PART 3: LANDSCAPE MANAGEMENT PLAN

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P1. Park frontage to Apple Tree Creek (source: CM+)

1.0 Introduction

1.1 Background

Apple Tree Bay is a popular recreational destination within the Ku-ring-gai Chase National Park. Prior to the reclamation of the swimming baths (tidal flats between 1937 and 1958), Apple Tree Bay provided an overflow area from Bobbin Head.

Currently Apple Tree Bay is highly used for its boat launching facilities. The park also provides a range of other recreational opportunities, including picnicking, fishing and walking. Increasing use of the parklands and of neighbouring Bobbin Head have placed stresses on facilities and compounded parkland use. This has reduced the park's recreational amenity and added to management burdens. The Parks and Wildlife Division of Department of Environment and Conservation have recognised the need for a Conservation Management Plan to guide the conservation and future management of the precinct.

This Landscape Management Plan provides a comprehensive assessment of the existing park conditions and identifies key opportunities and constraints with respect to park planning and management, leading to principles and actions directing the future development and management of the landscape. The Conservation Management Plan and the Landscape Management Plan, along with specialist reports contained in the Appendices, inform the Masterplan for Apple Tree Bay.

1.2 Report Objectives and Outcomes

Key objectives for this report as required by the Project Brief are:[1]

- To identify, direct and achieve long term conservation and landscape management outcomes for Apple Tree Bay.
- To assess and document all influencing factors on both parks including: recreation and use, visitor facilities, traffic review and car parking, connectivity and linkages, interpretation, soils, vegetation management, services and infrastructure (inc. seawalls / revetment).
- To develop well documented precinct plans that illustrate the future improvements to the parklands.
- To develop coordinated landscape planning policies and detailed design guidelines for the parklands.
- To give direction to the future uses for the parks while protecting their significance.

The outcomes of this report will be:

- Principles and Actions informing the future development and management of Apple Tree Bay in a manner which achieves a balance between conservation and recreational objectives; and
- Illustrative drawings which inform the future development of the park.

Refer to Volume 2, Part 1, Chapter 3.0

P2. The view over Apple Tree Bay (source: CM+)

[1] Tender Brief for Preparation of a Master Plan including: Conservation Management Plans and Landscape Management Plans Bobbin Head & Apple Tree Bay Precincts Ku-ring-gai Chase National Park, (2005); NSW NPWS

1.3 Park Location

Ku-ring-gai Chase National Park is situated within the Sydney Metropolitan Area, approximately 20 kilometres north of the Sydney city centre. The park generally comprises the land east of the Sydney Newcastle Expressway, south of the Hawkesbury River, west of Pittwater and north of Mona Vale Road. It also includes Barrenjoey Head on the eastern side of Pittwater.

The Ku-ring-gai Chase National Park is bounded by the Local Government Areas of Hornsby to the southwest, Ku-ring-gai to the south east and Warringah to the west. Cowan Creek forms the boundary between the Parish of South Colah (west) and the Parish of Broken Bay (east).

The subject area of Apple Tree Bay is located within Cowan Creek, which adjoins the Hawkesbury River at Broken Bay. Apple Tree Bay is formed by the junction of Apple Tree Creek with Cowan Creek and is located on the western side of Cowan Creek. The study area comprises the reclaimed land located on the southern side of Apple Tree Bay (Refer to Figure 1.1).

Apple Tree Bay is accessed by road from the southern side via a connecting road to Bobbin Head, which intersects with Ku-ring-gai Chase Road. Access is also available by foot via the Birrawana and Kalkari Tracks to the south and the Berowra and Mt Kuring-gai Tracks to the north. The north and south sides of Apple Tree Bay are accessed via a footbridge. Boat access is provided for in the form of a jetty located at the mouth of Apple Tree Bay, and the boat ramp with pontoon facilities.

Figure 1.1: Location of Apple Tree Bay, Ku-ring-gai Chase National Park (Source: Department of Environment and Conservation)

1.4 Methodology

Refer to Figure 1.1

This Landscape Management Plan forms part of the Masterplan for Apple Tree Bay. The Landscape Management Plan has been prepared concurrently with a Conservation Management Plan, which both inform and direct the Masterplan and associated illustrative designs.
The preparation of the Landscape Management Plan was undertaken through a staged process involving initial park analysis, consultation with National Parks and Wildlife Service staff, stakeholders and the general community, leading to an exploration of opportunities and then the development of principles and action which address the issues identified. The illustrative design drawings are the outcome of this process.

This report addresses a comprehensive range of physical, functional and experiential landscape issues and aspects including:

- Conservation
- Environment and Sustainability
- Landscape Character and Visual Quality
- Recreation and Visitor Facilities
- Public Security
- Access, Circulation and Parking

The Landscape Management Plan draws upon a number of studies undertaken as part of this project in respect to functional and physical landscape issues. These studies are included in Volume 3, Appendices.

Additional studies and reports undertaken previously, and which have provided useful information for this Landscape Management Plan, include:

- GHD, 1991 - Bobbin Head and Apple Tree Bay Landscape Management Plan
- The Tree Wise Men, 2004 - Arborist's Report for Bobbin Head and Apple Tree Bay Picnic Areas (Refer to Volume 3, Appendix 5)

1.5 Authorship

Context Landscape Design prepared the Landscape Management report. Oi Choong was Project and Company Director, Ben Dungey, Senior Landscape Architect, and Astrid Brokamp, Landscape Architect.

Specialist Consultation

The formulation of this Masterplan entailed specialised technical consultation in various fields. The following is a list of consultants engaged and their respective reports which have informed the outcome of this Masterplan project:

Location - Volume 3	Field	Consultant	Reports/Recommendations
Appendix 1.1	Flora and Fauna	Australian Museum Business Services	Flora Constraints Report Fauna Advice
Appendix 1.2	Aboriginal Heritage	Australian Museum Business Services	Aboriginal Heritage Report
Appendix 1.3	Transport Planning	Arup	Traffic Report
Appendix 1.4	Geotechnical	Douglas Partners	Geotechnical Advice
Appendix 1.5	Recreational Planning	Stratcorp	Recreational Planning Report
Appendix 1.6	Soils	Sydney Environment and Soils Laboratory Pty Ltd	Soil Report
Appendix 1.7	Marine Engineering and Structure	TLB Structural Engineering	Seawall Flood levels Structure of Sunny Corner toilets Structure of 'Bobbin Inn'
Appendix 1.8	Quantity Surveying	Bay Partnership	Quantity Surveying Report
Appendix 2	Bobbin Head Seawall	Conybeare Morrison International	Conservation Management Plan
Appendix 3	Apple Tree Bay Seawall	Context Landscape Design	Landscape Management Plan
Appendix 5.1	Flora	The Tree Wise Men	Arborists Reports
Appendix 6.1	Recreation	Kayak & Canoe Inc.	Kayak and Canoe Report
Appendix 6.2	Conservation	Hornsby Conservation Society	Conservation Reports
Appendix 7.1	Heritage	Conybeare Morrison International	Heritage Listings
Appendix 7.2	Landscape	Context Landscape Design	Concept Planting Plan

Table 1.1 Specialist Consultants

P3. Cultural Values (source: PICMAN)

P4. Aesthetic Values (source: CM[+])

P5. Social Values (source: CM[+])

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2.0 Significance

Refer to Volume 2, Part 2 CMP, Chapter 4.0.

Apple Tree Bay, Ku-ring-gai Chase National Park is a place of cultural significance for historic, aesthetic, scientific / research and social values at a local level. Apple Tree Bay is located within Ku-ring-gai Chase National Park an area of high natural significance at state level. The selection of the name, Ku-ring-gai Chase National Park, is dedicated to the local Aboriginal language groups that occupied the land.

The place has high historic significance for its associations with Ku-ring-gai Chase National Park, gazetted in 1894 as the second national park in NSW and the first national park devoted to nature conservation. Ku-ring-gai Chase Trust administered the conservation area from 1894 to 1967. National Parks and Wildlife continue to administer the place from 1967 to the present (2006).

Apple Tree Bay has high aesthetic significance associated with the views, vistas and scenic qualities of a secluded recreational area set within an inlet of Cowan Creek and surrounded by the bushland slopes of Ku-ring-gai Chase National Park.

Apple Tree Bay has high social significance at the local level for its leisure and recreational heritage, including water-based activities. Apple Tree Bay attracts visitors each year from surrounding residential areas and the wider Sydney region. Apple Tree Bay provides an open space recreational area that supports a wide variety of recreational activities. The place has strong associations with nature conservation.

Apple Tree Bay has moderate historic significance as a secondary recreational area closely associated with and related to with Bobbin Head, the principal pleasure ground in the National Park.

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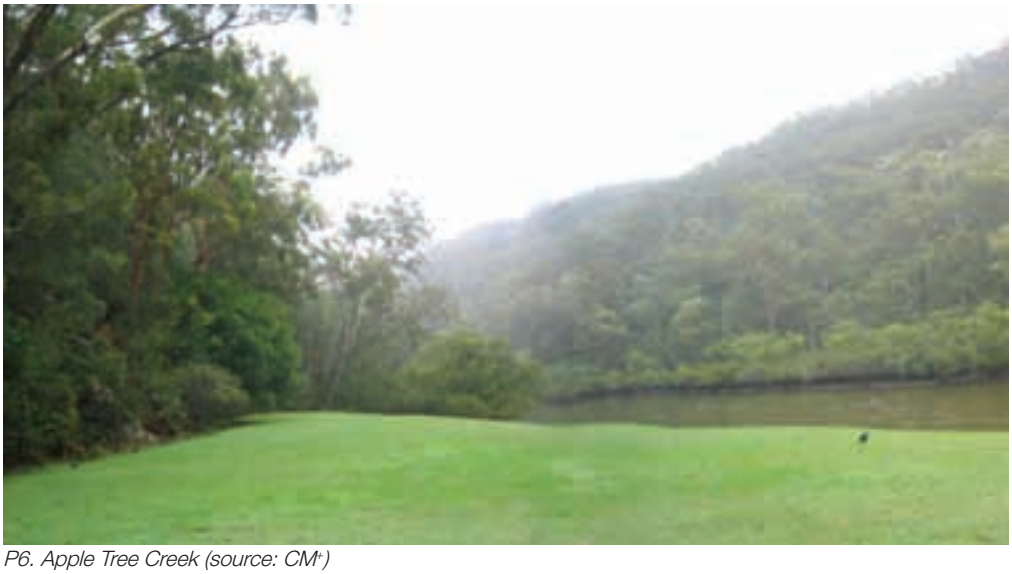
3.0 Objectives and Principles

The following general objectives relate to the management of National Parks in New South Wales:[2]

- The protection and preservation of scenic and natural features;
- The conservation of wildlife, including the maintenance of biodiversity and populations of threatened species;
- The maintenance of natural processes as far as is possible;
- The preservation of Aboriginal sites;
- The conservation of historic features;
- The encouragement of scientific and educational enquiry into environmental features and process, Aboriginal and historic features; and
- The provision of appropriate recreation opportunities.

Additionally, the following objectives apply to the management of Ku-ring-gai Chase National Park:[3]

- Protection of the national park and nature reserves as part of a system of parks and reserves, which, together, protect the natural and cultural heritage, water catchments and scenic values of the lower Hawkesbury River and its tributaries.
- Maintenance of ecological integrity within the park and reserves, and between the park and reserves and adjoining areas, consistent with their purpose of reservation.
- Promotion of Ku-ring-gai Chase National Park as a show place for the parks of the lower Hawkesbury River, with a variety of visitor facilities and experiences which are appropriate to the National Park and lead towards ecologically sustainable use of the park.
- Promotion of increased public awareness and understanding of the importance and value of protecting the natural and cultural heritage of the National Park and nature reserves in their own right, and as part of a system of conservation reserves within the Sydney metropolitan area.



