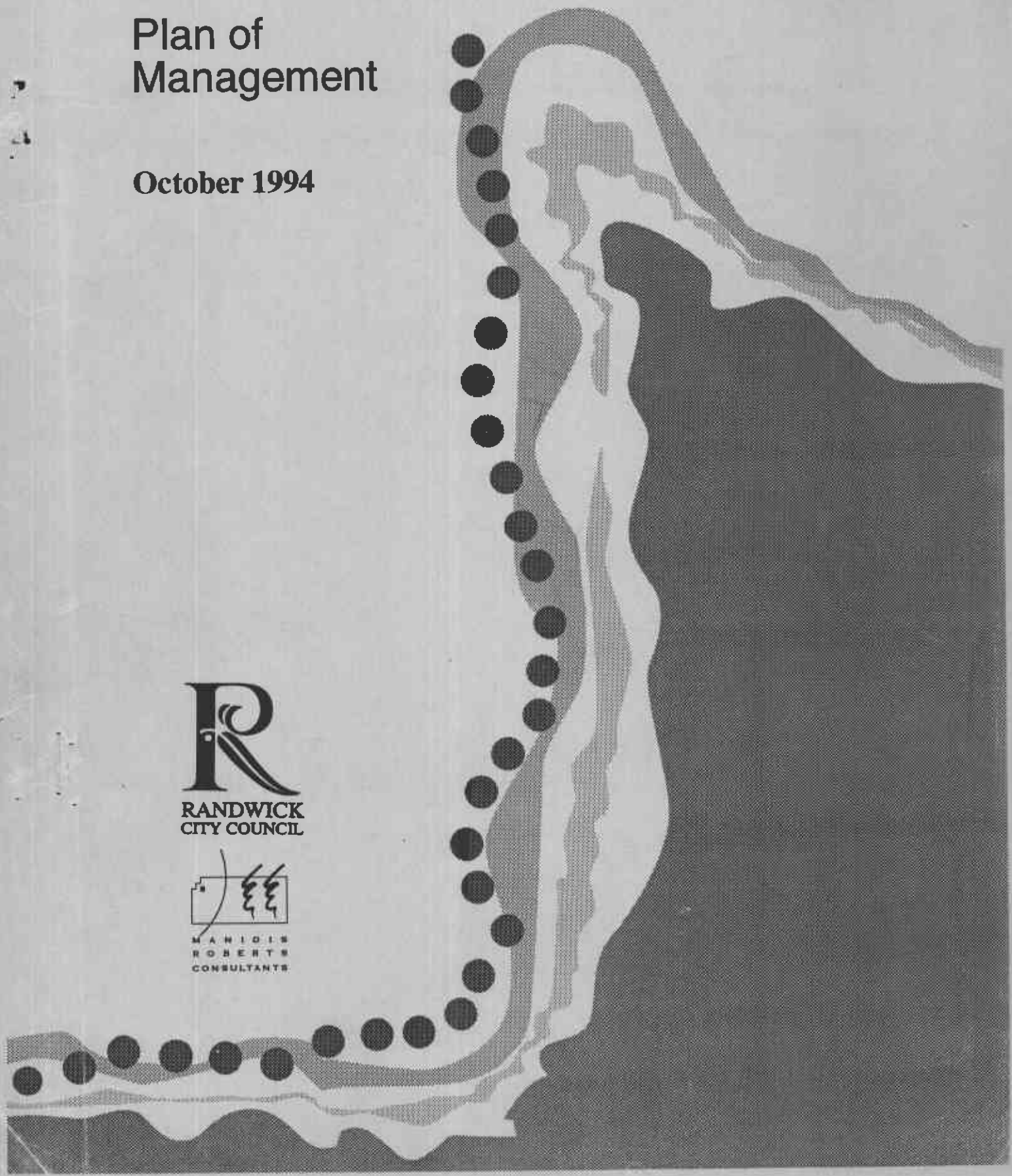
# MALABAR
# beach & foreshore

## Plan of Management

**October 1994**



RANDWICK CITY COUNCIL

MANIDIS ROBERTS CONSULTANTS

Randwick City Council

# MALABAR
## beach & foreshore
### Plan of Management

October 1994

Prepared by
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**940010**

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# STUDY TEAM

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| **Patterson Britton & Partners**<br>Kathy Adams<br>Mark Tooker | — engineering investigations |
| **The Ecology Lab**<br>Phillip Hawes<br>Marcus Lincoln Smith<br>Graeme White | — marine ecology investigations |
| **Mr A R Hall** | — bushland investigations |

# ACKNOWLEDGMENT

The study team wishes to thank all members of the Malabar Beach and Foreshore Consultative Committee and Council officers for their cooperation, assistance and enthusiasm throughout the preparation of the plan of management. The Consultative Committee comprised:

| | |
|---|---|
| Cr C Bastic | Mayor, Randwick City Council (Committee Chairman) |
| Cr R Walsh | Councillor, Randwick City Council |
| Cr J Lawrence | Councillor, Randwick City Council |
| Cr C Matthews | Councillor, Randwick City Council |
| Mr G Eastman | Recreation Assets Manager, Randwick City Council |
| Mr A Moore | Residents representative |
| Mrs F Gatenby | Residents representative |
| Mr M Johns | Residents representative |
| Mrs B Poche | Residents representative |
| Ms N Sandona | Malabar P & C Association |
| Mr D Kerr | RCCC South Precinct |
| Mr H Holland | Randwick Golf Club |
| Ms M Long | NSW Department of Sport, Recreation and Racing |
| Mr B Chenhall | Malabar RSL Club |

# EXECUTIVE SUMMARY

This plan of management addresses the issues raised by the Malabar Beach and Foreshore Consultative Committee, as well as those identified by the study team. It also incorporates issues raised by the local community in a questionnaire distributed as part of the overall investigations and, subsequently, comments on the draft plan of management, which was placed on public exhibition in September/October 1994.

The area covered by the plan of management includes all the public land along the foreshore area of Long Bay, Cromwell Park, adjacent coastal hinterland areas, the enclosed waters of the bay, and Randwick Golf Course.

The driving motive for the plan of management is the need to restore the study area, which has suffered many adverse impacts, particularly since the 1940s. The Consultative Committee has developed the following mission statement for the plan of management:

> *To efficiently manage Malabar Beach and foreshore areas, providing safe, appropriate access and recreational activities, whilst conserving and enhancing the natural environment.*

Flowing from this are the following guiding principles:

- There should be no major changes to the overall attractions of the bay.
- The overall 'flavour' should be indigenous, natural, low-key, soft-edged and non-commercial.
- Enhanced visual quality should underpin every design decision.
- The overall character and image should be upgraded.
- The area should be planned and managed for an expected increase in visitation.

The major recommendation of this plan of management is that there is a need to:

- Restore the rock pool below Randwick Golf Course. The main actions that should be undertaken are to reduce the size of the pool, deepen and flatten the pool to improve swimming safety, and build a new stroller ramp down to the pool from the above car park. In the long term, an outdoor shower and small toilet block should also be provided.

- Substantially upgrade Cromwell Park. The main actions that should be undertaken are to upgrade the amenities block, play equipment, and picnic facilities; and to provide an outdoor shower and barbecue facilities. It is also recommended that a new path to the beach be built through the park and that the Dacre Street car park be redeveloped as part of the park.

- Improve the quality of stormwater flowing to the bay by fitting stormwater pipes with trash screens.

- Provide a pedestrian-friendly gateway to the bay along Dacre Street/Bay Parade. This would involve narrowing the street adjacent to Cromwell Park and enlarging the footpath at the intersection of Raglan Street to provide an opportunity for an outdoor eating area.

- Restore the eroded areas around the site of the former surf club, below the Dacre Street car park, and the landfill area on the northern side of the bay; and fence off and revegetate the dune area.

- Revegetate key areas, including the cliff area along Bay Parade and in front of the sewage treatment plant.

A five-year timeframe is recommended for this work.

# INTRODUCTION

On 20 July 1993, Randwick City Council resolved to prepare a plan of management for Malabar Beach and the adjacent foreshore. The rationale for the plan of management is to provide Council with policy and management direction for the future enhancement and management of the area.

On 4 November 1993, the Malabar Beach and Foreshore Consultative Committee was formed to provide direction for the project. The Committee identified the key issues to be addressed in the plan of management. Subsequently, in April 1994, Council appointed Manidis Roberts Consultants to prepare a plan of management.

This plan of management addresses the issues identified by the Consultative Committee, the study team, and the local community during a consultation program. As required by the Local Government Act, the draft of the plan has been on public exhibition (in September/October 1994), and written submissions on the draft plan have been considered and, where appropriate, comments have been further investigated and incorporated. Before the plan can be implemented, it must first be adopted by Council and then approved by the Minister for Land and Water Conservation under the Crown Lands Act (see below).

**The study area and recreational activities**

As shown in **Figure 1**, the study area is about 12 kilometres south-east of Sydney City and covers about 38 hectares. It includes all the public land along the foreshore of Long Bay, Cromwell Park, adjacent coastal hinterland areas, the enclosed waters of the bay, and Randwick Golf Course. In terms of the Local Government Act, the study area comprises the following categories of land: natural area (foreshore, beach and water) and park.

The bay is the study area's dominant natural feature, and the major reason for its attraction. Its deeply incised and narrow form is characteristic of a number of such embayments between Bondi Beach and Botany Bay (such as Gordon's Bay). These embayments are unusual in the Sydney regional context and represent the inundated heads of short incised coastal stream valleys. Long Bay is a long wide inlet, by far the largest and most sheltered along this stretch of coast. The bay itself is about 1000 metres wide at the heads and narrows to about 150 metres at the beach. Water depths are generally less than 10 metres (Indian Spring Low Water).

The sheltered waters of the bay provide a number of recreational opportunities. A questionnaire survey of the local community (see below) found that preferred water-based activities of people visiting the study area are (in descending order):

- Swimming.
- Fishing.
- SCUBA diving and snorkelling.
- Surfing.
- Boating.

The most significant areas for land-based recreation are Cromwell Park and adjacent Malabar Beach, Randwick Golf Course and the rocky foreshore areas. The questionnaire survey found that preferred land-based activities of people visiting the study area are (in descending order):

- Walking.
- Relaxing/sitting.
- Walking the dog.
- Playing golf.
- Picnicking.
- Meeting friends.

Further information on the study area is contained in the report where relevant to particular issues.

**The need for the plan of management**

With the enactment of the Local Government Act 1993, councils in NSW are now required to prepare plans of management for all community land, such as that occupied by the study area, by July 1996. Plans of management may either be for generic areas (such as all playground areas), geographic areas (such as for several small parks within a neighbourhood), or significant areas (such as for a large natural area combining a range of ecosystems or multi-use sites with a range of facilities). Clearly, the study area fits into this latter category.

Allied to this legislative need for a plan of management is the particular need to restore the study area for high quality recreational use. Since the 1940s, the study area's use and image have been shaped by the location of the adjacent Water Board sewage treatment plant, and its outlet at Boora Point on the bay's northern headland. This resulted in identified health risks for bathers, and contributed to producing a negative image for the bay. As a result of these health risks, the NSW Health Department advised that the waters of Malabar Bay were unfit for bathing.

Since the opening of the deep water sewage outfall about 4.2 kilometres offshore from Boora Point in 1990, the water quality of the beach and waters of the bay has improved, and faecal coliform levels now satisfy the NSW Health Department bathing water criteria. As a result, the beach is fit for public bathing.

However, the bay's negative image has largely remained, mainly due to lingering public perceptions of poor water quality; the generally neglected and degraded appearance of the study area; occasional anti-social activities, such as car-dumping; and the existence of several dominant elements nearby. These include major adverse visual elements such as the sewage treatment plant, weed infestation on Malabar Headland, the large landfill area on the northern shore of the bay, Randwick Golf Course and club house, and the large and unsightly stormwater outfall on the northern side of the beach; and noise from the rifle range on Malabar Headland.

In view of these developments, the local community believes it is now appropriate to restore and enhance the study area so that it is once again a quality area for public recreation and perceived as such. A further concern is to ensure the study area is managed for the expected increase in visitation. These views are supported by the findings of a questionnaire survey of local residents administered for this plan of management. The survey found that the study area is visited daily or weekly by almost three-quarters of respondents. The respondents nominated their major reasons for visiting the bay as (in descending order):

- The bay's proximity to home.
- The bay's uncrowded and quiet character.
- The bay's natural environmental attributes.

However, respondents nominated the following dislikes about the bay (in descending order):

- Stormwater pollution.
- The closure of the rock pool for swimming.
- The existence of the adjacent sewage treatment plant.
- Litter.
- Dogs on the beach.
- The lack of showers.
- Poor access for pedestrians to the bay.

When asked which improvements they would most like to see, respondents nominated the following priorities (in descending order):

- Reduce water pollution.
- Re-open the rock pool.
- Regenerate the area's indigenous vegetation.
- Screen the adjacent sewage treatment plant to reduce its visual dominance.
- Keep the study area low-key and natural.
- Protect marine life.
- Reduce litter and improve general maintenance, and provide increased ranger/police patrols to reduce the incidence of dogs, vandalism and shellfish poaching.
- Upgrade amenities, such as the toilet block, picnic shelters and play equipment in Cromwell Park; and install other items such as showers and barbecues.

