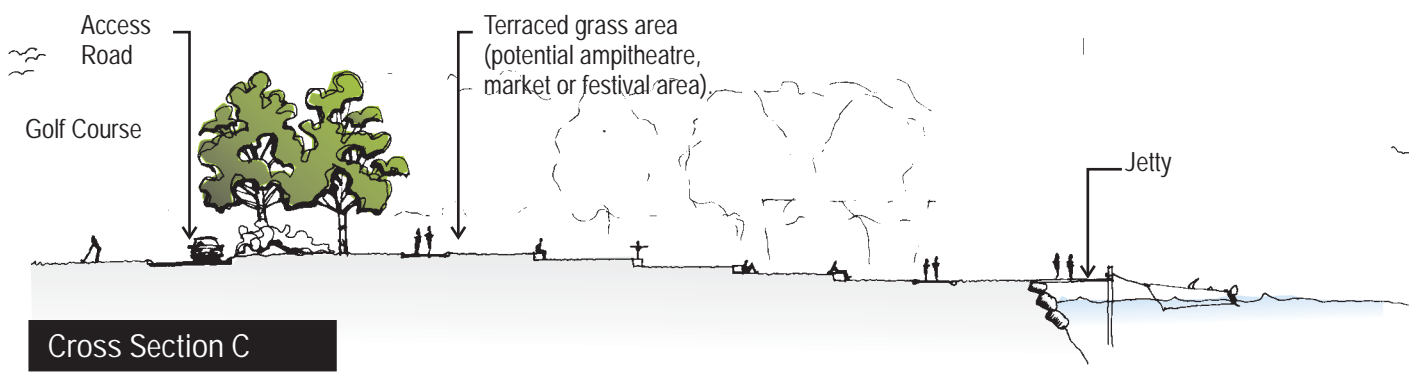
Plan of Management
Greys Beach and The Grotto