P6. Apple Tree Creek (source: CM+)

[2+3] KCNP Plan of Management (May 2002); NPWS (NSW)

These objectives inform and guide the planning and management of Apple Tree Bay. A framework for the implementation of management actions, which will ultimately achieve the Vision for the park, is also proposed herein.[4]

Management

- Provide the foundation for integrated management that retains and enhances the significance of the precinct.
- Provide sound planning, design and management guidelines addressing appropriate conservation, use and landscape management.
- Improve park user experiences through safety and improving pedestrian,/ vehicle access,/ parking within the Apple Tree Bay Precincts.

Education

- Raise perceptions of Apple Tree Bay as a special place for visitors and the general community.
- Provide for clear expression of values of Apple Tree Bay in the greater context of Ku-ring-gai Chase National Park and wider park network in Sydney North Region.

Recreation and Consultation

- Plan to better meet recreational / user expectations through improved facilities and access in a national park context.
- Reflect community views in the development of the plan.
- Review visitor facilities and develop concepts for new picnic shelters and park furniture.

Conservation

- Develop a Masterplan that captures the natural Aboriginal cultural heritage of the precinct and interpret these layers through sensitive design solutions.
- Prepare adaptive re-use possibilities for built elements that meet the National Parks and Wildlife Service heritage guidelines, ensuring they are accessible.
- Retain and conserve the heritage significance of the Apple Tree Bay Parklands.

[4] Tender Brief for Preparation of a Master Plan including: Conservation Management Plans and Landscape Management Plans Bobbin Head & Apple Tree Bay Precincts Ku-ring-gai Chase National Park, (2005); NSW NPWS

4.0 Analysis

Analysis for the Landscape Masterplan required a range of investigations to be undertaken, involving a combination of desktop research, field assessment and user surveys. This provided a holistic understanding of the park. Specialist input was obtained from recreational, geotechnical, soils, traffic, fauna and flora, heritage, Aboriginal and cultural consultants.

This chapter summarises the key information which was obtained from these investigations. Specialist studies also informed this analysis to provide a more detailed level of information. Specialist studies are included in Volume 3, Appendices.

The analysis of Apple Tree Bay's characteristics are identified under the following subject headings:

- Topography and Geology
- Soils
- Hydrology and Drainage
- Microclimate
- Flora and Fauna
- Heritage
- Recreation and Visitor Facilities
- Access, Circulation and Car Parking
- Landscape Character and Visual Quality

P7. Waters edge at Apple Tree Bay. (source: CM+)

4.1 Topography and Geology

Refer to Volume 3, Appendix 6.2; Hornsby Conservation Society.

Refer Figure 4.1.

The Ku-ring-gai Chase National Park is characterised by narrow sandstone ridges and deep V-shaped valleys, with the lower valleys flooded by seawater The geology consists almost entirely of horizontally bedded sedimentary rocks, dominated by Hawkesbury sandstone.

Apple Tree Bay is situated at the base of one of these valleys on mudflats (and has a relatively flat profile) contrasting with the surrounding relief. It is reclaimed land made up of imported fill and contained by a seawall along part of the northern waterfront and stone revetment along Apple Tree Bay.

Erosion from upper slopes on the edge of the parklands is known to block perimeter drainage systems.

P8. Existing soil conditions. (source: CM+)

4.2 Soils

Refer to Volume 3, Appendix 1.6; Improving Soils Conditions for Trees and Turf Report.

Apple Tree Bay is formed on an in-filled estuarine bay. Investigations have indicated that the fill is of possible local Hawkesbury sandstone origin and very stony and compacted. The surface soils are also compact and impermeable to water, causing surface water to run off quickly, thereby allowing little water infiltration.

There is also evidence of acidity and nutrient deficiencies in the parkland soils. Surface salinity, however, does not seem to be an issue for surface soils.

P9. Ponding in carpark. (source: CM+)

4.3 Hydrology and Drainage

Refer to Part 3 Appendix 1.6; Improving Soil Conditions for Trees and Turf

Apple Tree Bay is a major tributary of Cowan Creek and forms an edge to the park. Polluted runoff and erosion from urban development upstream in the catchment area is affecting water quality in the creek degradings the natural environment of Ku-ring-gai Chase National Park.

Overland flow within the park generally flows away from the natural edges of the site towards the foreshore areas. Some ponding occurs in the car park, due to insufficient cross falls. Overland flow also occurs from the natural slopes on the periphery of the park into the park. The park's reticulated stormwater system collects run-off from the asphalt roads and car parks and deposits the untreated water directly into Apple Tree Creek and Apple Tree Bay. Due to the impermeable surface layers of soil, the reticulated stormwater system effectively has a greater stormwater load to manage. Petrochemicals and other pollutants are not treated prior to entering Apple Tree Bay.

Some limited areas of the parkland are inundated by seawater at King-tide events. There is no evidence of surface salinity in the park.

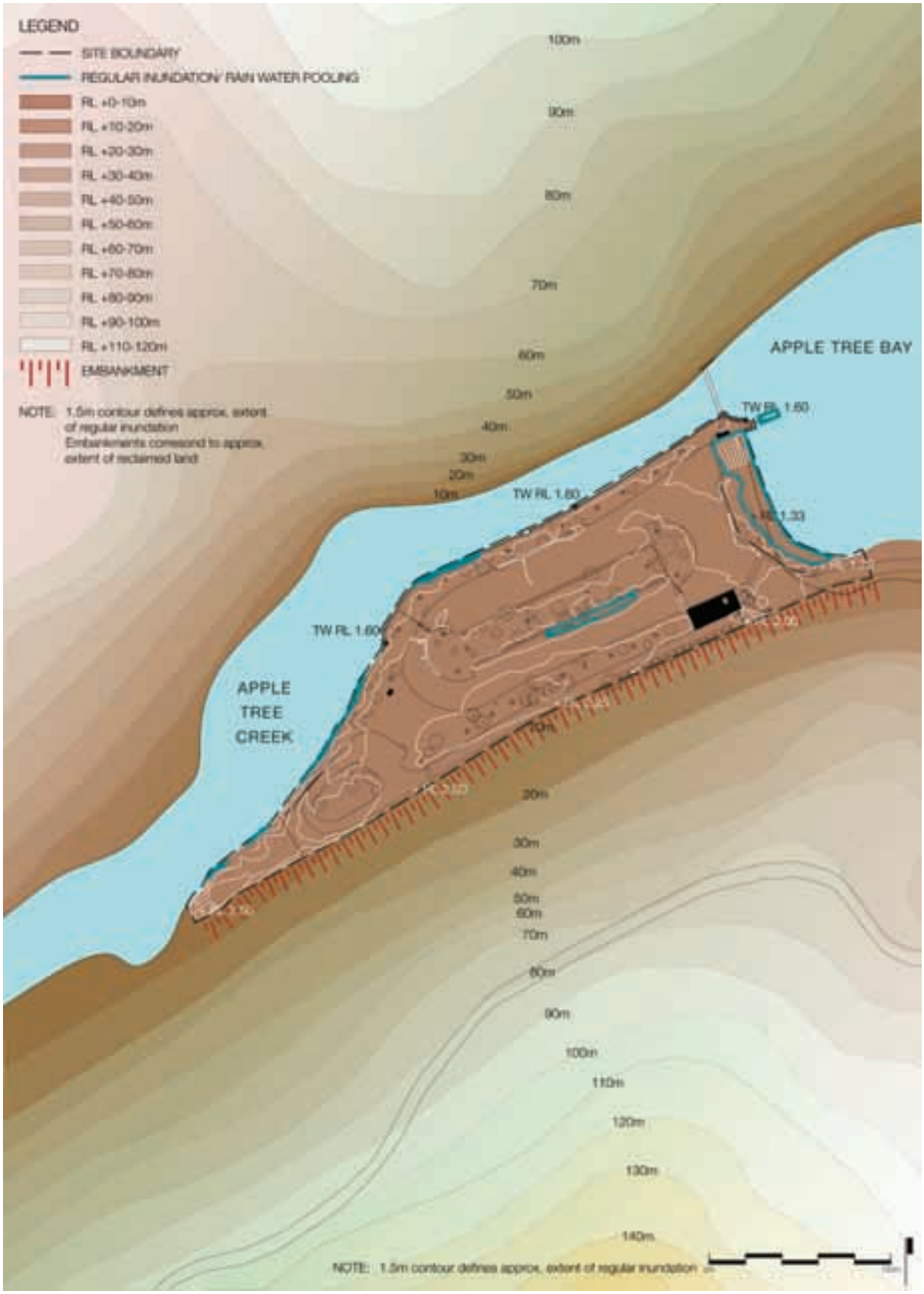


Figure 4.1: Existing Topography

4.4 Microclimate

Refer to Figure 4.2.

The majority of the park is an open, exposed environment with relatively little shelter or shade. The lack of protection from the sun in summer is compounded by the large expanses of heat-reflecting bituminised surfacing of road and car parking network. The steep slopes and vegetation to the rear of the park provide little shade relief within the park environment, due to their northerly aspect.

The location of the park within the valley, however, causes it to be relatively protected from strong winds.

P10. Extensive reflective surfacing and minimal shade reduces visitor comfort on warmer days (source: CM+)

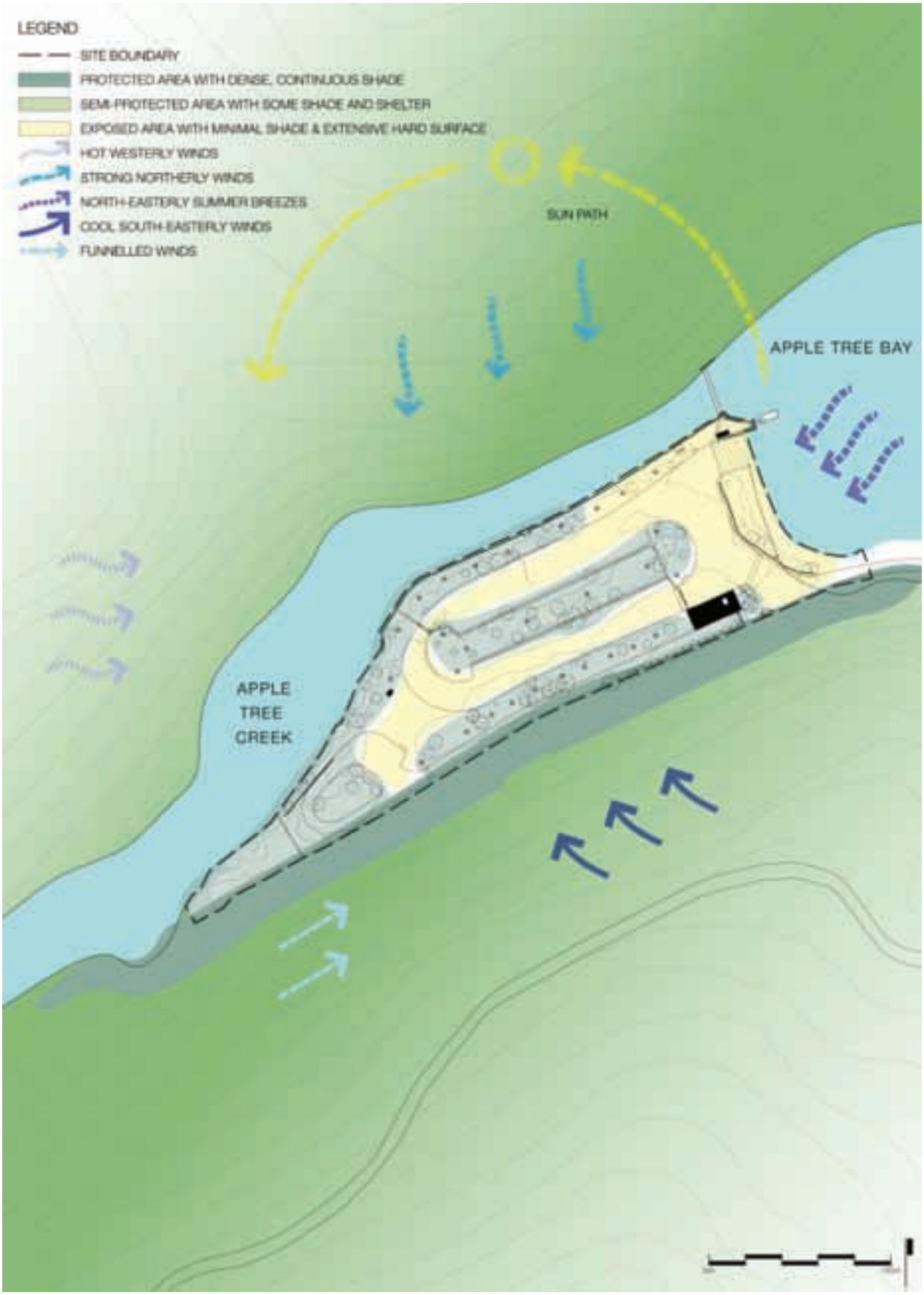


Figure 4.2: Existing Microclimate

4.5 Flora and Fauna

4.5.1 Parkland Flora

Refer to Volume 3, Appendix 5.1; Arborist Report.

