



Pittwater's Ocean Beaches Plan of Management

Chapter 14 - *Avalon Beach*

Prepared by Pittwater Council

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14.0 AVALON BEACH

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14.1 INTRODUCTION

Avalon Beach lies east of Clareville, between Whale Beach to the north and Bilgola to the south. The beach is bounded by Barrenjoey Road to the west.

Avalon Beach is located in the suburb of Avalon Beach, having been renamed from Avalon, as assigned 20 January 2012.

The early land grants in the Avalon area were to John Farrell in 1827 and Father John Joseph Therry in 1833. In 1921 Arthur J. Small instigated the subdivision of the Avalon area and funded public amenities including Palmgrove Park and the golf course and he named the area 'Avalon'.

Avalon Beach is a surfing beach. It is patrolled by Avalon Beach Surf Life Saving Club members during the summer season. A 25 metre salt water rock pool is located at the southern end of the beach. Avalon Beach village shopping centre located within walking distance of the southern beach.

The attached boundary map (refer **Figure 14-1**) shows the area covered within this plan of management, illustrating the Reserve boundary and adjoining land uses.

The study area incorporates Avalon Beach, rock platforms, rock pool and sand dunes. Surrounding parklands consist of Avalon Beach Reserve which contains the access road and parking, skate park, small playground and picnic area. Separated at the northern end of the beach is Des Creagh Reserve which provides road access parking and a small area of parkland.

The rock platform to the southern extent of the beach accommodates a rock pool which is divided into a larger swim pool and smaller children's pool. The pool access pathway, the pool and surrounding area need appropriate maintenance to ensure the ongoing safety of users, continued aesthetic and view preservation.

The southern end of the Reserve forms a headland bounded by car parking along Avalon Parade / Surfside Avenue. The headland provides an excellent vantage point to view the surf beach and coastal panorama. A low post and rail fence provides a barrier to the street along the cliff edge.

The southern area of the reserve, at the base of the headland provides the main focus for recreational activities, car parking, surf club events and access to the Avalon Beach village shopping centre. This area includes a small playground and picnic area. The dunes do not extend into this area therefore it is exposed to strong winds and erosion. The existing mature Norfolk Island Pine trees are threatened by the coastal conditions.

A.J. Small planted the Norfolk Island Pine trees (*Aracaria hetrophylla*) along the beachfront. Norfolk Island Pine trees are endemic to Norfolk Island. They appealed to earlier settlers due to their

distinctive appearance and coniferous shape. In 1816 Mrs Macquarie, wife of Governor Macquarie planted a Norfolk Island Pine tree in the *Demesne* (Domain). Norfolk Island Pine trees continued to be planted during the twentieth century. Their presence in coastal areas, including Pittwater is further linked to their ability to withstand salt and wind. While the mature trees have an element of interest, young trees that have self seeded should be removed immediately.

The SLSC building and public amenities are adjacent and to the north to this area. The Avalon Beach SLSC was established in 1925 with the original financed by A. J Small. The current SLSC building dates from 1961. Subsequent deterioration over time necessitates continuous repair and refurbishment of the building. The car park adjoining this area can be hazardous for pedestrians, specifically at the entrance off Barrenjoey Road and in particular during peak periods.

On the western side of the car park is the Avalon skate park. This is well used by young people, accommodating skateboarders, in-line skaters and BMX cyclists.

The sand dunes are located north of the SLSC building and extend behind the majority of the beach to Des Creagh Reserve. The dunes form a significant backdrop to the beach.

The large dune to the north was removed (mined) in the 1960s to supply Sydney's building market. Mining was stopped due to local opposition to the loss of the dunes. The Soil Conservation Service reshaped the remaining sand and dunes (not the north-west area) and divided the dunes into 'paddocks' fenced the area and installed walkways.

There is no record of the plants used during the dune stabilisation work. An article in the Soil Conservation Journal stated that several local native dune plants had been planted, and some non-native species but it didn't name them - possibly Bitou was among them as it had been in use to stabilise beaches after sand mining along the coast in the 1960s. Regardless of whether Bitou was planted or not, by the late 1980s Avalon dunes were 80% covered in Bitou.

Since 1989, the dunes have undergone a remarkable renewal and rehabilitation, with weeding and planting, largely undertaken by the *Friends of the Avalon Dunes Dunecare group* assisted by several grants, and works by Warringah then Pittwater Councils.

Many people who remember the dunes in the 1960s think they were much higher but this is probably not the case. The dunes look very different now covered in thick vegetation compared to looking up a hill of sand. Since rehabilitation a lot of sand has been captured by dune vegetation on the foredunes.

The story of the restoration project is available in *Avalon Dunes: Restoring a Metropolitan Dune System*, by NSW Environmental Trusts and Friends of Avalon Dunes Dunecare Group. Publisher: the Friends, 1995. (This little book isn't widely available as only a few copies were published).

An open lineal pedestrian corridor, bounded by Barrenjoey Road and the fenced dunes, connects the southern reserve area to the north end of the beach. This area is divided and dominated by the Careel Creek concrete drainage channel. The area is hot in summer because it is devoid of shade trees and the dunes block the sea-breezes.

Des Creagh Reserve to the north is a flat open grassed area between the northern car park and the fenced dunes. The area has no shade trees and few facilities; however, it provides an informal recreation area adjacent to the Barrenjoey Montessori School and Barrenjoey High School.

The northern end of Avalon Beach has a unique local character with its expansive view over the beach and dunes as well as the bush-clad hills beyond. This location is popular with local surfers because it offers protection from the dominant north-easterly winds in summer. The facilities in this area include an irregular shaped car park, with no delineation of car parking spaces, an amenities building and an outdoor shower.

The eastern steps leading down to the beach from the car park have been landscaped with sandstone faced terraces and some seating is provided. A stormwater outlet located at the base of these steps, seriously affects the amenity and recreational use of this area after storms and rain periods. During and after rain periods or storms, the stormwater outlet near the base of the North Avalon beach steps, scours the beach face and creates potential health risks.

Community Consultation

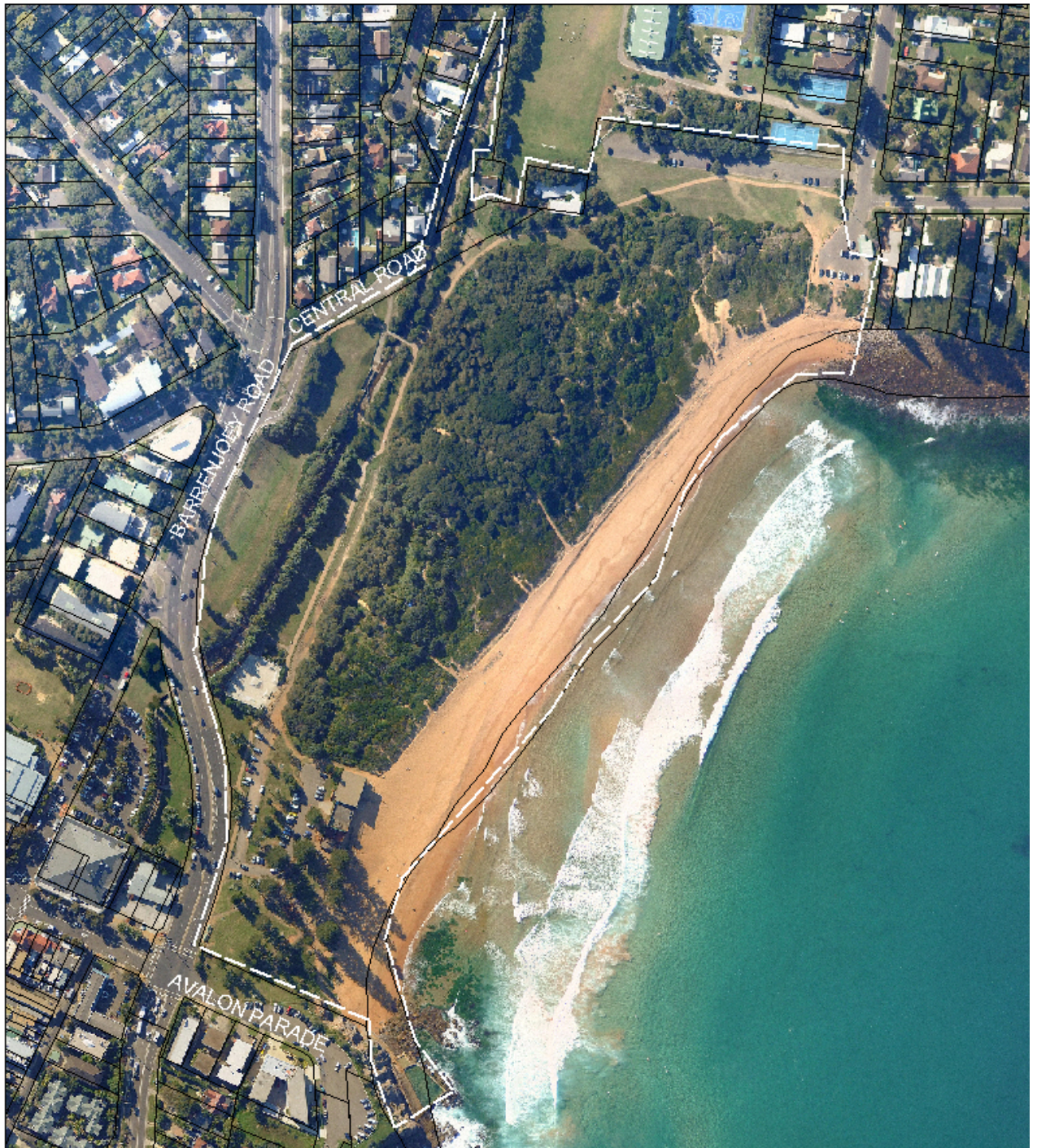
A community meeting was held on 18 November 2012, during the development of the draft plan of management. 31 submissions supporting the proposal were received.

Several stakeholder meetings were held, including:

- Friends of Avalon Dunes Dunecare group 7 November 2012
- Avalon Chamber of Commerce – 11 November 2012
- Avalon Historical Society – 14 November 2012
- NASA and north Avalon residents – 19 January 2012

Issues raised at the meetings and submissions received have been taken into account during the preparation of the draft Plan of Management.

Figure 14-1 | Avalon Beach – Boundary Map



The management area covered by this plan of management is shown by the white dashed line. It should be noted that this line is an indicative boundary only, particularly the seaward boundaries given the ambulatory nature of high and low water mark.

14.2 LAND TENURE, ADJOINING LANDHOLDINGS AND LAND CATEGORISATION

14.2.1 LAND TENURE

Refer **Figure 14-2** for Ownership Map.

Land and Property Management Authority land described as:-

The sand area of Avalon Beach is vacant Crown Land reserved from sale or lease as contained in Regional Crown Reserve R1012329 (RCR). The RCR also contains the intertidal zone, rock pool (and submerged lands to the three nautical miles State territorial limits).

Council owned land described as:-

- Lot 202 DP 1107408
- Lot 2 DP 607010
- Lot 3 DP 322514 (part of)
- Road Reserve (part of) – Avalon Parade

14.2.2 ADJOINING LANDHOLDINGS

The study area is zoned 6(a) Existing Recreation 'A' with a small section of Arterial Road Reservation (Zone 9(d)) along Barrenjoey Road from Old Barrenjoey Road to Central Road.

The Adjoining zoning to the beach reserve is largely 2(a) Residential "A".

Other adjoining zonings include:-

- 3(a) General Business "A". Avalon Beach is the only beach in Pittwater to adjoin a major commercial district/business centre;
- 5(a) Special Uses "A" (including Maria Regina Primary School, Barrenjoey High School, Barrenjoey Montessori School, fire-station and pumping station); and
- Local Road Reservation

Refer **Figure 14-3** for Zoning Map.

14.2.3 LAND CATEGORISATION

Refer **Figure 14-4** for Categorisation Map.

There is no statutory provision or requirement to categorise Crown land. In interests of an inclusive and holistic management approach the strip of Crown land which is located between the intertidal areas of the beach reserve has been included in a community land category in accordance with the majority of the beach.

General Community Use - covers the Avalon Beach SLSC building and the amenities block located at North Avalon, the rockpool, the skate park and all of the carpark areas.