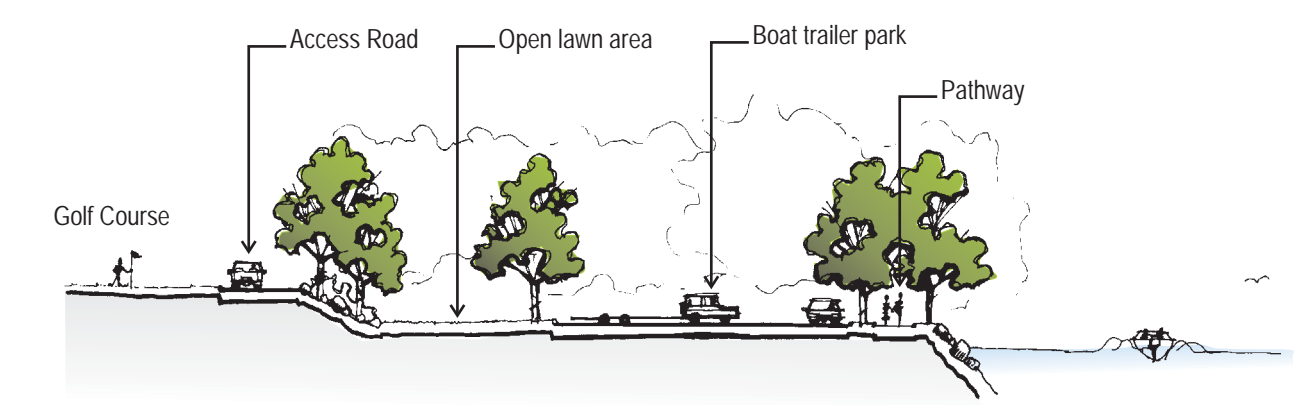
Cross Section A



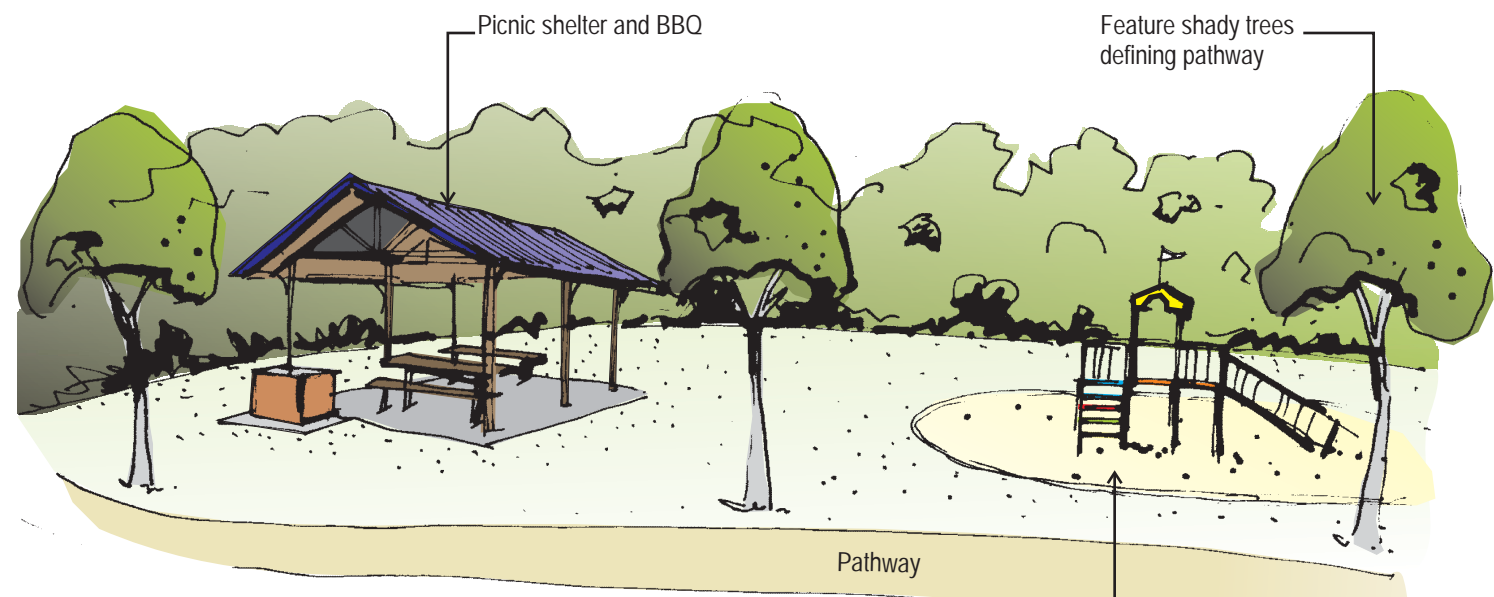
Cross Section B



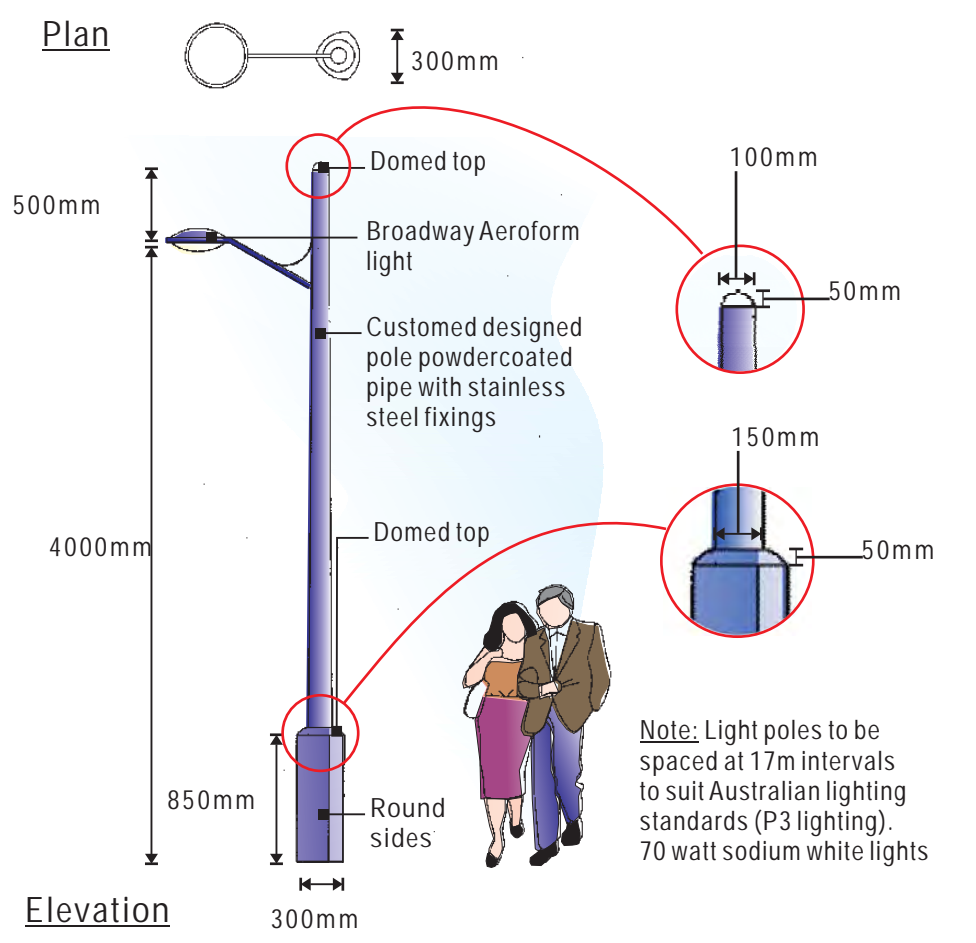
Cross Section C



Cross Section D



Playground Area/Picnic Facilities

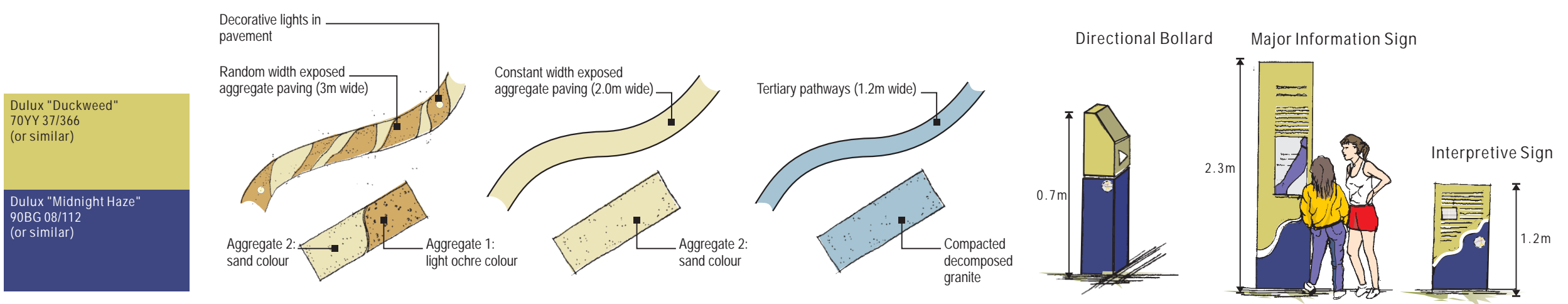


Light Poles to Promenade and Carpark



Litter Bins Barbecues Lighting Seats Picnic Shelters Bollards

Furniture Palette



Colours Main Pedestrian Pathways Secondary Pathways Tertiary Pathways Signage

Materials, Colours and Signage



Implementation

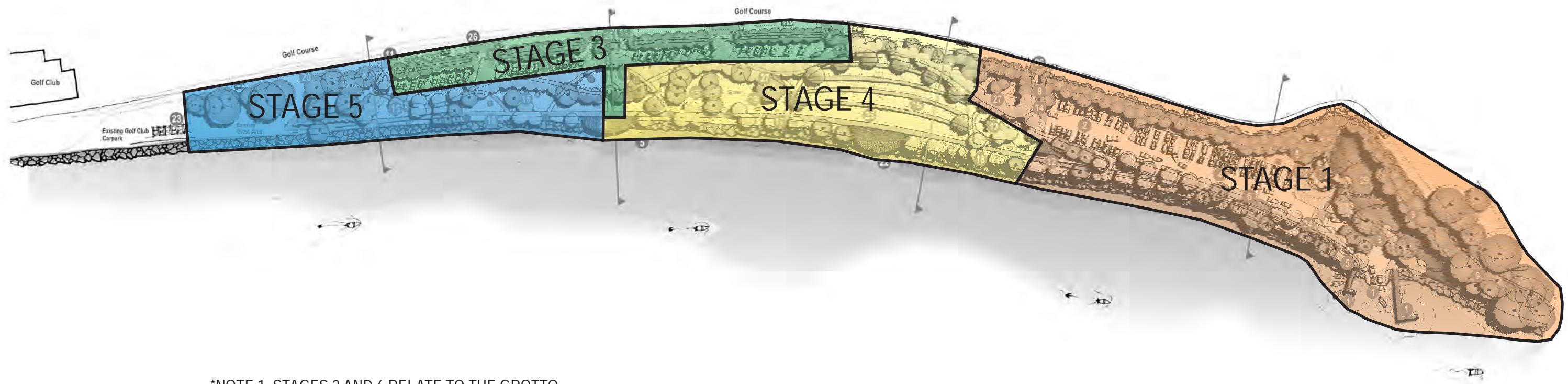
7.1 Works Schedule

This Plan provides a long term strategy for the management of Greys Beach and The Grotto. It is anticipated that the majority of management actions described in this Plan will be undertaken by Shoalhaven City Council over a five year period. Given the importance of the locality as a recreational area, the priority schedule below is based primarily on upgrading the facilities at Greys Beach and improving safety at The Grotto. Priorities for management actions and works are to be addressed on an annual basis to meet community needs.

An indicative schedule of construction works for the upgrading of the reserve is outlined in Table 7.1 as a guide to the priorities for the implementation of the plan as funding becomes available. A staging plan for Greys Beach is shown in Illustration 7.1

Table 7.1 Schedule of Priority Works

Stage	Works	Estimated Cost
1	Car parking and traffic circulation rationalisation at the eastern end of Greys Beach and Promenade walkway	\$417,000
2	Walking track and safety improvements at The Grotto	\$16,500
3	Car parking at western end of Greys Beach	\$202,200
4	Amphitheatre and upgrade of recreational facilities in the central part of Greys Beach	\$527,500
5	Upgrade of recreational facilities at the western end of Greys Beach	\$204,900
6	All remaining works relating to The Grotto, primarily involving the upgrade of recreational facilities at The Grotto (interpretive signage, picnic facilities, walking trails etc)	\$217,400



*NOTE 1. STAGES 2 AND 6 RELATE TO THE GROTTTO

NOTE 2. STAGE 1 ALSO INCLUDES PROMENADE
ALONG LENGTH OF THE FORESHORE



7.2 Community Involvement in Plan Implementation

Shoalhaven City Council will be primarily responsible for the implementation of the Plan of Management given the scope of works involved. However, the community may assist in the implementation of the Plan through volunteer work. In particular, community groups would provide valuable assistance through revegetation and weed management projects and the ongoing maintenance of the reserves. Council could support such community groups with technical advice, practical support such as rubbish removal, plant supply, tools and materials and through funding. The Department of Sustainable Natural Resources may also provide additional support and technical assistance to registered Care groups.

The community will also have an important overarching role in the continued monitoring and revision of the Plan. The Plan will be reviewed regularly to ensure that the evolving needs and views of the community are addressed in the short and long term. Through this process, the community will have the opportunity to guide the implementation of the Plan to assist in achieving the community vision for the site.

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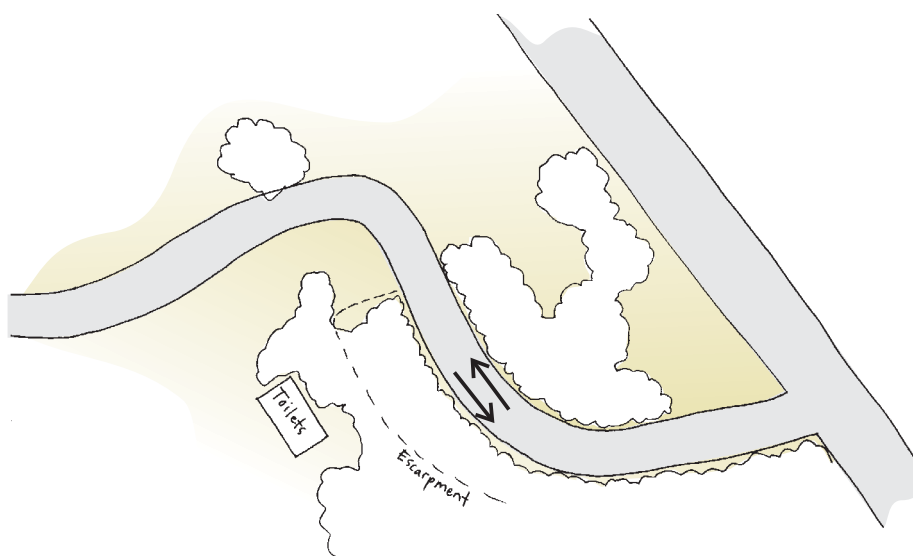
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A

Greys Beach Shared Access Options

Greys Beach Access Options

The following illustrations provide a brief outline of the positives and negatives associated with various options to improve both pedestrian and vehicle access into Greys Beach off Illaroo Road. These options are intended to provide a starting point for further investigations into improved access into Greys Beach in accordance with the management actions outlined in the Plan of Management.



