Crosslands Reserve

Park Masterplan

Adopted by Hornsby Shire Council 9th August 2006 and updated on 12 November 2008

prepared for
Hornsby Shire Council
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This Masterplan establishes clear directions for the future character, use, development and management of the landscaped recreation areas of Crosslands Reserve.

Introduction

Located on the east bank of Berowra Creek 9 kilometres from the Hornsby CBD, the developed park areas and associated visitor facilities cover approximately 6 hectares and are a popular picnic and camping destination for the residents of Hornsby Shire and beyond. Situated within the Berowra Valley Regional Park, the area has a long history of recreational use.

Access to the reserve is by a 2.5 kilometre unsealed northern section of Somerville Road from Hornsby Heights. The Great North Walk also traverses the site.

The reserve is a popular destination for picnicking, barbeques, bushwalking, canoeing, and regulated vehicle-based camping as well as having an important educational role. It is considered to be of regional recreation significance, but by comparison with similar destinations across northern Sydney receives comparatively low levels of use at present.

Crosslands Reserve is split across two land tenures – the south-western half is Council-owned community land, and the north-eastern half is in the Department of Environment and Climate Change (DECC) national park estate, as part of the larger Berowra Valley Regional Park under the management of the NSW National Parks and Wildlife Service (NPWS).

By agreement, Council has day-to-day management responsibility for the entire developed park area. The Berowra Valley Regional Park Plan of Management recognises Crosslands Reserve as a major recreational resource within the wider park, and identifies the preparation of a redevelopment plan for the site and the promotion of consistency of management across the reserve as high priority actions.

This Masterplan:

- recognises that the site's facilities and infrastructure are at present looking old and tired and need upgrading;
- reviews current use characteristics and determines the scope of improvements expected to occur over the short and longer term;
- accords with the directions of the Berowra Creek Estuary Management Plan,and

BVRP PoM which identify a range of needs including improved access to the waterway and interpretations and land management requirements; and

- aims to enhance the area's appeal and the quality of visitor experiences while protecting the area's natural and cultural heritage values.

Focus Group and Plan Preparation

The Crosslands Reserve Focus Group was established by Council to provide community input, engagement and review during the Masterplan's preparation. The Focus Group was a small community, user and stakeholder consultative group formed by Council to work with the Consultant Project Team and provide advice and input to the project's Steering Committee (which comprised Council and NPWS officers). The Focus Group met three times during the Masterplan's preparation, as discussed in Section 1.3.

Natural and Cultural Resources

Details of the site's natural and cultural resources are provided in Section 1.2, several of these factors have implications for the site's planning and management.

Crosslands Reserve is part of the traditional lands of the Darug Aboriginal People, and the area also has a rich European history from timber getting through boat building to early recreational uses. Although tangible heritage evidence is scare across the site neither of these values are well interpreted to visitors at present.

The scenic rugged incised valley of Berowra Creek, and the scarcity of river terraces such as those at Crosslands Reserve, are central elements of the site's character and appeal to visitors as an attractive scenic natural landscape and recreation setting. Three of the surrounding vegetation communities are considered under-represented in the Hornsby area. Although native wildlife is not obvious across the site, the area within a 1 kilometre radius of Crosslands Reserve was identified as one of the "major faunal habitats" within Berowra Valley (HSC 1996 (b) p.21).

The Reserve is located within the "upper estuary" section of Berowra Creek and tidal inundation is limiting the utility, and appearance, of parts of the site. Although no accurate flood level data is available for the site, available records and anecdotal evidence indicates that all of the river flats/terraces are subject to significant flooding at recurring intervals.

Water quality monitoring indicates that Berowra Creek at Crosslands Reserve is generally "poor" for an estuarine setting and unsuitable for swimming, and other "primary contact" activities. Water quality is a major constraint on swimming and other primary contact recreational use of Berowra Creek at Crosslands Reserve,

with the area being (at present) generally unsuitable for such uses.

Planning Context

Planning for the site's future management must recognise, and to a degree be guided by, a range of legislative and land use planning controls and existing planning documents that relate to the reserve. These are detailed in Section 1.4.

Key planning documents include the Hornsby Shire Local Environment Plan 1994, the recently adopted Berowra Valley Regional Park Plan of Management, Hornsby Shire Council Parks and Reserves Generic Plan of Management 1996, Berowra Valley Bushland Park Plan of Management (Stage 2) 1996, and the Berowra Creek Estuary Management Study and Management Plan 2002.