Park – This category has been applied to the areas of open space generally enjoyed for passive recreation including the Avalon Beach

Reserve, shared path and associated areas and the Des Creagh Reserve.

Natural Area (foreshore, watercourse) – These sub categories have been widely applied to the beach / dune area and the watercourse (Careel Creek) running through the reserve.

Figure 14-2 | Land Ownership Map



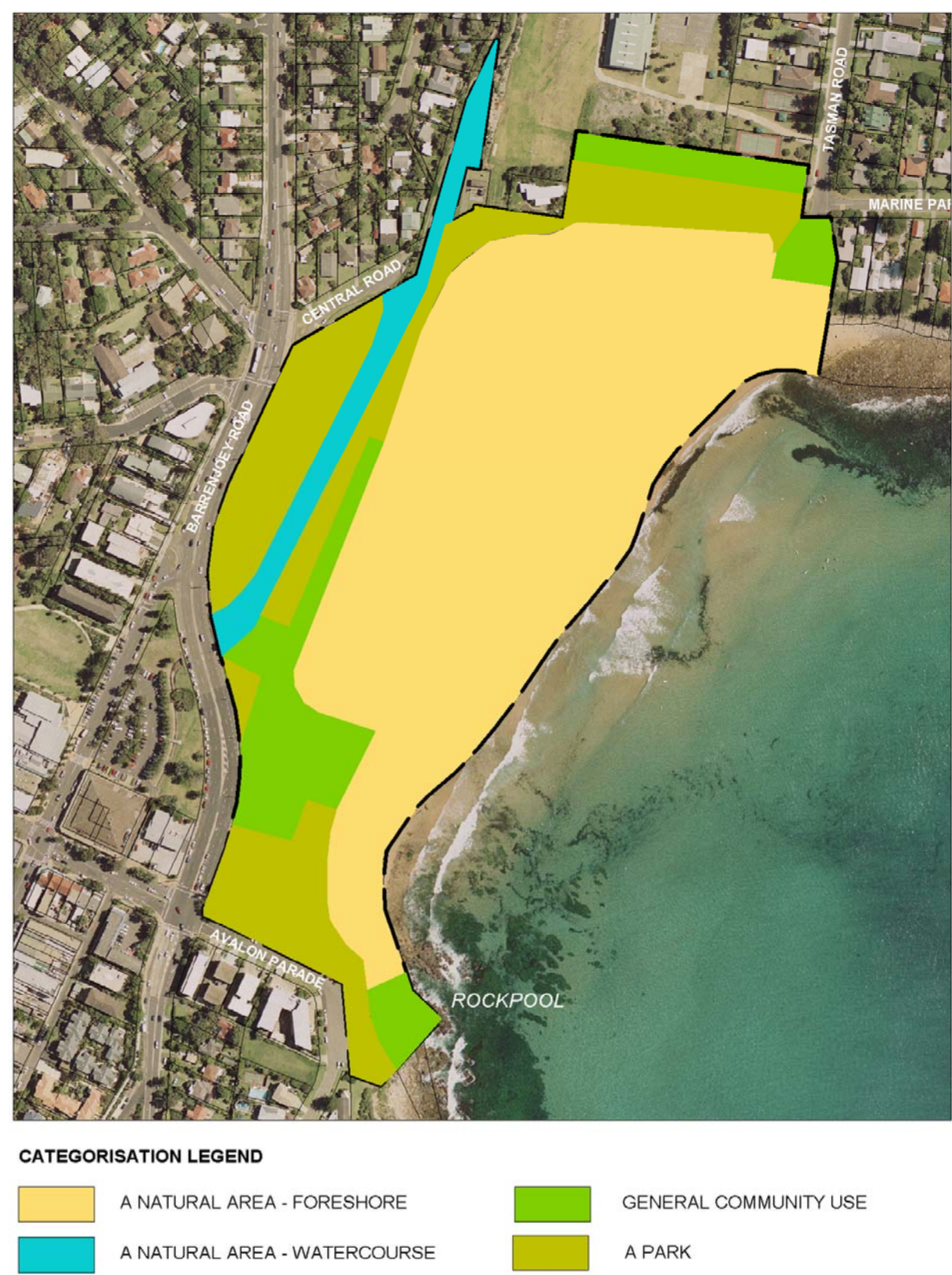
Figure 14-3 | Zoning Map



INDICATIVE RESERVE BOUNDARY -----

Note: Aerial image may be subject to inconsistencies with mapping (illustrative only)

Figure 14-4 | Categorisation Map



14.3 CURRENT USES OF AVALON BEACH

14.3.1 BUILDING AND RECREATION FACILITIES

Avalon Beach **SLSC Building** is located on the beach frontage of South Avalon Beach and accommodates surf life saving facilities, storage, male / female showers and toilets, and community rooms / function facilities.

The grassed area adjacent to the SLSC building includes seating, picnic settings, children's play equipment, litter bins, bubblers, outdoor showers / taps and lighting.

The **Avalon Skate Park** is located at the southern end of Avalon Beach and is an extremely popular facility with local youth. The shared path, known locally as the 'Yellow Brick Road' extends from the southern beach reserve road entry to North Avalon Beach and car park (Tasman Road).

Des Creagh Reserve is located at the northern end of the beach. The reserve includes a car park (providing access to the Barrenjoey Montessori School and occasional access to Barrenjoey High School) and an open grassed area, which is popular for picnics, male and female toilets and an outdoor shower. The Avalon dunes form a protective natural barrier to the main beach.

14.3.2 ROCK POOL

The rock pool, located at the southern end of Avalon Beach, is divided in two, to form a larger pool that is approximately 25m in length and a smaller shallow children's pool that is approximately 7m in length.

14.3.3 VEHICULAR ACCESS AND PARKING

Car parks are located at both the southern and northern ends of the beach – adjacent to Des Creagh Reserve and the SLSC building respectively. The car park at the northern end of the beach accommodates approximately 30 cars and is not line marked.

The southern car park is surfaced and line marked adjacent to the SLSC building, accommodating approximately 35 cars. The lower section adjacent to the shared path and skate park is currently being formalised and sealed. Further to the north, informal parking areas are regularly used to ease parking overflow. This area is subject to drainage problems and conflict with existing tree and dune planting. Upgrades to the overflow parking area will be undertaken in the future as Stage 2 of the works.

The parking areas are subject to a 'Pay and Display' vehicle parking payment system (Refer Section 5.3.2). This Plan of Management authorises the charging of parking fees in accordance with Council's Policy No. 18 – 'Parking – Issue of Annual Permits – Waiving of Annual Fees' (as determined by Council) by automated ticketed parking systems.

14.4 LEASES, LICENCES AND OTHER ESTATES

Refer Section 4.4 on Leases, Licences and other estates.

14.4.1 CURRENT

The only lease currently applicable to Avalon Beach is between Council and Avalon Surf Life Saving Club for a period of 21 years from 19 July 1999 to 18 July 2020.

This PoM authorises a lease between Council and the Avalon Surf Life Saving Club for the building excluding the proposed café, restaurant and public toilets/change room's area.

This PoM authorises a lease with Council with separate arrangements for commercial tenants.

Refer to Risk Management, section 14-5.4 for further details on leases and other arrangements.

14.4.2 PROPOSED

This Plan of Management authorises the leasing, licensing or granting of any other estate over Avalon Beach for any commercial activity that results in a diverse range of recreational activities or an activity that is deemed to be of community benefit being provided in the area.

Future proposed leases at Avalon Beach include, but do not preclude any future leases at this location;

- Avalon Beach food & beverage outlets. The proposals:
 - (i) will be consistent with the use of the open space for recreational purposes;
 - (ii) will enhance the public use of the open space; and
 - (iii) be generally in accordance with the concept plans / elevations and associated figures within this Plan of Management (refer 14.5.5)
- Community use. Council may lease areas of the SLSC building to community groups and associations. Proposals must be for the community benefit and may take the form of singular or recurrent bookings.

14.4.3 PERMISSIBLE USES TABLE

The permissible and prohibited activities and developments in the subject reserve area have been detailed in **Table 14-1 – Avalon Beach Permissible Uses Table**.

Development Application and Permit Procedures

Any proposed uses or development and building works that are permitted only with Development Consent (consistent with the uses listed in the Permissible Uses Table) would be subject to the normal

Development Application process required by Council in accordance with the *Environmental Planning and Assessment Act, 1979*.

Certain activities are subject to Council Permit approvals, in accordance with the relevant Council Policy. A summary of relevant Policy documents and the activities applicable, but not limited to, is detailed below:

- **Council Policy No 18 Parking – Issue of Annual Permits – Waiving of Parking Fees:**

- Pay Parking Facilities

- **Council Policy No 24 – Professional Lifeguard Service:**

- Surf Life Saving Activities & Events

Council Policy No. 52 – Surf Life Saving Movement

- Minimum standards for surf club buildings
- Activities and administrative arrangements
- Identifying SLS / public buildings on beach reserves

- **Council Policy No 88 Beach & Rockpool Management Policy:**

- Beach and Beach Reserves
- Beach Rockpools and Baths
- Regulations for the use of Public Bathing Reserves
- Beach Usage Fees
- Management of Commercial Activities on Beach Reserves – commercial filming, corporate functions, powerboat racing, fire works, surf contests
- Beach Compliance
- Charges relating to the release of Impounded Equipment
- Vehicles / Quad Bikes / All Terrain Vehicles on Beach Reserves

- **Council Policy No 93 Reserves, Beaches & headlands Booking Policy:**

- Social, sporting, community and commercial events i.e. weddings, charity events, fireworks
- Lease Agreements

- **Council Policy No 98 Helicopter Landings on Council Owned and Controlled Property:**

- To define conditions for the use of helicopters undertaking civil operations.
- To control the environmental impacts and public risks associated with helicopters

- **Council Policy No 129 Signs - Council's Facilities:**

- Determine appropriate signage
- Manage risks and minimise exposure to public liability

Table 14-1 | Avalon Beach Permissible Uses Table

Part II – General Restrictions: Zone 6(a) Existing Recreation 'A' (PLEP 1993)

Without Development Consent Permissible Uses 'exempt' development (these may require approval under Part V of the EPA Act 1979 and/or Council Permit and/or referral to Council)	Only with Development Consent Permissible Uses requiring Development Consent	Prohibited Including but not limited to the following
<p><u>Advertising</u> (temporary) in accordance with Council's DCP</p> <p><u>Alcohol-free zones</u> requiring consent of Council and consent of other relevant committees i.e. Traffic Committee. Consumption of alcohol in alcohol-free zones (providing appropriate signposting eg. <i>'the consumption of alcohol is prohibited without the express permission of Pittwater Council'</i> is in existence</p> <p><u>Beach and Rockpool Management</u> (in accordance with Council Policy No. 88)</p> <p><u>Booking Policy – Reserves, Beaches & Headlands No. 93.</u> – to allow, but control the impact of group activities.</p> <p><u>Car parking area (sealed or unsealed)</u> ancillary to use of the community land (in accordance with Masterplan & Management Strategy / Works Programme)</p> <p>Feral Animal Control and Eradication (treat as required)</p> <p><u>Filming and Professional Still Photography</u> will be allowed with Council permission and in accordance with Council conditions.</p> <p>Fire Hazard Reduction Activities in accordance with legislative requirements.</p> <p><u>Food Premises</u> (in accordance with Council Policy No 29).</p>	<p><u>Major Works / Permanent Structures</u> – generally in accordance with Masterplan and Management Strategy, including but not limited to: Major buildings / structures Buildings ancillary or incidental to the park Surf Club Building reconstruction – generally in accordance with section 14.5.8 or Concept Plans contained in this Plan of Management Provision of food & beverage outlets including ancillary support facilities – generally in accordance with section 14.5.8 or Concept Plans contained in this Plan of Management Telecommunications / mobile telephone transmission facility or tower</p> <p>Temporary Activities</p> <p>Certain activities i.e. surf club events and competitive ocean swims are subject to Council</p>	<p>Any purpose other than a purpose for which development may be carried out without development consent or only with development consent.</p> <p>Development and temporary activities or events, leases, licenses and other estates not consistent with the Local Government Act core objectives for (where applicable): a natural area; a park; or general community use, or Pittwater Council's goals for this reserve</p> <p>Prohibited Activities: Advertising (permanent) Agriculture Animals on the beach with the exception of Guide Dogs for the visually impaired Domestic drainage outlets Extractive industries (excepting fishing with permit) Gaming</p>