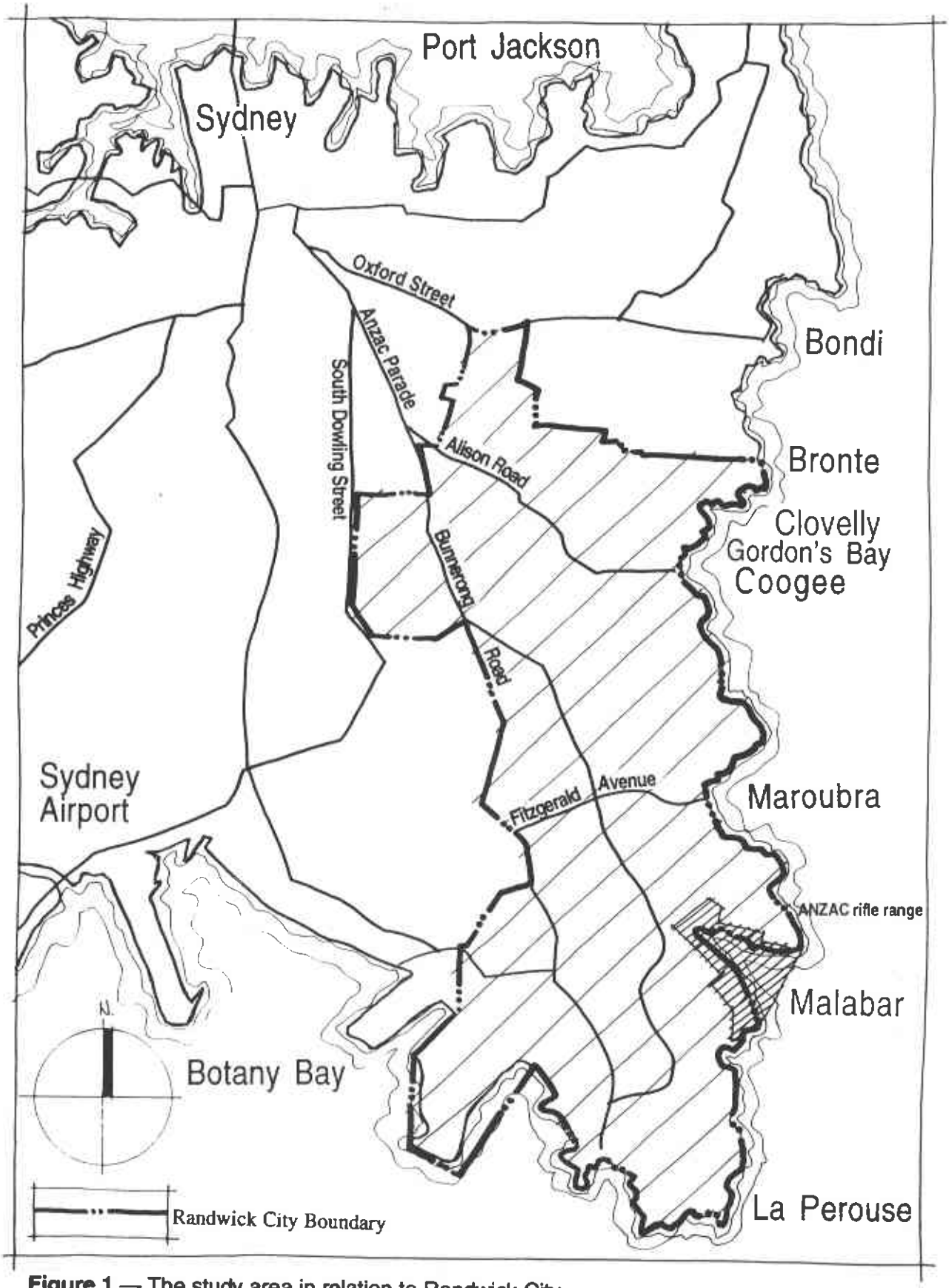



**Figure 1** — The study area in relation to Randwick City

**Study aims and guiding principles**
The Consultative Committee has developed the following mission statement for the plan of management:

> *To efficiently manage Malabar Beach and foreshore areas, providing safe, appropriate access and recreational activities, whilst conserving and enhancing the natural environment.*

Flowing from this are the following guiding principles:

- There should be no major changes to the overall attractions of the bay.
- The overall 'flavour' should be indigenous, natural, low-key, soft-edged and non-commercial.
- Enhanced visual quality should underpin every design decision.
- The overall character and image should be upgraded.
- The area should be planned and managed for an expected increase in visitation.

**Community consultation**
Community consultation has helped drive the plan of management. It has involved:

- Regular meetings with the Malabar Beach and Foreshore Consultative Committee, and with individuals on the Committee.

- Discussions with government departments and organisations, including Department of Planning, Conservation and Land Management, National Parks and Wildlife Service, Public Works, Sydney Electricity, Water Board and NSW Fisheries.

- Media coverage in *The Sydney Morning Herald* and local publications such as the *Weekly Southern Courier*, in order to publicise the plan of management process and help raise the study area's profile.

- A questionnaire survey distributed to the local community. Some 381 completed questionnaires were returned and analysed (the results are presented in **Appendix A**).

- 4000 copies of a brochure distributed throughout the study area to publicise the exhibition of the draft plan of management, and to ask for comments on the proposals.

- An open day at Malabar, publicised in the local media and in the brochure, and attended by about 100 people.

- Public comment on the draft plan of management. Some 34 written submissions were returned and analysed (a summary of comments is presented in **Appendix D**).

**Statutory and planning issues**
The study area is zoned 6(a) Open Space under the Randwick Planning Scheme. The entire study area, including Randwick Golf Course, is owned by the Crown, but is under Council trusteeship. The plan of management must therefore be approved by the Minister for Land and Water Conservation under the Crown Lands Act.

In addition, two State government planning instruments relate directly to the study area: Sydney Regional Environmental Plan No 14 Eastern Beaches (SREP 14), and Design and Management Guidelines Eastern Beaches. Both were prepared in 1988 by the then Department of Environment and Planning. In SREP 14 (1988), most of the study area is nominated *coastal open space*. The main exception is Randwick Golf Course, which is nominated *open space — access denied or restricted*. SREP 14 (1988) was prepared to coordinate a variety of initiatives to protect and enhance the beaches and coastal areas. It provides a framework for the management of coastal open space from South Head of Sydney Harbour to Cape Banks at the entrance to Botany Bay.

The relevant recommendations of SREP 14 (1988) include the need to:

- Maintain a tree planting and revegetation program to improve the coastal open space landscape.
- Upgrade recreation facilities.
- Maintain and enhance the coastal walking trail, which goes along Bay Parade and through Cromwell Park and the south-eastern section of Pioneers Park.
- Respond to user desires for cleaner water, cleaner beaches and more open space; and better pedestrian links, shelter from wind and sun, planting, and more facilities such as toilets, showers, kiosks, and food outlets.

Design and Management Guidelines Eastern Beaches (1988) was prepared as an integral part of SREP 14 (1988). The guidelines provide a design and management framework to help achieve a high standard of development in the beach areas. The relevant recommendations of the guidelines include the need to:

- Limit signs, railings and public utility structures to an absolute minimum.
- Discontinue dumping, filling, construction or extension of retaining walls.
- Remove unnecessary structures and restore areas to their natural condition.
- Give high priority to planting and conservation programs, emphasising preservation and extension of indigenous species, especially heath.
- Provide a variety of recreational settings and facilities to serve regional and local needs, giving preference to those requiring a coastal location. This can be assisted by traffic management measures; providing interpretative information to visitors; providing picnic and barbecue facilities; retaining and restoring rock pools; building a formal landscaped area as a focal point at the major pedestrian entrances; locating car parking along and off perimeter roads rather than within the main body of the open space; intensively planting car parking areas; providing for viewing direct from motor vehicles at limited selected vantage points.
- Put power lines underground and select slender poles for lighting.
- Directly relate the development of sections of the open space to specific adjoining developments within the commercial area.
- Develop the coastal walking trail.

The above recommendations have been used to help guide the preparation of this plan of management.

**Report structure**

This report contains the major issues identified by the Consultative Committee as well as those by the consulting team and provides a formalised structure for action. It is intended as a working document for Council that may be referred to on a regular basis, particularly for the purposes of annual works estimates. In the report, issues and actions are categorised into the following categories:

- Recreation
- Access
- Health and safety
- Restoration and rehabilitation
- Aesthetics
- Conservation
- Management and enforcement

In the report, each category begins with a brief list of goals. On subsequent pages, each issue is addressed in turn, with a table of actions, estimated capital and recurrent costs, the financial year in which work should begin, and the person responsible for initiating and overseeing each action. A final column is left blank so that Council may evaluate the progress of each recommended action.

The estimated costs are those that would be incurred by Council in undertaking the work. Therefore, in cases where recommended actions may be undertaken by other organisations (such as the Water Board or voluntary groups) no cost estimate is presented. The cost estimates are based on commercial rates current at the time of the report's preparation.

Issues in this report are not listed in priority order. Priorities are indicated by the recommended financial year in which each recommended action should begin, as indicated in each table and summarised in the financial plan.

# Category 1— Recreation

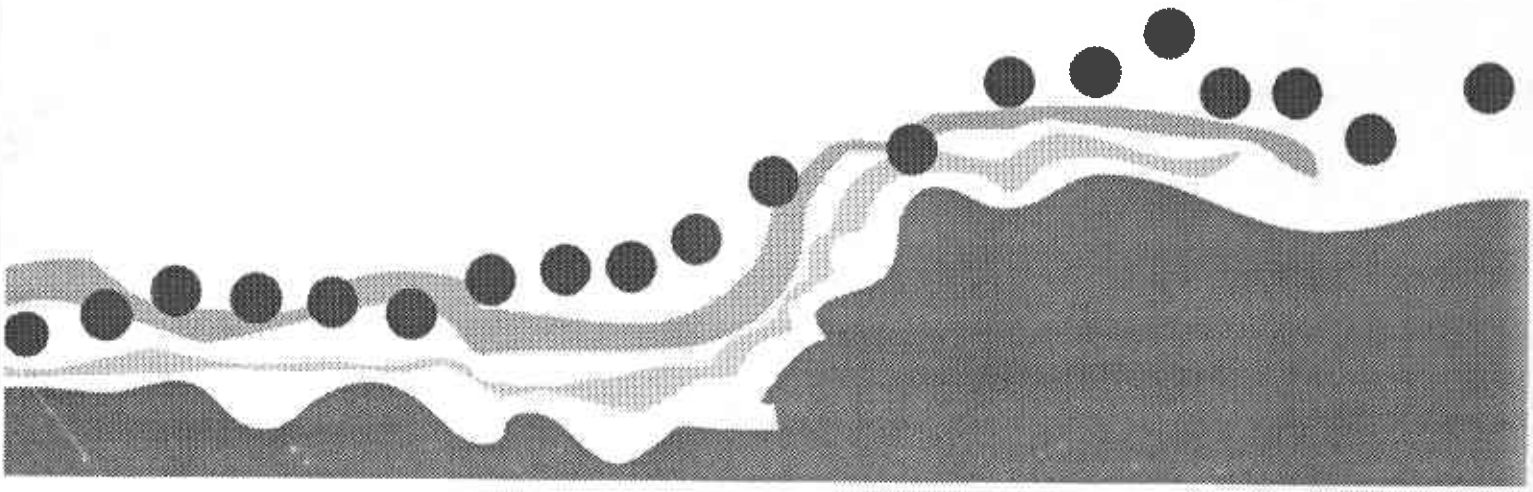
## Goals

Maximise unstructured recreation opportunities which are both land-based and water-based.

Enhance the recreational experience of local residents and visitors.

Ensure the study area is able to accommodate expected increased visitation without a corresponding reduction in the quality of the recreation experience.

Enable a recreational experience that is nature-based, low-key and non-commercial.



# 1.1 The rock pool

The pool below Randwick Golf Club is in poor repair and needs to be substantially restored. Due to the cost, redevelopment could occur in two stages. Problems that need to be overcome include:

- The poor shape and size of the pool, which affect its useability and visual quality.
- Poor retention of water in the pool, uneven water depths, which create safety risks, and possible water quality affects from golf course runoff
- Poor access to the pool and pool area, and lack of amenities, such as showers and toilets.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| ***Stage 1*** | | | 94/95 | | |
| • Build a new curved wall to reduce pool size (a straight wall would be slightly cheaper but less attractive); remove wall in south-east corner | 25500 | 0 | | Mnr, Pks & Rec | |
| • Build a new ramp access into the pool | 3500 | 0 | | Mnr, Des & Traffic | |
| Deepen and flatten the pool | | | | | |
| • Reduce the level of rock in the north-east corner (15 x 6 x 0.5 m) | 14000 | 0 | | Snr L'scape Architect | |
| • Remove sand from the south-western corner (as required) | 0 | 3500 | | | |
| Erect a post and chain barrier along the bay edge of the pool, similar to that at pools such as Wylies Baths, and paint information on edge of pool to indicate depths and length | 3500 | 0 | | Mnr Works | |
| • Sample runoff from golf course to asses quality of flow and potential health risks. Discuss irrigation practices of golf course to ascertain if irrigation efficiency can be improved to reduce runoff to the pool | 2000 | 0 | 94/95 | As above | |
| • Collect or divert runoff from the golf course, above the rock face, using new subsoil drainage | 13500 | 0 | | | |
| Remove concrete and other rubbish from natural rock areas surrounding the pool and concourse, and implement maintenance program to ensure pool is kept free of litter | 0 | 3000 | 94/95 | As above | |
| Build a stroller ramp from the car park to the pool level, with a 1:8 slope. (An alternative would be to build a wheelchair ramp with a 1:20 slope as per AS1428. It would be more extensive, with three landings and a 3-level ramp with 50 metres in each run, and cost about 10 times as much as a stroller ramp.) | 15000 | 0 | 94/95 | As above | |
| Formally name the pool (eg Malabar Baths) and erect a sign at the pool entry area to identify the pool. Hold an official opening for the pool in summer once it is restored | 1000 | 0 | 94/95 | As above | |