Regional Context

The planning and management of recreational use of Crosslands Reserve cannot be addressed in isolation from the site's regional context – and, in particular, the regional supply of open space and recreation areas of differing types as well as the demand for and uses made of these areas. These issues are discussed in detail in Section 1.5.

The site is primarily accessed by vehicle, and this tends to make it a destination for local, district and regional users.

The 2000 Hornsby Leisure Strategic Plan and Council's 1990 Recreation Needs Survey both suggest that continuing strong levels of demand for the leisure and recreation activities and settings at present offered by Crosslands Reserve can be anticipated.

Crosslands Reserve offers an uncommon set of attributes and attractions when considered against other day-use and camping area settings across northern Sydney. It offers:

- a "rare" undeveloped bushland park in close proximity to urban areas;
- one of the few vehicle-accessible bushland camping areas in northern Sydney;
- an unsealed access road suitable for conventional vehicles, and buses (with care);
- a comparatively safe, convenient and comfortable location for first-time, novice or young-family camping groups;
- the major point on the upper Berowra Creek estuary that is accessible by motor vehicle; and
- a shallow safe tidal waterway in a natural setting.

Existing Visitor Use

Council's 2000 Hornsby Leisure Strategic Plan identified Crosslands Reserve as the third most popular outdoor informal recreation setting in the Shire. The reserve is undoubtedly a popular venue, mainly on weekends and during holiday periods for picnicking, relaxing and socialising, camping, and increasingly for canoeing. Visitor use of the site is discussed in detail in Section 1.6.

No reliable counts of the site's total visitor usage levels are at present available. However peak usage, such as on Easter Sunday 2005, could be reasonably estimated to be in the order of 550-750 people per day. Low season usage levels range from 50 to 150 people per day.

The site is used predominantly for short-term day-use activities – chiefly picnicking often in extended family groups, barbecues, socialising and casual games in a very "social" or friendly atmosphere.

Campers make up a smaller percentage of the site's visitor numbers, but represent a greater visitor "load" due to their greater length of stay. The site's attributes make it a very attractive destination for novice or first-time campers with a high level of "repeat" or "regular" campers. Backpackers on the Great North Walk also use the area.

Scouts are a long-term user group at the reserve, their association with the area dating back to the 1960s or before. The site receives considerable educational use, usually during the week, chiefly by secondary and primary schools but also on occasion by tertiary institutions.

The site also serves as an access point for visitors to the Crosslands Convention and Field Studies Centre on the opposite bank of Berowra Creek. Tour operators and outdoor education/recreation providers are also regular users of Crosslands Reserve.

This site's 2.5 kilometre access road is largely unsealed and constructed on a generally curving alignment, narrow in places with an increasingly steep downgrade accommodating two-way traffic including regular use by buses. The access road is an integral part of the park's character and visitor' perceptions of the destination.

Crosslands Reserve remains at the lower end of the development spectrum – in terms of the type, standard and number of visitor facilities provided. This low level of development is a central element in the area's appeal to the existing users. The site has no permanent on-site management presence.

Vision Statement

A vision statement was identified to describe the "type of place" the creekside landscaped recreation areas at Crosslands Reserve will be in the forseeable future period, the experiences they will offer visitors, a preferred capacity, the standard of visitor and management facilities, and the intensity of Council-NPWS management. This vision statement relates principally to visitor management issues.

Overall the site will be - "A modified landscape located within a natural bushland setting, offering a sense of both remoteness and security, accessed by an unsealed, or predominantly unsealed 2WD road, catering for both day-use and regulated camping activities. There shall be an emphasis on low-key parkland and bushland oriented visitor activities as well as educational uses, without a perception of over-crowding. The reserve shall be serviced by an array of basic standard but well-presented and maintained facilities and managed without a high degree of regimentation and overt regulatory presence."

Key Planning Directions

The vision statement is supported by several key planning directions – detailed in Section 1.7. More tangible physical planning, organisation, presentation and design directions for the site are detailed in the Master Plan itself.

A traffic engineering assessment of the access road found that there was limited scope to provide major improvements to the road, such as widening or re-alignment, without undertaking substantial road reconstruction.