Without Development Consent Permissible Uses 'exempt' development (these may require approval under Part V of the EPA Act 1979 and/or Council Permit and/or referral to Council)	Only with Development Consent Permissible Uses requiring Development Consent	Prohibited Including but not limited to the following
<p><u>Helicopter landings</u> if consistent with the core objectives of the park and with the General Manager of Council's approval (in accordance with Council Policy No 98)</p> <p><u>Lease Agreements</u> (in accordance with Council Policy No</p> <p><u>Liquor Licensing Applications</u> (in accordance with Council Policy 175).</p> <p><u>Maintenance / minor works</u> – in accordance with the Masterplan & Management Strategy / Works Programme, including but limited to the following:</p> <p>bush regeneration and land / habitat restoration works (including temporary access and storage of materials for work, minor excavation & levelling, grading, installation of protective fencing and weed removal)</p> <p>children's playground equipment and structures</p> <p>dune stabilisation and foreshore protection measures</p> <p>earthworks to construct structures (including filling, levelling, grading and topdressing)</p> <p>fencing including security, childproof, protective and temporary fencing</p> <p>multi-use pathways and tracks (other than for motor vehicles)</p> <p>footpaths, cyclepaths, boardwalks, minor footbridges, steps, ramps</p> <p>land restoration works, including mounding</p> <p>landscaping works, including garden beds, laying turf and re-turfing</p> <p>lighting of reserve, including floodlighting of beach areas for beach related activities</p> <p>drainage, stormwater, erosion and sediment control works</p> <p>park furniture i.e. seating, bins, shade structures, outdoor showers and shelters</p>	<p>approval and Permits. A D.A is required when the:</p> <ul style="list-style-type: none"> • number of participants and / or spectators on any one-day of an event exceeds 2000; • activities occur outside the period of 6.30am to 11.30pm; and • activities or temporary facilities occur over a total of more than 14 continuous days 	<p>Obstructing access or leaving goods in dangerous condition</p> <p>Private alienation or encroachment onto the reserve</p> <p>Private vehicular access to adjoining lands</p> <p>Recreational motor vehicles, including four-wheel driving, motorbike or trail bike riding, or similar, other than use for surf life saving and filming on a short term basis (in accordance with Council Policy No 88)</p> <p>Residential</p> <p>Storage of watercraft or equipment below Mean High Water Mark (MHW)</p> <p>Unauthorised dumping of refuse including building materials, soil, fill, garden wastes and the like (other than importing of fill for permitted works)</p> <p>Vegetation removal not in accordance with Council's Tree Preservation and Management Order, or this Plan of Management.</p> <p>Avalon Beach Reserve and Des Creagh Reserve are Alcohol Prohibited Areas – Evening Restricted Only 8pm to 8am.</p>

Without Development Consent Permissible Uses 'exempt' development (these may require approval under Part V of the EPA Act 1979 and/or Council Permit and/or referral to Council)	Only with Development Consent Permissible Uses requiring Development Consent	Prohibited Including but not limited to the following
<p>viewing platforms / decks</p> <p><u>Overflow vehicle parking</u> on a temporary basis for special events, large film shoots, etc.</p> <p><u>Professional Lifeguard Service</u> No 24.</p> <p><u>Recreational equipment hire</u> eg. Bicycles, non-powered watercraft, umbrellas, banana chairs, locker storage equipment, etc.</p> <p><u>Temporary activities</u> require a casual booking or permit from Council, or a licence under the Crown Lands Act 1989. Note: certain activities i.e. Surf Club Events & Competitive Ocean Swims may be subject to relevant authority approvals. Council Permit approval subject to temporary activities satisfying all of the following criteria: number of participants and / or spectators on any one-day of an event does not exceed 2000; activities do not occur outside the period of 6.30am to 11.30pm; and activities or temporary facilities do not occur over a total of more than 14 continuous days</p> <p><u>Tourism in Pittwater</u> (in accordance with Council Policy No. 21).</p> <p><u>Pay Parking Facilities</u> (in accordance with Council Policy No 18)</p> <p><u>Risk Management for Coastal Public Buildings Assets in Pittwater</u> (in accordance with Policy No 186)</p> <p><u>Signage</u> – compliance, directional, interpretive, identification and safety (in accordance with Council Signs – Council Facilities Policy</p>		<p>Part of Avalon Beach Reserve is contained within the Alcohol Free Zones (effective from 1 October 2009 until 30 September 2013). See Appendix 2.</p> <p>Note: The building occupied by Avalon Beach Surf Life Saving Club is excluded from the Alcohol Prohibited Area.</p>

Without Development Consent Permissible Uses 'exempt' development (these may require approval under Part V of the EPA Act 1979 and/or Council Permit and/or referral to Council)	Only with Development Consent Permissible Uses requiring Development Consent	Prohibited Including but not limited to the following
<p>No. 129)</p> <p><u>Significant Tree Policy</u> No 118 – to protect large amenity trees with visual significance (such as the Norfolk Island Pine trees during construction works).</p> <p><u>Temporary Storage on Council Land</u> (in accordance with Council Policy No 84).</p> <p>Utility Installations</p> <p><u>Urban Stormwater</u> – Integrated Policy (in accordance with Council Policy No 69)</p> <p><u>Vehicular access</u> subject to Council approval (in accordance with Council Policy No 88)</p> <p><u>Reserves, Beaches and Headlands Booking Policy</u> (in accordance with Council Policy No 93)</p> <p><u>General Information</u> – Exempt Development (Part B DCP 22) Only if, but limited to development that: is of minimal environmental impact complies with DCP 22 and PLEP 1993 does not cause interference with the amenity of the neighbourhood i.e. noise, vibration, smell, fumes, smoke, waste products, grit or oil, or otherwise does not restrict any vehicular (mobility vehicles only) or pedestrian access to or from the site.</p>		

14.5 PROPOSED IMPROVEMENTS

14.5.1 MASTERPLAN

The attached Masterplan (refer **Figure 14-5**) for Avalon Beach has been developed to illustrate the works and improvements to the beach and surrounds that are required to address key management issues and objectives. Specific improvement works have been described in greater detail.

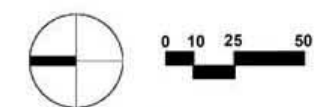
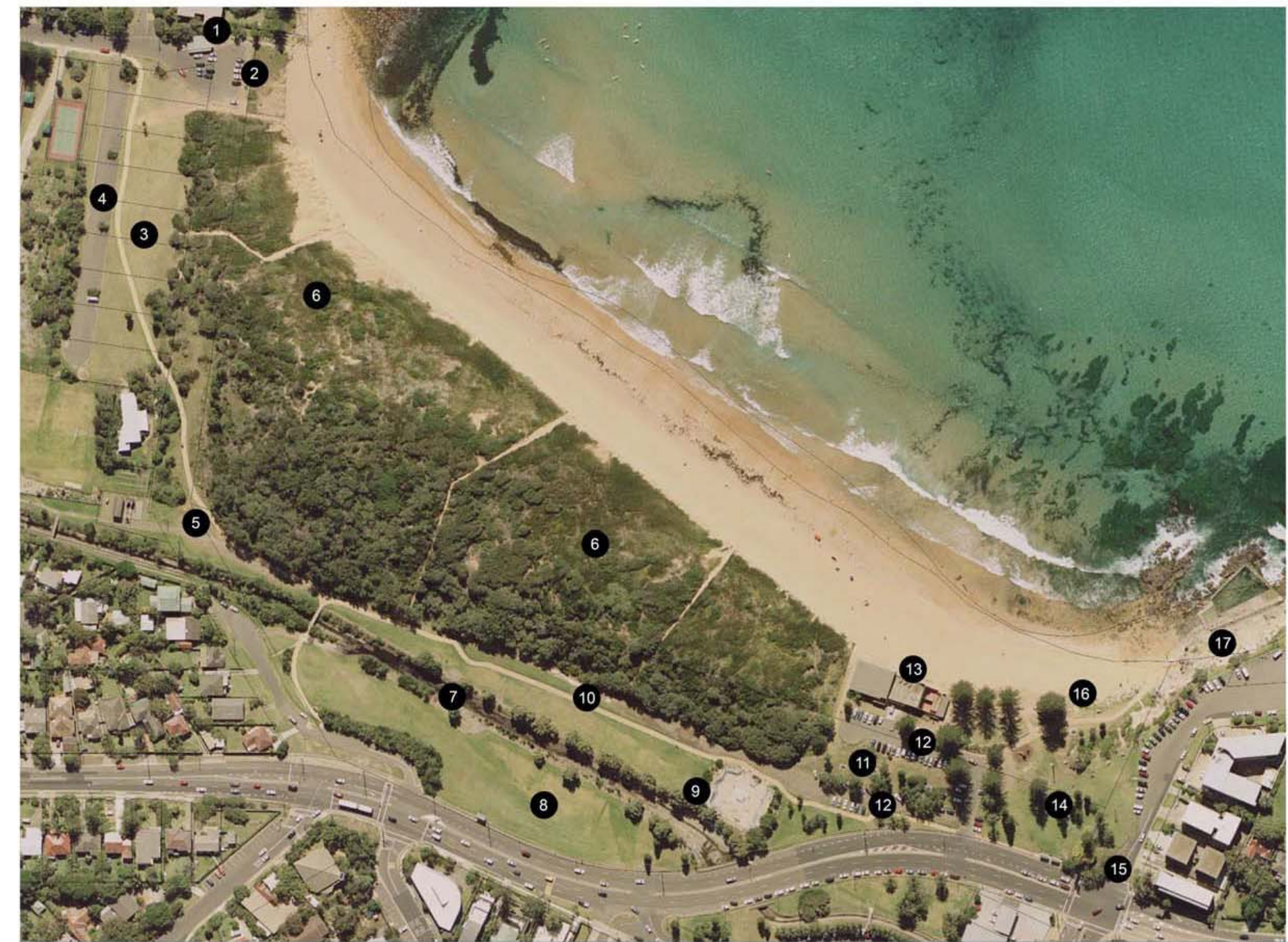
Note

A community working party will be established to provide feedback to Council staff and the surf club on the detailed design of the amenities relating to the restaurant prior to the DA being lodged for the proposed restaurant.

The resolution from the Council meeting on 3 December 2012 stated that ". . . Council authorise the expenditure of funds for the construction of this project, subject to the confirmation of the grant funding being confirmed."