Refer to Volume 3, Appendix 1.6; Improving Soil Conditions For Trees and Turf.

Refer to Figure 4.3

A combination of Apple Tree Bay native and endemic tree species has been planted at Apple Tree Bay. Planting is generally informal, with the exception of a line of *Melaleuca quinquinervia* at the entry road.

An Arborists Report was prepared by The Tree Wise Men in 2004. At the time the report was prepared, the majority of trees in the park had SULE values (Safe Useful Life Expectancy) rated 'long', signifying a retainable lifespan of 40 years plus. 5 trees of the 105 surveyed in the report had 'short' SULE values, indicating a retainable lifespan of 5-15 years.

Soil compaction, nutrient deficiencies and soil salinity are likely to be causing death and poor performance of both trees and turf. Additionally, a lack of attention to trees in their early stages is evident in trees on the park and has resulted in a backlog of pruning tasks such as removal of weak branching, multiple leaders, overly dense canopies and trunk and branch fungal decay.

4.5.2 Natural Flora and Fauna

Refer to Appendix 1.1: Flora Report and Fauna Report.

Refer to Ku-ring-gai Chase National Park Plan of Management (2002)

Ku-ring-gai Chase National Park is listed for its scientific importance as a remnant of the natural environment of Sydney. A number of threatened plant and animal communities are protected within the national park and many uncommon plant species and a number of endangered ecological communities occur there.

At Apple Tree Bay, naturally occurring endemic vegetation occurs on the steep slopes at the periphery of the park and conforms to *Angophora costata - Eucalyptus piperata* open forest and woodland communities. Vegetation in this community is generally weed free and in good condition, however, some trampling is evident, particularly in areas which are easily accessed. Patches of mangroves occur in disturbed soils along the western part of the park and along the edge of Apple Tree Creek, and are likely to be regrowth.

No plant species occurring at Apple Tree Bay is listed as threatened or endangered, nor is it likely that any threatened fauna species would occur with any regularity on the park.

P11. Stunted tree growth is likely to be caused by compacted soils and nutrient deficiencies. (source: CM+)

Figure 4.3: Existing Vegetation

4.6 Heritage

4.6.1 Aboriginal Heritage

Refer to Volume 3, Appendix 1.2 Aboriginal Research and Analysis Report.

Ku-ring-gai Chase National Park is important archaeologically because it exhibits a large number and a diverse range of Aboriginal sites that represent a range of past activities. These activities include resource gathering and tool production, indicated by shell middens and grinding grooves, as well as ceremonial processes demonstrated by rock art and engravings.

The marine resources provided by the creeks and tributaries located around Apple Tree Bay would have attracted Aboriginal occupation of these areas. The mud flat and mangrove habitats that existed in these areas prior to European occupation and eventual reclamation for development would have also provided a plentiful resource zone. The prevalence of rock shelters in the area would have also offered suitable sites for regular visitation and use.

Although the history of reclamation at the Apple Tree Bay recreation precinct shows the area at the base of the sandstone scarp to be natural landscape, cutting of the sandstone cliff in the eastern portion of the precinct (evidenced by drilling scars) suggests that past disturbance in this area may have been considerable.

The site visit confirmed no archaeological sites are located in Apple Tree Bay recreation precinct.

There is currently no interpretation on Apple Tree Bay's Aboriginal significance.

Refer to Volume 2, Part 2 CMP Policy 6.8, 6.9 and 6.13

4.6.2 European Heritage

Refer to Volume 2, Part 2 CMP.

Apple Tree Bay is associated with Ku-ring-gai Chase National Park, the second national park to be proclaimed in NSW and the first devoted to nature conservation. Apple Tree Bay is a secluded area 1.3km north of the popular parklands of Bobbin Head. Initially a track, and in 1937 a sealed road, provided access by land from Bobbin Head. Prior to 1958 the banks of Apple Tree Creek were used for passive and active recreation.

The mudflats of the southern bank of the creek were reclaimed between 1937 and 1958 to provide an increased recreational area. The reclaimed area was planted with native species and date from the 1960s and 1970s phase, a period of development associated with the establishment of the carpark area and its use as a boat-launching precinct.

The Conservation Management Plan and Historic Overview provides further detailed information on the European heritage of Apple Tree Bay.

P12. An early photo of boats at Apple Tree Bay (source: PICMAN)

4.7 Recreation and Visitor Facilities

4.7.1 Visitor Facilities

Refer to Figure 4.4.

Volume 2, Part 2 Conservation Management Plan, Chapters 3.5, 3.6 & 3.7 provides a physical assessment of the site facilities and infrastructure, including an appraisal of their condition. The following description of facilities is summarised from this assessment.

Kiosk, Garage and Amenities Building

The building dates from 1963 and is located at the vehicular entry to Apple Tree Bay, in close proximity to the revetment area. The East and West Elevations feature walls of expressed sandstone. The kiosk is located at the eastern end of the building and the toilets are located at the western end. The roof, clad in metal decking, is a gabled or has a low pitch gable. A garage accommodates the NPWS power boat. The Kiosk area is currently vacant.
Condition: Varies. Amenities are in good condition.

P13. Kiosk and facilities (source: CM+)

Footbridge

The footbridge is located at the mouth of the creek and was constructed in 2002 / 2003. The bridge is constructed of a steel frame on concrete piles, with steel handrails and timber treads. The footbridge forms part of the Berowra Track.
Condition: Good

P14. Footbridge (source: CM+)

Seawalls

Located on the north-western and western side of the creek, the seawall was built during the reclamation phase of Apple Tree Bay (1949-52). The gravity seawall is constructed of solid sandstone blocks.
Condition: Varies from Fair to Good.

P15. Seawall (source: CM+)

Picnic Platforms

Timber picnic platforms are located throughout the park.
Condition: Good

P16. Picnic platform (source: CM+)

Fish Cleaning Bench

The Fish Cleaning Bench consists of a sandstone bench constructed at table height, with an attached tap. It is mounted on a sloping concrete pad that drains directly into the creek.
Condition: Good

P17. Fish cleaning bench (source: CM+)

Jetty

The pontoon occurs in the north-eastern corner of the site and is constructed from timber. A new pontoon is currently on order for the site and should double the area of the pontoon.
Condition: Fair

P18. Jetty and pontoon (source: CM+)

Figure 4.4: Existing Infrastructure

P19. Boat launch ramp (source: CM+)

Boat Ramp

The boat ramp is located adjacent to the pontoon in the north-eastern corner of the park and has a concrete surface.
Condition: Fair

P20. Information station (source: CM+)

Information Station

The information station is located at the northern end of the park and consists of information panels with a roof.
Condition: Good

P21. Garbage bin station (source: CM+)

Bin Stations

Garbage bin stations are located throughout the park on concrete slabs. They comprise five wheelie bins attached by a steel frame, three of which are recycling bins and two are garbage bins.
Condition: Good

P22. Barbecue shelter (source: CM+)

Barbeque Shelters

Barbecue shelters are located at the south-western end of the park, in a turfed area associated with picnicking. Facilities include two gas-operated barbecues.
Condition: Maintenance issues reported

Services

All services at Apple Tree Bay are located underground, with the exception of overhead powerlines. Services include electricity, gas, sewage, drainage, telecommunications and water.

4.7.2 Recreational Planning Issues

Refer to Volume 3 Appendix 1.5. Following is a summary of the issues highlighted in the report in regard to recreation and visitor facilities.

- There is strong community support to re-establish a refreshment outlet at Apple Tree Bay.
- The location of the amenities building is appropriate, however, poor accessibility to them, and the general poor condition of them, make their upgrade a priority. The toilets are to be made Disability Discrimination Act compliant.
- The Picnic Platforms should be gradually removed and replaced with park furniture which is appropriate to the parkland characteristics.
- There are insufficient barbecues in the to cater to demand.

4.8 Access, Circulation and Parking

4.8.1 Park Access

Refer to Figure 4.5. Refer to Volume 3, Appendix 1.3; Traffic and Transport Planning Report.

Most visitors to Apple Tree Bay arrive by car or boat. No public transport services reach the parklands. Walking to Apple Tree Bay from areas outside the park is possible, however, the distance and steep grade discourage most walkers.

Figure 4.5: Park Access

4.8.2 Vehicular Circulation and Parking

Refer to Figure 4.6.

Car parking is dispersed over the entire park, dominating the park setting. The popularity of the park for boat launching causes car parking spaces to fill up quickly on weekends. Poor definition of car parking bays causes cars with trailers to regularly park in spaces assigned for cars only, while the reverse also occurs. Cars with trailers often mount the kerb, compacting topsoils and reducing the amenity of recreational areas, generally.

Conflicts between pedestrians and vehicles, while launching boats, at the boat launching ramp. Other pedestrian and vehicle conflicts in the park are relatively minor, due to low traffic speeds.

Existing car parking numbers are as follows:

- Formal car parking: 45
- Formal trailer lot: 82
- Disabled trailer lot: 2
- TOTAL existing car parking capacity: 129

Refer to Volume 3, Appendix 1.3, Traffic and Transport Planning Report.

P23. Vehicles with trailers regularly mount kerbs, causing soil compaction and resulting in grass wear and diminished tree growth. (source: CM+)

Figure 4.6: Existing Vehicular Circulation and Parking

4.8.3 Pedestrian Circulation

Refer to Figure 4.7.

The spread of car parking around the park, and the flat, open nature of the environment cause dispersed pedestrian movement around the parklands. The majority of pedestrian movements within the park is undefined and there is a lack of accessibility to many facilities for disabled people and pram-users.

Pedestrian focal points within the park, which attract a higher degree of pedestrian movement to and from the car parks, include the waterfront zone (north and east), the amenities building, the footbridge / jetty / boat launch area and the barbecue shelter.

Pedestrian circulation between Apple Tree Bay and Bobbin Head is currently only possible by road or a Grade 3 or 4 ridge track (Birrawanna Track) which is physically challenging. Pedestrian movement along the road suggests that a new track between the parks is likely to be well used, being a continuation of the Berowra track.

Several trail heads occur at Apple Tree Bay, providing entrance into the bushlands.

Pedestrian Safety at the boat ramp is compromised by reverse trailer launching and associated movements. The Apple Tree Bay Bridge desire line for pedestrians is unsuitable at the boat launch area and is to be relocated in the future.

Refer to Volume 3, Appendix 1.5, Recreational Planning Report.