## The rock pool (continued)

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| ***Stage 2*** | | | 96/97 | As above | |
| Build a simple amenities block within the lower car park of the Golf Club for use by swimmers. It should include a male and a female toilet and change rooms, as well as a common shower area and wash basin outside the building. Liaise first with golf club regarding size and siting of the building to ensure it does not block access to golf course for golf course vehicles | | | | | |
| • Amenities block and shower | 13500 | 1000 | | | |
| • Composting toilets (eg Rota Loo), water supply to hand basins and shower | 15000 | 500 | | | |
| Slope the concrete concourse of the pool area so that it drains towards the pool (to prevent puddles and slippery surface) | 5000 | 0 | 96/97 | As above | |
| Provide three benches on the concrete concourse of the pool area | 4000 | 0 | | | |
| **Subtotal Stage 1** | **78000** | **6500** | | | |
| **Subtotal Stage 2** | **37500** | **1500** | | | |
| **Total** | **115,500** | **8000** | | | |

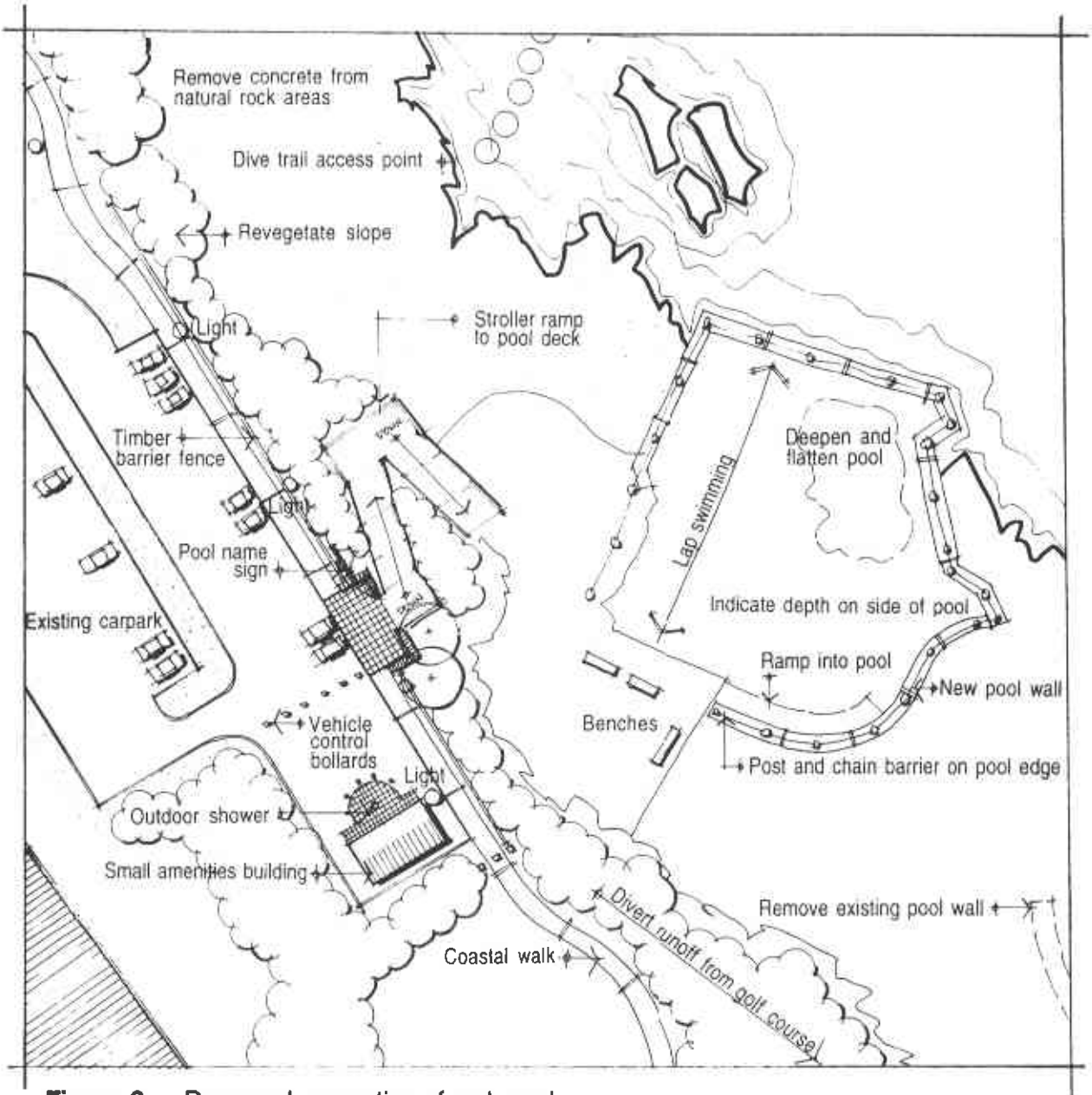



**Figure 2** — Proposed renovation of rock pool

## 1.2 Dive trail

Dive trails provide a focus for divers. They are ideal for learners and novices as they increase safety and highlight habitats. Installing a trail requires consideration of a number of factors, including demand, adequate parking amenities, diver access, diver safety, boating activity and the trail route.

Among divers, Long Bay is particularly popular with learning and novice divers as it is sheltered from most prevailing seas and swell, has easy water entries and exits, and overall shallow depth. Spearfishing occurs in the shallow sheltered waters of the bay and around the headlands. The two shipwrecks in the bay (the SS Malabar and the Goolgwai) near Boora Point are also popular with divers. Two acts cover NSW shipwrecks: the Commonwealth Historic Shipwrecks Act 1976 and the NSW Act 1977. The NSW Department of Planning administers these acts within NSW waters.

Currently, there are several good access points for divers: the boat ramps, particularly on the northern shore, where gear can be driven to the water's edge; the rock pool; and directly off the beach.

Three sites were investigated as potential scuba trails: off the rock pool, off the northern boat ramp, and south of Chinaman's Beach. Habitats and species in these areas were compared with those at Gordon's Bay — where there is already a dive trail — and found to be similar. In terms of safety, it is preferable to keep boats away from areas where people are diving. A trail which starts around the rock pool would probably achieve this best. A trail that started around the rock pool would also be advantageous because of the provision of adequate parking, and the proposal to provide a shower and amenities nearby.

It would also be preferable to keep the trail free of spearfishing.

Impacts of the dive trail would include disturbance of habitats through abrasion by the chain, increased visitation by divers, and associated damage and loss of visual amenity (natural appearance) by introducing the trail.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| This work could be done by volunteers, such as the Gordon's Bay SCUBA Diving Club (contact: Rick Poole of Pro Dive, Coogee), or by people doing a dive master course who need to do a survey as part of the course. Work would involve: | | | 94/95 | Rec'n Assets Mnr | |
| • Undertaking a detailed survey of the bay to assess the best route for a dive trail (about 600 metres long), so that there would be no damage to kelp beds, and no interference with lobster traps (liaison with lobster fishermen should be undertaken as part of the survey) | 0 | 0 | | | |
| • Assess whether there is sufficient interest among divers for the establishment of a dive trail. Document this assessment | 0 | 0 | | | |
| • Once the trail route is determined, obtaining permission to construct from NSW Fisheries and Public Works; then applying for permissive occupancy from NSW Department of Conservation and Land Management | 0 | 0 | | | |
| Move the anchor from the *SS Malabar* (about 300 metres west of the wreck of the ship) to the dive trail (work to be done by dive club) | 0 | 0 | 95/96 | Mnr, Parks & Rec | |
| Provide access to the water at the start of the dive trail. Access should not be steep or slippery. Walkways or stairs need not go all the way to the water's edge if the rock platform is sufficiently level to walk upon. A ramp to the water's edge would be preferable to cater for the needs of divers with walking problems | 2000 | 0 | 95/96 | Mnr, Parks & Rec<br>Mnr, Works | |
| • Mark dive trail using heavy chain attached to large weights, like that at Gordons' Bay. Formalise responsibility for and maintenance of dive trail with local dive clubs | 20000 | 0 | 95/96 | Rec'n Assets Mnr | |
| • Install marker buoys to keep boats clear of the diver-frequented area | 500 | 0 | | | |
| • Near the entry to the pool, install a small plaque showing the location of the dive trail and the wrecks | 1000 | 0 | | | |
| Apply for a spearfishing closure for the portion of the bay containing the dive trail and popular snorkelling and swimming areas. Apply to the Director of Fisheries for the closure. NSW Fisheries to erect signs | 1000 | 0 | 95/96 | Rec'n Assets Mnr | |
| **Total** | **24,500** | **0** | | | |

## 1.3 Amenities and showers (Cromwell Park)

The amenities block in Cromwell Park is inadequate and requires upgrading. Problems include:

- Toilet facilities in poor condition.
- A lack of changing areas and showers.
- Poor internal lighting and ventilation.
- No facilities for the disabled.

The existing block, located in the middle of the park, is in the ideal location to be accessible to all users without being visually dominant. The opportunity exists to extend and upgrade the amenities block in keeping with the low-key flavour of the bay. The local community has also requested outdoor showers close to the beach, and this could be installed at relatively little cost.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Extend and refurbish existing amenities block to include changing areas, internal showers and wheelchair access for disabled toilet, as per sketch diagram. Works to include a new roof to give maximum ventilation and increase internal light | 52000 | 5000 | 94/95 | Mnr, Pks & Rec<br><br>Snr L'scape Architect | |
| Provide outdoor showers adjacent to steps to beach access ramp, as per sketch diagram (similar to outdoor shower at Clovelly Beach) | 4000 | 0 | 94/95 | Mnr, Works | |
| **Total** | **56,000** | **5000** | | | |