The report found that any significant upgrading of the road/road surface, such as full length sealing, would result in an undesirable increase in vehicle travel speeds, with a possible increase in accidents, requiring consideration of the introduction of traffic slowing measures. It is also noted that complete sealing of the access road is likely to impact on the site's character, visitor experiences, usage levels, management demands, and development pressures.

However increased use by all vehicles and in particular heavier vehicles, such as large charter buses, would add to the frequency for maintenance of the road surface and possibly warrant further sealing of sections of the roadway.

The reserve's water supply is in urgent need of replacement. Negotiations will continue between Council, the NPWS and Crosslands Convention and Field Studies Centre for the funding of these works. Upgrading of the site's toilet facilities, and sewage disposal systems, is discussed in the Site Analysis and Master Plan at Sections 2.5 and 3.6. In light of the water supply and sewage disposal issues, showers or dishwashing facilities will not be provided at the site.

The present mixing of picnicking/day-use and camping activities was recognised as operating successfully within the creekside recreation areas. It is therefore proposed that those mixed uses continue, however vehicle-based camping may need to be more closely managed in the future. This may involve capping camping bookings over any given period, or specifically defining those parts of the site where camping is permitted. Picnicking and associated day uses will continue to be permitted across all parts of the site.

It is proposed that the present warnings against swimming and other primary contact uses of Berowra Creek be improved through better advisory signage. Council will also consider establishing a permanent water quality monitoring site at Crosslands Reserve.

Dogs are not permitted within Crosslands Reserve and the adjacent Berowra Valley Regional Park and this Master Plan proposes better enforcement of this through improved signage in the park.

The extent of the landscaped and modified riverside recreation areas will not be extended beyond the existing developed park area. Environmental protection of the site and surrounding areas will continue to be given high priority in all management operations.

The introduction of day-use fees for general reserve visitors is not considered desirable or practical at present. The current fees and charging arrangements will be continued for campers, large group, commercial and other booked users of the site. Those fee arrangements will, however, be subject to review and change as required.

Day-to-day management regimes that require minimal input from Council and the NPWS will be favoured in the area's on-going management. This especially relates to special visitor/vehicle access provisions and the management of camping. Operational management, presence and patrol arrangements, and enforcement activities by each agency will be co-ordinated across the site as a whole to present a single seamless destination and experience for visitors.

The Masterplan for Crosslands Reserve responds to the strategies and objectives of the Recreation Plan and the Plan of Management and sets out the scope of short term and longer term improvements to the park.

Masterplan

The Masterplan proposes a number of key elements for the improvement of recreational and environmental amenity and the management of pedestrian and

vehicular circulation on the site that may be developed in the forseeable future.

Entry Area Improvements

A reconfiguration of the site entry from Somerville Road is proposed to improve vehicular management and pedestrian linkages throughout the reserve. Car parking is to be removed from the side of the existing entry road and the area landscaped to improve the site entry vista.

A new one way bus and car accessway is proposed to improve site safety and to prevent the needs for buses to enter and turn in the central parking area. A new car parking area for controlled use by campers is proposed at the eastern end of the new accessway, The entry will be marked with new directional, informational and regulatory signage to improve site identity information and orientation.

New Riverside Interpretation Walk

A riverside interpretation walk is proposed to link the south and north trackheads of the Great North Walk.

The new pathway will become the new north/south pedestrian link through the Reserve. Designed for pedestrians the path may accommodate small maintenance vehicles where required. Riverside platforms are also proposed along the path. The platforms will be used as places for passive recreation, interpretation and artworks and will provide opportunities for park users to appreciate the natural river environment.

In addition to the new riverside walk, a new bush track is proposed to link from Hornsby Heights to Crosslands entering the park from the southern end.

Existing Vehicular Track Removal

Both the Southern and Northern area of the Reserve are bisected by vehicular tracks. It is intended to progressively remove these tracks over time and return the areas to planting and recreational space. This will open up the areas to the views of surrounding bushland and escarpments, and provide valuable new spaces for passive recreation in the middle of the site.

Reorganisation and Refurbishment of the Central Carparking Area

The central car parking area requires refurbishment and reorganization to allow it to operate more efficiently in less space, improve management of parking and reduce

impact of vehicles on adjoining vegetated areas.
The Masterplan proposes:-

- The restriction of the sealed area by the use of bollards or wheelstops.
- Improved efficiency of sealed areas through better defined parking arrangements.
- Resealing of the car park surface and new drainage management works.