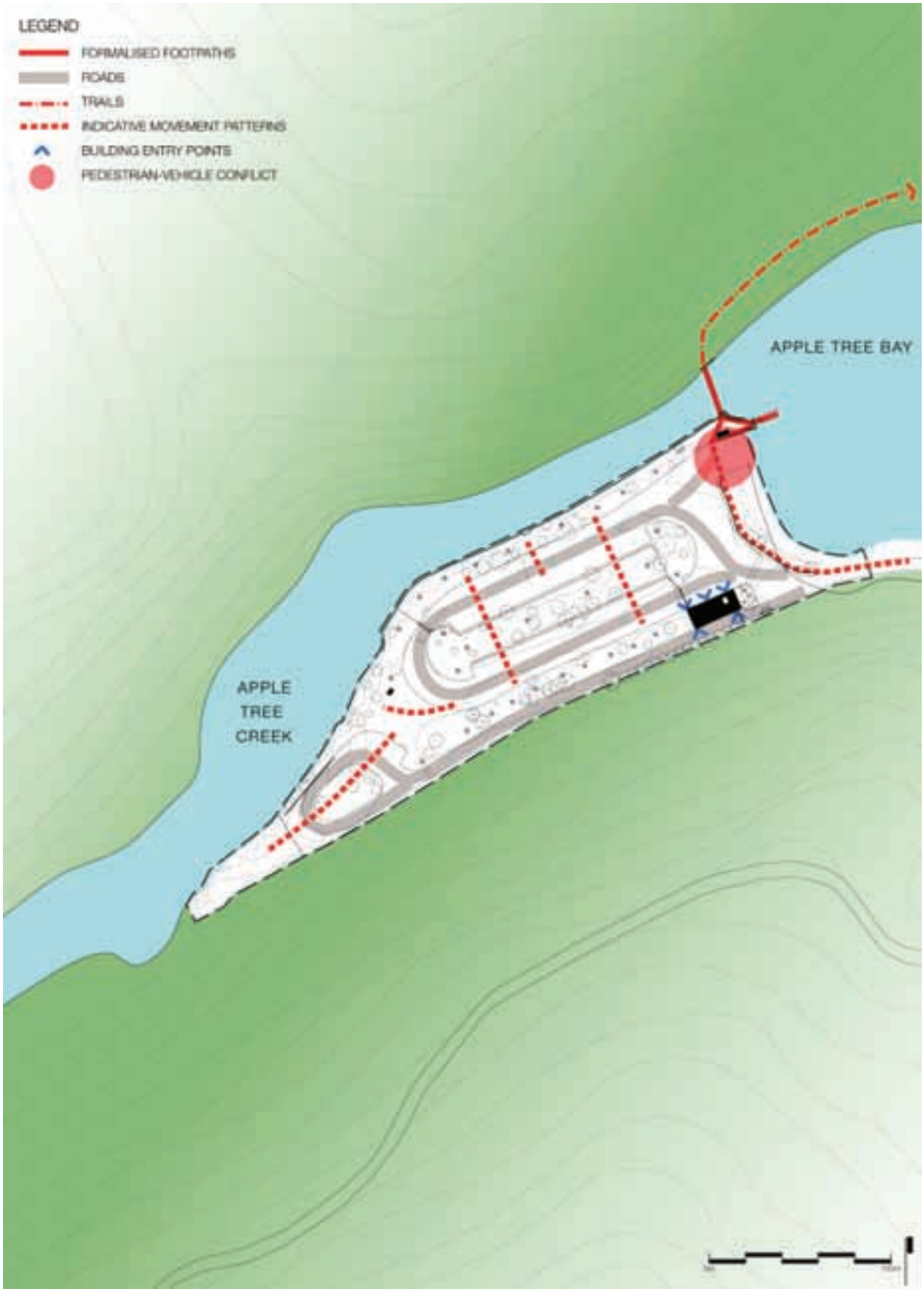


Figure 4.7: Existing Pedestrian Circulation

4.9 Landscape Character and Visual Quality

4.9.1 Visual Catchment

Refer to Figure 4.8.

Apple Tree Bay has a relatively restricted visual catchment defined by the surrounding ridgelines within the National Park. Urban development outside the park is not visible from the park.

4.9.2 Views & Vistas

Refer to Figure 4.9.

Views from and towards the water are an important aspect of Apple Tree Bay's attraction and appeal. Key views and vistas include the following:

- Spectacular, expansive views over Apple Tree Bay from the eastern water's edge.
- Near views to Apple Tree Creek along the northern water's edge.
- Filtered views to the water throughout the park.
- Filtered views across the length of the park between tree trunks and park infrastructure.

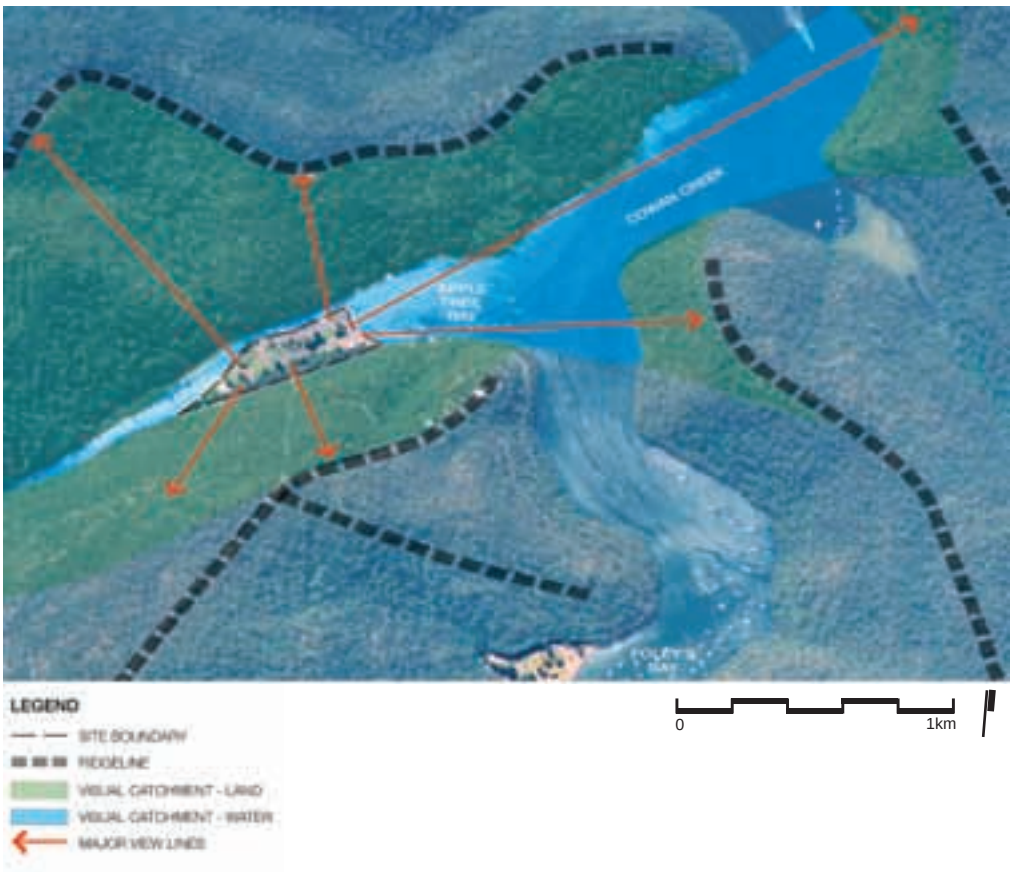


Figure 4.8: Visual catchment

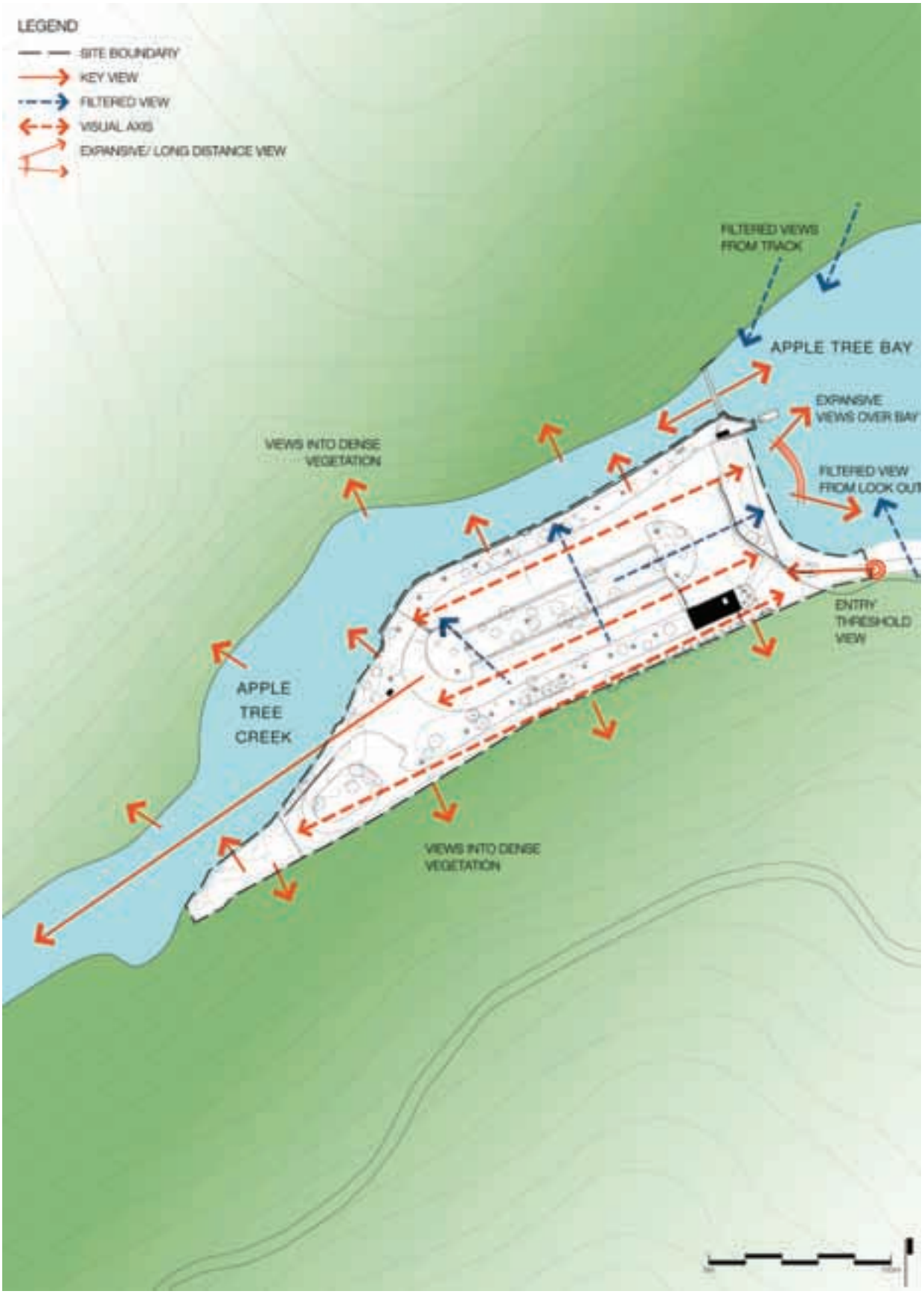


Figure 4.9: Views and Vistas

4.9.3 Landscape Character

Refer to Figure 4.10.

Significantly, there is a lack of spatial definition within the park and car parking dominates the majority of the park, limiting the user experience.

Six distinct character areas have been identified in Apple Tree Bay. Figure 4.10 defines the limits of these zones and indicates parklands dominated by vehicles, parking, hard surfaces and poor landscape.

P24. Sparse, informal native plantings in grass characterise the parkland at the edge of Apple Tree Creek (source: CM+)

P25. The eastern waterfront is an exposed zone with open, expansive views onto Apple Tree Bay (source: CM+)

Figure 4.10: Landscape Character

4.9.4 Visual Detractors

Refer to Figure 4.11.

The spectacular natural visual qualities of Apple Tree Bay and its surrounds are compromised by visually detracting elements within the park. Significant visual detractors include the following:

- Excessive expanses of bitumen, which extend close to the water's edge.
- The concrete rubble and rock revetment fronting Apple Tree Bay.
- Waste facilities.