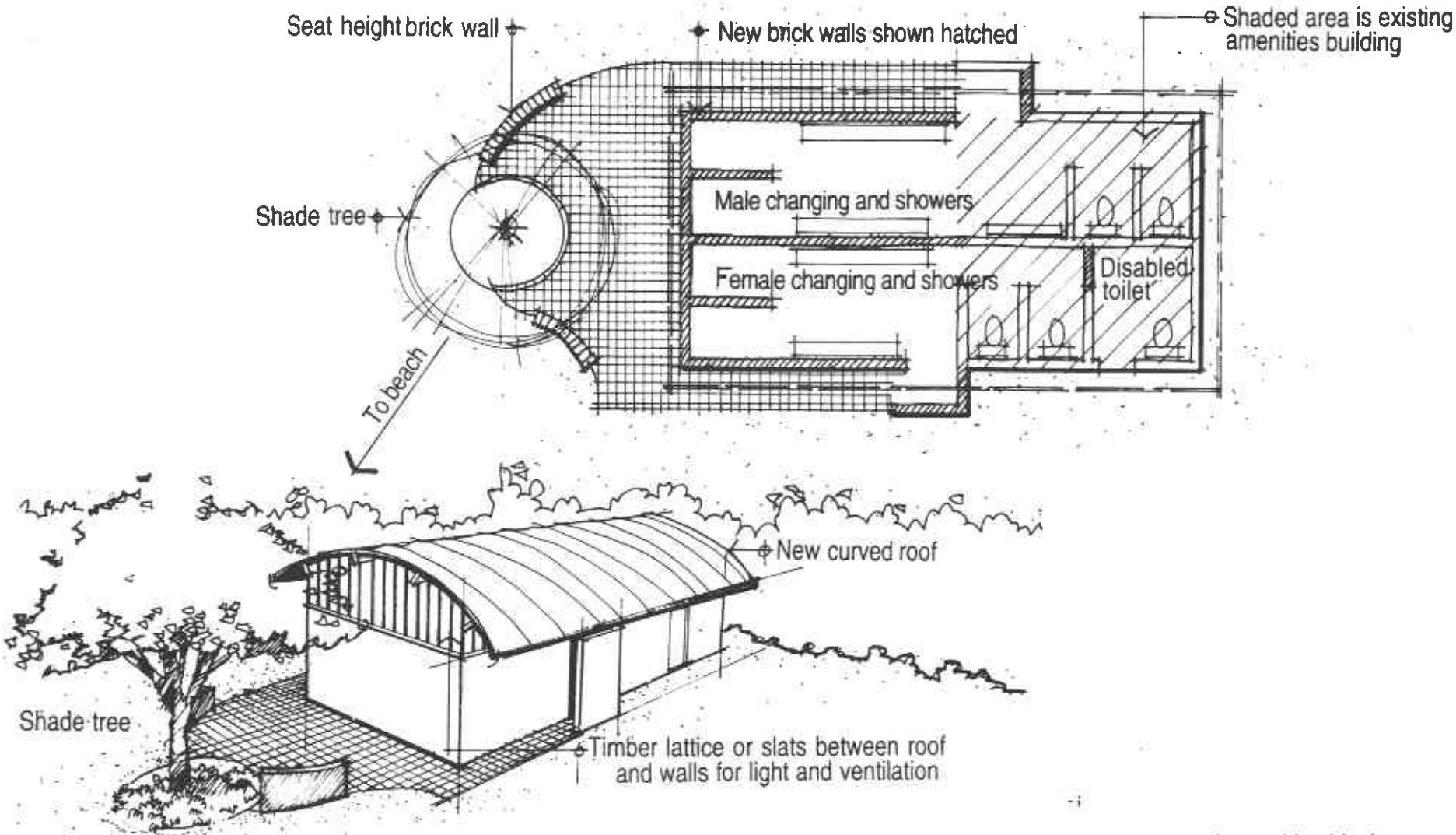



**Figure 3** — Proposed renovation of amenities block

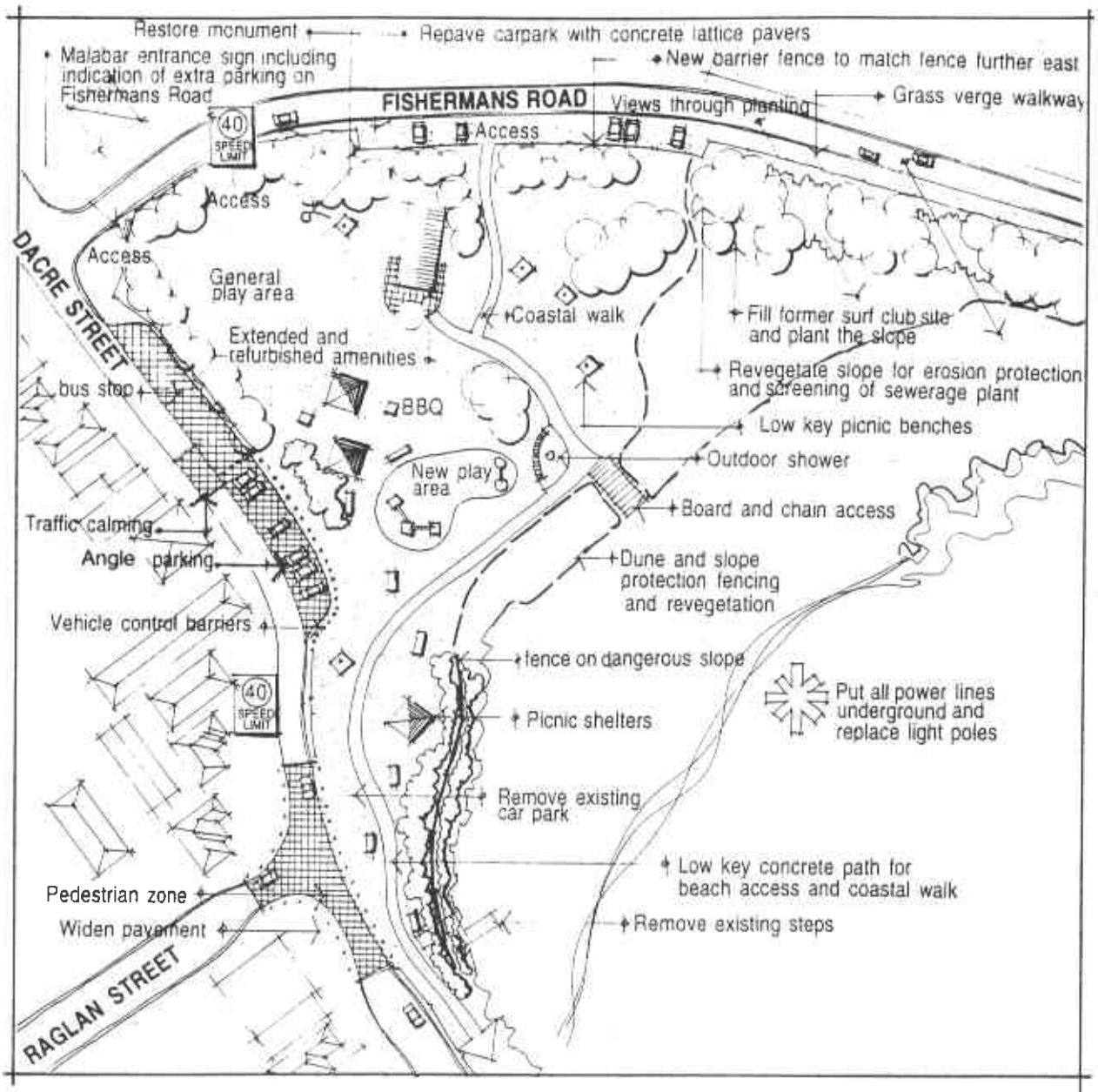



**Figure 4** — Cromwell Park concept plan

## 1.4 Play equipment (Cromwell Park)

Cromwell Park contains a slide, see-saw, and two sets of swings. These have been rated by Council as safe for use. However, the equipment is becoming outmoded and caters, at best, to the needs of a local catchment only. In the short to medium term, there is a need to install more modern play equipment that provides greater play experiences, and caters for the needs of a regional catchment. Nearby seating and shade for guardians to watch over children is also necessary.

In addition, although there are large grassed areas, the park has no defined unstructured general play area that could be used for impromptu ball games, kite flying, etc.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Install a regional-sized play area in Cromwell Park. The area would cater for both younger and older children. The design and materials should reflect the natural elements of the location, with a preference for timber, sand and rope, rather than brightly coloured plastics. Position the equipment to take advantage of the natural slopes and views | 50000 | 1500 | 95/96 | Rec'n Assets Mnr<br><br>Snr L'scape Architect | |
| Provide a defined general play area of about 15 m x 20 m, consisting of a relatively flat grassed area in the south-west corner of Cromwell Park | 4000 | 0 | 95/96 | As above | |
| **Total** | **54,000** | **1,500** | | | |

## 1.5 Seating

There is limited seating in the whole study area. The only seating exists at the edge of Cromwell Park. The opportunity exists to provide seats that take advantage of views and integrate with paths.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Provide seating to a consistent design throughout the study area in the locations shown on the concept plan | 30000 | 200 | 94/95 | Snr L'scape Architect | |
| **Total** | **30,000** | **200** | | | |

# 1.6 Picnic and barbecue areas (Cromwell Park)

Although the number and location of the existing picnic shelters in Cromwell Park are adequate, they are not aesthetically pleasing, nor in the most appropriate places. The opportunity exists to provide new shelters that are aesthetically pleasing and appropriately situated.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Provide three picnic shelters with associated BBQ facilities in Cromwell Park in locations shown on the map. Each shelter to provide for two groups of six people. The picnic and BBQ facilities to be similar to those on the northern side of Clovelly Bay. The BBQs should be free to use and operate with a timer switch. Appropriate rubbish/recycling bins should be located near the eating areas to minimise litter (see **Section 3.3**) | | | 96/97 | Snr L'scape Architect | |
| • Picnic shelters (3) | 30000 | 300 | | | |
| • Barbeques (2) | 5000 | 2500 | | | |
| • Power | 2000 | 0 | | | |
| Provide five low-key picnic benches in the locations shown on the concept plan | 6500 | 150 | 96/97 | As above | |
| **Total** | **43,500** | **2,950** | | | |

# 1.7 Gateway to the bay

The area lacks a focal point or gateway, which would considerably improve its image and increase its sense of identity. In addition, the existing streetscape of Dacre Street/Bay Parade (near the corner of Raglan Street) is characterised by:

- A wide street and intersection, which encourages speeding traffic.
- No shelter for pedestrians.
- No focus for the activities associated with the beach and shops.
- No defined link between the residential area, the shops, Cromwell Park and Malabar Beach.

The opportunity exists to provide an attractive area at this focal point that will serve the needs of the store owners, residents, motorists, pedestrians and beach users.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Pave the street and footpath in front of the shop/cafe with attractive pavers, and provide speed reduction measures, bollards, etc, to provide an integrated 'shared pedestrian zone', such as that at corner Beach Street/Carr Street, south Coogee. Reduce allowable speeds to 40 km/hour in this area | 25000 | 0 | 94/95 | Mnr, Design & Traffic<br>Mnr, Works | |
| Calm traffic by placing 40 km/hour speed limit signs to cover the area from corner Franklin Street/Dacre Street to corner Howe Street/Bay Parade, and along Fishermans Road. Use other traffic calming measures, as appropriate (eg road narrowing) | 1000 | 0 | 94/95 | As above | |
| Narrow the road at the intersection of Bay Parade/Raglan Street to help regulate traffic, and widen the pavement to enable placement of outdoor tables and chairs outside the shop/cafe, conforming to Council regulations | 4000 | 0 | 94/95 | As above | |
| **Total** | **30,000** | **0** | | | |

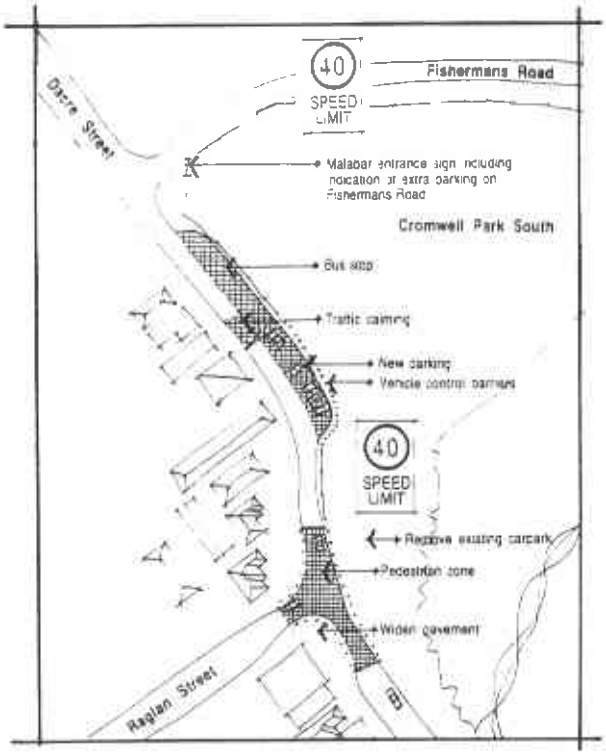



**Figure 5** — Proposed gateway to the bay

# Category 2 — Access

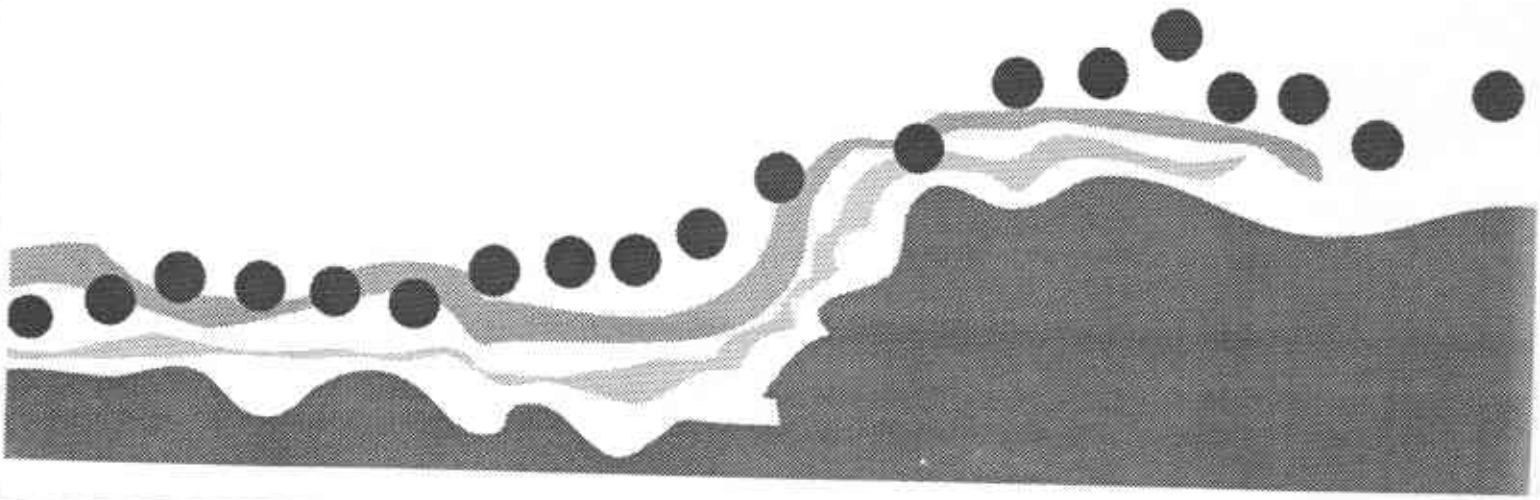
## Goals

Maximise accessibility to facilities within the study area for all people.

Ensure access is safe.

Minimise conflicts between user groups, such as pedestrians and motorists.

Maximise links with the proposed Randwick coastal walk, particularly with Malabar Headland and Maroubra Beach to the north and Little Bay to the south.



## 2.1 Pedestrian access to the beach

Currently, access to the beach is from the wooden staircase off Bay Parade, and from a small set of concrete stairs at the back of the beach. The staircase is in very poor repair and poses a potential safety risk. The stairs are unattractive and out of keeping with the natural setting of the study area.

A further problem is that the road access to the beach for Council's beach cleaning vehicles represents a secondary — and unnecessary — breach in the sand dune, which can cause the mobilisation of the dunes.

In addition, there is a need to formalise the 'desire lines' within the park leading to the beach in a way that is attractive, appropriate and accommodating to the needs of both people requiring stroller or wheelchair access and Council's maintenance and beach cleaning vehicles.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Remove staircase to beach from Bay Parade | 4000 | 0 | 94/95 | Mnr, Parks & Rec'n | |
| Remove steps at back of beach | 2500 | 0 | 94/95 | Mnr, Works | |
| Provide 3 metre wide path and access ramp to beach as shown in sketch diagram. Path to be of crushed silica or exposed aggregate and concrete. Beach access ramp to be of board and chain | 15000 | 0 | 94/95 | Mnr, Design & Traffic<br><br>Snr L'scape Architect | |
| **Total** | **21,500** | **0** | | | |