Figure 14-5 | Avalon Beach – Masterplan

master plan



notes

- 1 North Avalon Amenities Building**
Maintain and upgrade the amenities building and surrounds as required, having regard to public safety issues.
- 2 Northern Car Park and Beach Access**
Carry out general maintenance of road surface material as required (reseal / bay demarcation). Install an additional picnic table to stepped / grass terracing and additional steps to northern beach access, to ensure a safe access point. Investigate re-direction of stormwater outfall to Careel Creek system. Re-orientate the southern beach access path to address the issues of sand 'blow out' from beach and into the car park. Improve car park verge viewing area and investigate provision of small timber deck.
- 3 Des Creagh Reserve**
Plant shade trees e.g. *Banksia integrifolia* within reserve / along pathway, ensuring the existing open grassed area is maintained. Investigate the opportunity to install a small playground and provide additional picnic furniture / shade trees. Instigate weed infestation removal programme.
- 4 Car Park**
Maintain existing car park arrangement, ensure the car parking bays are well marked and carry out general maintenance of road surface material (reseal) as required. Rejuvenate existing planting beds including weed treatment, new tree and shrub planting. Reinstate 'Pay & Display' parking system.
- 5 Pathway network**
Maintain and upgrade the existing pathway connection as required having regard to public safety, including ensuring sight lines are maintained by pruning back vegetation and installation of lighting and seating in key locations. Make provision for extension of network as per Pittwater Walks & Rides Strategy Masterplan (June 2005). Re-turf area adjacent to pumping station and plant indigenous trees.
- 6 Avalon Dunes**
Ongoing maintenance and regeneration works including, upkeep of the protective fencing, removal of weed species, creation of landscape edge 'buffer' and supplement planting e.g. Spinifex, Pigface and other salt tolerant local coastal species. Ensure dunal vegetation is maintained to the existing fence line on the eastern side and upgrade and maintain existing beach access paths as required. Restore rear dune area adjacent to Montessori School and incorporate into main dune extent to consolidate maintenance regimes.
- 7 Careel Creek**
Management of Careel Creek to be in accordance with the *Careel Creek Floodplain Risk Management Plan* - Adopted by Council in December 2002. Supplementary works to include staged removal of exotic species ie. Norfolk Island Hibiscus, targeted weed suppression treatments, riparian restoration / planting to strengthen creekbank vegetation. Investigate 'naturalisation' of concrete channel.
- 8 Western Reserve Area**
Maintain the existing grassed area / sport courts as required, having regard to public safety and drainage issues. Incorporate shade trees around recreation / court areas and street trees to Barrenjoey Road.
- 9 Skateboard Park**
Maintain existing skate park facility, including re-surfacing as required, refurbishment, new seating and enhancement of surrounding vegetation, having regard to public safety and amenity issues. Investigate installation of lighting.
- 10 Central Reserve - Occasional Use Car Park (seasonal)**
Define angle parking layout to maximise overflow parking facility, coordinate with existing dune vegetation (trim to maintain undulating edge), establish dune edge 'vegetated buffer' and install hard surfacing / drainage. Provide lighting along pathway. Establish informal avenue of shade trees ie. *Banksia* spp. to improve user amenity on pathway.
- 11 Car Park Reserve Area**
Re-turf and re-grade grassed area where required, supplement existing shade trees with new trees and install additional picnic tables. Define, by way of a connecting vehicular route, the existing desire line between the lower car park area and the upper car park (refer Concept Plan).
- 12 Southern Car Park**
Upper Carpark - Ensure car parking bays are well-marked and carry out general maintenance of road surface material as required. Remove existing 'copper log' barriers and replace with wheel stops and hardwood timber bollards where appropriate. Re-paint existing feature bollards.
Lower carpark - Redefine parking layout including bitumen pavement, line mark and landscape improvements. Improve vehicular entry off Barrenjoey Road (ie 'splitter' island).
- 13 Surf Club Community Building**
Refurbish Surf Club building to improve the current lack of storage space and general poor condition of the building. Development proposal for amenity block area to incorporate a cafe and restaurant, lifeguard room, refurbished amenities (male & female) and upper level club and community spaces and a restaurant. Revenue to assist with improvement costs as identified in this Plan. Refurbishment to require development consent.
- 14 Avalon Beach Reserve**
Existing open grassed character maintained, upgrade existing park furniture, and provide picnic shelter and associated furniture. Reshape landform to create useable spaces and reduce soil erosion. Install low barrier fence to cliff edge. Upgrade playground area, including re-surfacing, decking and seating for parental supervision, and shade. Provide access pathway link from Barrenjoey Road to open space and to beachfront. Build sandstone seating terrace within reshaped landform surrounded by turf areas.
- 15 Corner Barrenjoey Road / Avalon Parade**
Upgrade the south-western corner of the Avalon Beach Reserve; removal of vegetation to open views from roadway through reserve, re-grade landform, incorporate feature sign for Avalon Beach with mass planting of native species. Remove existing stairs, and relocate access to reserve from Avalon Parade to Barrenjoey Road bus stop, incorporating footpath connection to SLSC and Avalon Beach.
- 16 South Avalon Beach**
Supplement existing shore protection, establish low vegetated dunes, incorporating several 'cut-throughs' and specifically stairs on the northern side of the existing shower, to improve beach access. Review levels of the existing footpath (re: sand inundation issues), to improve access to the beach and rock pool. Relocate bins (on beach frontage), replace with seat & install an additional picnic table.
- 17 Avalon Rock Pool**
Maintain and upgrade the rock pool as required, including resurfacing the platform edges, having regard to the existing character of the pool and public safety issues. Investigate installation of shower, replace protective fencing and continue to monitor cliff hazard and instigate works to cliff face and rocky outcrops (ie. underpinning) as required.

14.5.2 AVALON DUNES

The dunes are maintained by Council through bush regeneration contractors with current funding of \$16,000 a year. Between 1989 and 2007, a group of volunteers, now called the Friends of Avalon Dunes Dunecare group, undertook the restoration of the dunes. The Friends have recently recommenced work. Their aim is to stabilise, weed and regenerate / revegetate with local dune plant species to increase biodiversity and ecosystem resilience.

Considering the history of the site, the technical skills of the Friends and the good work that has been achieved to date, the most important management strategy is to promote good communication and a well coordinated approach between the Friends, contractors and Council, particularly in relation to the weeds - where, what, why and how the various teams work throughout the dunes.

Apart from weeds, the other most concerning issue is damage by youth who build bases / camps and drag sofas into the dunes. This is a cultural problem that is best addressed through the promotion of organised sport and recreational activities. Team based activities teach responsibility, promote social skills and burn excess energy. Other strategies include youth education through interpretative signage and school visits. Young people could also be encouraged to form a volunteer working group for dune restoration work. Council could also reduce the time items are left out before collection dates for kerb-side clean up to reduce the availability of materials. A designated youth area at the edge of the dunes could also be investigated in the longer term. This could provide Council with a negotiating tool in order to contain and monitor activities (This option is not supported by the Friends).

Specific management works include:

- prepare a works program for the dune system and surrounds;
- promote the Friends through signage and on Council's website;
- promote communication and a coordinated approach between the Friends, contractors and Council;
- replace the fencing around the parameter of the dunes;
- remove and treat weed species in accordance with best practice;
- supplementary planting of local coastal vegetation;
- maintain the main access tracks through the dunes, but close the middle access track through the dunes;
- At the northern end of the beach, there are three tracks, close two tracks and retain one,
- Install interpretative signage where needed to discourage people from walking on the plants – integrate signage into existing elements rather than using dominate signs on posts where possible;
- restore area adjacent to Barrenjoey Montessori School and incorporate into main dune extent to consolidate management regimes;

- establish a landscape 'buffer' of local coastal native plant species to north, west and southern interfaces. Edge treatment to reduce weed encroachment from managed amenity areas;
- a viewing deck is proposed to be built in an area of the dunes for SLSC members and lifeguards to view the beach; and provide interpretative signage for dunes.

14.5.3 SOUTHERN CARPARK AND YELLOW BRICK ROAD

Avalon Beach is a popular destination during the summer months. At these times, vehicle access and parking is congested. The previous 2007 plan of management proposed alleviating congestion by formalising the access drive and parking. Stage 1 works have recently been carried out (Refer to **Figure 14-6**). This is in accordance with the initial concept sketch.

Works include:

- two-way vehicular access driveway with turning circle at the northern section to alleviate current traffic congestion;
- formalise parking bays (mix of perpendicular and parallel parking), type dependent on location;
- resurface (reseal);
- parking bay demarcation;
- 'wheel stop' barriers / bollards (where required);
- footpath to improve access from Barrenjoey Road to the beach;
- existing lighting has been integrated into new design;
- landscaping; and
- investigate extending the Yellow Brick Road, perhaps as part of the creek-line corridor.

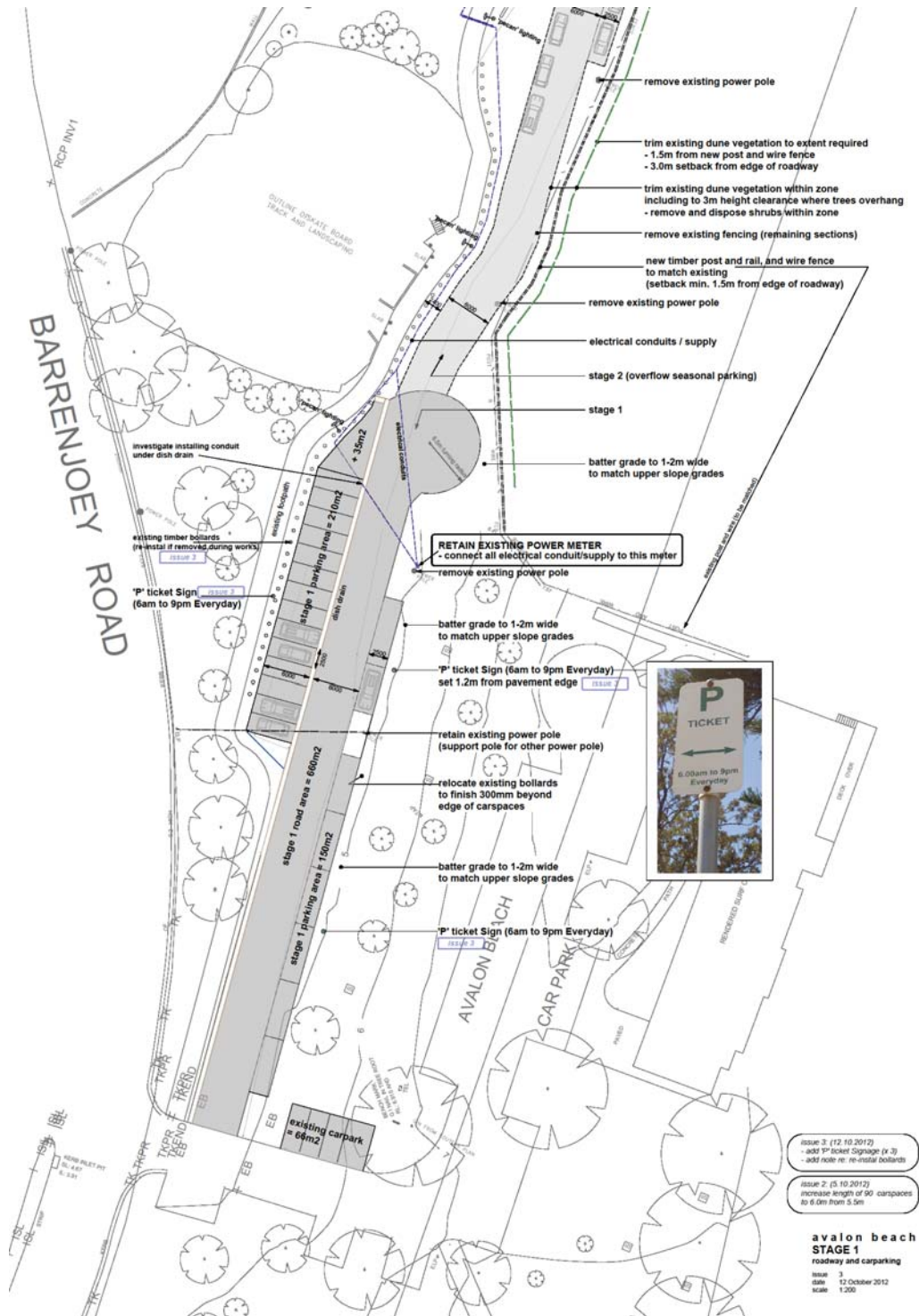


Figure 14-6 | Southern Car Park – Recent works to formalise access drive and parking

14-5.4 OVERFLOW PARKING AREA – STAGE 2

Overflow parking is currently available towards the north of the new formalised access road. Overflow parking is necessary during peak periods, particularly during Nipper events, carnivals and surf competitions. Stage 2 proposes to formalise this area using road base to provide a low-key functional surface. The access road is single lane with parallel parking for minimal impact on the adjoining sand dunes. (Refer to **Figure 14-7**).

- one-way access road with turning circle at the northern end;
- parallel parking to retain maximum dune vegetation;
- revegetate dune edge (currently vegetation in this area is over-mature);
- overhead lighting to illuminate access drive and footpaths along the entire length of the road; and
- tree planning.