P26. Large expanses of bitumen detract from the visual qualities of the setting. (source: CM+)

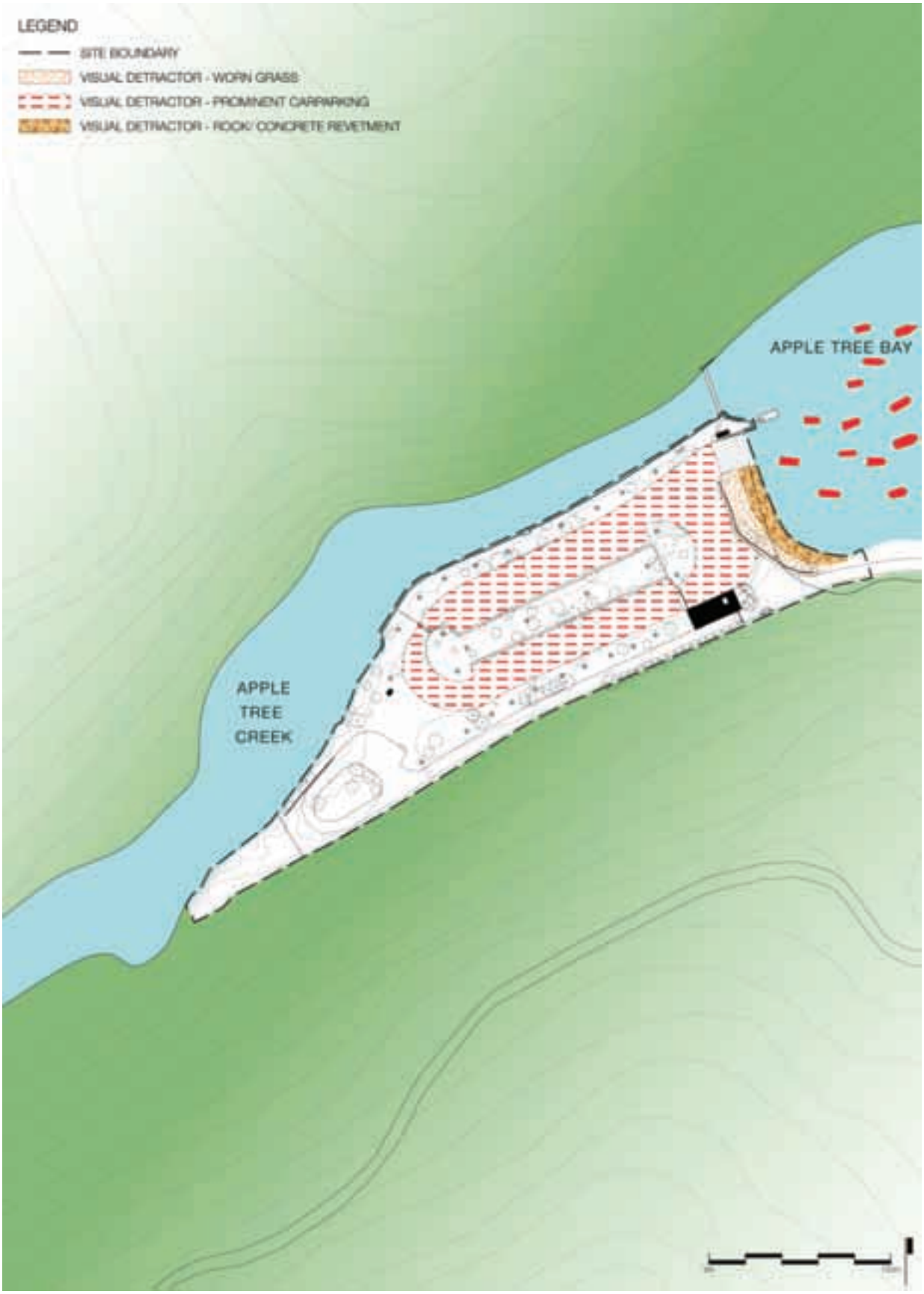


Figure 4.11: Visual Impact / Detractors

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5.0 Issues and Opportunities

The following chapter summarises key issues in relation to the management of Apple Tree Bay, based upon the outcomes of the research and analysis phase, which included park investigations, user surveys and community and stakeholder consultations. It also outlines key opportunities in regard to planning of the parklands.

The following topic headings were established as a framework for the review of issues:

- Conservation
- Environment and Sustainability
- Landscape Character and Visual Quality
- Recreation and Visitor Facilities
- Public Security
- Access, Circulation and Parking

5.1 Key Issues

5.1.1 Conservation

Refer to Volume 3, Part 2 CMP.

Apple Tree Bay, Ku-ring-gai Chase National Park is a place of cultural significance for historic, aesthetic, scientific / research and social values at a local level. Apple Tree Bay is located within Ku-ring-gai Chase National Park an area of high natural significance at state level. The selection of the name, Ku-ring-gai Chase National Park, is dedicated to the local Aboriginal language groups that occupied the land.

The place has high historic significance for its associations with Ku-ring-gai Chase National Park, gazetted in 1894 as the second national park in NSW and the first national park devoted to nature conservation. Ku-ring-gai Chase Trust administered the conservation area from 1894 to 1967. National Parks and Wildlife continue to administer the place from 1967 to the present (2006).

Issues

- There is currently no interpretation of the cultural and Aboriginal heritage of the area.

Refer to Volume 2, Part 2, Policy 6.13

5.1.2 Environment and Sustainability

Refer to Volume 3, Appendix 1.6 Improving Soil Conditions for Trees and Turf Report.

Early reclamation to create the existing parklands was carried out with little knowledge of, or regard to, the provision of good growing conditions for trees and vegetation. As a result, unsuitable soils were used, which are prone to compaction and are deficient in nutrients, and these are continuing to affect the performance of vegetation.

Issues

- Soil compaction due to foot traffic and unsuitable topsoils is affecting tree growth and contributing to grass wear in some areas.
- Soil nutrient deficiencies are likely to be preventing vigorous plant growth taking place.
- The revetment area (foreshore), comprising rubble and rock revetment, is an unsuitable foreshore area.
- There is a large amount of asphalt in the park that is not necessary.
- There is currently no interpretation on the natural or cultural landscape.

Refer to Volume 3, Appendix 3, Apple Tree Bay Seawall Advice Report

5.1.3 Landscape Character and Visual Quality

The setting of Apple Tree Bay has a high visual quality, with a variety of views and vistas from the park to the surrounding waterways and natural slopes. These qualities are partly compromised by features within the park that are incongruous with the setting and detract from the experience of being at Apple Tree Bay.

Issues

- Much of the park is dominated by the car park, which detracts from the park's qualities and enjoyment.
- The park lacks spatial definition, owing to its flat, open nature and unstructured plantings.
- Distracting noise from vehicles occurs in the vicinity of the boat ramp.
- Waste management facilities are unsightly.

5.1.4 Recreation and Visitor Facilities

Refer to Volume 3, Appendix 1.5 Recreational Planning Report.

Apple Tree Bay receives high use, due primarily to its boat launching facilities. This activity tends to dominate the park, physically and visually, with a steady flow of boats being lauched and the majority of the park being taken up with expanses of car parking providing parking for vehicles with trailers. The park's potential for passive recreation is consequently reduced, in spite of its visual qualities and diverse recreational potential.

Issues

- Visitation numbers by the boating community have increased dramatically in recent years, placing additional demand on facilities. This trend is likely to increase.
- There are insufficient undercover picnic facilities and barbecues.
- There is insufficient seating alongside the water, while seating within the park is underutilised.
- There is a lack of interpretive information.
- There is no designated canoe launching facility at Apple Tree Bay, causing conflicts at the boat ramp with boat users.
- Significant demand exists for the re-introduction of a kiosk in the park.
- The park's opening hours are not a reflection of the current shift in working culture.

P27. A narrow strip of parkland is reserved for recreational use in waterfront areas, the remainder of the park being dominated by car parking. (source: CM[+])

5.1.5 Security

The precinct is subjected to vandalism and some theft from cars and boats. Most of these activities occur after hours, due to the precinct being ungated. National Parks and Wildlife Service is currently considering the issue of access to the park after hours.

Issues

- Vandalism of park infrastructure occurs, particularly after hours, due to unobstructed access to the park.
- Some theft occurs from parked cars and boats.
- Aggressive conduct at the boat ramp areas has been recorded, associated with boat launching

5.1.6 Access Circulation and Parking

Refer to Volume 3, Appendix 1.3 Traffic and Transport Planning Report.

Most visitors to Apple Tree Bay arrive by car. Car parking is spread over the entire park and dominates the environment, visually and physically, causing safety issues for pedestrians and taking up large areas of the waterfront, which could otherwise be used for recreation. Maintenance of adequate car parking numbers is important, given the popularity of the park; however, this needs to be balanced against the carrying capacity of the park for continued visitor satisfaction, and to meet environmental objectives.

Issues

- There is inadequate definition between car parking and car-with-trailer parking.
- Cars with trailers frequently back onto grassed areas, causing compaction and grass wear.
- There is a lack of drop-off points and 5 minute standing.
- There are conflicts between pedestrians and vehicles launching boats, adjacent to the boat launching ramp.
- There is a lack of accessibility to many facilities for disabled people and pram-users.
- There is a lack of information, maps and signage to amenities, increasing visitor disorientation.
- Speeding occurs on the access road to Apple Tree Bay.
- Pedestrian access from Apple Tree Bay to Bobbin Head is currently only possible by road or via a Grade 3 or 4 ridge track, which requires strenuous exertion.
- Coaches are unable to negotiate hair-pin turns on Apple Tree Bay Road.
- Cyclist and vehicle conflicts on Apple Tree Bay Road require consideration.

5.2 Opportunities

Refer to Figure 5.1.

The analysis of the existing park leads to an understanding of the opportunities and constraints which may guide the future planning of the park.

Key opportunities are:

- Improve the amenity of the waterfront areas by reducing the hard surfacing and providing greater shelter and shade.
- Concentrate the car parking to the rear of the park, thereby reducing its impact and providing greater parkland area at the waterfront.
- Reduce the pedestrian-vehicle conflicts in the boat launching area, with improved traffic management and enforcement systems.
- Enhance the sense of arrival into the precinct
- Upgrade the existing kiosk building and establish a new kiosk facility.
- Improve the setting of the existing building and the foreshore.
- Provide greater interpretation and educational awareness of the cultural and natural values of the park and environs.
- Improve the condition and vigour of park vegetation by improving soils and managing vegetation.