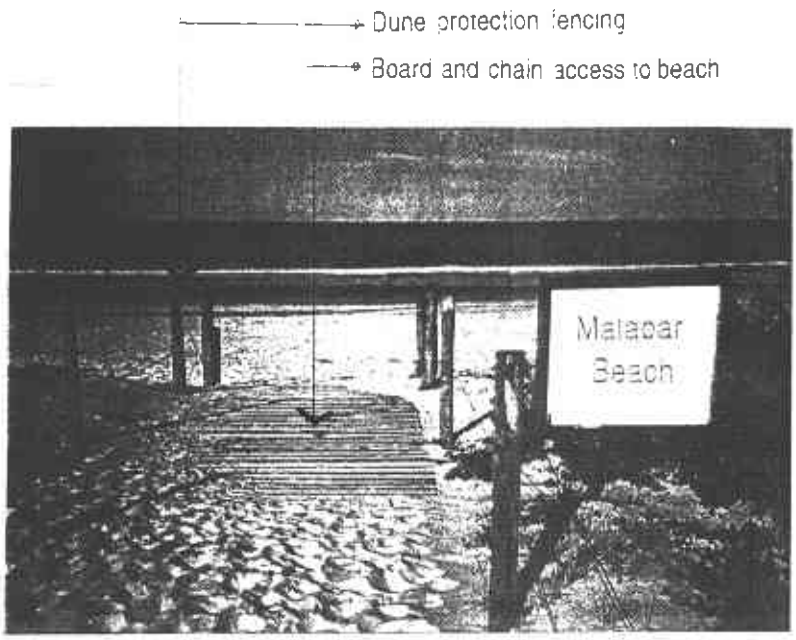



**Figure 6** — Proposed board and chain access to beach showing dune stabilisation fence

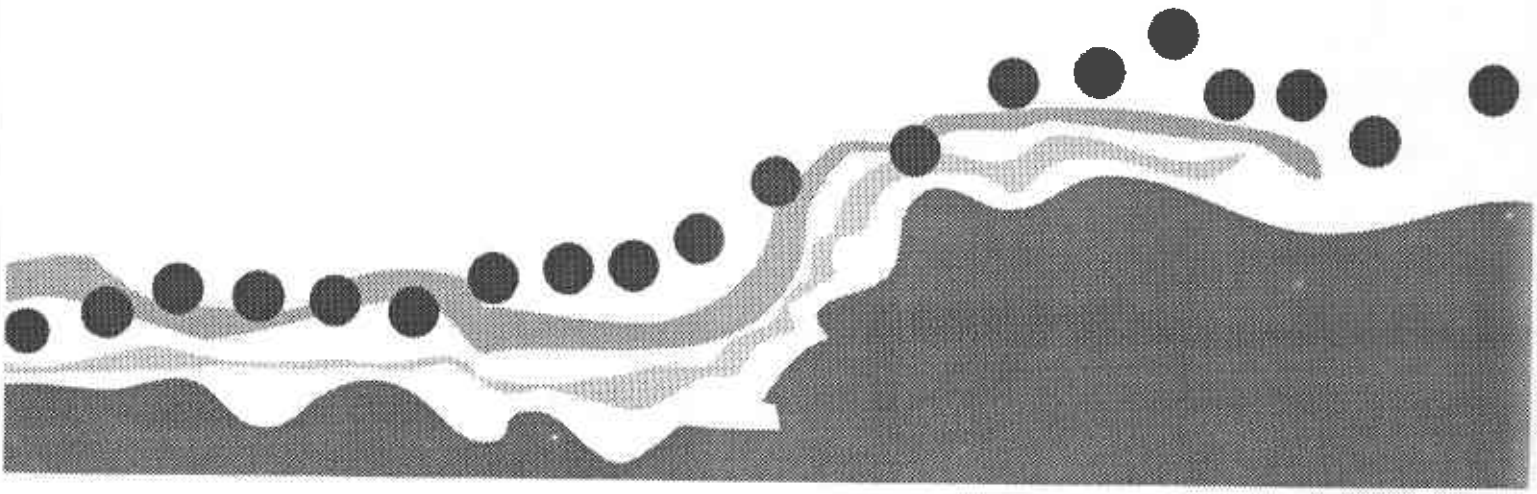
# Category 3 — Health & safety

## Goals

Ensure safe use of the bay by all visitors, within financially feasible parameters.

Minimise Council's exposure to possible public liability litigation.

Maintain the bay as a safe swimming location.



## 2.2 Car parking

The study area has a reasonable amount of on-street and off-street parking, and a major increase in parking areas is not needed, even assuming increasing visitation in the future. However, currently, there are conflicts caused by motorists parking on recreational land. This mainly occurs near the northern and southern boat ramps. Near the northern ramp, parking problems are mainly caused by occasional visitors and boat owners. Near the southern ramp, problems occur when visitors park on the grass verge due to a lack of nearby on-street parking. There is a need to rationalise and formalise car parking to minimise conflicts with pedestrians in these areas.

Near the northern boat ramp, a new parking area is needed to cater for up to 25 vehicles. Near the southern boat ramp, it is considered that all parking should be on existing streets, and not allowed on grassed areas. Divers visiting the (proposed) dive trail and swimmers visiting the rock pool would at most times have adequate parking in the existing car park below the golf course.

Also, Fishermans Road should be signposted so that it becomes the main parking focus for the bay. Parking provision along Fishermans Road is adequate, but, in the future, Council could consider extending parking if regular parking overflows occur, and if these overflows are found to cause problems.

In addition, the Dacre Street car park needs to be relocated and re-designed to reflect the recreational attributes of this part of the study area, and its status as the main gateway to the beach and Cromwell Park.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Relocate Dacre Street car park to provide better access to Cromwell Park and free up existing car parking area for recreational use. The preferred option is to provide angle parking for about 12 cars in Dacre Street (as shown on the concept plan) and maintain parallel parking opposite this new parking area. However, this would be subject to a parking study by Council prior to detail design. If this area is not found to be appropriate for angle parking, it should remain for parallel parking and an alternative site investigated nearby (eg further along Dacre Street or in Raglan Street or Bay Parade)<br><br>Liaise with Sydney Buses regarding best site for the bus stop in this area, and also about establishing additional bus stops further to the east along Bay Parade or in Raglan Street | 10000 | 0 | 94/95 | Snr L'scape Architect<br><br>Mnr, Works<br><br>Mnr, Design & Traffic | |
| Place 'no parking on grass' signs near the southern boat ramp | 500 | 0 | 94/95 | | |
| Place indicator signs near the corner of Fishermans Road/Dacre Street directing cars to park in the car park off Fishermans Road. | 1000 | 0 | 94/95 | | |
| Pave the Fishermans Road car park with concrete lattice slabs (which allow grass to grow through), or similar attractive 'soft' paving, as car parking demand grows | 10000 | | When needed | | |
| Provide a formalised car parking area for about 25 cars near the northern boat ramp | 25000 | 0 | 95/96 | | |
| **Total** | **46,500** | **0** | | | |

## 2.3 Randwick coastal walk

The study area is a key component of the Randwick coastal walk, which is an important regional planning objective of Sydney Regional Environmental Plan No 14: Eastern Beaches (1988).

Council has been giving effect to this objective for some time. It is critical that the study area be appropriately integrated into the walk, between Maroubra to the north and Little Bay to the south. The ideal location for the coastal walk would be through Malabar Headland. However, this area is currently off-limits to the public, although this may soon change.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Provide a formal walking trail — with interpretative signs — around the bay, including from Howe Street around Randwick Golf Course, to enable links to Maroubra Beach and Little Bay. Formalise links with Malabar Headland once the status of the headland is confirmed<br><br>Mark a cycleway line on Bay Parade leading to the rock pool to increase cycling safety | 30000 | 500 | 97/98 | Snr L'scape Architect | |
| **Total** | **30,000** | **500** | | | |

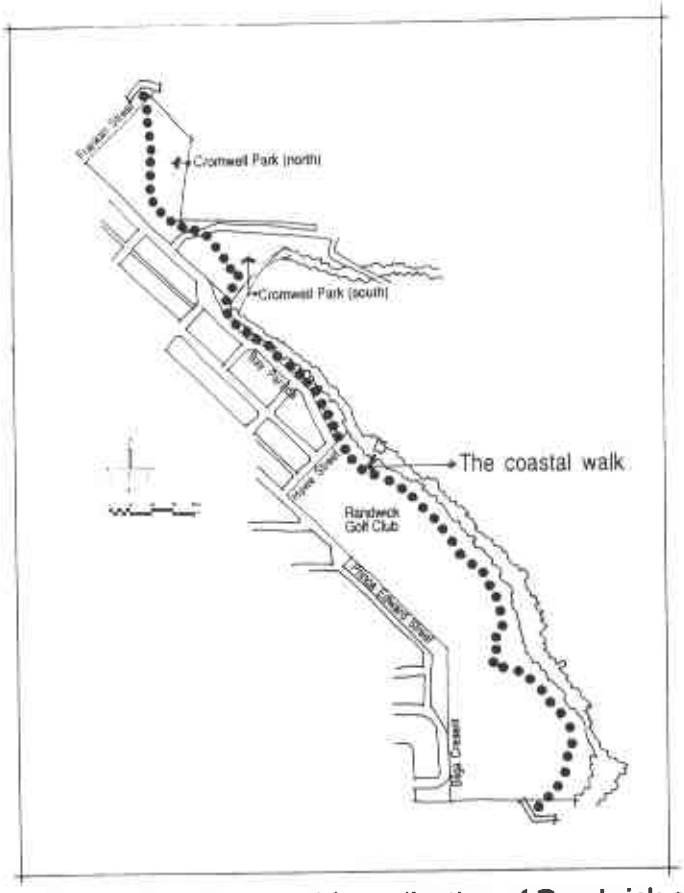



**Figure 7** — Proposed formalisation of Randwick coastal walk

## 3.1 Improve water quality of the bay

This issue mainly involves water quality in terms of gross pollutants, particularly floating matter such as plastic bags. However, water quality in terms of faecal coliform has also been investigated.

**Gross pollutants**
Residents have indicated that floating debris from stormwater runoff is a nuisance during and immediately after storms and have raised the possibility of installing metal trash screens across the stormwater outlets to trap floating debris, such as cans, paper, plastic and vegetation. These screens need to be regularly cleared of debris, or they can cause flooding problems upstream. This course of action is recommended for those pipes discharging stormwater into the bay from urban areas. Currently, it is not known exactly how many of the 21 stormwater drains discharging into the bay carry urban discharge, and a further investigation is needed to ascertain this. (There have been claims that the Water Board discharges stormwater from its treatment plant to the bay; however, the Board advises that its stormwater is diverted to the head of works, treated together with sewage flows, and discharged from the deep water ocean outfall.)

This course of action should be complemented by the management approach adopted for other Sydney beaches. This involves Beachwatch regularly sampling and reporting beach and water conditions on radio and in other media. The general rule would be that swimming at Malabar would not be recommended immediately after heavy rainfall. This should be complemented by a public awareness and education campaign to reduce the amount of pollutants entering stormwater pipes.

In addition, a gross pollutant trap has been suggested by the Consultative Committee for the large stormwater outlet on the northern side of the beach. This would remove trash as well as sediments and oils. Traps rely on reducing flow velocity so that suspended sediment can settle and be retained. The trap would need to reduce velocities to about 0.3 metres per second to enable sediment to settle. The trap could be incorporated as a sump in the pipeline further upstream of the outlet at Pioneer Park. This trap would require considerable engineering design and incorporate an appropriate sediment removal method. It would need to be about 15 metres by 45 metres and have a storage depth of about one metre. It would cost about $800,000 to build.

However, given the cost, it is difficult to justify installation of a gross pollutant trap because:

- The stormwater outlet discharges stormwater from only about 25% of the total catchment that discharges into the bay, so that 75% of flows into the bay would remain untreated.
- Malabar is probably no more affected by stormwater pollution than other nearby beaches.
- Malabar has a relatively low visitation compared with other beaches in Randwick City which do not have the benefit of a gross pollutant trap. These more popular beaches should have priority should Randwick Council decide to install a gross pollutant trap.

If Council considers further water quality improvements are needed, it could commission a stormwater study to assess the existing network, flows and water quality (particularly sediments) in order to size and conceptually design a suitable gross pollutant trap for the main stormwater outlet on the northern shore of the bay. The study should include an assessment of feasibility of installing the gross pollutant trap, given its large expense, and use, where possible, the experience gained from the operation and maintenance of existing traps, such as at Bondi. The study would cost about $10,000.

**Faecal coliform pollution**
Water quality in Long Bay has been reviewed by the Water Board and Beachwatch. In 1991, the Water Board concluded that, since the commissioning of the deep water sewage outfall off Malabar, the presence of high faecal coliform counts in the bay is a result of urban runoff discharged from the stormwater outlets. The effects of runoff are localised to the outlet location. However, the general background level in the bay rises during wet weather.

This finding is supported by Beachwatch, which samples water from the bay as well as many other Sydney beaches, generally on a two-day interval. Analysis of the data since late 1990 indicates a

strong correlation between high faecal coliform counts and rainfall in the area. During wet weather, the count regularly exceeds the Department of Health's recommended limits for bathing beaches. However, the counts are similar to nearby beaches, such as Maroubra and Little Bay. Beachwatch found these high levels generally return to acceptable values within two days of a storm.

To treat the stormwater to improve water quality in the bay, Council could either divert the outlets, treat the flows with chlorine or ozone, or detain the flow and disinfect it using natural sunlight. These options are expensive and not practical.

**Re-use of stormwater to irrigate coastal golf courses**
The Consultative Committee also requested the study team to investigate the possibility of intercepting a portion of the stormwater flow now discharging into the bay and directing it back to Randwick Golf Course and the three adjoining golf courses for irrigation (thereby replacing irrigation using drinking water). The four golf courses require 60 megalitres of water per year for irrigation. This would require a draw-off and storage facility adjacent to one of the larger stormwater networks. This stored water would then need to be pumped through a pipe system to the golf courses for storage and irrigation. To accommodate the irrigation needs of the golf courses, particularly during dry periods, each golf course would need an underground storage tank measuring about 60 square metres with a depth of 1.2 metres. Each tank would cost about $130,000. This cost would need to be borne by the golf courses, should this course of action be adopted.