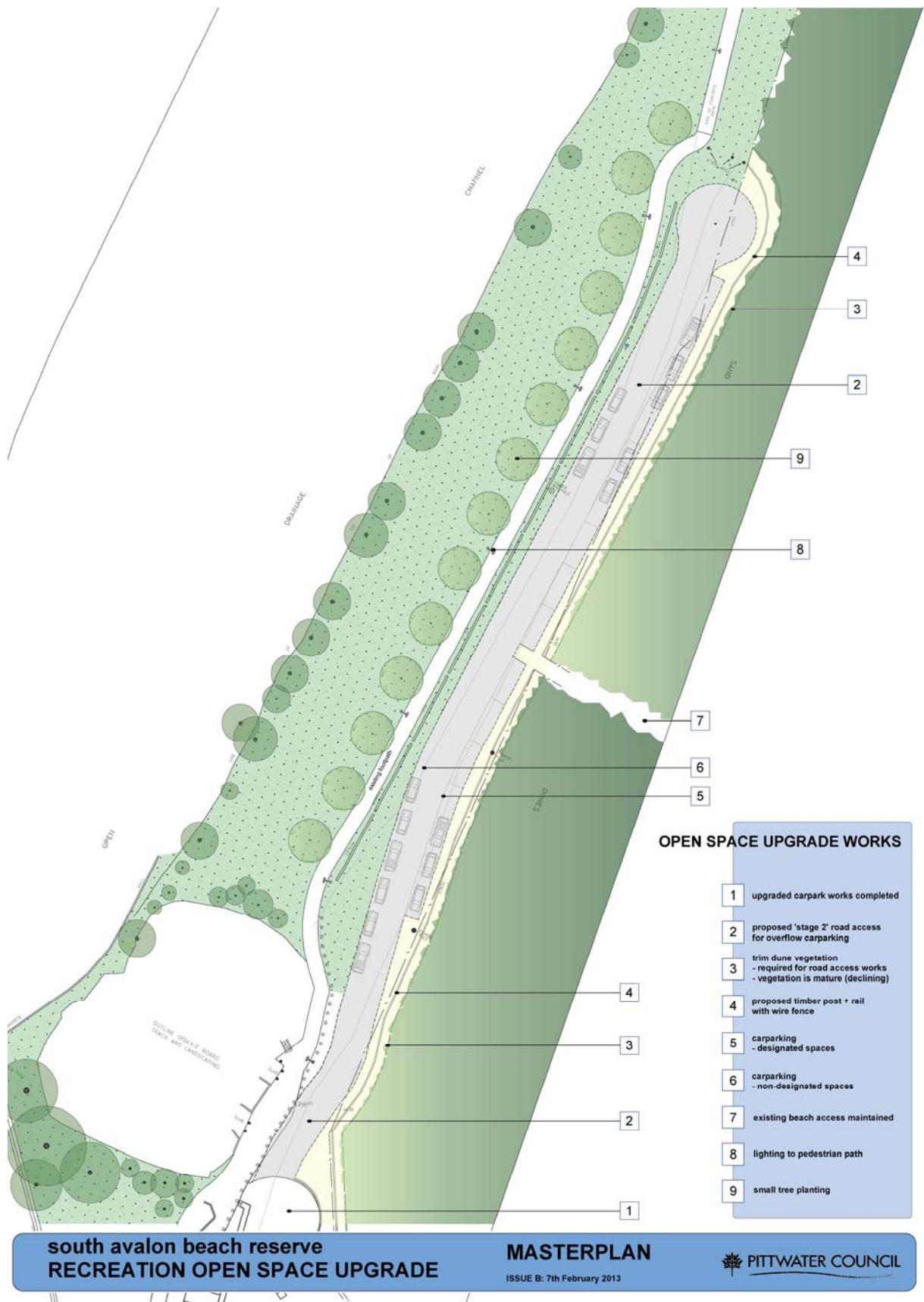


Figure 14-7 | Overflow parking – proposed works Stage 2.

14-5.5 RECREATIONAL AREA – SOUTH AVALON

Proposed works include:

- install additional park furniture;
 - upgrade footpath connection from Barrenjoey Road bus stop to Avalon Beach and Surf Life Saving Club / community facilities;
 - upgrade of playground area;
 - improve eroded slope surrounds, incorporating ground stabilisation , steps, decking, seating and shade provision (the seating will provide a turf surface, rather than concrete or stone);
 - undertake cliff line stabilisation work in accordance with geotechnical recommendations;
 - install sandstone terrace seating with turf surface (not sandstone);
 - signage;
 - protection of kiosk footings and interpretative signage; and
 - landscaping.
- (Refer to **Figure 14-8**)

14-5.6 DES CREAGH RESERVE & PARKING AREA - NORTH AVALON

Proposed works include:

- stabilise the sand dune;
- re-fence the dune;
- install a timber deck;
- stabilise the main track leading to the beach;
- close excess tracks to the beach;
- retain the lawn behind the dune for recreational uses;
- consider installing a small playground in the longer term;
- seal and line mark the parking area; and
- address vandalism.

14-5.7 SENSE OF PLACE

Avalon Beach Reserve will be landscaped as sensitively as possible to enable the natural landscape to dominate. Principles:

- the proposed recreational facilities – playground and picnic area, will be contained within the small section of the reserve as shown in the Masterplan (Refer to **Figure 14-8**);
- the majority of the Reserve will be green, open space;
- vegetation will be locally native species where possible;
- plantings will consider coastal views and security (open enough to prevent people hiding behind bushes; and
- a sign with the reserve name will be considered. (Refer to **Figure 14-9**).

Figure 14-8 | Avalon Beach Reserve – Landscape Plan

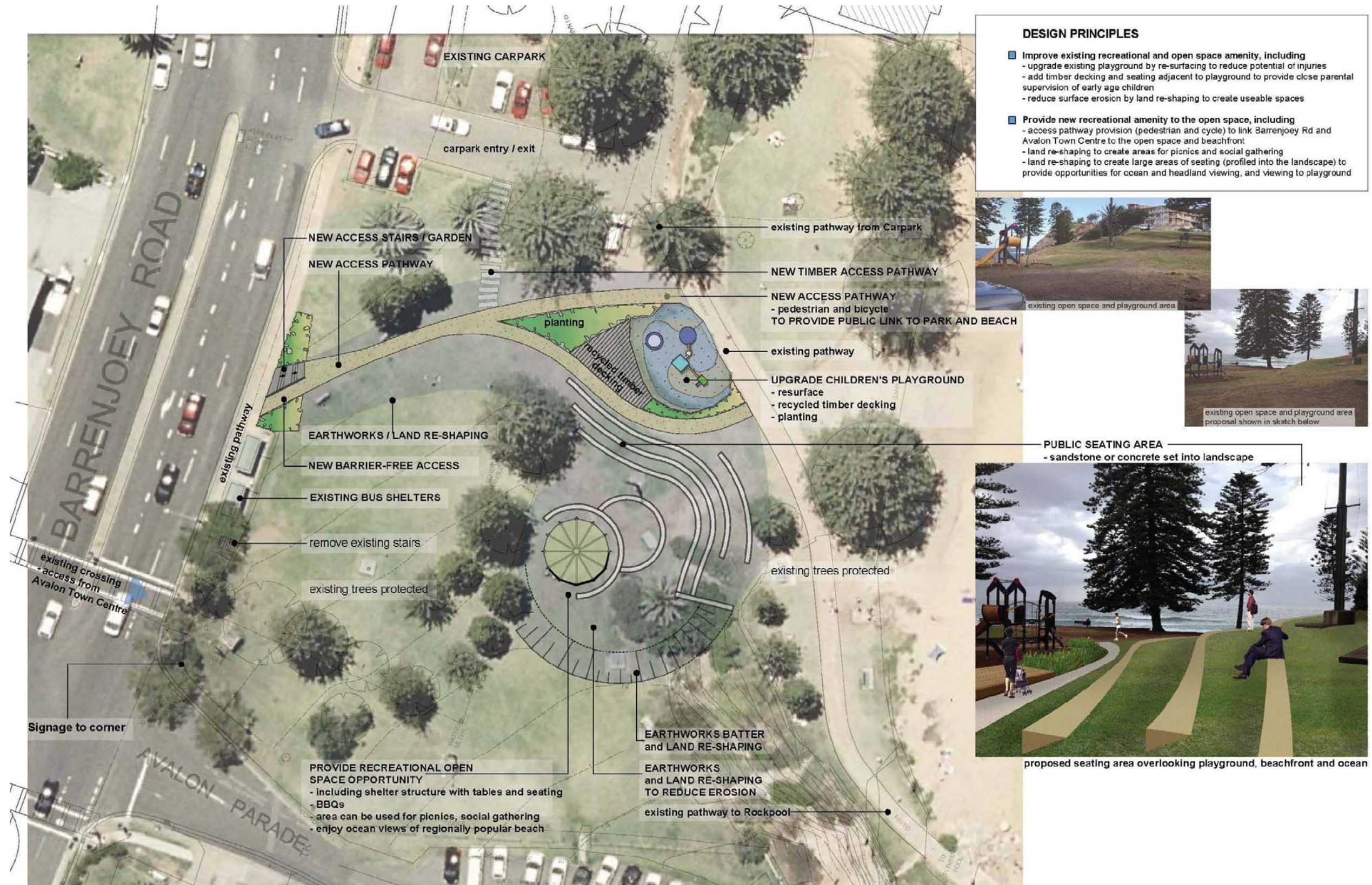


Figure 14-9 | Signage identifying Avalon Beach Reserve



14-5.8 PROPOSED SURF CLUB BUILDING

The existing building is generally in poor condition, subject to continual repairs and increasingly outmoded for the current and future usages. Storage space for rescue and training equipment is at a premium and specific areas of the building do not comply with current Building Code of Australia (BCA) requirements.

A proportion of the building is leased by Surf Life Saving Australia (refer 14.4) while the southern end of the building accommodates the Avalon Beach public facilities (showers, change area and toilets).

A development application was lodged in 2011 for a new building in accordance with the 2007 Plan of Management. The Development Approval addressed many issues including water sustainability (water saving and disposal to approved discharge), consideration of the Disability Discrimination Act 1992 and Council Policy.

The current proposal provides for the addition of a restaurant on the first floor at the southeastern corner of the building (refer to **Figures 14-10.1 to 14-10.4**).

The building as proposed retains the 2007 footprint with improved aesthetics and functions, including:

- storage rooms will open both sides – from access road to beach to provide patrol gear and trailers with through access;
- improved organisation for service rooms - patrol and first aid;
- Hall of Champions to showcase trophies and awards;
- first floor flexibility with sliding panels between rooms (join or separate depending on function).
- terrace overlooking the beach - 4m x 6m with roof and clear blinds for wind protection;
- disabled access – lift;
- caretaker room with access to Club kitchen and bathroom;
- several toilet areas; and
- transparent roof over the shower and change room downstairs for natural light and sun;
- architect to review amenities for restaurant during the detailed design stage.

Sustainable Initiatives

During construction stage

- Large canopy roof to shade glazing.
- Natural ventilation and ceiling fans (no air conditioning).
- High performance glazing.
- Gas heating.
- High rating insulation for walls and roof.
- LED lighting.
- Sun screens on the western side of the building.

- Sustainable material selections including timber and materials salvaged from existing building.
- Fibre cement cladding in clear finish for low embodied energy.
- Solar panels.
- Underground water tank to the north of the building.

Equity of Use

- The Avalon Beach Surf Life Saving Club consists of about 1,000 members who will enjoy the new facility.
- The facility will provide improved conditions for rescue service operators.
- The community rooms will be available for hire and the improved facilities will benefit all users.
- The Club currently encourage the community to use the existing facility through a website booking system. The Club will continue to do this to ensure the facility is available to the wider community. Current uses include regular classes such as yoga and drama and special occasions such as birthdays (not 18th and 21st), weddings, wakes and corporate events.
- The building includes a lift for disabled access.

Coastal Management

A Coastal Protection Works Management Plan has been obtained for the deep pile foundations including strategies to manage ongoing access to the beach, public liability risks, coastal protection works and any restoration of the beach and adjacent land. (Refer to **Figure 14-11**)

Social, Environmental (see 14.5.2 above) and Economic Values

In the past 100 years, Surf Life Saving Australia has saved over 530,000 lives at Australia's beaches and continues to rescue more than 11,000 people every year.¹ Life Guards are volunteers who are engaged with coastal zone management and monitoring, emergency preparedness, response and care for the benefit of local communities and the wider public.

The type of infrastructure required includes a building /club house with storage for equipment, first aid, training facilities, meeting rooms, rescue vehicles and craft, surveillance / outlooks, radio communications, essential services - power, water and sewage etc. To be well equipped, clubs raise funds, apply for government grants, and form partnerships.