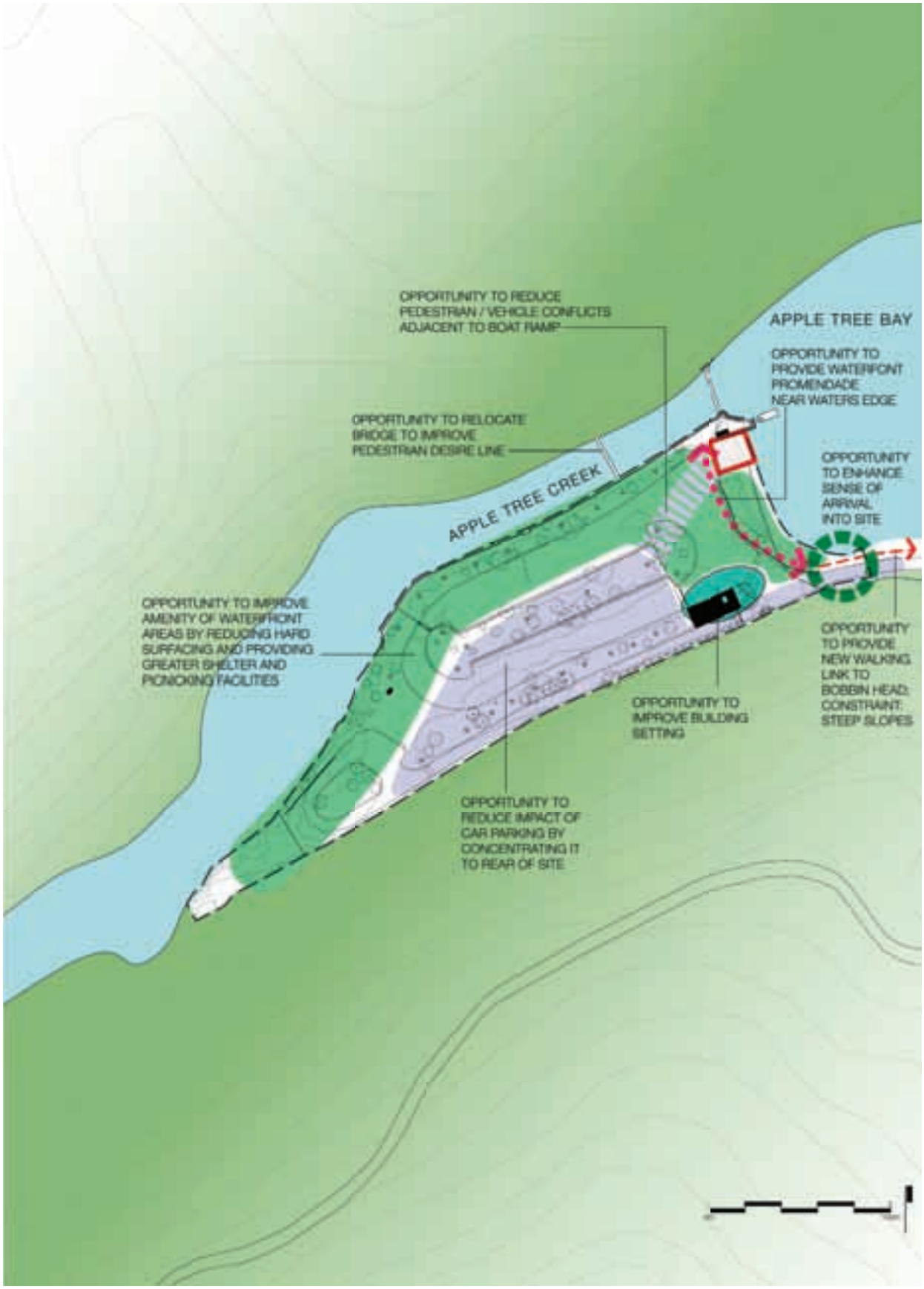

Figure 5.1: Opportunities and Constraints

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6.0 Management Actions

The following chapter outlines specific actions for Apple Tree Bay in relation to its planning and management and address the issues identified in Volume 2, Chapter 5.0 Issues and Opportunities. The actions are supported by design principles, which inform the approach to implementation of the actions, to ensure a coordinated, consistent design is achieved for Apple Tree Bay.

The actions and principles direct and inform the Landscape Masterplan for Apple Tree Bay as described in Volume 2, Chapter 3.0 Design Description. This chapter should also be used as a general reference in relation to all future planning or management activities affecting the park.

The topic headings established in Volume 2, Chapter 6.0 Issues and Opportunities provide a framework for this chapter.

Reference should be made to the Masterplan, Volume 2, Part 1, 10.0 Implementation.

P28. Apple Tree Creek, looking south (source: CM+)

6.1 Conservation

Refer to Volume 2, Part 2 CMP.

6.1.1 European Heritage

Apple Tree Bay is associated with Ku-ring-gai Chase National Park, the second national park to be proclaimed in NSW and the first devoted to nature conservation. Apple Tree Bay is a secluded area 1.3km north of the popular parklands of Bobbin Head. Initially a track, and in 1937 a sealed road, provided access by land from Bobbin Head. Prior to 1958 the banks of Apple Tree Creek were used for passive and active recreation.

The mudflats of the southern bank of the creek were reclaimed between 1937 and 1958 to provide an increased recreational area. The reclaimed area was planted with native species and date from the 1960s and 1970s phase, a period of development associated with the establishment of the carpark area and its use as a boat-launching precinct.

Actions

- Provide interpretation on the European heritage of Apple Tree Bay and its surrounds through interpretive and information signs, guided walks and talks, visitor information centres, brochures, newsletters and workshops.

Refer to Volume 2, Part 2 CMP, Policy 6.13

6.1.2 Aboriginal Heritage

Refer to Volume 3, Appendix 1.2 Aboriginal Aboriginal Research and Analysis Report.

Ku-ring-gai Chase National Park is important archaeologically because it exhibits a large number and a diverse range of Aboriginal sites that represent a range of past activities. These activities include resource gathering and tool production, indicated by shell middens and grinding grooves, as well as ceremonial processes demonstrated by rock art and engravings.

The marine resources provided by the creeks and tributaries located around Apple Tree Bay would have attracted Aboriginal occupation of these areas. The mud flat and mangrove habitats that existed in these areas prior to European occupation and eventual reclamation for development would have also provided a plentiful resource zone. The prevalence of rock shelters in the area would have also offered suitable sites for regular visitation and use.

Although the history of reclamation at the Apple Tree Bay recreation precinct shows the area at the base of the sandstone scarp to be natural landscape, cutting of the sandstone cliff in the eastern portion of the precinct (evidenced by drilling scars) suggests that past disturbance in this area may have been considerable.

Actions

- Protect Aboriginal sites from disturbance or damage by human activities.
- Provide interpretation on the Aboriginal heritage of Apple Tree Bay and its surrounds and promote a general understanding and appreciation of Aboriginal culture through interpretive and information signs, guided walks and talks, visitor information centres, brochures, newsletters and workshops.
- Encourage non-destructive research into past Aboriginal use of the area, including systematic surveys for Aboriginal sites and assessments of the real and potential impacts of people and other threats on parks.
- Ensure work which may disturb, damage or destroy relics as defined under the Heritage Act 1977 is be preceded by an archaeological survey, and work will only be undertaken with the approval of the Metropolitan Local Aboriginal Land Council.

Design Principles

- Avoid the use of fencing to control access where possible given its compromising visual effects.

6.2 Environment and Sustainability

Refer to Volume 3, Appendix 1.6 Improving Soil Conditions for Trees and Turf.
Refer to Colume 3, Appendix 5.1 Arborist Report.

6.2.1 Park Vegetation and Soils

Park vegetation provides shade, visual interest, spatial structure and general amenity to the parklands. Much of the vegetation in the parklands at Apple Tree Bay appears to be underperforming, which is likely to be a result of compacted and nutrient deficient soils. Management of vegetation and associated soils is critical to the ongoing amenity of the park and should be an undertaken proactively as an integral component of the park's maintenance regimes.

Actions

- Implement soil management strategies which improve plant health and vigour.
- Implement vegetation management strategies which improve plant health and vigour. This includes undertaking regular pruning of trees to remove dead wood and suckers and to eliminate identified hazards.
- Undertake regular hazard assessments and update the Arborist's Report to account for the constantly changing nature of tree defects and to identify tasks requiring action.
- Use a suitable herbicide to kill grass under trees, where it is seen to be having a detrimental effect on tree growth. Replace with mulch.
- Undertake sand slitting, coring and topdressing in grassed areas on a regular basis.
- Periodically, monitor nutrient levels soil testing to ensure ongoing suitability for tree and turf growth. Test soils around declining vegetation as a priority. Correct acidity and nutrient deficiencies by appropriate chemical amendments.
- Install replacement for ageing tree population; before the population becomes depleted.
- Reinstate turf areas with a turf type which is easy to establish and tolerant to wear, drought, salt and shade.

Design Principles

- Use and manage vegetation to subtly define different use areas while retaining visual permeability through the park.
- Ensure trees are located to provide adequate shade to picnic facilities and foreshore areas.
- Consider branch dropping risks when placing new trees.
- Select species which reinforce the desired character of different precincts and which are suited to park conditions.

Refer also to Volume 3, Part 1, Chapter 3.2 on Sustainability.

6.2.2 Flora and Fauna

Refer to Volume 3, Appendix 1.1 Flora Report and Fauna Report.

Ku-ring-gai Chase National Park is particularly important in conserving a large area of relatively undisturbed vegetation of the type which gives the Sydney bushland its distinctive character. At Apple Tree Bay, endemic flora occurs primarily on the natural slopes at the park's perimeters and provides a visual counterpoint to the manicured landscape of the cultural park setting. The steepness of the terrain and the denseness of the natural vegetation tend to discourage trampling and damage in most areas; however, ongoing maintenance is required to ensure that parkland use does not affect the natural bushlands deleteriously and, conversely, that endemic vegetation and erosion does not become a hazard to visitors.

Actions

- Prevent or discourage access to bushland areas, except on existing tracks.
- Undertake regular hazard assessments and undertake pruning / felling works as necessary.
- Control weeds in accordance with the Pest Management Strategy for Sydney North Region.
- Use only endemic species in any rehabilitation of existing natural areas on the fringes of the park. Where possible use locally collected seed stock.
- Require contractors to minimise disturbance to the natural flora and fauna surrounding the park and rehabilitate any damage resulting from the activity. Ensure protection of natural vegetation forms part of any contractual agreement by way of pre-determined protective measures or performance based criteria coupled with financial disincentives for damaged vegetation.
- No invasive species to be planted as part of 1930s or 1950s design.

Design Principles

- Consider shade provision and branch dropping risks in relation to picnic facilities when selecting species for rehabilitation works to the rear of the park.
- Avoid the use of fencing to control access, where possible, given its visual incongruity with the bushland environment.
- Consider erosion control methods for upper areas of bushlands.

6.2.3 Water Quality

Maintaining appropriate water quality controls at Apple Tree Bay is important in order to protect the quality of Cowan Creek, and should embrace total catchment management principles and objectives.

Actions

- Protect and rehabilitate seagrass and mangroves wetlands and control access to these areas to maintain their value as nurseries and for improving water quality by stabilising sediments and functioning as biological filters of pollution.
- Ensure the 'No Discharge from Boats' policy continues to be implemented in conjunction with the NSW Maritime, boat owners and the boating industry.
- Use sedimentation control devices in reticulated stormwater systems to ensure that pollutants, litter and other solid material are not deposited in the waterways.
- Ensure that appropriate controls and procedures are implemented for minimising the impacts of construction water run-off and chemical spills into Cowan Creek. Ensure protection of water quality forms part of the contractual agreement by way of pre-determined protective measures or performance based criteria couples with financial disincentives for damaged vegetation.

Design Principles

- Avoid the use of fencing to control access to mangroves where possible given its visual incongruity with the bushland environment.
- Improve water quality throughout the parklands in relation to stormwater and pollution.

6.2.4 Water Sensitive Environmental Design (WSED)

The implementation of WSED at Apple Tree Bay involves the application of a broad range of measures aimed at reducing the reliance on the urban water supply system.

Actions

- Conserve water by the installation of water efficient fixtures and appliances.
- Harvest rainwater for external uses (eg Amenities building cleaning, irrigation).
- Investigate systems which recycle water.
- Investigate the use of swales in preference to a reticulated stormwater system.

Design Principles

- Minimise impervious surfaces and enhance the permeability of remaining pervious surfaces (soil decompaction/reconstruction, protection from future vehicle compaction).
- Utilise best practice standards to reduce potable water use.

6.3 Landscape Character and Visual Quality

The high visual quality of the setting of at Apple Tree Bay is diminished by detracting elements in the parklands, including expanses of bitumen, worn grass and stunted trees. Planning and management are aimed to improve these characteristics and to establish an integrated, harmonious visual relationship between the park and its surrounds. Careful attention needs to be made to ensure preservation of the views and vistas to the adjacent waterways and natural slopes are an important part of the experience of being at Apple Tree Bay.

Actions

- Relocate car parking from the water's edge to the rear of the park.
- Remove the existing rubble revetment and construct a new sandstone tidal edge with platforms and a saltwater marsh area as part of the parkland.
- Implement new facilities that are sympathetic to the natural significance of the place and visually integrated and coordinated with the design of other infrastructure and facilities in the park.
- Plant endemic trees to provide additional shade and shelter throughout the parklands.
- Improve the condition of turf.

Design Principles

- Retain the natural foreshores, hill slopes and ridgelines adjoining the park and keep free of built elements.
- Design, park and maintain new facilities in the park so as to harmonise with their surroundings and not be visually intrusive. Avoid proliferation of new built forms.
- Avoid further dramatic alteration to the landform. Use formed undulations or shrub planting to reduce the impact of car parking areas, but retain adequate visual permeability to allow casual surveillance.
- Ensure that facilities and infrastructure in the park communicate a consistent park image and are sympathetic to the character of the park's culturally significant elements.
- Ensure different use areas are clearly defined, while maintaining legibility in the landscape by retaining sightlines between key elements.
- Ensure that active recreational pursuits do not impact detrimentally on areas provided for more passive activities.
- Contrast grassed areas with natural bushland areas at the parklands' edges.
- Ensure new buildings, shelters and other built forms complement the character of existing ones in relation to scale, siting, shape and materials, to achieve a unified character.
- Maintain significant views and vistas from and to the park, particularly to and from Cowan Waters.