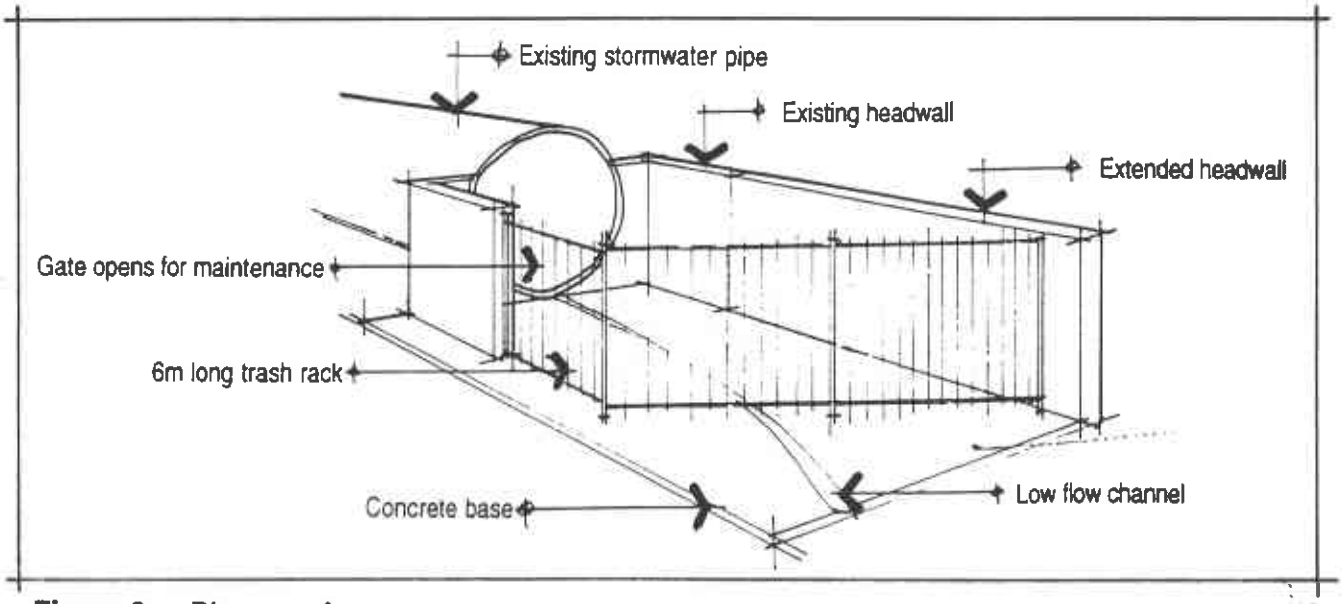



**Figure 8** — Diagram of proposed trash rack

## Water quality

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Council to liaise with coastal golf courses, to commission a study to assess the feasibility of intercepting stormwater flow and re-using it to irrigate the golf courses. The study to address:<br>• The volume of stormwater flow available.<br>• The reliability of the flow, and if the flow is to be pumped continuously, or at night, or only when required.<br>• The size of storage needed.<br>• The water quality of the flow, any treatment needed, and at what stage in the system is treatment possible.<br>• The financial feasibility of building the system.<br>• Other alternatives, such as intercepting runoff from the golf course and storing it for re-use, and how these compare in terms of cost-benefit analysis.<br>• The feasibility of incorporating existing structures into this system, such as the disused pit and pump housing in Pioneer Park.<br>• Whether a water balance study has been undertaken, and the irrigation needs of the golf course based on a water balance. | 0 | 0 | 94/95 | Mnr, Parks & Rec'n<br><br>Mnr, Env'tal Protection | |
| Council to commission a stormwater study to investigate and prepare a concept design for the provision of trash racks on the stormwater outlets into the bay. Study to assess impact on the stormwater system should trash racks become blocked. This may involve some survey of pipe diameters, inverts and lengths | 6000 | 0 | 94/95 | Mnr, Parks & Rec'n<br><br>Mnr, Env'tal Protection | |
| Council to install trash racks on all pipes up to a 0.5 metre diameter that carry urban storm flow (assume 15 pipes x $1200 per rack), and a large trash rack on the large stormwater pipe on the northern side of the beach ($11500) | 29500 | 2000 | 94/95 | | |
| Council to implement an education/awareness program geared towards schools in the catchment to heighten awareness of the causes and effects of stormwater pollution | 0 | 2000 | 95/96 | Mnr, Env'tal Protection | |
| **Total** | **35,500** | **4000** | | | |

## 3.2 Boat ramps

There are two boat ramps in the bay, one each on the northern and southern shores. The northern ramp is used by the general public, while the southern ramp is used by two local fishing clubs, the Water Board and the Malabar Surf Life Saving Association.

Two main fishing clubs operate from Long Bay: the Malabar RSL Fishing Club (including the RSL Rockhoppers) and the Malabar Boat Owners Club. The clubs have several hundred members who use the boat ramp on the southern shore. Club members usually fish in the ocean waters outside the bay, but fish in the bay when sea conditions are adverse.

(According to NSW Fisheries, there is also limited commercial fishing within the bay. Seven fishers in the region are licensed to use lobster traps within the bay. Lobster fishing is seasonal with traps set from May to September. Traps are generally set close to shore and tend to be concentrated along the southern shore. Purse seining is done infrequently for garfish, between March and May.)

In 1989, NSW Public Works advised Council that, in view of the exposed nature of the northern ramp, there is a concern about the safety aspect of launching boats from the ramp due to ocean swell and wave action, and the inexperience of many recreational boaters. It assessed that the boat ramp would be unsuitable for inexperienced boaters for the majority of the time, and concluded that any upgrading of the ramp would attract further use of the ramp by inexperienced boaters which it regarded as undesirable from a safety point of view.

Because of these reasons, and because of the economic climate, Public Works advised that it would be unable to commit any further funds to the project at the time. It is therefore likely that any upgrading of the ramp would not meet Public Works standards, with the implication being that funding from this avenue is unlikely.

Given the Public Works assessment regarding the poor safety aspect of the existing ramp, a new location may need to be found for the ramp, possibly at another bay. If this were the case, a major study would need to be undertaken to identify a suitable alternative location.

Another problem at this location is that the drainage pipe that was once installed to divert runoff away from the ramp has disintegrated, so that runoff now flows across the ramp area, creating a build-up of slime, and posing a safety hazard.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Re-route groundwater now crossing ramp. Replace the drainage pipe with a new PVC pipe | 2000 | 0 | 95/96 | Mnr, Traffic & Design | |
| Upgrade northern ramp to provide easier and safer access. Lengthen the drop-off by about 5 metres, and widen the ramp by about 2 metres | 5000 | 1000 | 95/96 | Rec'n Assets Mnr | |
| Erect a warning sign at the boat ramp warning boat users to be cautious during unsafe conditions | 500 | 0 | 95/96 | Mnr, Works | |
| **Total** | **7,500** | **1,000** | | | |

## 3.3 Litter

Litter is a problem in the study area. It ranges from careless disposal of rubbish to problems associated with dogs and horses, and car dumping. While the solution to this problem relies heavily on public education, increased ranger patrols and citizen action to deter this behaviour, some measures can be taken.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Provide Sulo-type litter bins in Cromwell Park, particularly near picnic and barbecue areas. Provide separate bins for glass, aluminium and other rubbish and consider visually screening the bins in attractive enclosures, similar to those in Centennial Park. (However, experience of vandalism of lattice screens in Coogee may indicate that bins should be unscreened) | 2500 | 0 | 94/95 | Snr L'scape Architect<br><br>Mnr, Env'tal Services | |
| Provide additional cleaning patrols | 0 | 0 | 94/95 | Mnr, Env'tal Services | |
| **Total** | **2,500** | **0** | | | |


**Figure 9** — Example of litter recycling container

## 3.4 Fencing

Appropriate fencing can play the roles of:

- Creating a sense of enclosure for the study area.
- Unifying the different elements of the study area.
- Preventing access to certain areas (such as rehabilitation areas).
- Deterring access to areas that pose a public health risk.
- Preventing car dumping.

The Water Board has installed attractive low timber post and rail fencing around its rehabilitation areas, and it is proposed that any new fencing continue this theme.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Install fences as shown in sketch diagram | | | | Snr L'scape Architect | |
| • On top of proposed retaining wall in Cromwell Park to prevent falls | 2500 | 0 | 94/95 | | |
| • Dune protection fencing (see **4.1**) | 40000 | 0 | 95/96 | | |
| • Perimeter fencing to Cromwell Park | 15000 | 0 | 96/97 | | |
| • Fencing on slope above rock pool | 4000 | 0 | 96/97 | | |
| • Along Bay Parade when existing fencing needs replacing | 20000 | 0 | 97/98 | | |
| **Total** | **81,500** | **0** | | | |

## 3.5 Water craft

Long Bay is used by many people to launch small boats and jet skis. The key issues regarding water craft involve:

- The safety of divers, snorkellers and swimmers who are at risk of being struck by boats.
- Objections to jet skis which many consider to be noisy and undesirable. Council has contacted the Maritime Services Board Waterways Authority (MSB) about this issue. The MSB has advised that its jurisdiction pertaining to regulations on boat usage, such as the Water Traffic Regulations, are being amended by the NSW government. The amendments would extend its jurisdiction to three nautical miles offshore. This would allow the regulations to be enforced in areas such as Long Bay. The MSB has invited Council to nominate appropriate officers to become authorised officers of the Waterways Authority to help enforce the regulations.

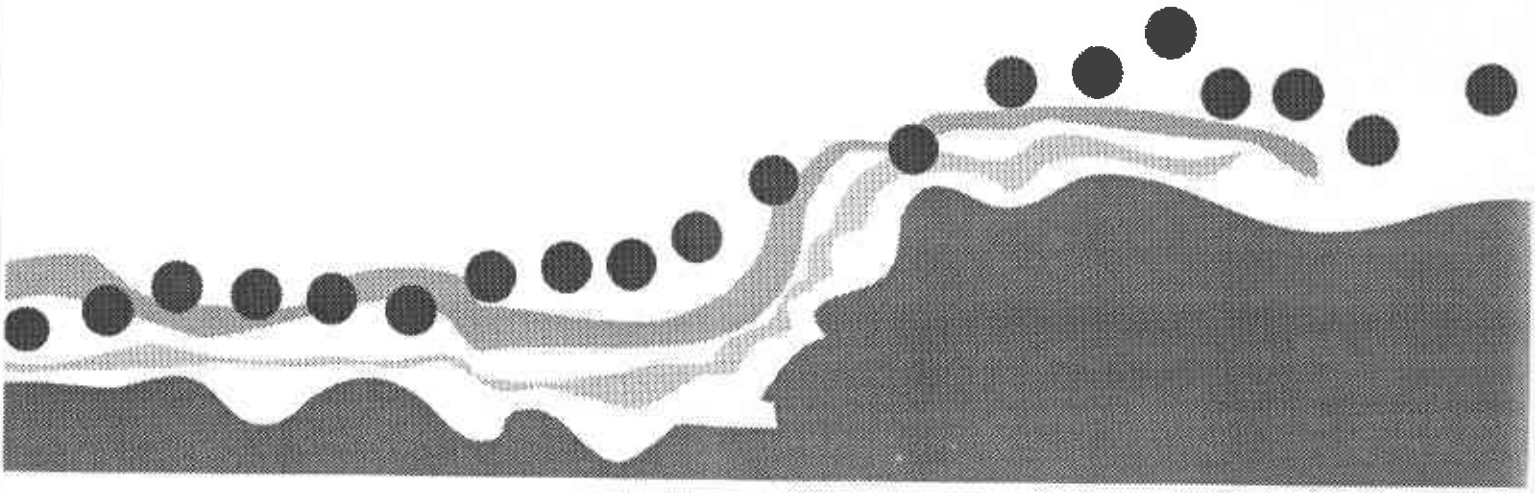
| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Introduce speed limit of 8 knots for all watercraft within that part of the bay west of the anchor of the *SS Malabar* (about 200 metres east of the pool) to help reduce the risk to divers and swimmers, and reduce the quality of the recreational experience for jet skiers, who generally need high speeds to operate effectively. | 0 | 0 | 94/95 | Council Ordinance Inspectors | |
| Erect markers to show speed limit area | 1000 | 0 | | | |
| Invite applications from local residents (preferably boat owners) to become authorised officers of the Waterways Authority to enforce the relevant regulations | 500 | 0 | 94/95 | Manager, Works<br><br>Snr L'scape Architect | |
| Install pictorial signs at the boat ramps to warn boat operators of the location of the (proposed) dive trail, the potential hazards to divers and swimmers and the appropriate actions to take, including speed restrictions. Maritime Services Board to erect speed restriction signs | 1000 | 0 | 94/95 | As above | |
| **Total** | **2500** | **0** | | | |

# Category 4 — Restoration & rehabilitation

## Goals

Undo previous building works that affect the bay's visual quality and amenity.

Restore natural vegetation and topography to return the bay to a more natural setting.