Reorganisation of Boat Launching Ramp Area

The Boat launching ramp requires organization and refurbishment to manage boat and pedestrian access and control erosion of the adjacent banks. Public use of the ramp for trailer launched boats will be discontinued, and restricted to light-weight hand-carried craft . Various works are proposed including stabilisation works to ramp and adjacent banks, removable bollards to control ramp use, ramp refurbishment,a wash-down area for canoes, regulatory signage and line markings.

River Bank Improvement Works

The bank's edge of the reserve have been eroded by constant access in both the North and South Areas.

It is proposed to fence off the smaller open areas along the water's edge which have been damaged by informal access and allow the mangroves to regenerate. At the large open northern bank area, the erosion will be controlled with retaining walls. At the main southern bank area, it is proposed to reduce the gap and stabilise adjacent banks by regrading and fencing off to encourage mangrove recolonisation.

Improvement of Visitor Amenity Structures

The Masterplan proposes extensive upgrading or replacement to various visitor amenities throughout the reserve toilet buildings. The two main structures on the site both require refurbishment and the capacity of the existing sewerage treatment systems require upgrading to cope with peak loads on busy visitor days at the Reserve.

North Building
The existing building is sited on the river's edge, prominent in the middle of a significant view line of pedestrian access into the Northern Area. A new replacement facility is proposed on the eastern edge of the site, adjacent to the end of the board

walk on the Great North Walk. The septic system is to be upgraded.

South Building

The location of the toilet building in the south is appropriate being close to the end of the track for the Great North Walk and set back against the eastern edge. The existing building would be renovated and the septic system upgraded.

Picnic and Barbeque Structures

The replacement of existing structures as well as additional structures in new locations is proposed.

The Playground

It is proposed to relocate the playground to a more appropriate location on the eastern edge of the Southern Area.

Topdressing and Turf enhancement works - northern parklands

In the north eastern corner of the Reserve topdressing and turf enhancement works are proposed to increase usable recreational space adjacent to the wetland and to reduce tidal flooding of developed park areas.

Tree Planting

The preservation, management and evolution of the tree canopy at Crosslands is an essential part of the site character. The Masterplan proposes extensive new structural tree planting to both enhance existing tree groupings and provide replacement planting where appropriate.

Interpretation

The Masterplan proposes the preparation of an overall Interpretation Plan for the Reserve, to be developed as part of the proposed riverine interpretation walk. Interpretive signage would be located along the Walk, and also on the proposed platforms.

Interpretive Themes could include:-

- Setting and Significance
- Aboriginal Heritage
- European settlement and leisure
- Environmental awareness including flora and fauna

Estuarine issues including tidal flushing, flooding, water and sediment control,

ecology including mangroves and seagrasses.

All of these would be seen in their relationship to Berowra Creek and the Hawkesbury River catchment at large.

Implementation

The Master Plan is a long term plan for the development of the park and its full implementation is expected to extend beyond five years. The successful implementation of the Master Plan will rely on a range of funding sources including Council and Department of Climate Change sources, other stakeholders including the Crosslands Convention Centre and various grant funding sources.

An evaluation of the total scope of the development works has determined that the works will develop over a number of years in a series of stages. The staging of the work is subject to change as a consequence of further more detailed investigation, approval requirements, funding availability and unforeseen requirements. It is considered that short term development is likely to include:

- water supply and sewer infrastructure upgrades and improvements;
- pathway works linking north and south trackheads including development of a landscaped corridor alongside the carpark and directional and interpretive signage;
- upgrading park facilities including the northern and southern toilet block, southern riverside platform, BBQs, picnic tables and seating;
- tree planting and river bank stabilisation works; and
- limited carpark upgrade works.

The above works have been costed and may form the first stage of construction. Other medium to long term works that may proceed later include:

- park entry, vehicle turning facility and central carpark pavement upgrade;
- park facility improvements including topdressing and turf enhancement works in the north eastern part of the park, additional relacement picnic shelter facilities, central and northern decks onto Berowra Creek and playground reconstruction.