Plan

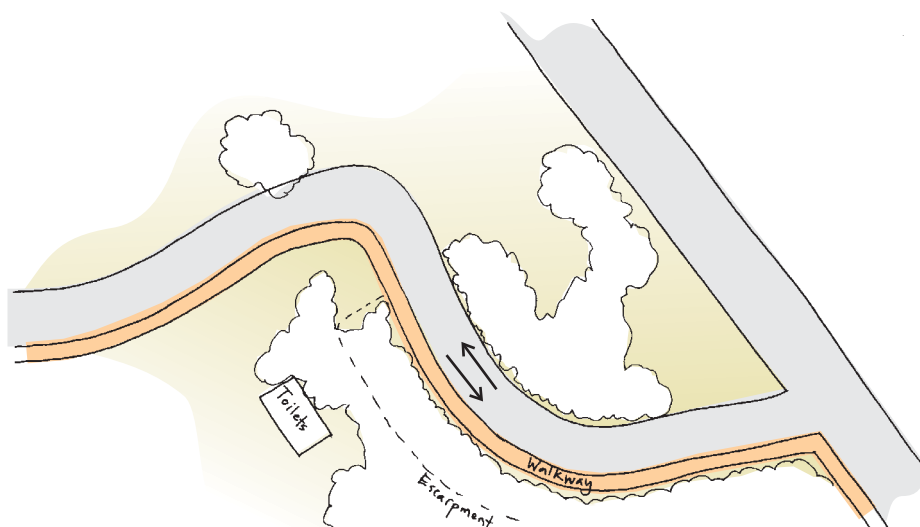


Perspective sketch

- | | |
|-------------------|--|
| Positive Features | -No negative environmental impact
-No costs |
| Other Features | -Provides no safe pedestrian access
-Difficult for large vehicles to pass (e.g. boat trailer) |

Option 1 - Retain Current Situation

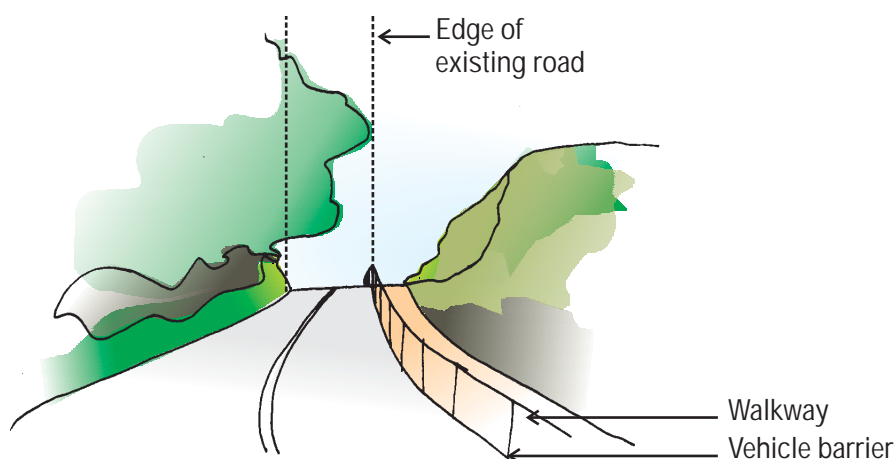
Greys Beach Access



Key Features

- Cut away escarpment
- Construct walkway and vehicular barrier
- Feasibility study required to access escarpment stability

Plan



Perspective sketch

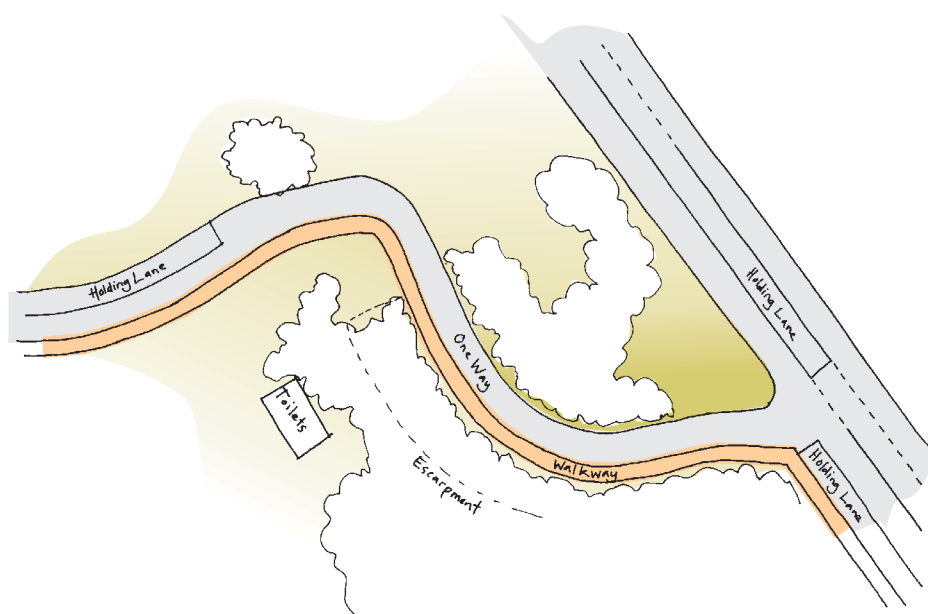
Positive Features

- Lower construction costs than option 3 and 4
- Provides a separate pedestrian access path although not complying with Australian Standards for access for people with disabilities
- Separately defined pedestrian and vehicle paths
- Retains two-way vehicular movements

Other Features

- Environmental damage caused by excavating rock
- Loss of the rock or part of it - loss of an important aesthetic entry feature.
- A detailed environmental study may be required

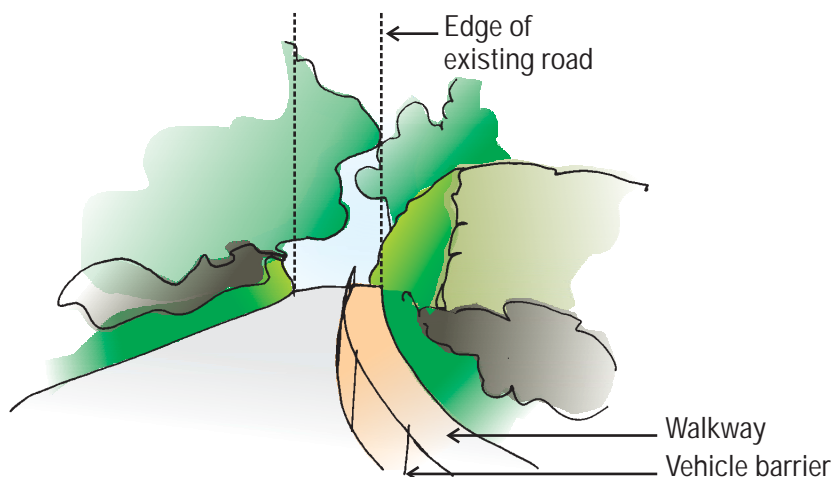
*Option 2 - Widen Road
Greys Beach Access*



Key Features

- Retain escarpment in current location.
- Install traffic lights and turning lanes/holding lanes
- Construct walkway and vehicle barrier

Plan



Perspective sketch

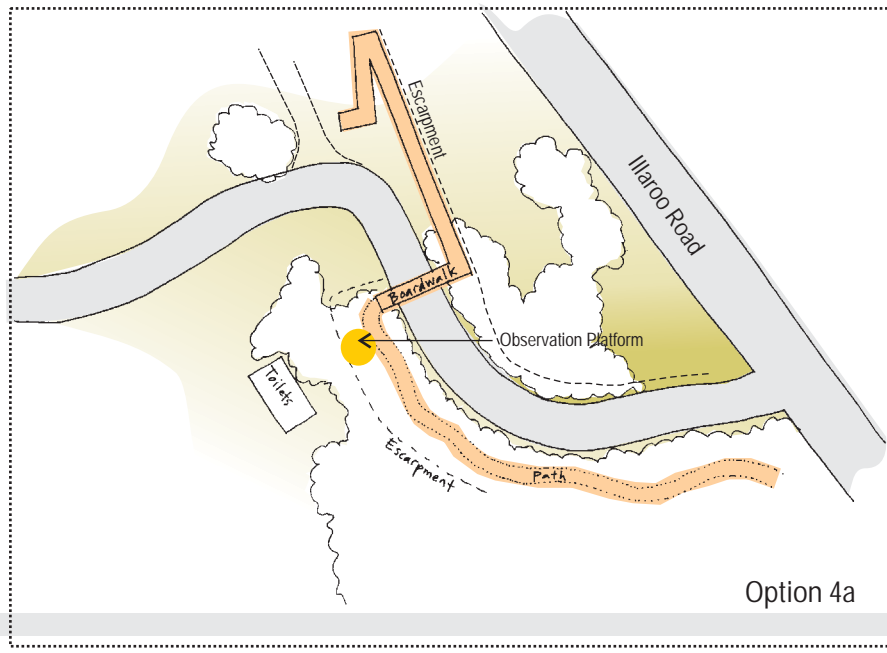
One-way controlled by traffic lights.