# 4.1 Erosion

The two main erosion problems in the study area are:

- Below the Dacre Street car park, where there is a need to ensure public safety and maximise the recreational useability of this area, particularly as it is proposed to be the main gateway to the beach and to Cromwell Park (see **Figure 6**).
- The old surf club site, where there is fairly steep sediment above the bedrock which could slip at any time, and is therefore posing a safety problem. The erosion also detracts from the area's visual quality.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| **Below Dacre Street car park** | | | 94/95 | | |
| • Commission a geotechnical study of the underling sandstone | 10000 | 0 | | Mnr, Parks & Rec'n | |
| • Build a retaining keystone wall to provide slope stability. The wall, on foundation, would be 3 metres high and 40 metres long and faced with a natural finish (eg sandstone). Backfill the area on the landward side of the retaining wall to create a level area for recreation | 51500 | 0 | | Mnr, Works<br>Snr L'scape Architect | |
| **Old surf club site** | | | 96/97 | As above | |
| • Add fill in the area of the former surf club to achieve a stable 1:5 slope | 7500 | 0 | | | |
| • Add fill to the scour hole west of the stormwater pipe and repair the face of the slope | 1500 | 0 | | | |
| • Landscape the surface (650 sq m) | 60000 | 6000 | | | |
| • During storm seas, this slope may be affected, eg by scouring. Therefore, maintain this slope as required (probably annually, on average) and fence the erosion area as shown in the sketch diagram (fence costs are given in **3.4**) | 0 | 500 | | | |
| • Revegetate the erosion area with appropriate indigenous species | 80000 | 6000 | | | |
| • Enhance the road gutter on Fishermans Road to channel runoff from the treatment plant that now flows over the road and down the slope | 2500 | 0 | | | |
| **Subtotal Dacre Street car park** | **61500** | **0** | | | |
| **Subtotal old surf club site** | **151500** | **12500** | | | |
| **Total** | **213,000** | **12,500 *** | | | |

* *Three year maintenance period for revegetated areas*

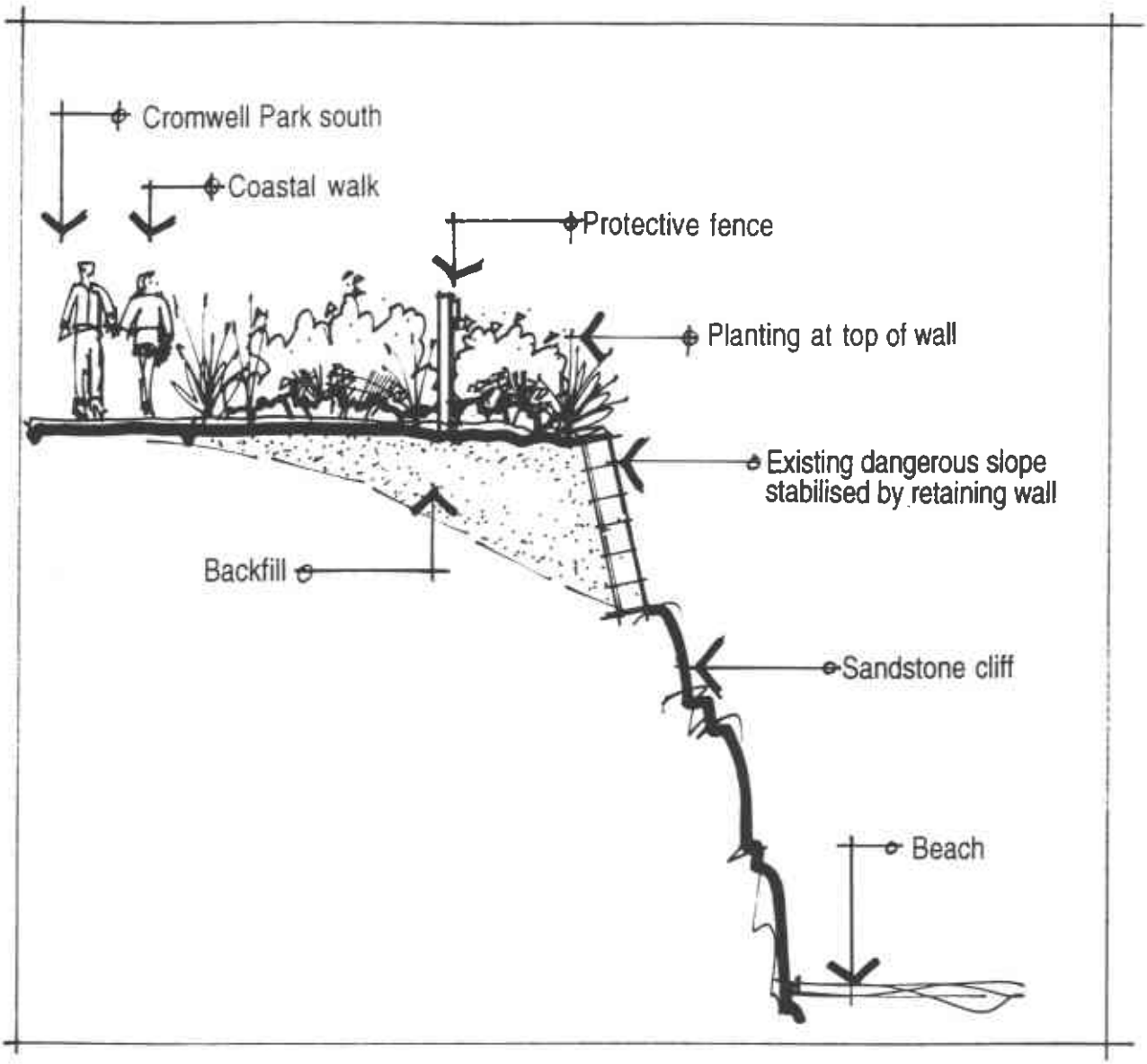



**Figure 10** — Proposed treatment of erosion below Dacre Street car park

## 4.2 Landfill area

The landfill area on the northern foreshore is estimated to cover 32,000 square metres. The filled area has an undulating surface overgrown with weeds and some sections contain broken pieces of concrete with protruding reinforcement pipes, rusty chain wire and other illegally dumped rubbish. Issues in this area are:

- The effect of a rockfall onto the wavebench at the eastern end of the landfill (near the boundary of the Commonwealth land). This appears to be the result of a collapse in the sandstone ledge on which the fill has been placed. While the material does not appear to be unstable or to represent any significant danger to the public, some concrete units placed to retain the face of the fill have been partially undermined and action is needed to clear the wavebench and ensure the stability of the embankment.

- The poor visual quality of the landfill, which detracts from the visual appeal of the study area.

- The existence of Aboriginal rock engravings that have been buried beneath the landfill. The engravings are covered under the National Parks and Wildlife Act (1974, as amended), and may not be disturbed or destroyed without prior written approval of the National Parks and Wildlife Service. National Parks has advised that the engravings may be in danger of being gradually destroyed by leachate from the landfill.

Council estimates that the fill comprises 42,135.6 cubic metres — equivalent to about 67,500 tonnes). About 90% is clean fill that could be crushed, screened, separated into different products, and re-used by Council as part of its normal road and path building over the next five or so years (about 10% is not re-usable and would need to be tipped).

Council currently uses about 10,000 tonnes of crushed concrete a year for this purpose. Therefore, the cost of removing and crushing the fill is not calculated in the following table as, if this fill were not used, Council would still need to seek and alternative source of fill for road and path building. The earliest date that Council could use the fill would be early 1996.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Erect signs along northern shoreline warning of danger of falling material from landfill area | 5000 | 0 | 94/95 | Mnr, Works | |
| Prepare an environmental impact assessment for the rehabilitation of the landfill area, focusing on geotechnical feasibility, Aboriginal archaeology, dust, noise, traffic, marine ecology, erosion, recreation. Seek advice on whether an environmental impact statement is required under Schedule 3 of the Environmental Planning and Assessment Act Regulation or, alternatively, a statement of environmental effects | 40000 | 0 | 95/96 | Mnr, Parks & Rec'n<br><br>Snr L'scape Architect<br><br>Rec'n Assets Mnr | |
| Engage a contractor to remove and crush the fill in five annual stages, as needed by Council | 0 | 0 | 95/96 | Mnr,Works | |
| Rehabilitate landfill area to resemble its natural state using indigenous plant species | 300000 | 20000* | 98/99 | | |
| Once the location and extent Aboriginal rock engravings is known, engage an archaeologist to record engravings and prepare a management plan in consultation with the La Perouse Land Council | 5000 | 500 | 98/99 | | |
| **Total** | **350,000** | **20,500*** | | | |

* *Three year maintenance period for revegetation area*

## 4.3 Bush regeneration and revegetation

Large sections of the study area were once covered by coastal heath and scrub. Over the last 35 years or so, millions of tons of fill have virtually destroyed the area's native vegetation, leaving only small remnants. In terms of specific areas:

- Cromwell Park consists of lawn as well as local, introduced and exotic species. There is scope to add a variety of locally indigenous shrubs and ground covers. Two problems in the northern section of the park are the apparently impervious nature of the underlying fill, which leads to drainage problems; and the invasion of the Western Australian species Acacia saligna. In the southern area of the park are a small number of native species. There is a weed problem on the adjacent cliffs.

- In the eastern section of Cromwell Park, to the west of the northern boat ramp, there is the one relatively extensive section of native coastal vegetation in the study area, which is mainly revegetation. It has a narrow range of species, mainly Banksia integrifolia (coastal banksia) and Lomandra longifolia (swordgrass). This area is being weeded and substantially revegetated by the Water Board. To the east of Cromwell Park, the area consists of deep fill with a serious infestation of the noxious weed, asthma weed.

- The southern foreshore (from the beach to Randwick Golf Course) is covered with introduced grasses and weeds, including blackberry. The steepness of the slope creates a dangerous working situation. In some places along the cliff edges there are serious infestations of the invasive weed, Bitou bush and the declared noxious weed commonly known as asthma weed.

- Randwick Golf Course contains an unexpected range of indigenous species, remnants of the original coastal heath, but many are confined to only to one or two specimens. Most survive on or near rocky outcrops above the cliff edge. They do not form the basis for a bush regeneration program. however it is recommended that Council revegetate the narrow 1 km long strip between the cliffs and the top of the fill. This would represent a major revegetation program, but have major benefits in terms of improving views to the golf course, improving the stability of the slope, and increasing the attractiveness of the coastal walk. Screening vegetation around the golf club house and car park are also recommended.

It would require a long-term commitment of resources for effective bush regeneration/revegetation of the foreshore. This is because of the substantial size of the areas worth regenerating, the time required to control weed infestations in badly degraded areas, and the probable need to revegetate gradually over a number of years. As elsewhere in this report, costs are estimated on the basis of:

- 5 tubestock plants per square metre.
- $5 per tubestock (includes site preparation and planting).
- $1 per tubestock to maintain per year (for three years).
- Three year maintenance period for revegetation areas.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Advertise for and establish bush regeneration teams in coordination with Randwick Community Nursery, National Trust and bush regeneration teams at Malabar Headland | 2000 | 0 | 94/95 | Snr L'scape Architect<br><br>Horti-culturist | |
| Zone 1: northern section of Cromwell Park: Liaise with Water Board about<br>• Controlling the invasion of the Western Australian species Acacia saligna<br>• Adding a variety of locally indigenous shrubs and ground covers | 0 | 0 | 94/95 | As above | |
| Zone 2: southern section of Cromwell Park:<br>• Add a variety of locally indigenous ground covers, shrubs and shade trees such as eucalypts like the Port Jackson Mallee | 10000 | 1000* | 94/95 | As above | |
| Zone 3: Bay Parade (from the beach to Randwick Golf Course):<br>• Control weeds by repeat spraying, at the expense of some existing native species. Revegetation with native grasses, sedges and heath species will not be easy due to the steep slope, and may need to proceed on a piecemeal, experimental basis | 70000 | 7000* | 95/96 | As above | |
| Zone 4: eastern section of Cromwell Park:<br>• To the west of the boat ramp, plant additional native species, and plant species to screen the Water Board building (Water Board to provide funding for screening vegetation only). Costs are given in **4.1** (old surf club site)<br>• To the east of the boat ramp, rehabilitate the area once landfill has been removed (costs are provided in **4.2**) | See **4.1** and **4.2** | See **4.1** and **4.2** | See **4.1** and **4.2** | See **4.1** and **4.2** | |
| Zone 5: Randwick Golf Course:<br>• Clear severe infestations of Bitou bush from clifftop area, and encourage golf club to phase out dumping of fill in this area<br>• Encourage Golf Club to continue increasing the cover of indigenous plants<br>• Prepare landscape plan for car park and clubhouse area<br>• Implement above landscape plan<br>• Revegetate the narrow 1 km long strip between the cliffs and top of the fill. Liaise with golf club to assist with maintenance | 0<br><br>0<br><br>5000<br><br>50000<br>200000 | 0<br><br>0<br><br>0<br><br>5000<br>5000 | 94/95<br><br>94/95<br><br>95/96<br><br>96/97<br>As needed | As above plus Randwick Golf Club | |
| **Total** | **337,000** | **18,000** | | | |

* *Maintenance period of three years*

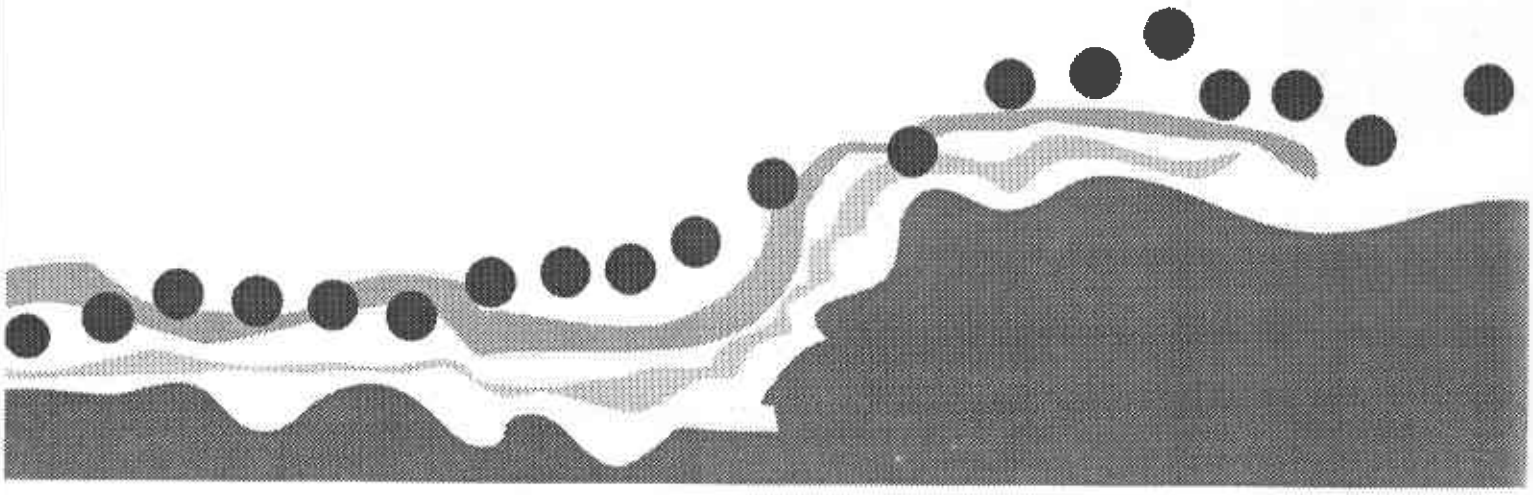
# Category 5 — Aesthetics

## Goals

Ensure all new works conform to the principle of aesthetic integrity.

Ensure the over-riding aesthetic is natural, soft-edged, and native/ indigenous.

Blend the edge of the surrounding built area (homes, golf course and treatment plant) with the natural forms of the bay.