Conclusions

This Master Plan includes a comprehensive evaluation of recreation planning, operational and park development issues and opportunities. It has been prepared in consultation with a range of stakeholders and specific interest groups, and responds to a policy framework provided by the Berowra Valley Regional Park Plan of Management and the Berowra Creek Estuary Management Plan and Council Plans of Management for the site.

The plan uses this background knowledge and understanding to identify a wide ranging and long term development plan for the park that seeks to improve the amenity of the site while retaining its key recreation opportunities.

A staged implementation strategy also outlines the scope of works expected to be developed in the immediate future, on the basis that funding from a number of sources is able to be identified.

Acknowledgements

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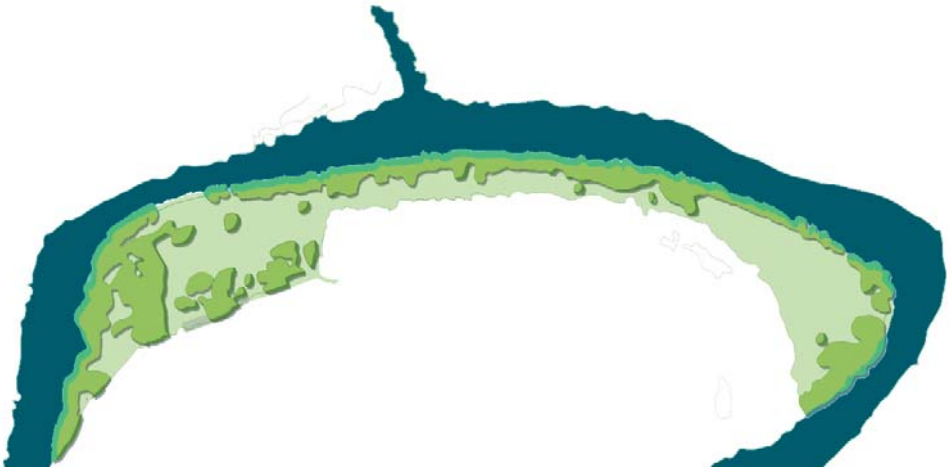
Part One

Recreation Plan



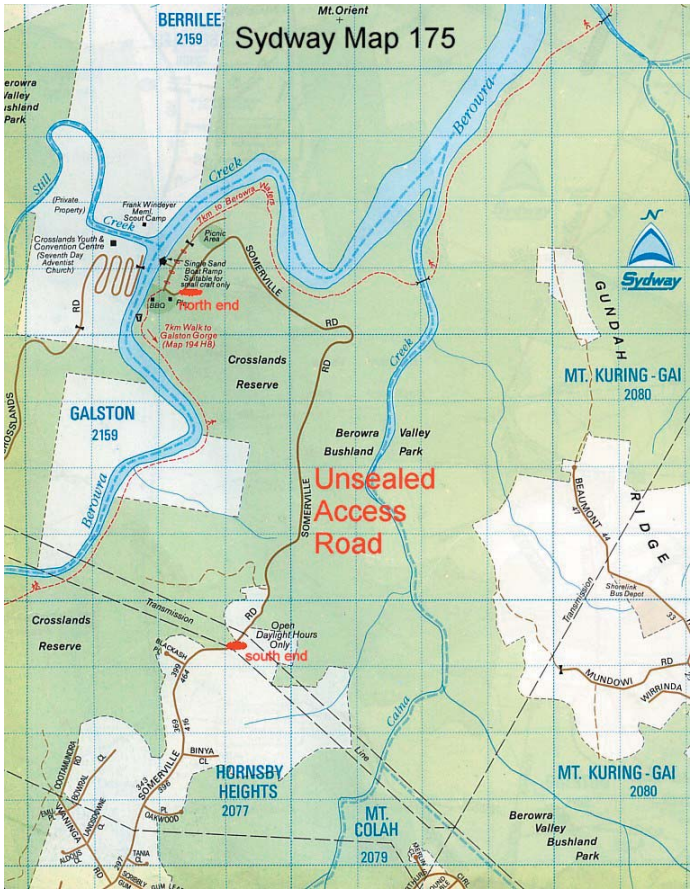


Figure 1.1: Location Plan
Source: *Sydway Map 175, 2003*

Figure 1.2: Crosslands Reserve - Aerial Photograph
Source: *HSC*

1.1 Introduction

1.1.1 Location and Area Overview

Crosslands Reserve covers an area of around 19 hectares at the end of Somerville Road in Hornsby Heights. Located on the east bank of Berowra Creek, the reserve is approximately 9 kilometres from the Hornsby CBD and 34 kilometres north-west of Sydney CBD. It is part of the larger Berowra Valley Regional Park (see fig. 1.1 and 1.2).