- Positive
- No negative environmental impact
 - Reasonable construction costs
 - Separately defined pedestrian and vehicle paths
 - Retention of the rock as an aesthetic entry feature

- Other Features
- May obstruct traffic flow on the main road.
 - Road alterations will be required on Illaroo Road
 - A detailed traffic assessment and feasibility study may be required
 - May be congested during holiday periods

Option 3 - One-way Vehicle Access

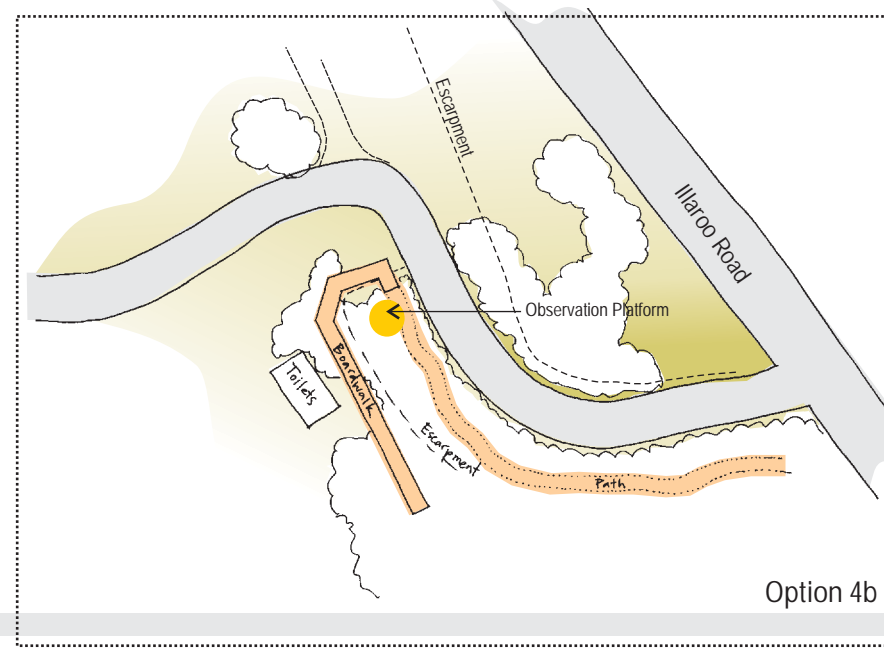
Greys Beach Access



Option 4a

Key Features

- Retain existing road and escarpment
- Construct pathway along top of escarpment and a boardwalk over road and down face of escarpment near golf course access track

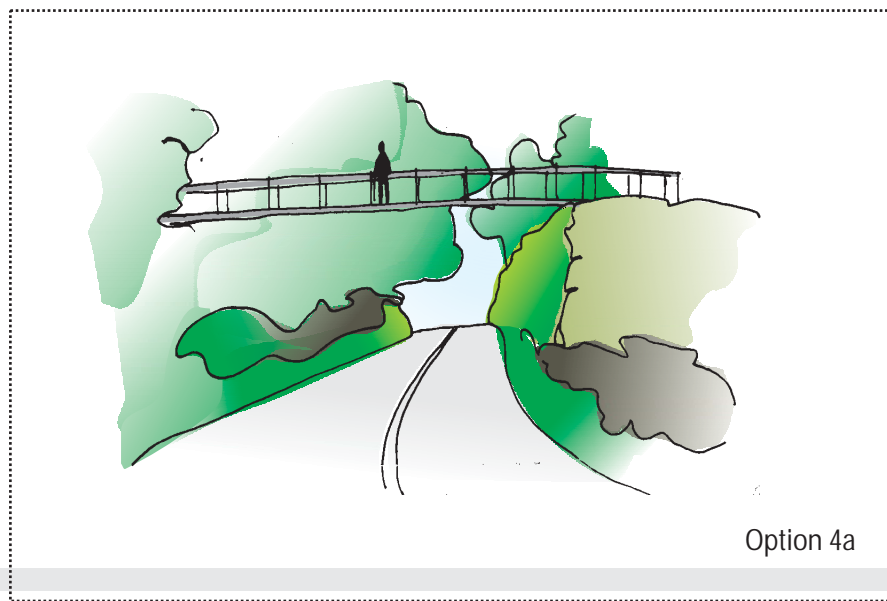


Option 4b

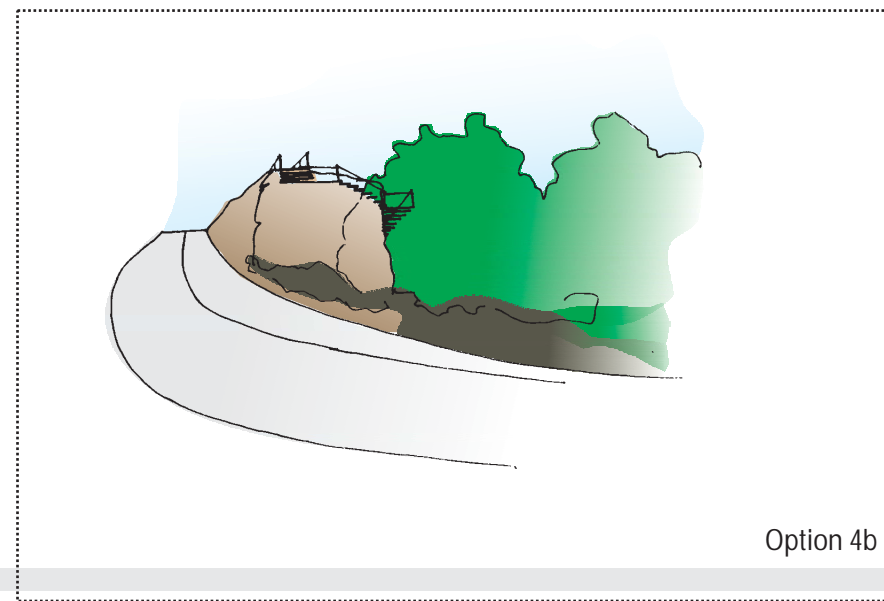
Key Features

- Retain existing road and escarpment
- Construct pathway along top of escarpment and boardwalk down escarpment near vehicle turn around area

Plan



Option 4a



Option 4b

Perspective sketches

Positive features

- Safe, no pedestrian/vehicle conflicts
- Potentially visually interesting
- Can be constructed with little environmental impact
- Retention of the rock as an aesthetic entry feature

Other features

- Feasibility assessment required
- Likely to be expensive to construct
- Limited access for people with disabilities
- Higher maintenance requirements than an at-grade option

B

Weed Control Plan

Greys Beach and The Grotto

Weed Management Plan

Prepared by GeoLINK to accompany the
Greys Beach and The Grotto Plan of Management
January 2004

1.0 Introduction

For any weed management plan program for the study area to be effective, a number of considerations need to be examined. Some elements of a successful weed management plan might include:

- biology of weed species;
- location;
- climate;
- rainfall;
- soil type;
- runoff;
- terrestrial flora and fauna;
- aquatic flora and fauna;
- water depth and quality;
- current uses; and,
- existing land and water management.

These elements need to be explored for each individual weed species identified at the site. Management plans for each weed species must also be considered collectively to select the most appropriate, cost effective and efficient management program for the entire site. Generally, weed management has one of the following goals:

1. weed eradication for maintenance; or
2. weed control to stimulate regeneration.

Different weed control techniques apply to each objective.

A number of weed management options are available for different weed species. A general description of each process is given below. Examples of possible management plans for individual weed species are also given. This is followed by a potential weed management plan that considers the different sections of the study area.

2.0 Control Methods

2.1 Physical

There are two types of physical control methods: mechanical and hand techniques.

Mechanical control methods for weeds might include:

- mowing/slashing;
- clearing/removal using large earthmoving equipment (e.g. use of a wire or chain rope anchored at a point and dragged by a tractor or equivalent);
- landscaping/burying with 'clean' fill; and,
- for aquatic weeds, netting, and mowing using specialised equipment.

Hand removal techniques are, in general, small-scale versions of mechanical techniques and include:

- hand pulling;
- removal of flowering heads (i.e. seed source); and,
- for aquatic weeds hand netting and other netting devices (e.g. chicken wire fencing).

Care needs to be taken with weed species that can spread via stem fragments. In these cases physical means of control is not advisable as all the stem fragments must be collected and disposed of adequately, otherwise the above procedures may exacerbate the problem.

For aquatic weeds, chemical control methods may threaten fish life due to depletion of oxygen levels through the breakdown of vegetation. Mechanical options may be better suited as this method physically removes the vegetation. However, mechanical options can result in a number of other adverse environmental effects. Use of heavy equipment near or in waterways can result in disturbing sediment via runoff or in the waterways itself, which, in turn, would increase turbidity and adversely affect the hunting and survival ability of fish and amphibians. In addition, bird species utilising the waterway may be adversely effected by a decrease in water visibility and reduced effectiveness of their hunting expeditions. Dust and noise from machinery could also adversely impact on fauna species in the vicinity.

Hand control techniques, while being time consuming and therefore often expensive, do not adversely impact on the habitat conditions of waterways to the same level as mechanical means. In addition, hand control techniques are, in general, extremely effective for small infestations.

2.2 Biological

Biological control involves the use of a natural predator of the problem weed. In the long term, this control method can be cost effective and environmentally friendly. However, it is rarely the complete solution for a weed problem and in most cases cannot completely eradicate a weed. Instead, this method generally functions to suppress a weed to keep the area economically or ecologically viable.

A good example of a successful biological control agent in Australia is the Cactoblastis moth (*Cactoblastis cactorum*). This South American moth was introduced to Australia in the 1920's to combat the large infestation of Prickly pear (*Opuntia inermis*), also a native of South America, across the country.

Unfortunately in a number of cases, no biological control agent has been located for a number of weed species in Australia. Care must be taken in the event of a biological control agent being recognised. For example, the introduction of the cane toad (*Bufo marinus*), a native to Venezuela, to Australia to control cane beetles in sugar cane, has led to an overpopulation of this pest species. This has resulted in the death of a number of native Australian fauna species and no control on the insect pests. A number of years is required by researchers to assess the organism and demonstrate it does not attack economic crops or native plants and animals prior to introduction to Australia.