The proposed Surf Club building is the vision of Avalon Beach SLSC. The members have worked for years to reach this stage in the project. Council is committed to helping community groups, particularly groups with strong commitments to achieving their goals.

Council staff have spoken with the Avalon Chamber of Commerce regarding the possible impact of the restaurant on local businesses. There is a unique relationship between Avalon Village and the beach, it is hoped that the restaurant will bring tourists to the area and that they will also visit the Village due to its close proximity to the beach.

1. Australian Coastal Public Safety Guidelines – 1st Ed. *Surf Life Saving Australia*, Sydney 2007.

Figure 14-10.1 | Avalon Beach SLSC Concept Plan

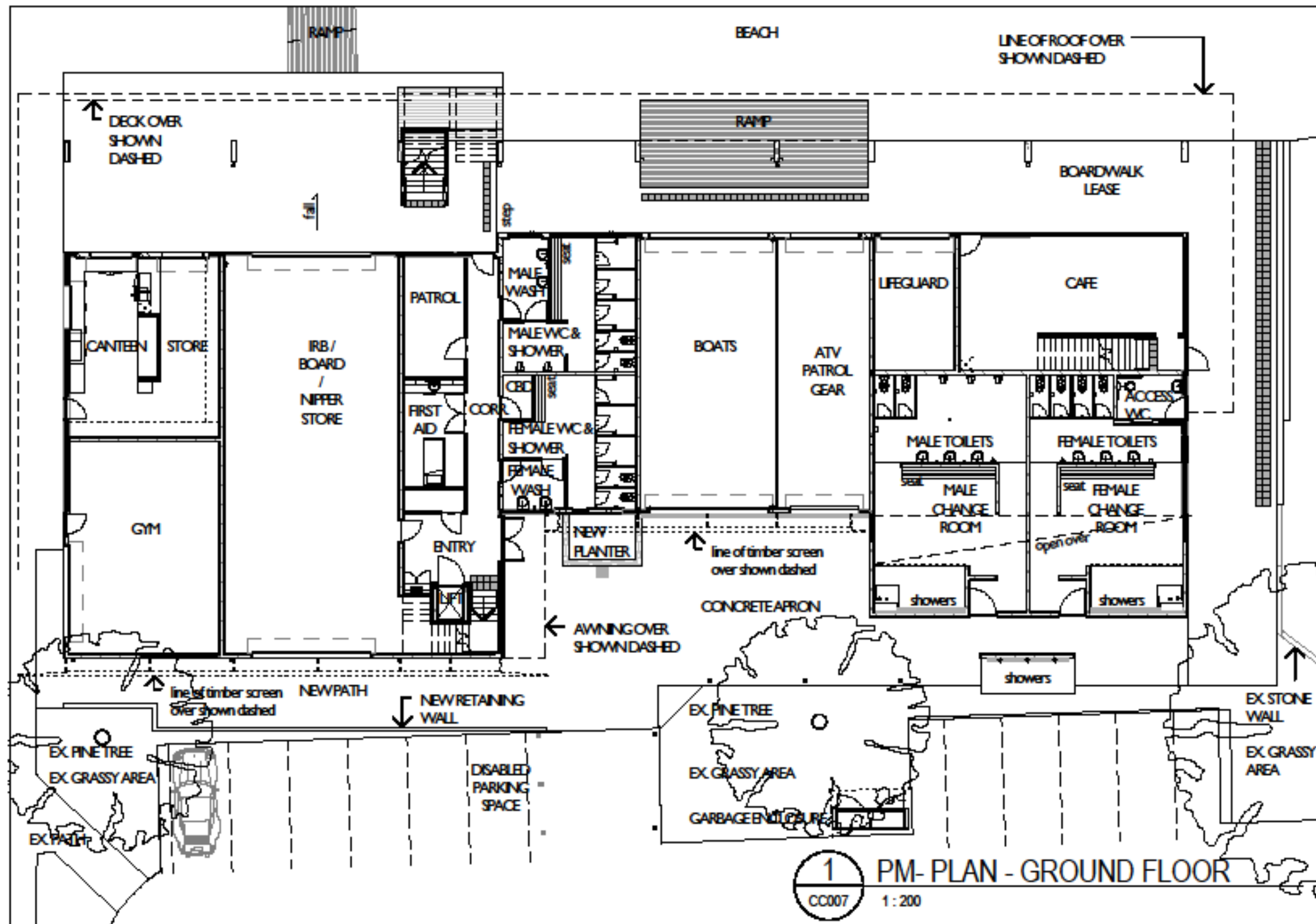
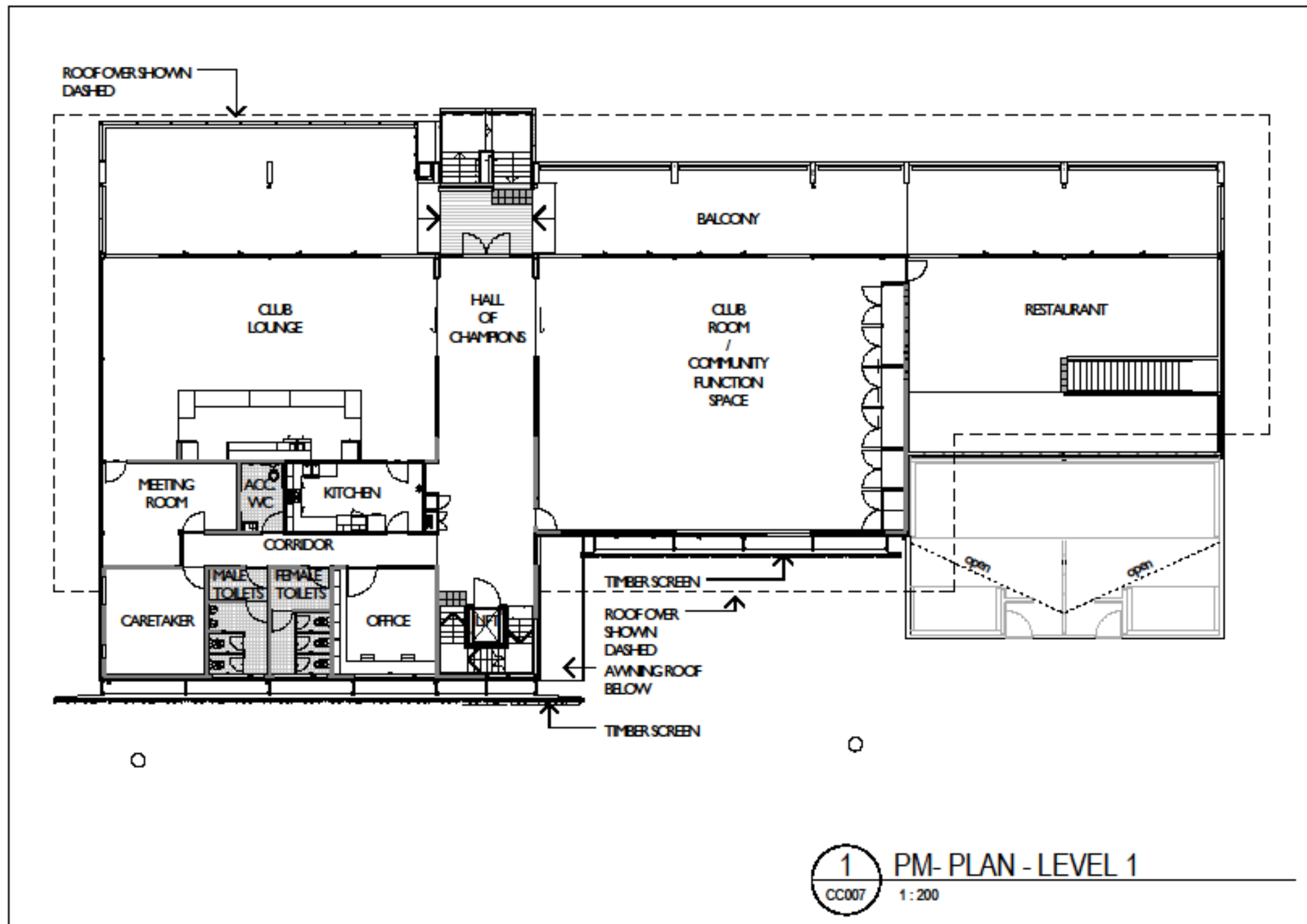


Figure 14-10.2 | Avalon Beach SLSC Concept Plan



Note: The restaurant includes the adjoining section of the balcony.
It is anticipated that the café will seat about 60 people and the restaurant will seat about 90 people.