6.4 Recreation and Visitor Facilities

Refer to Volume 3, Appendix 1.5 Recreational Planning Report.

Currently predominant recreational use of Apple Tree Bay is as a location for launching boats, an activity which is particularly popular on weekends and public holidays. The parklands have potential to cater better to a range of other recreational activities, in addition to maintaining its role as an important boat launching location within Ku-ring-gai National Park. Future planning should seek to realise this potential by implementing additional facilities and creating a more amenable environment to passive, park-based recreational activities, such as picnicking and enjoying the natural setting. Facilities should be distributed through the park and parkland to provide favourable aspect and shade to picnickers.

Actions

- Plant additional trees throughout the park, for increased shade and amenity.
- Upgrade or replace the picnic benches with appropriate park furniture. Provide additional picnic facilities, including shelters, barbecues, benches and tables, including facilities suited to larger groups, and provide full recycling and rubbish facilities in the vicinity.
- Upgrade the boat launch facilities, including the provision of a wash down area.
- Provide a new canoe launch facility for experienced users.
- Establish an integrated way-finding strategy to assist with the orientation of users, both inside the Park and in the surrounding pedestrian and vehicular road network.
- Provide a new interpretive area, using naturalistic elements, which provide educational opportunities.
- Implement a coordinated suite of interpretive and wayfinding signage throughout the parklands. Interpretation should focus on both the natural and cultural values of Apple Tree Bay and its environs.
- Upgrade track heads with new interpretive and directional signage to National Parks and Wildlife standards and coordinated with other park facilities and infrastructure.
- Demolish the existing pontoon and replace with a new gangway and pontoon.
- Undertake repairs to the existing seawalls.
- Upgrade and refurbish the existing building for use as a kiosk / café facility. Improvements to include internal refurbishment, improvements to the facade and upgraded access to Disability Discrimination Act compliance.
- Remove or terminate existing redundant systems and ensure new services, such as stormwater drainage, electrical systems, telecommunications, sewerage, water supply, irrigation, fire fighting systems and security systems, are concealed and safe.
- Use high quality, durable, vandal-resistant infrastructure (e.g.,sturdy materials, tamper-proof fastenings, anti-graffitti coatings).
- Consideration must be given in planning and upgrading underground services to the parklands that are subsiding.
- Construction management plans must include services locating and identification.
- Design cost effective and robust reticulation and future provision allowances for services.
- Where service infrastructure is located within high traffic areas, such infrastructure is to be powder coated to blend in and/or screened by appropriate landscape.
- Overhead power cable leading to the kiosk / garage building to be placed underground.

Design Principles

- Ensure that active recreational pursuits do not impact detrimentally on areas provided for more passive activities.
- Locate facilities and signage to avoid obstruction of views.
- Ensure new signage structure is sympathetic to the cultural significance of the place and visually integrated. Installation of signage should not damage significant fabric of a heritage item.
- There should be an efficient use of mounting structures, through consolidation, to reduce visual clutter. Signage may be mounted on existing infrastructure such as lamp posts.
- Signage should be ergonomically designed, changeable where required and legible from the intended distance.

- Ensure facilities meet best practice environmental standards in regard to water conservation, waste disposal and power efficiency.
- Choose facilities including signage from the NPWS Park Facilities Manual 2006 wherever possible and if appropriate.
- Park signage should be visually coordinated and should meet NSW National Parks and Wildlife Service Signage Design Standards.
- Ensure new buildings and facilities are sympathetic to the natural significance of the place and visually integrate.
- Sandstone, brick, timber and steel should be primary materials used for any new built elements.
- Use vegetation as the first preference for screening, shading and spatial definition.
- Where possible, all furniture should appear as part of the landscape (e.g. use rocks for seats and tables etc.).
- Ensure materials are harvested in an ecologically sustainable manner.
- Ensure materials are able to be installed and managed with a minimal impact on the environment.
- Select pavement and building materials which are durable, with minimal maintenance requirements.
- Ensure new services are located to minimise damage to infrastructure and vegetation should service access be required.
- Re-use existing systems where possible.
- Location of large, above-ground infrastructure (e.g., substations, large cabinets and overhead powerlines) is not permitted within identified main thoroughfares and vistas.

6.5 Security

Some vandalism to park infrastructure and car and boat break-ins occur at Apple Tree Bay, particularly after hours, owing to the uncontrolled access to the park. Consideration to the layout of elements and the choice of materials and fittings could reduce the incidence of anti-social behaviour and enhance the sense of security for visitors using the park. National Parks and Wildlife Service is considering the issue of providing limited lighting in the park.

Actions

- Install subtle, recessive lighting for security and ambience concentrated in access and areas required for night visitor use.
- Use vandal-resistant infrastructure (e.g., sturdy materials, tamper-proof fastenings).
- Consider security devices such as gates or surveillance equipment to improve security.

Design Principles

- Design to enable a certain level of casual public surveillance of all accessible areas of the park.
- In particular maintain adequate views to the car parking areas from other parts of the park.
- Avoid design of dead-end spaces in the park. Incorporate facilities into the wider vehicle and pedestrian circulation system, to provide random visitor activity patterns through the park.

6.6 Access, Circulation and Parking

Refer to Volume 3, Appendix 1.3 Traffic and Transport Planning Report.

The dominance of the car park at Apple Tree Bay is compromising the parkland's amenity and safety for visitors and discourag use of the park for recreational experiences other than boating. Future planning should seek to overcome this dominance by consolidating roads and parking and rationalising the extent of surfacing. This can be achieved by relocating car parking to the rear of the park away from foreshore areas, thereby increasing parkland space at the water's edge for picnicking and recreation and reducing potential conflicts between pedestrians and vehicles. It is important to maintain car parking numbers, due to the significant and growing visitor demand.

Actions

- Introduce traffic safety and calming devices to reduce speed of vehicles in the precinct. Install a new park entry threshold incorporating traffic calming devices and provide pedestrian crossings at key conflict locations.
- Relocate car parking from the water's edge to the rear of the park.
- Establish a queuing system to improve the efficiency of the boat launch facility.
- Establish a network of footpaths connecting different areas within the park.
- Incorporate provision for bus parking and disabled parking. Ensure all spaces are adequately demarcated and signposted.
- Establish an integrated way-finding strategy to assist with the orientation of users, both inside the Park and in the surrounding pedestrian and vehicular road network.
- Ensure Disability Discrimination Act compliance standards throughout the parks for all amenities.
- Investigate the feasibility of constructing a walking trail to Bobbin Head along the water's edge.

Design Principles

- Ensure an efficient vehicular circulation system, which reduces speeds, minimises conflicts with pedestrians and is visually subordinate within the park environment.
- Ensure a legible, structured pedestrian circulation system, comprising a hierarchy of paths that recognise desired movement patterns within and through the park, and which caters to the needs of the range of users expected in the park.
- Minimise impermeable hard surfaces and locate parking away from prime vistas.

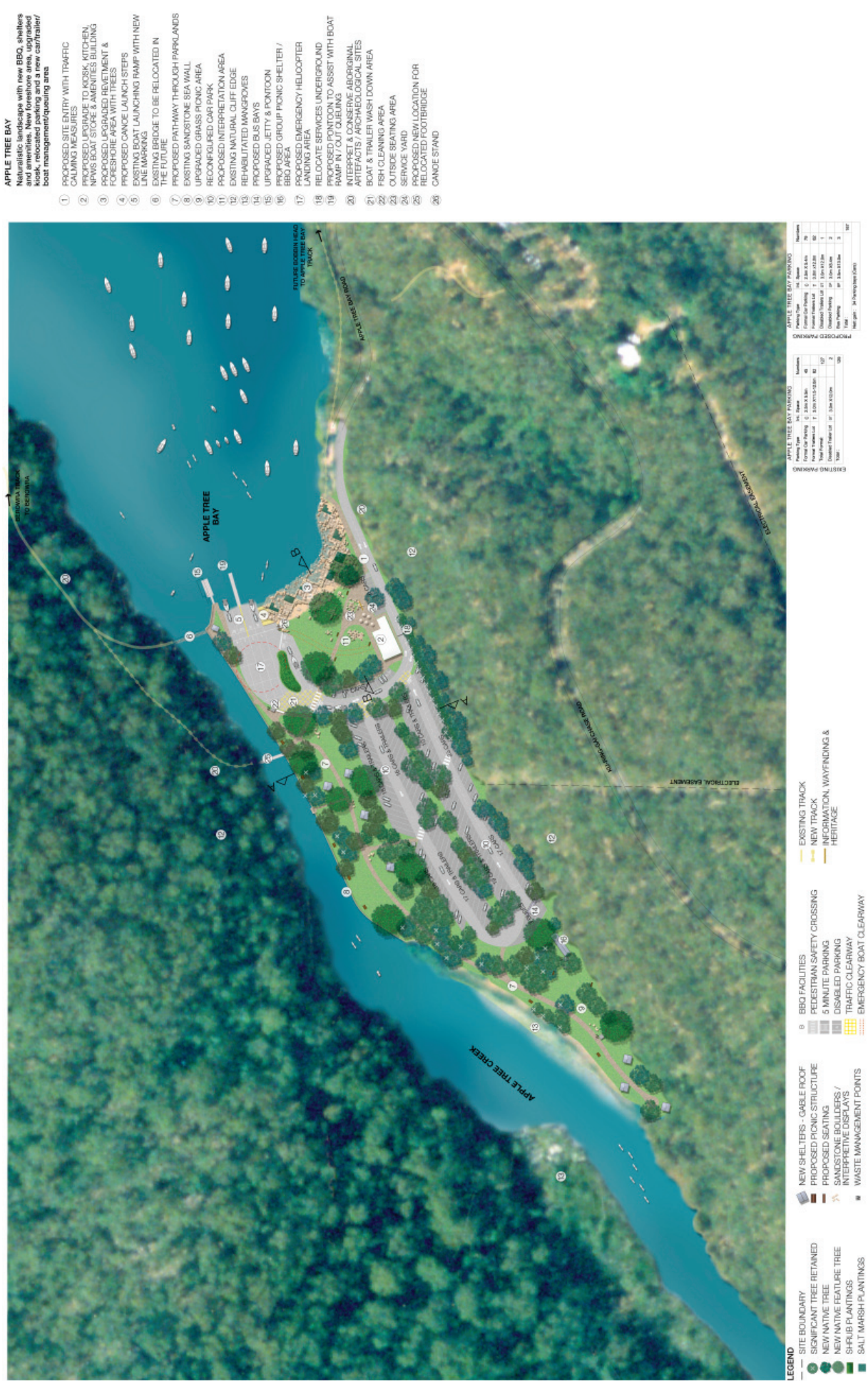

Figure 7.1. Landscape Masterplan for Apple Tree Bay

7.0 Design Description

This chapter describes the design for Apple Tree Bay and is intended to be read in conjunction with the Illustrative Masterplan and Sections. The design addresses the issues outlined in Volume 2, Part 2, Chapter 5.0 (LMP) and is informed by the actions outlined in Volume 2, Part 2, Chapter 6.0 (LMP). The LMP also draws upon the policies established in Volume 2 Part 2: Conservation Management Plan, the Actions outlined in Volume 2 Part 1: Masterplan and the recreational recommendations described in Volume 3, Appendix 1.5; Recreational Planning Report, and the traffic and trasport planning in Volume 3, Appendix 1.3.

The revitalised landscape design for Apple Tree Bay proposes new works to maintain and improve the popular use of the park for boating while realising the park's potential to better cater to a diversity of park-based recreational opportunities, relieving some of the pressure on Bobbin Head.

A detailed description of the design for Apple Tree Bay follows:

P29. Informal waterfront parkland (source: unknown)

Apple Tree Bay

Refer to Volume 2, Part 2 CMP, Policy 6.4.1 - 6.4.5

The parklands of Apple Tree Bay will be transformed to a shady naturalistic landscape that melds with its natural setting and provides improved recreational and educational opportunities for visitors. The design of the parklands rebalances the needs of recreational users, including picnicking, walking and boating. The realisation of this Vision requires the relocation and reconfiguration of the car park to the rear of the park, opening up a broader area of parkland along the northern and eastern waterfronts.