2.3 Chemical

Chemical (herbicide) control methods are widely used in weed management programs. Herbicides can be grouped into either contact or translocated based on their mode of action to kill the desired weed (NSW Agriculture, 2001). For instance, contact herbicides kill those parts of the plants in which they directly contact (e.g. leaves and stem). Translocated herbicides need to move within the plant to the site of action. Contact herbicides tend to be more effective on annual weeds or on the seedlings of perennial weeds. Whereas, translocated herbicides tend to be more effective on grasses and broadleaf weeds. Herbicides can be selective, non-selective, residual and/or pre-emergent.

As with all chemicals, there are numerous application techniques and equipment available to apply herbicides. For example, equipment which might be utilised in applying herbicides include boom sprayers, hand guns, knapsacks, granular soil applicators and aerial sprayers. Methods that might be employed include foliar spraying, cut stump and stem injection.

As with all the weed control methods, consideration of the weed species, infestation, topography, access and the potential environmental and health hazards need to be assessed to determine which equipment and application methods are best suited to control the weed.

Where the weed is located near a water course, care must be taken if the water is used for stock, domestic purposes or watering gardens and crops. There are some herbicides available which are suitable for use near waterways (e.g. Roundup® Biactive and Weedmaster® Duo). In general, the use of herbicides for controlling

small weed infestations near waterways is appropriate (NSW Agriculture, 1998). This is because small infestations require small amounts of chemical to be applied and the resultant water contamination is minimal. Whereas, in large infestations, the resultant degradation of plant material can cause deoxygenation of water to sufficient levels to kill fish.

The use of any chemical product should be implemented with caution. The material safety data sheet and label should be read thoroughly prior to use. For use near waterways, various publications highlighting the general procedures for use of herbicides near water should be followed (e.g. NSW EPA Draft: Guidance for the Use of Herbicides Near Water, 2000; NSW Agriculture Noxious and Environmental Weed Control handbook 2001/2002 - A guide to weed control in non-crop, aquatic and bushland situations, 2001).

In summary, these publications recommend the following procedures be followed:

- thoroughly read and comply with label directions and legislation;
- handle and store herbicides correctly;
- maintain application equipment properly;
- apply herbicides correctly and efficiently;
- dispose of, or reuse, waste properly;
- notify neighbours and follow withholding periods;
- keep accurate records; and,
- obtain training as required.

The use of any chemical including herbicides, may result in resistant strains of the pest to develop. Glyphosate is one such chemical that is known to cause resistance in weed species (NSW Agriculture 2001). Care should be taken when using the above-mentioned chemicals to avoid resistance developing in any weed population.

2.4 Environmental Management

This control option relies on altering the environment in some way that will limit the growth of weed species. The core strategy to this method is management. Items which could be considered are reforestation, rehabilitation, plant vigour, mulching, hygiene and early weed identification. These options are briefly described below.

1. Reforestation is a long-term weed control method which aims to provide a dense tree canopy to limit weed growth through the restriction of sunlight to the forest floor.
2. Rehabilitation is similar to reforestation and can work well together. In reforestation, tree species are planted to provide a canopy. Rehabilitation methods tend to assist a local population of native species to recolonise an area by way of controlling the competing weed species and thereby stimulate regeneration.
3. Plantings or assisted germination of native or desirable species require care during the initial stages of their life. Plantings must be maintained (e.g. weeded, fertilised) to obtain a plant vigour that will outcompete weed species in the area.
4. Mulching provides a physical barrier to the germination of weed species. Barriers such as weed matting and woven paper and cloth products have been used successfully in a variety of situations. This option is good for small areas especially for a dual role in bank stabilisation and erosion.
5. Hygiene is important to stop the entry of additional or new weeds entering the weed control area. For a public area this can be difficult. However, public education through signage and pamphlets may assist. In addition, any work vehicles or equipment used in weed control should be thoroughly cleaned prior to and after entry onto the site.
6. Early weed identification is essential to providing the most effective control on a site. A small infestation, no matter which control option is employed, is always easier to contain than a large infestation.

In the case of aquatic weeds, a number of environmental management options can be used and include:

1. Emptying of the waterbody, if possible, and allow the bed to dry for several weeks. The success of this method depends upon the plant material sufficiently drying out to achieve death.
2. Dredge and/or excavate parts of the waterway to depths where the plant cannot survive (approximately 3 to 4 metres). In many cases, this option must allow for a number of measures to be implemented to ensure public safety. For example, steep slopes at the bank edge could provide instability for persons standing or walking on the edge increase the chance of drownings by young children that may venture close to the edge.
3. Provide shading along the banks with trees which will limit the growth of the weed. This option has the added benefit of providing bank stabilisation but can result in a loss of access to the waterway's bank unless formal access points and facilities are provided.
4. Limit the influx of nutrients into the waterway. For rivers this can be difficult as a number of nutrient sources may occur upstream (e.g. stormwater, farming practices, industrial areas). The distribution of leaflets to local residents outlining waterwise options available to them (e.g. "The Drain is for Rain" campaign) may help alleviate this problem. Additionally, the complementary plantings of trees outlined above combined with plantings of native aquatic plants can assist in using nutrients that enter the lake system. The planting of native aquatic plants will also compete with the weed, thereby assisting in its control.

2.5 Option Comparison

The following table highlights the positives and negatives for each of the control methods outlined above.

Table 1 Comparison of Control Method Options

Control Method	Positives	Negatives
Physical		
Mechanical	relatively fast, not labour intensive	can exacerbate the problem, can be expensive, can cause extensive ecological damage
Hand	low impact on environment	labour intensive, slow, can exacerbate the problem
Biological	environmentally sound	cannot eradicate the problem
Chemical	can provide fast control of a weed	possible environmental and health hazards, resistance can develop in weed species, can adversely effect fish through deoxygenating of waters
Environmental Management	can provide sound, environmentally sensitive control	can be expensive

2.6 Recommended Control Techniques

Any control method employed in isolation usually does not provide long-term control. An integrated system, using two or more options, provides more efficient and stable control of a weed with fewer undesirable side effects (NSW Agriculture 2001). In addition, integrated control of a weed species provides a cost-effective and practical solution to weed control.

An example of an integrated control plan for an individual weed may be as follows:

- Physically remove (by machine or hand) large and easily accessible areas of the weed;
- Chemical treatment (spot treatments) of any remaining plants;
- Plant suitable and diverse range of endemic species;
- Mulch remaining area with black plastic and thick layer of straw;
- Follow-up treatments (removal or poisoning of weeds, fertilising and watering of plantings) for a minimum of 2 to 3 years.

The combination of a number of integrated control options for individual weeds will determine the overall weed management plan for the subject area.

3.0 Possible Management Plans for Individual Weeds Identified on the Site

A number of weed species were identified on the site during the site visit on 14 March 2002. The main species included: Lantana, Moth vine, Common morning glory, Crofton weed, Farmers friend, Wandering jew and Black wattle. A number of other weed species, mainly annuals, were identified on the site but were in minor infestation levels. A description of each of the major weeds and possible control methods are provided in Appendix 1.

The study area can be divided into two broad areas: The Grotto and Greys Beach.

3.1 The Grotto

Vegetation found in the area known as 'The Grotto' includes good quality rainforest, bushland, wetland and the remnants of an historic market garden. The landscape in this area also contains a number of caves. These caves, in conjunction with the existing vegetation and their locality next to the Shoalhaven River, provide excellent habitat for a number of flora and fauna species in the region.

The main weed problems identified at the time of the site inspection were the presence of lantana and a number of vine species (e.g. moth vine), both of which can smother native vegetation. A number of other weeds, primarily annual and perennial weeds, (e.g. crofton weed) were also located in the area but were not considered the main weed threat at this time.

Given that a number of weed species were identified in the area and the relative good quality habitat, the following actions for weed control to allow natural regeneration of the area should occur.

1. **Inform community** Dispatch information leaflets to neighbouring residents and erect informative signs in the area regarding the wildlife habitat and social qualities of the vegetation in 'The Grotto'. Explanations of the strategy for controlling weeds to protect and enhance this area should be included (e.g. signage may include tips such as keeping to walking tracks and put litter in bins provided to protect and enhance flora and fauna habitat).
2. **Hand removal** Hand remove (with the assistance of Landcare or Green Corp teams, if possible) any easily accessible areas of weeds, such as lantana, and dispose of fragments appropriately (e.g. dry plant material or compost, monitor until complete death has occurred). For vine weeds (e.g. moth vine), stems may be cut at shoulder height and plant material in the canopy can be left to die. The bottom half of vine weeds including roots should be removed and disposed of. For some vine weeds (e.g. Madeira vine), this method will only exacerbate the problem. Care must be taken to correctly identify each weed species to allow for the correct control option to be followed. Note: mechanical methods may be implemented in this step, but care must be taken to avoid disturbing seedlings of native species that may have become established amongst weeds.

3. **Chemical Control** Treat remaining plants with spot applications with suitable herbicide. For example, apply a foliar application of Roundup® Biactive along river bank to control lantana, morning glory and crofton weed. For moth vine, cut and paint stem with glyphosate based herbicide.
4. **Mulching** In areas of social interest (e.g. lookout platforms, around the historic market garden), use weed matting and/or thick layer of straw to help suppress weed seeds in these areas.
5. **Rehabilitation/Revegetation** Where desired, local plant species should be encourage to regenerate. If this does not occur, plant suitable locally native trees, shrubs and ground covers (preferably from seed obtained from the Grotto area) to provide shade and competition against weeds. Ensure a number of species are used to provide diversity to the area. For the wetland area, plantings should include suitable locally native wetland species.
6. **Maintenance** Repeat from item 2 as necessary.