Figure 14-10.3 | Avalon Beach SLSC Concept Elevations

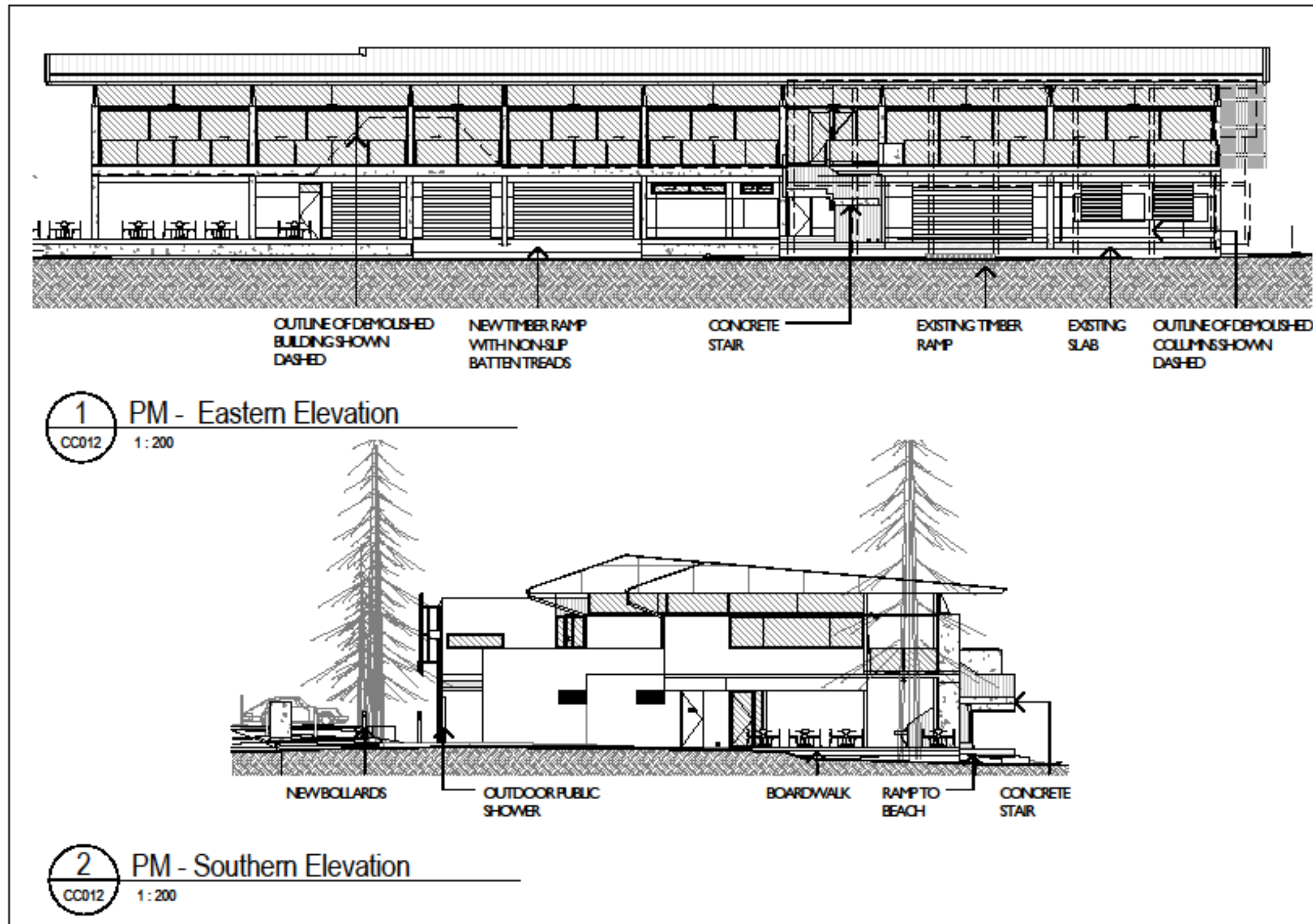


Figure 14-10.4 | Avalon Beach SLSC Concept Elevations

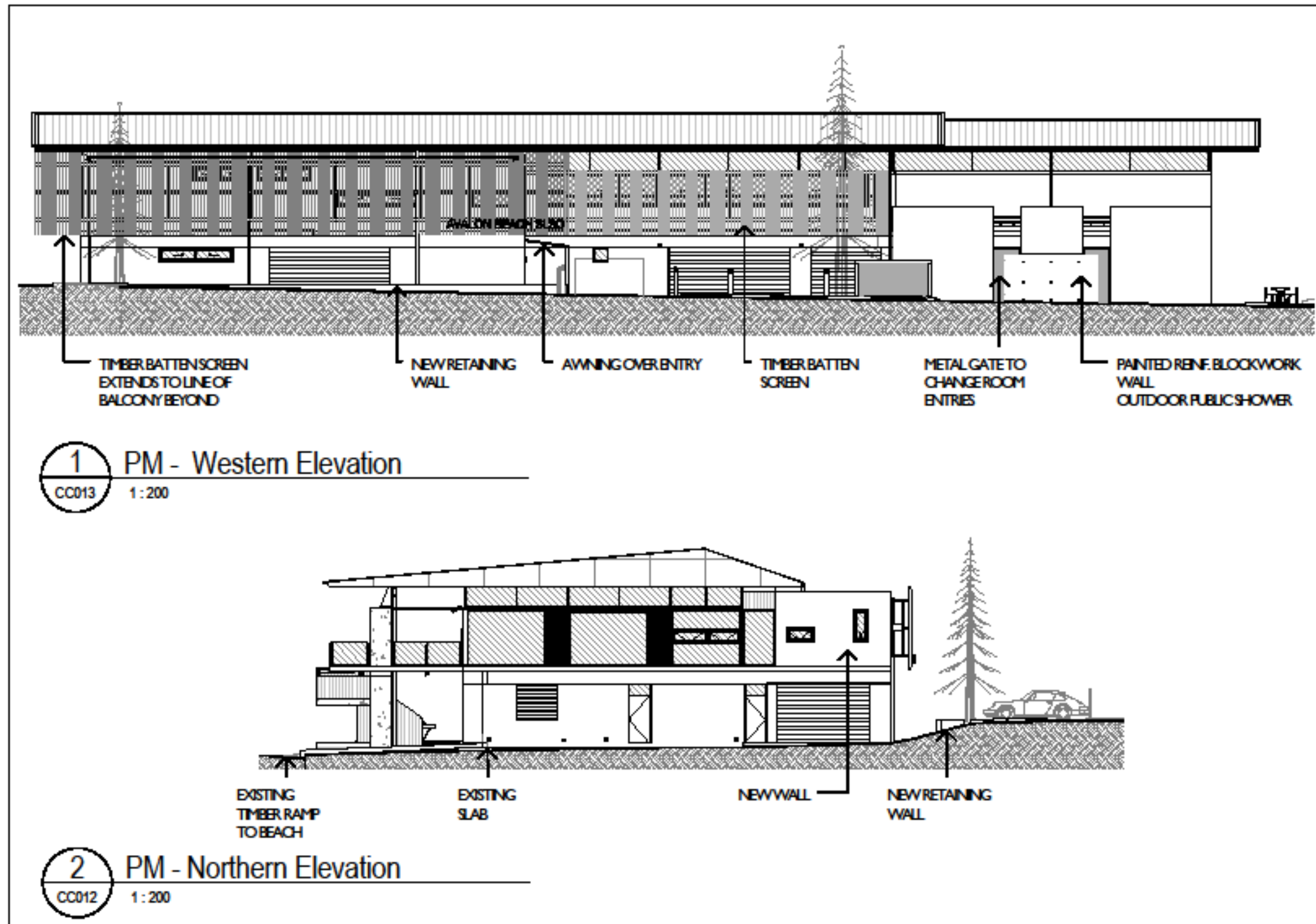


Figure 14-11 | Shore protection: low vegetated dunes – Illustrative sketch



14.6 WORKS PROGRAM FOR AVALON BEACH

The table below includes indicative costs only for implementation of the master plan. It should be noted that the commencement and completion of works identified in the master plan are dependent on Council resources and funding.

Table 14-2 | Avalon Beach Works Program

<i>Area / Item</i>	<i>Approx. Cost</i>
North Avalon Amenities Building	
General maintenance (approx. \$3500 per year) – 5 year term	\$17,500
Amenities building refurbishment	\$60,000
Northern Car Park & Beach Access	
General improvements – line marking / road surface repair (reseal)	\$25,000
Picnic table installation (grassed terraces) – 1no	\$3,000
Stone steps installation – northern beach access (lower)	\$5,000
Incorporate small viewing platform & seating	\$50,000 - \$100,000
Des Creagh Reserve & Car Park	
General improvements – line marking / road surface repair (reseal)	\$60,000
Shade tree planting i.e. <i>Banksia integrifolia</i> (10-15no)	\$10,000
Rejuvenate existing carpark planting beds	\$3,000
New playground	\$200,000
New picnic furniture & supplementary reserve planting (shade trees)	\$15,000
Pathway Network	
Lighting installation (approx 5no)	\$90,000
Re-grade and re-turf (adj. pumping station) / new tree planting	\$8,000
Extension of route in accordance with Pittwater Walks & Rides Strategy Masterplan (June 2005)	\$150,000
Avalon Dunes	
Maintenance – fencing / weed treatment / supplementary planting	\$20,000
Expansion of rear dune vegetation extent (adj. Barrenjoey Montessori School)	\$20,000
Careel Creek	
General maintenance – footbridges	\$5,000
General maintenance - Treatment of creek line consistent with Careel Creek Floodplain Risk Management Plan (Dec 2002) (approx. \$5000 per year) – 5 year term	\$25,000
Ongoing restoration / planting of riparian corridor (approx \$10,000 per year)	\$50,000
Investigate 'Naturalisation' of concrete channel (with regard to Careel Creek Floodplain Risk Management Plan / Study (Dec 2002) – Option E: Restoration of concrete lined section. Prepare Feasibility Study.	\$50,000
Western Reserve Area	
Shade tree planting to recreation / court areas (approx 10-15no)	\$10,000
Street tree planting: Barrenjoey Road (approx 10-15no)	\$15,000
Skateboard Park	
General improvements	\$20,000
Refurbishment – new seating / vegetation enhancement / fencing	\$10,000
Central Reserve – Occasional Use Car Park	
Implement parking layout / access road definition / landscaping (hard surface treatment)	\$70,000

Shade tree planting along shared path (approx 10-15no)	\$15,000
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Area / Item

Approx. Cost

Car Park Reserve Area

General improvements – regrade & turf	\$5,000
New shade tree planting (approx 10no)	\$10,000
New picnic tables (approx 3no)	\$12,000

Southern Car Park

General improvements (upper carpark) – line marking / road surface repair (reseal)	\$30,000
Replace 'copper log' barrier fence – wheel stops / timber bollards	\$50,000
Re-paint feature bollards	\$2,500
Improve entry off Barrenjoey Road (i.e. widening / 'splitter island')	\$30,000

Surf Club Community Building

General maintenance (\$20,000 per year) – 4 year term	\$80,000
New building - lifeguard facility / food outlets / amenities refurbishment / community rooms / decking	\$2,670,000

Avalon Beach Reserve

Upgrade existing park furniture, seating 'amphitheatre' and provide picnic shelter and associated furniture. Reshape landform to create useable spaces and reduce soil erosion.	\$350,000
Low barrier fence along cliff edge (hardwood)	\$10,000
Upgrade playground area, including re-surfacing, decking and seating for parental supervision, and shade. Provide access pathway link from Barrenjoey Road to open space and to beachfront.	\$125,000

Corner Barrenjoey Road / Avalon Parade

General improvements – remove old / dead vegetation (i.e. cypress trees)	\$2,000
New footpath connection from Barrenjoey Road (bus stop area) to SLSC / Avalon Beach	\$50,000
New mass planting and shade trees (native species)	\$25,000

South Avalon Beach

Establish dune protection to supplement existing rock boulders (inc 'cut-throughs' and stair access at shower)	\$35,000
Relocate bins from under existing trees / replace with seat	\$3,000
Additional picnic table & concrete pad	\$3,000

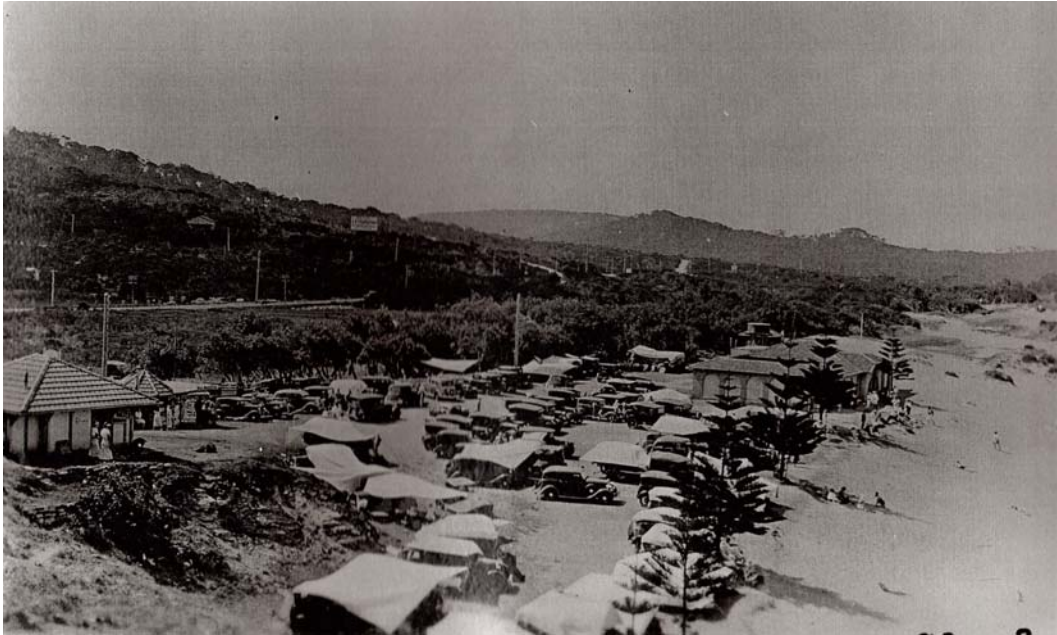
Avalon Rock Pool

General maintenance inc. platform edge re-surfacing	\$20,000
Install new outdoor shower	\$5,000
Replacement of protective fencing	\$25,000
Ongoing monitoring of cliff line instabilities and risk	\$5,000
Cliff face stabilisation works i.e. underpinning of rock outcrops (in accordance with geotechnical recommendations)	\$40,000

General Works

Signage – maintenance and installation of new	\$20,000
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Appendix 1. Interpretative Signage



Avalon Beach in the 1920s showing the location of the original surf club building, Norfolk Island Pine Trees, the dunes and the kiosks. (Source: Avalon Historical Society).