New picnic facilities, including shelters, barbeques, benches and tables, are proposed to be implemented throughout the park, particularly along the northern waterfront zone. The eastern water frontage to Apple Tree Bay will be converted to a series of tidal rock pools constructed from large sandstone boulders and the adjacent existing building converted to a kiosk / café taking advantage of the views to the Bay. The boat launch facilities will be upgraded with a new road configuration and traffic management systems, which will improve the efficiency of the traffic queuing system, while reducing hard surfacing.

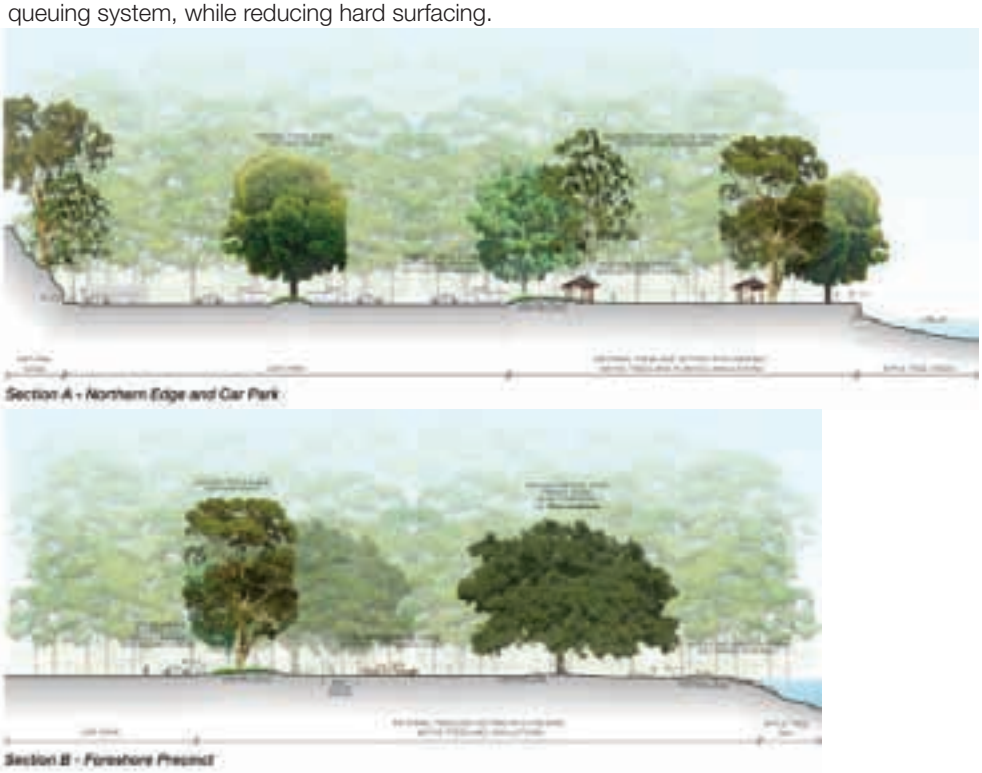

Figure 7.2. Landscape Sections for Apple Tree Bay

Key elements of the design are described as follows:

Foreshore Tidal Pool Rock Edge

The eastern water frontage to Apple Tree Bay is proposed as a series of tidal rock pools constructed from large sandstone blocks and boulders interspersed with paved areas and salt marsh plantings. The pools and boulders will provide educational and recreational opportunities and are intended to be setout in a pattern reflective of rippled water, symbolic of natural patterns in the environment. Fishing, seating and picnicking in the shade of trees will be possible.

P30. New shelters and picnic facilities (source: CM+)

P31. Alfresco dining (source: Landscape Architecture: Defying the Craft, Peter Walker & Partners, 2005)

P32. Interpretive Elements (source: unknown)

Shelters and Picnic Facilities

Refer to Volume 2, Part 2 CMP, Policy 6.4.20-6.4.21

Currently, there are limited picnic facilities in the park, indicating that the main use of the park is as a boat launch location. The Recreational Planning seeks to encourage greater use of the precinct for picnicking and other park-based activities. New picnic facilities proposed include shelters, barbeques, benches and tables throughout the parkland, particularly along the northern waterfront zone. The shelters and other facilities will have a contemporary character and be coordinated with the design of other infrastructure and facilities in the park, utilising similar materials, forms and finishes. A group shelter with barbeque facilities is proposed in the western portion of the park, adjacent to bus parking. Occasional clusters of sandstone boulders placed throughout the parklands will also provide seating and picnicking surfaces and will enhance the sense of being in the natural environment. Waste disposal facilities, including recycling facilities, will be provided near to picnicking facilities and will be visually downplayed by sensitive detailed design.

Kiosk, Garage and Amenities Building

Refer to Volume 2, Part 2 CMP, Policy 6.4.18-6.4.19

The existing kiosk, garage and amenities building is currently vacant and underutilised. It is proposed that the building be upgraded and refurbished to be used as a kiosk / café, with upgraded access to Disability Discrimination Act compliance standards and possible implementation of water and power saving technologies and systems. The presentation of the building will be improved by realignment of the park entry road around the rear of the building and with sensitive landscaping. A new outdoor eating area is proposed to be established in front of the building, taking advantage of the views of Apple Tree Bay. An unobstructed line of travel will be maintained in front of the garage containing the National Parks and Wildlife Service boat to access the boat launch area.

Interpretation Area

Refer to Volume 2, Part 2 CMP, Policy 6.13

A new interpretation area incorporating sculptural and interpretive elements is proposed adjacent to the kiosk building. Tree planting will provide shade. Seating and drinking fountains will be installed. It is intended that the design of the foreshore area will visually integrate with its setting and be aesthetically pleasing.

Park Entry Threshold

Traffic calming devices are proposed for the entry location into the park along Apple Tree Bay Road. Treatments may include different pavement treatments, an entry feature, traffic management systems and road narrowing devices. NPWS is considering the installation of gates to control access to the park and other safety measures.

Car Parking and Roads

Refer to Volume 2, Part 2 CMP, Policy 6.4.8-6.4.13

Car parking dominance will be reduced by relocating parking from the foreshore to the rear of the park, enlarging the area of parkland available along waterfront areas to provide more opportunities for picnicking and recreation, and to reduce conflicts between pedestrians and vehicles, and landscape undulations with plant screening between the parklands and parking areas. The proposed design provides additional car parking numbers to those currently available at Apple Tree Bay. Provisions are also made for bus parking, trailer parking, disabled parking and short term parking. New tree plantings will provide shade and amenity to car parking areas.

New pedestrian crossings are proposed to be installed on the access road to the boat ramp and adjacent to the relocated Apple Tree Bay Bridge to improve pedestrian safety.

Proposed car parking numbers are as follows:

- Formal car parking: 79
- Formal trailer lots: 82
- Disabled trailer lots: 1
- Disabled parking: 2
- Bus parking: 3
- TOTAL proposed design parking numbers: 167

Boat Launch Facility
Refer to Volume 2, Part 2 CMP, Policy 6.4.22

The boat ramp provides a safe access to the Hawkesbury River complex and is highly used on weekends and during holiday periods. Traffic management measures, line markings, signposting and penalty notices are proposed to assist all boat ramp users in optimising use of this facility and a new pontoon will assist with boat ramp in/out waterside queuing. A designated wash down area will prevent salt water from damaging the park landscape and a emergency helicopter landing area will share the vehicle loading area.

Canoe Launch Facility
Canoeists currently use the boat ramp to launch their canoes, which is leading to conflicts with boat users. A new canoe launch facility catering to experienced users is proposed to be established adjacent to the boat launch ramp. This is proposed to be in the form of a set of terraced steps with a sandy surface, with integrated wash down facilities and signage. Less experienced users can continue to use the western portion of the park along Apple Tree Creek to launch canoes.

Jetty and Pontoon
The existing jetty and pontoon adjacent to the boat ramp are proposed to be replaced with a new jetty and pontoon. A boat launching pontoon will be provided to assist with boat queuing.

Fish Cleaning Facility
The existing fish cleaning facility will be upgraded and relocated adjacent to the boat wash down area.

Footpaths
Refer to Volume 2, Part 2 CMP, Policy 6.4.14

Pathways are proposed in the park reflecting pedestrian desire lines, in particular adjacent to car parking areas and access to the toilet facilities. Relocation of car parking to the rear of the park and the provision of pedestrian crossings will improve pedestrian safety in the precinct.

Tracks
Refer to Volume 2, Part 2 CMP, Policy 6.4.15-6.4.16

Two tracks originate in Apple Tree Bay: the Berowra Track which follows the foreshore of Cowan Waters north of Apple Tree Bay and a short track to the NPWS regional office. The track heads are proposed to be upgraded with new signage, wayfinding and interpretation facilities. The existing footbridge is proposed to be relocated in the future west of the boat ramp facility to reduce the conflict between pedestrians and boat users.

P33. Livistona australis (source: unknown)

P34. Ficus rubiginosa](source: unknown)

P35 Eucalyptus piperita (source: unknown)

P36. Sculptural elements providing interpretation (source: unknown)

Vegetation

Refer to Volume 2, Part 2 CMP, Policy 6.7

The landscape design proposes to retain existing trees where possible. It is anticipated that the majority of tree plantings along the northern foreshore will be able to be retained. Strategic replacement of topsoil around the roots of existing trees will improve the condition and vigour of the existing trees. Trees which are likely to be retained are indicated on the Illustrative Masterplan.

New tree planting is proposed to be entirely selected from endemic species of local provenance to integrate the parklands with the surrounding bushland. Tree selection will be based on species with good shade provision and which are tolerant to park conditions (including salinity) and not invasive to bushland. A suggested planting list is provided in Figure 7.1.

At the foreshore, adjacent to the tidal pools, large feature trees are proposed (e.g., *Ficus rubiginosa*) which will provide shade and frame views of Apple Tree Bay. Other feature trees are also proposed along the northern waters edge. Trees around the car park will be selected to provide good shade and that have minimal branch dropping risks. The mangroves in the western part of the park will be improved.

Precinct	Species Type	Species	Common Name
Apple Tree Bay	Trees	*Angophora costata*	Smooth Barked Apple
		Callistemon salignus	Willow Bottlebrush
		Casuarina glauca	Swamp Oak
		Eucalyptus amplifolia	Cabbage Gum
		Eucalyptus piperata	Sydney Peppermint
		Eucalyptus botryoides	Mahogany Gum
		Eucalyptus robusta	Swamp Mahogany
		Eucalyptus tereticornis	Forest Red Gum
		Ficus rubiginosa	Port Jackson Fig
		Glochidion fernandii	Cheese Tree
	Palms	*Livistona australis*	Cabbage Tree Palm

Table 7.1. Suggested Planting List for Apple Tree Bay

Signage

Refer to CMP Policy 6.13

A coordinated suite of wayfinding and interpretative signage is proposed to be installed in the future at Apple Tree Bay. Detailed design should ensure that this infrastructure coordinated with the design of other infrastructure and facilities in the park, utilising similar materials, forms and finishes. Interpretation is proposed to emphasise the natural significance of Apple Tree Bay as well as providing information on indigenous cultural heritage and the park's history and its use as parkland.

Seawalls

Refer to CMP Policy 6.4.6

Repairs are required to the existing seawalls. Sandstone will be used in all seawall reconstruction works.

Refer to Volume 3, Appendix 3 Apple Tree Bay Seawall Advice Report.

Lighting

Subtle, recessive lighting will be considered for security and ambience and will be concentrated to access and use areas required for night visitor use, particularly around the kiosk.

Utilities and Services

All utilities and services will be concealed underground and will be adapted and coordinated with proposed power and water saving systems and technologies.

8.0 Implementation

Refer to Volume 2, Part 1 Masterplan, Chapter 10.0 Implementation.

End of Volume 2, Part 3 LMP.

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