As with all weed management plans, the whole area often cannot be targeted at the same time. Smaller, more manageable areas within 'The Grotto' should be identified and targeted systematically. In general, areas with slight to moderate weed infestations are targeted first rather than areas with large weed infestations. The reasoning behind this method is to make areas resistant to weed invasion prior to large infestations taking hold. In addition, areas with existing large infestations often require a systematic method to slowly reduce the problem, rather than tackling the whole infestation at one time. This method of systematic implementation on control methods to selected areas also allows for different techniques to be tested to determine which method(s) are most suitable for the area.

Care should be taken during all weed control practices to ensure weeds are not introduced to the site. Adequate hygiene measures such as cleaning vehicles prior to and after entry to the site should be carried out.

In carrying out the above actions, Council should also encourage local Bushcare groups to contribute to the weed management program in the area, where appropriate.

3.2 Grey's Beach

The area surrounding Grey's beach is relatively clear of any weed infestation at the time of the site inspection. As this area is generally clear of weeds, the weed management plan aims for weed eradication for maintenance. A general weed management plan would be to regularly monitor (e.g. monthly or bimonthly) the area and identify weeds early. Spot applications of herbicides or removal techniques should then be implemented as required. General maintenance procedures such as mowing could also keep a number of weed species under control.

An infestation of lantana was identified near the entry to Grey's Beach. This infestation should be controlled by mechanical or hand removal techniques with follow-up spot treatments with glyphosate (Appendix 1). Lantana was also located along the riverbank and should be removed by hand.

This type of approach would enable weeds to be contained prior to large infestations occurring. To enhance the visual quality of the Grey's Beach area, plantings and landscaping may be implemented. Care should be taken during these procedures to ensure weed species are not introduced to the area (e.g. cleaning of mowing equipment prior to and after entry to the site). Plantings should contain a variety of locally native trees, shrubs and groundcovers that will not only compete with weeds species but also provide diversity to local fauna when mature.

As with The Grotto, Council should encourage local Bushcare groups to contribute to weed management at Greys Beach, where appropriate.

4.0 Identification of weeds

To confirm identification of weed species, assistance should be sought from organisations such as:

NSW Agriculture

web page: <http://farer.agric.nsw.gov.au/ap/weeds/index.html>

Regional Headquarters: NSW Government Offices
159 Auburn St
Goulburn, NSW 2580
(PO Box 389,
Goulburn NSW 2580)
Telephone: 4828 6600
Fax: 4828 3261

The Weed Society of NSW

web page: <http://nb.au.com/nswweedsoc>

Postal address: PO Box 438
Wahroonga NSW 2076

President: Bob Trounce
NSW Agriculture – Orange
email: bob.trounce@agric.nsw.gov.au
Telephone: 6391 3814
Fax: 6391 3883

Weeds Australia

web page: www.weeds.org.au

5.0 A note on Black wattle

The Black wattle is an Australian native species that has become naturalised in some areas around Australia. As a result, this species has become a weed in a number of areas. The control of this weed can be through the use of herbicide injected into the trunk, felling and painting with herbicide or complete removal. However, as with a number of tree weeds, this species may be providing important habitat for a number of local fauna. In addition, this tree could be providing soil stabilisation. Careful consideration of these factors should be taken in determining if this species is causing a dominant threat to the area and requires control.

Appendix 1: Weed profiles for selected weeds and control techniques

FAMILY: VERBANACEAE

COMMON NAME: Lantana

SCIENTIFIC NAME: *Lantana camara*

ORIGIN: Tropical South America

HABITAT: Widespread, especially in disturbed environments, rainforest, sclerophyll forest, moist gullies

Habit: shrub – scrambling shrub

Height: usually up to 3 m but can climb much higher

LEAVES:

Length: 2.5 to 8 cm

Width: 1.5 to 4.5 cm

Shape: ovate, apex acute to obtuse

Margin: toothed

Colour: mid-green

Arrangement: opposite

Type: simple

Other: upper surface rough, scabrous, lower surface usually pubescent

STEM: usually 4-angled, stem and branches long and weak with short recurved prickles and usually hairy

FLOWERS

Season: most of the year

Size: 4 – 6 mm diameter

Number of Petals: 4 to 5

Inflorescence: axillary, many-flowered umbel (2 to 3 cm diameter)

Colour: various combinations of white, orange, yellow, pink or red

Other:

FRUIT

Type: succulent drupe

Colour: black

Size: 4 to 6 mm

Season: most of year

SEED

Size: 1 or 2 seed per fruit

Viability: 1 to 2 seasons

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type: extensive shallow root system

Regrowth Ability: suckers from roots; layers; cut stems can reshoot if in contact with moist ground

DISPERSAL MECHANISMS: birds, vegetative, foxes, rubbish-dumping, water

REMOVAL TECHNIQUES:

cut, scrap and paint glyphosate (1:1.5); removal of plant; brush-hook/lopper or slash with tractor, mulch and spray regrowth with glyphosate (1:100)

Best Season: when actively growing

Other: Introduced as a hedge plant, numerous cultivars are grown as garden plants; some forms are toxic to stock if eaten; a declared noxious weed in NSW; can provide habitat for ground-dwelling fauna.

FAMILY: ASCLEPIADACEAE

COMMON NAME: Moth Vine

SCIENTIFIC NAME: *Araujia sericifera*

ORIGIN: Peru

HABITAT: Grows best in partial shade and moist situations. Grows well in riverine rainforest and other riparian vegetation

Habit: vigorous woody climber

Height: unrestricted

LEAVES:

Length: 3 to 11 cm

Width: 1.5 to 6 cm

Shape: usually triangular to ovate or oblong
ovate, apex acuminate, mucronate

Margin: entire, undulate

Colour: upper green, whitish below
(glaucous) with dense minute hairs

Arrangement: opposite

Type: simple

Other: base truncate to slightly cordate, 1 to 5 glands, apex
twisted

STEM: twining and woody, copious white latex from cut stems

FLOWERS

Season: spring-summer

Size: 2 to 2.5 cm

Number of Petals: 5 tubular

Inflorescence: 2 to 5 flowered

Colour: white or pale pink

Other: highly fragrant

FRUIT

Type: pear-shaped follicle

Colour: pale glaucous-green

Size: 6 to 10 cm long, 6 to 7 cm wide

Season: summer-autumn

SEED

Size: 4 mm long, brown pappus

Viability: unknown

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type: shallow tap and lateral

Regrowth Ability: seedling rate high

DISPERSAL MECHANISMS: wind, rubbish dumping and water

REMOVAL TECHNIQUES: fairly resistant to herbicides when mature although cut, scape and paint is usually effective, hand pulling is most reliable especially seedlings, cut at head height, spray seedlings with glyphosate (1:50) plus acidifier (LI 700[®]; 0.5%), bag fruit if practical.

Best Season: when not stressed

Other: Is a declared noxious weed for some areas of NSW

FAMILY: CONVOLVULACEAE

COMMON NAME: Morning Glory

SCIENTIFIC NAME: *Ipomoea purpurea* or *Ipomoea indica*

ORIGIN: Native of tropical regions

HABITAT: Coastal districts, prefers moist areas, rainforest edges and disturbed areas

Habit: annual or perennial with twining stems

Height: unrestricted

LEAVES:

Length: up to 17 cm

Width: up to 15 cm

Shape: ovate to broad ovate

Margin: entire or 3-lobed

Colour: mid-green with paler reverse

Arrangement: alternate

Type: simple

Other: base cordate

STEM: grey-green with raised lenticels, pilose, milky latex with onion smell

FLOWERS

Season: throughout year

Size: tube to 7.5 cm long, 8cm diameter

Number of Petals: 5-fused

Inflorescence: axillary, 2 to many flowered

Colour: purplish blue or violet-blue

Other: funnel shaped

FRUIT

Type: capsule

Colour: brown

Size: 8 – 10 diameter

Season: throughout year

SEED

Size: approximately 1 mm

Viability: unknown

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type: tap root with long running stolons

Regrowth Ability:

DISPERSAL MECHANISMS: locally spread, rubbish dumping, water, vegetative

REMOVAL TECHNIQUES: cut, scrap and paint main stem with glyphosate (1:1.5), hand pull long running stolons, roll up and allow to dry out by suspending above the ground; mature plants relatively resistant to herbicide but can spray seedling with glyphosate (1:50) plus acidifier (LI 700®)

Best Season: when plant is not stressed

Other: cultivated as an ornamental, garden escape

FAMILY: COMMELINACEAE

COMMON NAME: Wandering Jew

SCIENTIFIC NAME: *Tradescantia fluminensis* (*T. albiflora*)

ORIGIN: South America

HABITAT: deep shaded areas to full sun. Prefers moist, semi-shaded areas, rainforest floor and gaps, gullies, creek banks, storm water drains etc.