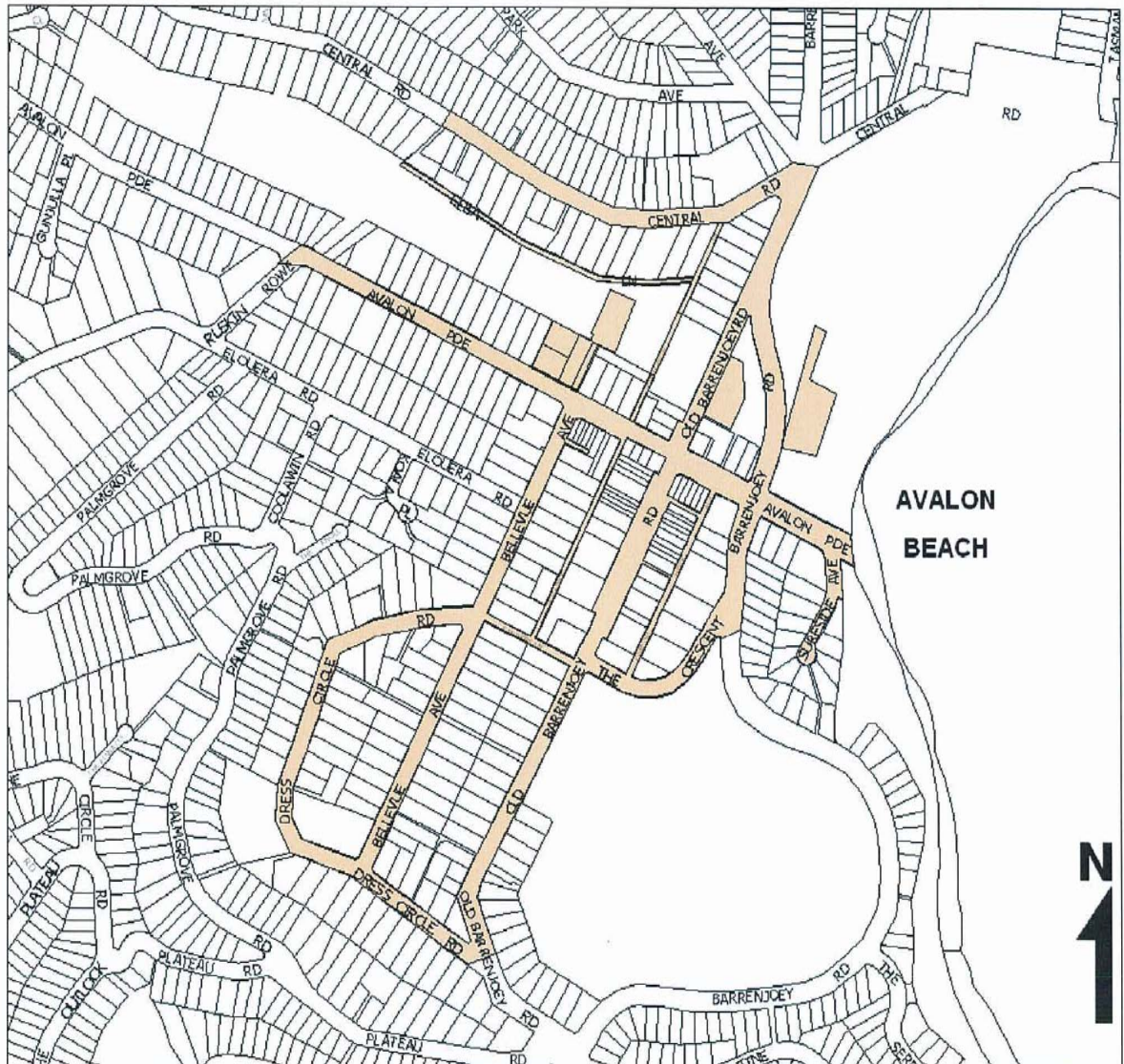
Avalon beach in 1964. The mining for sand was from the area in the bottom right hand side of the photo. Tracks and machinery can be seen in this location. (Source: Avalon Historical Society).



Avalon in the early 1960s. (Source Avalon Historical Society).

Appendix 2. Alcohol Free Zones within Avalon Beach Reserve and Surrounds

ALCOHOL FREE ZONES - AVALON VILLAGE



Appendix 3. Avalon Beach – surfing history

This information was contained in a submission received from a resident during the exhibition period:

What is not apparent and included is the historical background that is essential to the beach culture of the area/suburb.

While there is not many significant events that would apply to this area, there is a major one which is of great significance to Avalon Beach. It is widely documented to be the first place in Australia where modern malibu surfboard riding was displayed in November 1956 and the significance of this event to Australian coastal culture is undeniable.

This eventuated from the American and Hawaiian lifesavers visiting Avalon to compete in the local carnival when they first arrived for the demonstration sport with the Olympics. From this event the lifesaving movement in England established itself with the surfboard industry also being started due to 4 lifesavers from the club going over for lifeguard positions. The rubber ducky also could be said to have been a result of that day.

A very successful commemoration of this event was conducted between the board riding and surf lifesaving communities 50 years later in the Surf Club. This has assisted with the very good relationships between all the surfing fraternities at the beach.

It was noted at that time that there should be a monument that can be placed in a conspicuous place that allows for this proud part of our history to be displayed for the future generations.

I ask that you present this for inclusion in the POM....the opportunity has now presented itself and you would agree it is vital that it is not lost.

Mark Eriksson
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Our reference: It8A0172mjp_gwb211212 - CPWMP
Date: 21 December 2012

**Subject: AVALON SURF LIFE SAVING CLUB
COASTAL PROTECTION WORKS MANAGEMENT PLAN**

Dear Mark

It is understood that a Coastal Protection Works Management Plan (CPWMP) for Avalon SLSC is required to address the management of beach access, beach amenity, public liability and maintenance issues related to the installation of deep pile foundations associated with the proposed refurbishment and redevelopment. This plan will be included as a subplan of the Avalon Beach Reserve Plan of Management (PoM) when it is next reviewed. This PoM is currently on public exhibition until 4th February 2013 and includes consideration of the proposed Avalon SLSC refurbishment and redevelopment works.

Royal HaskoningDHV (RHDHV) have been engaged to prepare the CPWMP, which is provided in **Attachment A**. Should you require any additional information, please not hesitate to contact us.

Yours faithfully
HASKONING AUSTRALIA

Greg Britton
Director

Attachment A

Avalon SLSC Coastal Protection Works Management Plan

DRAFT

AVALON SURF LIFE SAVING CLUB COASTAL PROTECTION WORKS MANAGEMENT PLAN

Background

It is proposed to refurbish and redevelop the Avalon Surf Life Saving Club (SLSC) building over the existing footprint. As a portion of the existing SLSC building is located seaward of the immediate coastal hazard line and the building is entirely seaward of the 2060 and 2110 hazard lines, the redevelopment of the building in its current position requires underpinning of the structure with deep piled foundations.

The installation of the proposed deep piled foundations requires the preparation of a Coastal Protection Works Management Plan (CPWMP), which addresses the following issues for the life of the development:

- ongoing public access to and use of the beach in the vicinity of the surf club building;
- management of public liability issues associated with the coastal protection works;
- the maintenance of the coastal protection works; and,
- arrangements for the restoration of the beach, or land adjacent to the beach, if any increased erosion is caused by the presence of the works.

The management of these issues is outlined below.

Ongoing Public Access and Liability

Under normal conditions, public access to the beach following redevelopment of the SLSC building would be provided by:

- existing timber ramp;
- new timber ramp (proposed);
- existing path on northern side of SLSC building; and,
- existing informal access over partially buried seawall structure and low level retaining wall to the south of the SLSC building.

Management of public access and liability during and after storms should be considered in the context of the position of the crest of any resultant erosion scarp in relation to the above access structures and the deep piled foundations of the SLSC building. Management actions to be implemented under the following scenarios are outlined below:

- erosion scarp seaward of existing and new beach access ramps;
- erosion scarp landward of existing and new beach access ramps but seaward of the SLSC building foundations; and,
- erosion scarp landward of SLSC building foundations.

Erosion scarp seaward of existing and new beach access ramps

In this situation, management of beach access and usage in the vicinity of the SLSC building would be similar to that currently employed during and after storm events. This would include:

- erection of 'beach closed' signs during dangerous surf conditions;
- lifeguards on duty during storm events to inform the public of hazardous conditions and discourage people from entering the ocean; and,
- no additional specific restrictions on beach access.

Erosion scarp landward of existing and new beach access ramps but seaward of the SLSC building foundations

In this situation, the existing beach access ramp at the northern end of the SLSC building would be undermined. This ramp structure is not known to be founded at a depth below the expected storm scour level and would be left unsupported if outflanked by an erosion scarp. Under this scenario, the structure may fail and be broken apart under the action of waves.

The new beach access ramp would be supported on deep piled foundations and should remain standing during an erosion event. However, the end of the ramp would be elevated above the eroded beach profile and would be unsuitable for beach access.

The following management actions are to be employed during storms and the subsequent beach recovery period:

- erection of 'beach closed' signs during dangerous surf conditions;
- lifeguards on duty during storm events to inform the public of hazardous conditions and discourage people from entering the ocean;
- removal of any debris from any failure of the existing beach ramp when safe to do so;
- erection of temporary barricades across the entry points to the existing and new beach access ramps;
- provision of appropriate signage at both ramp access points indicating prohibited access;
- beach access via existing path on northern side of SLSC building and over the foreshore to the south of the SLSC building is retained for continued beach usage after dangerous surf conditions subside and the beach is reopened; and,
- undertaking of beach scraping and/or sand replenishment activities as soon as possible following the storm erosion event to restore beach amenity and safe access (refer to discussion of beach restoration below).

Erosion scarp landward of SLSC building foundations

In this situation, both of the beach ramps would be undermined and the erosion scarp would have undercut the ground floor slab of the SLSC building, exposing its deep piled foundations and creating a cavity beneath the building. This would also result in undercutting of the seaward edge of the beach access path on the northern side of the SLSC building, creating an unsafe drop from the ground floor level to the eroded beach level. A similar height differential would exist over the edge of the ground floor slab along the seaward frontage of the SLSC building.

The cavity and exposed foundations beneath the SLSC building would present a potential hazard to the public once the beach is reopened, particularly at high tides. Public access to the immediate area around the seaward frontage of the SLSC building should be prohibited until beach levels are restored.

The following management actions are to be employed during storms and the subsequent beach recovery period:

- erection of 'beach closed' signs during dangerous surf conditions;
- lifeguards on duty during storm events to inform the public of hazardous conditions and discourage people from entering the ocean;
- removal of any debris from any failure of the existing beach ramp when safe to do so;

- installation of a temporary barricade (with appropriate signage) across the beach access path to the north of the SLSC building;
- installation a temporary barricade (with appropriate signage) across the access path (adjacent to the public toilets) to the paved area along the seaward frontage of the SLSC building;
- installation of temporary fencing on the beach to enclose the area of exposed foundations along the seaward frontage and sides of the SLSC building (when practicable and safe to do so); and,
- undertaking of beach scraping and/or sand replenishment activities as soon as possible following the storm erosion event to restore beach amenity and safe access (refer to discussion of beach restoration below).

Maintenance of Coastal Protection Works

Deep pile foundations to support the Avalon SLSC should be designed from a durability perspective for occasional exposure to the marine environment, at those times of beach erosion and prior to beach recovery, in accordance with Australian Standard AS 4997 Guidelines for Design of Maritime Structures having regard to the life of the building. It would not be necessary to undertake a regular maintenance program involving mechanical excavation around the piles, but the opportunity should be taken to inspect the piles whenever they are exposed following storm events and to complete any maintenance, if required.

Beach Restoration

The proposed foundation piles are not expected to exacerbate erosion in adjacent areas as they would be spaced several metres apart, are relatively small in dimension relative to the scale of the wave conditions and would act as an open structure allowing the transmission of wave energy to the position of the retreating erosion scarp.

Notwithstanding, in the interests of restoring beach amenity and safe access and minimising public liability risk, beach scraping and/or sand replenishment should be employed to restore the eroded foreshore areas in the vicinity of the SLSC building as soon as possible after storms.

Beach scraping should be used to accelerate natural beach recovery and involves the movement of relatively small to medium quantities of sand from the lower portion of the beach profile to rebuild the upper beach profile, by mechanical means (typically using earthmoving equipment such as bulldozers). Provided that low tide water levels allow sand to be accessed from the lower beach profile, this practice could be employed adjacent to the SLSC building to return sand to exposed foundation areas beneath the ground floor slab and restore beach amenity.

Beach access for plant and equipment should be available at the southern end of Avalon Beach adjacent to the ocean pool, which is likely to be less affected by wave erosion. As access beneath the ground floor slab of the SLSC building is likely to be limited by height restrictions and presence of deep foundation piles, it is anticipated that beach scraping by large bulldozers would need to be supplemented with pushing and placement of sand beneath the structure by smaller equipment such as front end loaders and Bobcats.

Sand accessible from the lower portion of the beach profile could also be supplemented by redistribution of sand from other adjacent areas of the beach using similar plant and equipment.