Despite its location on the margins of a metropolitan area and close proximity to several suburbs, the reserve provides an accessible, but seemingly remote, recreation area within a rugged natural setting. It is enjoyed by visitors from across the Hornsby Shire, northern Sydney and beyond. Access to the reserve is by a 2.5 kilometre unsealed northern section of Somerville Road, which is accessible from the old Pacific Highway 3 kilometres to the east or through Galston Gorge 6 kilometres to the west. The reserve can be reached from the Berowra or Mount Ku-ring-gai Railway Stations. The area is also accessed by walkers along the Benowie Walking Track, which is part of the Great North Walk beside Berowra Creek. Canoes and small boats can also access the reserve foreshores via Berowra Creek.

Crosslands Reserve predominantly comprises natural bushland on steep sandstone slopes and escarpments surrounding narrow river flats beside Berowra Creek (see fig. 1.3). These river flats have for many decades been developed and used as an attractive landscaped recreation area. As long ago as 1924 the area was described as “the most ideal spot on the river where acres of turf covered banks slope down to the water’s edge”. It is these landscaped areas and their visitor facilities – covering approximately 6 hectares – that have become a popular picnic and camping area and attractive setting for a range of recreational activities.

Today the reserve offers the facilities and the familiarity or security of an urban park, but in a bushland setting with a sense of remoteness and escape. Berowra Creek provides an additional significant attraction, and is broad and tidal (but with limited flushing) at Crosslands Reserve. The reserve is a popular destination for picnicking, barbeques, bushwalking, canoeing, and regulated vehicle-based camping (see fig. 1.4 and fig. 1.5). The site is considered to be of *regional recreation significance*, but by comparison with similar destinations across northern Sydney it receives comparatively low levels of use at present.

The reserve is the venue for a number of educational or organised activities – such as school and Scouts use, an Eco History walk, guided Aboriginal heritage walks, and spotlighting activities. Commercial outdoor education, recreation and tour groups also visit the area. The Great North Walk which bisects the reserve’s lowlands, and the Crosslands Convention and Field Studies Centre on the opposite bank of

Figure 1.3: Crosslands Reserve on Berowra Creek

Figure 1.4: An attractive and popular picnicking destination

Figure 1.5: An attractive, popular and safe vehicle-accessed camping destination

Berowra Creek (but not part of the reserve), add additional dimensions to the area's appeal and visitor use.

Unknown to almost all visitors, Crosslands Reserve comprises both Council-owned community lands and part of the Department of Environment and Conservation's national park estate within the larger Berowra Valley Regional Park.

Both agencies acknowledge the need for a planned approach to the future development, use and management of the site to improve the quality of visitor experiences while protecting the area's natural, cultural and scenic values.

1.1.2 Land Tenure and Joint Management Arrangements

Crosslands Reserve is split across two land tenures – the south-western half is Council-owned community land, and the north-eastern half is in the Department of Environment and Climate Change's (DECC) national park estate, as part of the larger Berowra Valley Regional Park under the management of the NSW National Parks and Wildlife Service (NPWS) (see fig. 1.6).

Those areas of Crosslands Reserve owned by Hornsby Shire council are categorised as "Community Land". The main southern lot (L1, DP995496) was transferred to Council on 7/2/1994 and both southern lots (L1, DP995496 and 311 DP752053) were classified community land in 1994.

Hornsby Shire Council has responsibility for the day-to-day operational management of all the landscaped recreation areas at Crosslands Reserve. This is under the terms of a Memorandum of Understanding between Council and the DECC/NPWS which also sets out joint funding arrangements and other co-operative management matters. However the by-laws, regulations, planning and approval procedures of each agency still apply to their respective land areas.

Council Rangers visit the reserve daily, or more frequently, as required during peak use periods. There is also an emergency after-hours call out service for Council's duty ranger.

Daily cleaning of the area's toilets and periodic lawn mowing are undertaken by contractors or day labour staff, as per Council's standard service level agreements.