Habit: ground cover which scrambles over small plants

Height: up to 60 cm (much higher when scrambling)

LEAVES:

Length: 2.5 to 5.5 cm

Width: 1 to 2.5 cm

Shape: ovate-lanceolate

Margin: entire

Colour: green, glossy, fleshy

Arrangement: alternate

Type: simple

Other: sheath 5 to 8 mm long

STEM: green, brittle and fleshy, branching, rooting at the nodes, prostrate

FLOWERS

Season: spring to summer

Size: 1 to 1.5 cm

Number of Petals: 3

Inflorescence: terminal cluster (15 to 20 flowers)

Colour: white

Other:

FRUIT

Type: papery capsule

Colour:

Size: small

Season: chiefly autumn – winter

SEED sets seed irregularly – need high light levels

Size: unknown

Viability: unknown

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type: fibrous roots

Regrowth Ability: stolons layer and roots form easily from nodes on stolons

DISPERSAL MECHANISMS: water (floods), dumping, disturbance (e.g. brush turkeys, trampling).

REMOVAL TECHNIQUES: spray with glyphosate (1:50) plus acidifier (LI 700®; 0.5%) with regular follow-up treatments, hand removal (regular follow-up required)

Best Season: autumn – winter (spraying)

Other: Garden escape, invasive weed, difficult to eradicate due to ability to regrow from rooted stems

FAMILY: ASTERACEAE

COMMON NAME: Crofton weed

SCIENTIFIC NAME: *Ageratina adenophora*

ORIGIN: Central America

HABITAT: disturbed moist sites on fertile soils

Habit: erect, branched perennial herb

Height: 1 to 2 m

LEAVES:

Length: 4 to 12 cm

Width: 3 to 9 cm

Shape: triangular to rhombic, apex acute to acuminate

Margin: crenate to toothed

Colour: dark green

Arrangement: opposite

Type: simple

Other: slightly hairy or glabrous, veins prominent and hairy

STEM: reddish brown and brittle

FLOWERS

Season: spring

Size: 5 to 8 mm

Number of Petals:

Inflorescence: terminal, campanulate, dense panicle

Colour: white

Other:

FRUIT

Type: achene

Colour:

Size: 1 to 2 mm long

Season: spring

SEED

Size: very small

Viability: unknown

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type: short root stock, weak lateral roots

Regrowth Ability:

DISPERSAL MECHANISMS: wind and water

REMOVAL TECHNIQUES: spray with glyphosate (1:100), if plants stressed (1:50) plus acidifier (LI 700[®]; 0.5%), hand-pull, make sure roots dry out

Best Season: throughout year

Other: declared noxious weed in many shires including Shoalhaven (W2), suspected of poisoning stock

FAMILY: ASTERACEAE

COMMON NAME: Cobblers pegs

SCIENTIFIC NAME: *Bidens pilosa*

ORIGIN: South America

HABITAT: moist sites, disturbed sites

Habit: woody herb

Height: 1 m

LEAVES:

Length: 6 to 8.5 cm

Width: 4 to 7 cm

Shape: lanceolate to ovate

Margin: toothed

Colour:

Arrangement: opposite

Type: simple or 3 to 5 lobed

Other: petiole distinctly lobed

STEM:

FLOWERS

Season: throughout year

Size:

Number of Petals:

Inflorescence: terminal, loose cymes

Colour: ray florets – white; disk florets – yellow

Other:

FRUIT

Type: achene

Colour: dark brown

Size: 5 to 12 mm long

Season: throughout year

SEED

Size:

Viability: unknown

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type:

Regrowth Ability:

DISPERSAL MECHANISMS: wind, animals

REMOVAL TECHNIQUES: spray (glyphosate), hand removal

Best Season: all year

Other: fruit is a barbed achene which attaches easily to clothing and animal fur

FAMILY: MIMOSOIDEAE

COMMON NAME: Black Wattle

SCIENTIFIC NAME: *Acacia decurrens*

ORIGIN: Australia

HABITAT: Grows in dry sclerophyll forest and woodland, often on river banks or rises

Habit: tree

Height: 5 to 15 m

LEAVES:

Length: 7 to 12 cm

Width: approximately 5 cm

Shape: pinnules linear to oblong

Margin: entire

Colour: green

Arrangement:

Type: compound (bipinnate)

Other: jugary glands present, interjugary glands absent

STEM: bark smooth, brown, branchlets angled or flattened, pruinose, sometimes hairy

FLOWERS

Season: July to December

Size: 6 to 10 cm

Number of Petals:

Inflorescence: globose

Colour: golden yellow

Other: heads are 21 to 30-flowered

FRUIT

Type: pod

Colour: dark brown to black

Size: 5 to 10 cm

Season: July to December

SEED

Size:

Viability: 5 years plus

ROOT SYSTEM/UNDERGROUND STRUCTURE

Type:

Regrowth Ability: nil

DISPERSAL MECHANISMS: birds, mammals and ants

REMOVAL TECHNIQUES: Herbicides suitable for woody weeds (trunk injection), felling/removal




Best Season:


Other: Native Australian species which has become an environmental weed in areas

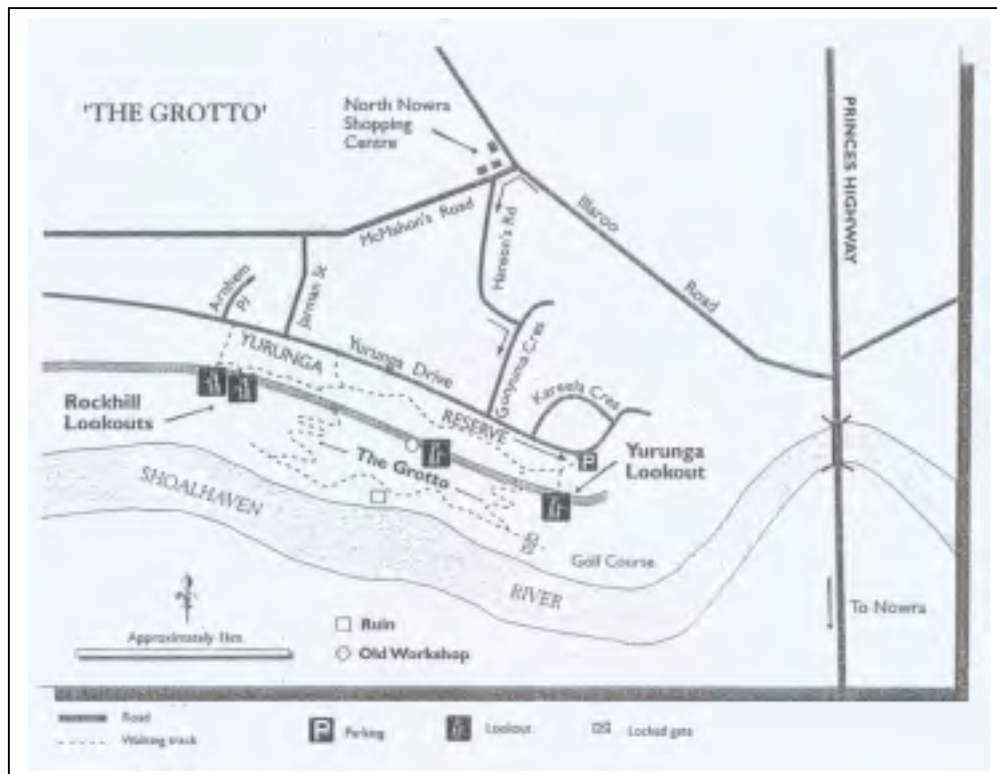
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Location of Interpretive Attractions in The Grotto

Locations of Interpretive Attractions in The Grotto

Interpretive Attraction	Locational Details	Photo/Location Plan
<p>1. Indigenous Heritage Escarpment cave used by local Aboriginal man</p>	<p>In the escarpment behind the second tee and third green on the Nowra Golf Course.</p>	<p>No photo provided to protect precise location of the cave. Signing of the site should be done in consultation with the Local Aboriginal Land Council.</p>
<p>2. Natural Environment and Heritage Rock representative of local geology</p>	<p>East of The Grotto picnic area at the bottom of the escarpment.</p>	
<p>3. Natural Environment and Heritage River access point with information about local river processes</p>	<p>Near picnic area in The Grotto.</p>	
<p>4. European Heritage Market garden site</p>	<p>Centrally located in The Grotto picnic area.</p>	

Interpretive Attraction	Locational Details	Photo/Location Plan
5. Natural Environment and Heritage Cave site	In the escarpment behind The Grotto picnic area.	
6. Natural Environment and Heritage Endemic vegetation	Western edge of The Grotto picnic area.	Multiple areas exist at the Western end of the picnic area.
7. European Heritage Cave workshop used by residents of homestead	In the escarpment approximately 300m west of The Grotto picnic area. Precise location should be determined in consultation with the local historical society.	See map below.
8. European Heritage Homestead site and water tank run	Approximately 350m west of The Grotto picnic area. The homestead ruins are obscured by vegetation regrowth. Precise location should be determined in consultation with the local historical society.	See map below.



<p>9. European Heritage Wharf Site</p>	<p>Approximately 750m west of The Grotto picnic area.</p>	
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Legislation and Policy Summary

LEGISLATION & POLICY SUMMARY

The management of Greys Beach and The Grotto Land requires compliance with existing government legislation & policy. In addition to the Local Government Act 1993 and the Crown Lands Act 1989, the main aspects of current legislation and policy listed in the Plan include:

NSW Environmental Planning & Assessment Act 1979

The EP&A Act has the following objectives:

- to encourage the proper management, development and conservation of natural resources for the purpose of promoting the social and economic welfare of the community and a better environment.
- the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities and their habitats.