# 5.1 Landscape planting

Landscape planting would be critical to help soften visually dominant and unattractive features, help integrate the surrounding urban development into the natural landscape of the bay, and generally raise the visual quality of the study area. The following areas actions are recommended.

**Screening of sewage treatment plant**
There is local concern about the dominating presence of the treatment plant. The Water Board has advised that it is willing to continue its current planting program along Fishermans Road to help screen the building. Consultation is continuing with the Water Board to enable this to occur, as presented in **4.1** (old surf club site) an **4.3** (Zone 4).

**Additional planting in Cromwell Park (south)**
Cromwell Park is the focus for land-based recreation in the study area, and it is therefore critical that its visual appeal be maximised. Plantings in recent years have helped to improve the park's aesthetics, but additional plantings are needed to complement elements such as the picnic areas. Actions relating to Cromwell Park are costed in **4.3** (Zone 2).

**Revegetation along Bay Parade**
The houses fronting Bay Parade are poorly integrated with the natural setting of the bay. There is a need for vegetation along Bay Parade to accommodate the built elements into the setting, without impeding views, and to increase the attractiveness of the coastal walk. Actions relating to Bay Parade are costed in **4.3** (Zone 3).

**Screen planting in Randwick Golf Course**
The golf course, club house and car park represent major elements in the study area's landscape, so it is critical that they integrate with the area's natural setting. There is a major opportunity to revegetate large areas of the golf course, particularly in view of the club's stated keenness to undertake landscaping work, and to help screen the club house and car park to lessen the visual impact. Actions relating to the golf course are costed in **4.3** (Zone 5).

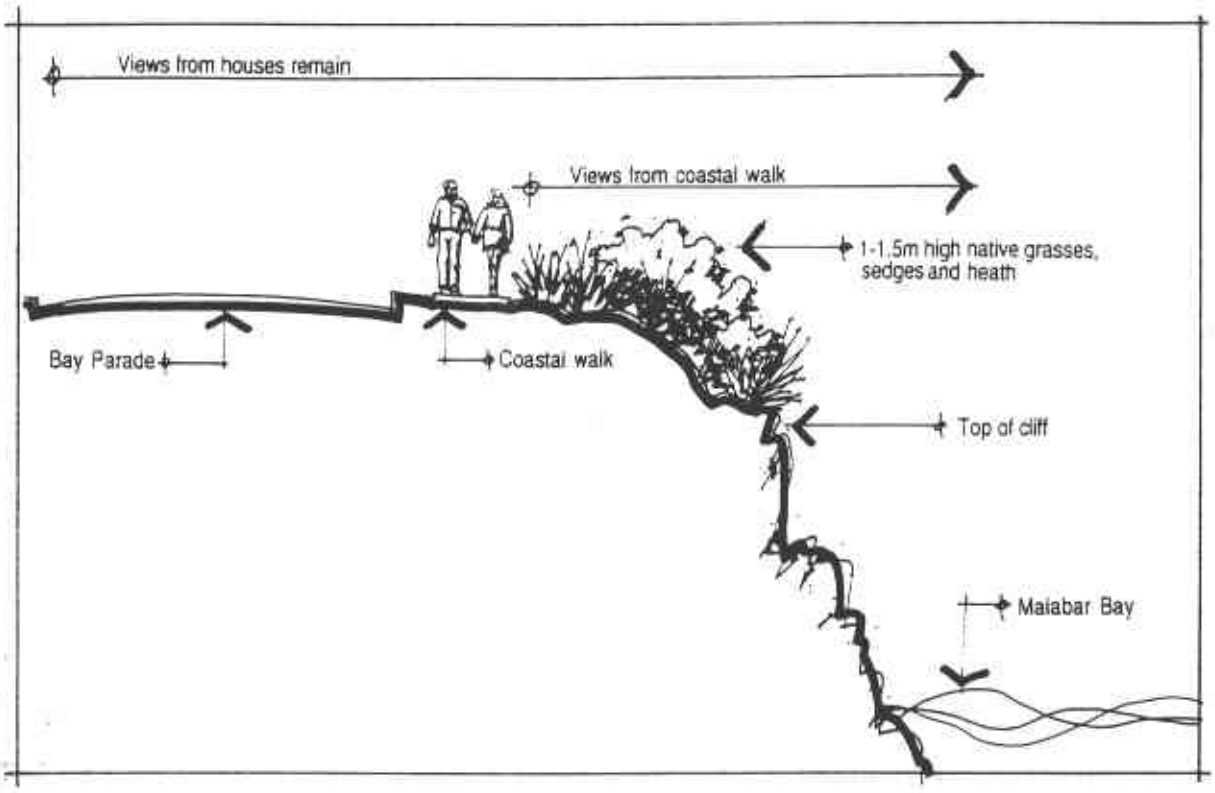



**Figure 11** — Proposed revegetation along Bay Parade

## 5.2 Lighting and power lines

An overhead transmission line runs across Cromwell Park behind Malabar Beach, supplying power to overhead lights. The poles and transmission line are unsightly and add to the sense of clutter in the study area. Inquiries have been made to Sydney Electricity as to the feasibility and costs involved in converting this line to an underground system to supply power to new, attractive light poles in the park (similar perhaps to those installed at Coogee Beach).

Inquiries have also been made about the feasibility of placing underground all power lines from the corner of Dacre Street/Fishermans Road to Bay Parade/Howe Street to enhance the overall visual appeal of the study area. Sydney Electricity advise that this would be very costly and extremely difficult to coordinate, as it requires the agreement of all residents to the installation of an underground feed to their switchboard, which would involve some excavation of front yards and a cost of about $1000 per residence. In addition, Council would need to fund the conversion of the electricity system (ie from aboveground to underground), which could be more than $60,000. Annual maintenance costs would also escalate from the present $72 per light to $275 per light, for each of the 16 or so lights (an increase of about $3200 per year). Given these costs, this measure is not strongly recommended, but could be considered if residents feel strongly enough about undertaking the conversion and are willing to contribute to the cost.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| In Cromwell Park, liaise with Sydney Electricity to place power underground, remove old system and replace with new lighting. Replace light poles with attractive light poles. Ensure sufficient lighting to safely light Cromwell Park and pedestrian areas | 8000 | 2150 | 94/95 | Mnr, Parks & Rec'n<br><br>Snr L'scape Architect | |
| Along Bay Parade, Council to request Sydney Electricity to review the current electricity and lighting scheme, and consider the costs and benefits of placing all power lines underground and installing new attractive light poles. Residents to pay for individual connections to each switchboard<br><br>Light poles owned by the boat owners club should be included in the proposed underground wiring system | 60000 | 4400 | As needed | As above | |
| **Total** | **68,000** | **6550** | | | |

## 5.3 Development control plan for adjacent area

Many Sydney councils, such as Waverley, Hunters Hill, Leichhardt and North Sydney, have introduced design guidelines for houses in visually or historically sensitive areas. The study area is certainly visually sensitive, and there is a need to better integrate surrounding residential areas with the natural setting of the bay so that the overall aesthetic of the study area is improved.

Particularly visually sensitive streets are Dacre Street and Bay Parade which are easily visible from the beach and northern shore.

Ideally, regulations should cover all development up to the edge of the 'coastal visual backdrop' shown in Sydney Regional Environmental Plan No 14. Streets defining the edge of this visual backdrop include Herbert Street/ McGowen Avenue, and Nix Avenue.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Prepare a development control plan to cover the whole area up to the edge of the 'coastal visual backdrop' shown in Sydney Regional Environmental Plan No 14. All new building work and external painting to conform to the development control plan. Consultative Committee to have input into devising the development control plan | 5000 | 0 | 95/96 | Director of Planning | |
| Publicise the development control plan in a letter to local residents within this area, as well as advertising in local papers and placing on display, as required by Section 72 of the Environmental Planning and Assessment Act, 1979 | 2000 | 0 | 95/96 | Director of Planning | |
| **Total** | **7000** | **0** | | | |

## 5.4 Other issues

Other visual issues include:

- The concrete tank traps near the southern boat ramp, which act as an artificial breakwater during storm seas.
- The concrete retaining wall on the southern side of the bay.
- The large stormwater pipe on the northern side of the bay.

These elements are visually inconsistent with the aim of enhancing the study area's natural attributes.

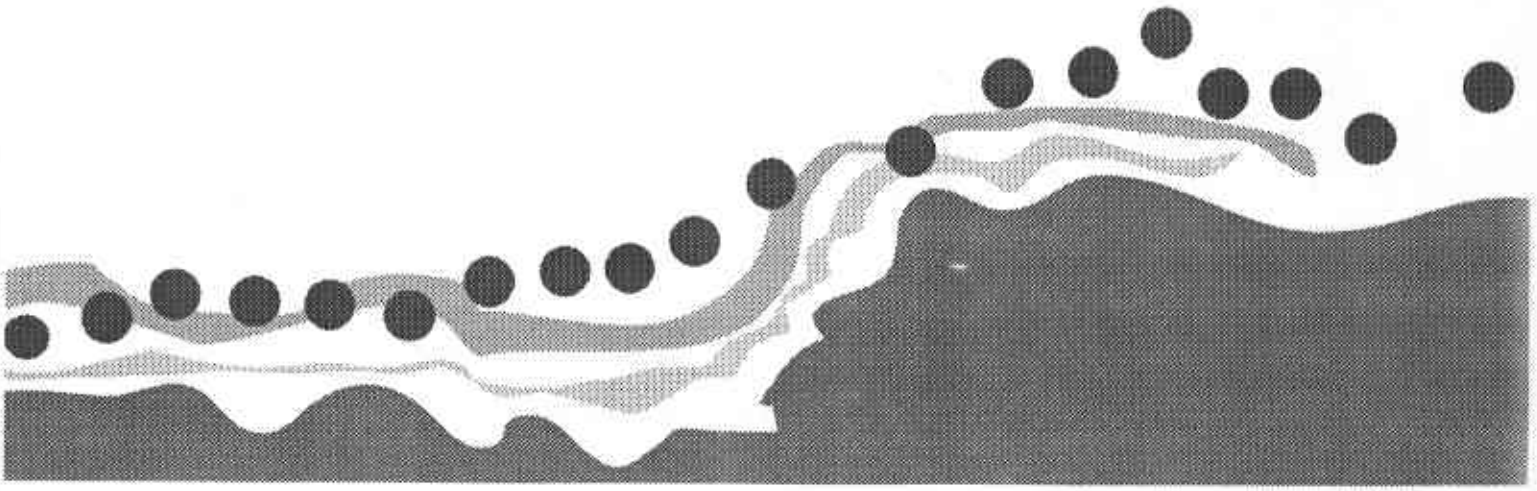
| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Encase the large stormwater pipe in concrete to reduce its visual dominance. Mould the concrete into a natural form, and use colours found in nearby rocks, to camouflage the pipe into the surrounding landscape | 18000 | 0 | 94/95 | Mnr, Works | |
| Replace the tank traps with sandstone blocks of similar weight | 9500 | 0 | 96/97 | Mnr Parks & Rec'n | |
| Face the concrete retaining wall with urbanstone paving, or a similar material that is consistent with the bay's natural attributes | 14000 | 0 | 98/99 | Snr L'scape Architect | |
| **Total** | **41,500** | **0** | | | |

# Category 6 — Conservation

## Goals

Enhance and protect the natural conservation values of the bay, foreshore and surrounding landforms and vegetation.

Enhance and protect any social and built conservation values.



## 6.1 The bay and its ecology

The intertidal foreshores are predominantly rocky shelves and boulder slopes which merge into subtidal rocky reef. The bay has two beaches: Malabar Beach to the west, and Chinaman's Beach, a small shelly beach just east of the boat ramp on the northern shore.

The shores of the bay, from Boora Point to Tupia Head, have been declared an Intertidal Protected Area (IPA) by NSW Fisheries. (There are 14 declared IPAs in the Sydney region.) The IPA extends from mean high water to 10 metres beyond mean low water. Collecting invertebrate animals within this area is prohibited. However, angling and spearfishing are permitted. Although invertebrate animals may not be collected, anglers may bring bait with them, up to the quantity allowed by the bag limit imposed by NSW Fisheries. The aim of the Intertidal Protected Area status is to preserve the structure of intertidal communities and act as reservoirs to repopulate harvested areas.

There is a large concern that some visitors to the bay are collecting invertebrates in contravention of the IPA, and that there has been a significant decline in animal life in the intertidal zone.

The subtidal zone 10 metres beyond mean low water is not covered by the NSW Fisheries IPA designation and, therefore, is unprotected. Subtidal habitats within the bay include bare rock reef (also known as 'barrens'), sandy patches and channels, flat rock covered with kelp and flat rock covered with turfing brown and red algae with a veneer of sand.

It has been raised that the bay could be declared an Aquatic Reserve to further protect the habitats and marine life of the bay. However, NSW Fisheries has advised that it would be unlikely to give the bay such status as it is considered neither unique nor an outstanding representative habitat. (Biologically, the intertidal and shallow subtidal communities of the bay are similar to sheltered oceanic communities throughout the Sydney region.)

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| If desired, commission further surveys of the bay to determine if there are grounds for increased protection through Aquatic Reserve status. An application to the Director of Fisheries for the marine reserve status would then need to be made. It is considered that this process should be instigated, managed and undertaken by a local dive group | 0 | 0 | As needed | Local dive group<br><br>Rec'n Assets Mnr | |
| **Total** | **0** | **0** | | | |

## 6.2 Monument in Cromwell Park

The monument in the corner of Cromwell Park (near the corner of Dacre Street/Fishermans Road) is in poor repair. Many members of the local community feel a great sense of attachment to the monument, due to its links with the area's history, and its restoration is recommended.

| Action | Capital cost ($) | Annual cost ($) | Year to begin | Role | Evaluation |
|---|---|---|---|---|---|
| Restore monument in Cromwell Park | 1000 | 0 | 94/95 | Mnr, Works | |
| **Total** | **1000** | **0** | | | |