Zoning

Any land use proposed for an area must be consistent with the zoning that is applied to the land by Council's Local Environment Plan.

Environmental assessment

Environment Assessment must be carried out for any proposed activity or development. Any change in the use of a reserve area requires a development application (DA) and environmental assessment of the proposed activity under Part 4 of the EP&A Act forms part of the DA. A review of environmental Factors (REF) under Part 5 of the EP&A Act must also be written for those proposed activities which do not require development consent.

Protection of Environment Operations Act 1997

This legislation replaces the Clean Air Act 1961, Clean Waters Act 1970, Pollution Control Act 1970, Noise Control Act 1975, and the Environmental Offences and Penalties Act 1989. It is an offence for a person to discharge pollutants to waters unless they hold an environment protection licence.

State Environmental Planning Policy No. 71 – Coastal Protection

State of Environment Planning Policy No. 71 – Coastal Protection (SEPP 71) Commenced in November 2002. SEPP 71 has been made under the Environmental Planning and Assessment Act 1979 and will ensure that the coastal zone is protected in accordance with the principles of ecological sustainable development.

SEPP 71 makes the Minister for Planning the consent authority for major high-risk development proposals in the coastal zone as defined by the Coastal Protection Act 1979. SEPP 71 also define a category and development assessment process for development in sensitive coastal locations, which are:

- a coastal lake (a list of coastal lakes appears in schedule 1 of SEPP);
- within 100m above mean high water mark of sea, a bay or an estuary;

- land within 100m of the water's edge of a coastal lake, a declared Ramsar wetland, a World Heritage property, an aquatic reserve, a marine park, a national park, a nature reserve, or SEPP 14 – Coastal Wetland; or
- Residential land within 100m of land identified under SEPP 26 – Littoral Rainforest.

Commonwealth Native Title Act 1993

As a result of the High Court Mabo Decision the Commonwealth Government enacted legislation which recognised the interest that indigenous Australian may still hold in some areas of Crown Land. The Act makes provision for:

- Aboriginal and Torres Strait Islanders to lodge native title claims;
- the determination and validation of extinguishment of native title;
- The dealing with land and waters where native title may not have been extinguished; and
- Establishing the existence of native title.

The requirements of this legislation must be followed by reserve trust's when dealing with Crown reserve where it has not been establishment that any native title interest that may have existed in the land has been lawfully extinguished.

The Fisheries Management Act, 1994

Under Section 205 of the Act, the Minister's consent is required for any cutting, removal, damage or destruction of mangroves, seagrasses or any other prescribed marine vegetation on public land.

Native Vegetation Conservation Act 1997

This Act replaces SEPP 46 and incorporates native vegetation clearing controls previously contained in SEPP 46, the Soil Conservation Act 1938, the Western Lands Act 1901, the Crown Lands (Continued Tenures) Act 1989 and the Forestry Act 1916.

The Act provides for the development of Regional Vegetation Management Plans by community based Regional Vegetation Committees. Among other things, the plan will highlight areas where the condition of native vegetation should be improved and recommend areas that should be revegetated.

Section 7 provides that a person shall not ringbark, cut down, poison, top lop, remove, injure or otherwise destroy any tree or cause such to be done on any protected land in or within 20 metres of the bed or bank of any part of a river, stream, lake, lagoon or swamp, etc, without prior approval from the Department of Lands.

Protected lands which are identified as prescribed streams in the Shoalhaven are:

- Clyde River and 8 tributaries
- Coonemia Creek
- Croobyar Creek

- Crookhaven River
- Currumbene Creek
- Parma creek
- Shoalhaven River and 28 tributaries including
- Kangaroo river
- Brogers Creek
- Broughton Creek
- Yalwal Creek
- Wandandian Creek

Threatened Species Conservation Act 1995

The objectives of this Act are:

- a) To conserve biological diversity and promote ecologically sustainable development.
- b) To prevent the extinction and promote the recovery of threatened species, populations and ecological communities
- c) To protect the critical habitat of those threatened species, populations and ecological communities that are endangered
- d) To eliminate or manage certain processes that threaten the survival of evolutionary development of threatened species, populations and ecological communities.
- e) To ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed.
- f) To encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.

Species Impact Assessments must be written for all proposed new work that is 'likely to significantly affect threatened species, populations or ecological communities or their habitats'.

Rural Fires Act 1997

Section 63(1) states:

"It is the duty of a Public Authority to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bush fires on, and to minimise the spread of a bush fire on or from:

- (a) any land vested in or under its control or management, or
- (b) any highway, road, street, land or thoroughfare, the maintenance of which is charged to the authority."

One of the objects of the Rural Fire Act is to provide "for the protection of the environment by requiring certain activities to be carried out having regard to the priorities of ecologically sustainable development described in Section 6(2) of the Protect of Environment Administration Act 1991"

Water Management Act 2000

The objects of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular:

- (a) to apply the principles of ecologically sustainable development, and
- (b) to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and
- (c) to recognise and foster the sufficient social and economic benefits to the State that result from the sustainable and efficient use of water, including:
 - (i) benefits to the environment, and
 - (ii) benefits to urban communities, agriculture, fisheries, industry and recreation, and
 - (iii) benefits to culture and heritage, and
 - (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of the land and water,
- (d) to recognise the role of the community, as a partner with the government, in resolving issues relating to the management of water sources
- (e) to provide for the orderly, efficient and equitable sharing of water from water sources,
- (f) to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna
- (g) to encourage the sharing of responsibility for the sustainable and efficient use of water between the Government and water users,
- (h) to encourage best practice in the management and use of water

Part 3A Protection of Rivers and Lakes (covered under Rivers and Foreshores Improvement Act 1948)

Protected land – the bank, bed or shore of protected waters; note more that 40m from top of the bank or shore of protected waters; material deposited on or under the above mentioned land.

Protected waters – a river, lake (assoc. with river), coastal lake or lagoon (include. any permanent/temp. channel between a coastal lake or lagoon & the sea).

A permit is required to excavate on, in, under protected land; remove material from protected land; do anything which obstructs/detrimentally affects flow of protected waters (or is likely to do so).

This does not apply to Council. However if the Constructing Authority believes that work conducted by/for Council has

- (a) damaged or detrimentally affected or is likely to damage or detrimentally affect protected land, or
- (b) caused or is likely to cause, whether directly or indirectly, protected waters to contain their course

then they may require Council to undertake specified works in a specified time.

Environment Protection and Biodiversity Conservation Act 1999

This Act provides protection for matters which are considered to be of national environmental significance (NES). Specifically:

- World Heritage properties
- RAMSAR wetlands
- Nationally threatened species and communities
- Internationally protected migratory species
- Commonwealth areas
- Nuclear actions

The EPBC Act establishes a new legislative framework to protect and conserve nationally important aspects of the environment and to conserve biodiversity.

The Act is triggered only if there is a direct action (on-ground) involved, if there is an effect on an NES matter and if the impact is significant.

Should the Act be triggered, all State Government approvals are firstly required before the matter is referred to the Federal Government for final approval.

NSW Rivers and Estuary Policy

The objective of the policy is "to manage the rivers, estuaries and adjacent wetlands of NSW in ways which:

- slow, halt or reverse the overall rate of degradation in their systems;
- ensure the long-term sustainability of their essential biophysical functions, and
- maintain the beneficial use of these resources" (NSW Government, 1992).

The policy contains a set of management principles to achieve the objective of the policy. The policy also contains several sub-policies including the State Wetlands Policy. Recommendations of this assessment and future use and management of the study area and its watercourses and wetlands would need to be consistent with this policy.

River and Foreshores Improvement Act, 1948

This Act makes provision for the protection and improvement of protected waters (i.e., watercourse as defined in the Act) and the associated beds, banks, shores and land within 40 metres of these waters. Any works within 40 metres of protected waters need to be referred to DLWC to determine where the works require a permit under Part 3A of the Act

Food and Beverage Outlets on Crown Reserves Policy

The policy addresses the need to maintain the integrity of the special nature of public purpose reserves, a consistent approach to the establishment of these facilities across the state. The policy delineates which food and beverage outlets are suitable and which food and beverage outlets may not be suitable.

Shoalhaven City Council Recreation Strategy (1999)

Council adopted a Recreation Strategy in late 1999 which aims to

“Improve the quality of life in the Shoalhaven by creating a diversity of recreation opportunities whilst protecting and enhancing the natural and built environment”

The Recreation Strategy identifies a range of actions to meet this goal, based on the following:

The provision of recreation facilities, programs and services is to:

- (a) be based upon an assessment of current and future needs.
- (b) be realistic in terms of Council's (and the community's) ability to operate and maintain them.
- (c) ensure the achievement of equity of opportunity for all individuals and groups within the city, regardless of age, ability, ethnicity or economic capacity.
- (d) avoid unnecessary duplication of opportunities.
- (e) be based upon efficiency, quality and continuous improvement principles and approaches.
- (f) be based upon meaningful community consultation.
- (g) incorporate resource sustainability practices and principles.
- (h) incorporate best practice risk management processes to reduce public risk.
- (i) include the encouragement and support of community and commercial initiatives in the provision and management of recreation opportunities.