1.1.3 Project Requirements and Background

Both Hornsby Shire Council and the National Parks and Wildlife Service acknowledge that the management of Crosslands Reserve warrants greater attention and effort – and that clear directions for the area's future character, use and management are

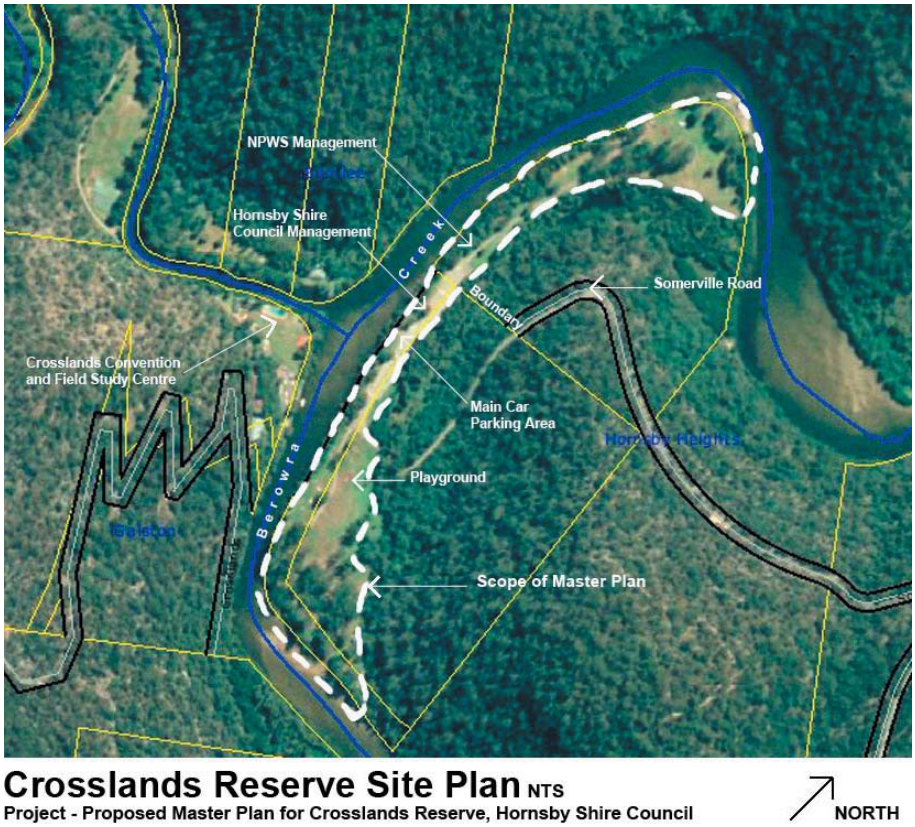


Figure 1.6: Study Area - Site Plan and Land Tenure
Source: *HSC*

required. The Berowra Valley Regional Park Draft Plan of Management recognises Crosslands Reserve as a major recreational resource within the wider park, and identifies the preparation of a redevelopment plan for the site and the promotion of consistency of management across the reserve as high priority actions.

Accordingly a Recreation Plan and Masterplan for the developed river flat areas of Crosslands Reserve is required:

- because the site's facilities and infrastructure are at present looking old and tired and need upgrading;
- to review current use characteristics and determine the scope of improvements expected to occur over the short and longer term;
- to accord with the directions of the Berowra Creek Estuary Management Plan and Berowra Valley Regional Park Plan of Management, which identify a range of needs including improved access to the waterway and interpretation and land management requirements;
- to enhance the area's appeal and the quality of visitor experiences while protecting the area's natural and cultural heritage values;
- because the site is an important park within Hornsby Shire and a major recreation attraction in the Berowra Valley Regional Park; and
- to establish clear directions for the area's future character, use, development and management as a single unified destination.

1.2 Summary Description Of Crosslands Reserve

This section provides a brief overview of the natural and cultural resources and values of Crosslands Reserve.

It is not intended to be a comprehensive description of the reserve – but focuses on the approximately 6 hectares of the study area along the river flats, adjacent estuary to the west, and fringing bushland to the east. Emphasis is also given to those attributes with implications for the site's visitor use, planning, development and management.

1.2.1 Aboriginal Cultural Heritage

Crosslands Reserve is part of the traditional lands of the Darug Aboriginal People.

The location and extent of the various groups of Aboriginal occupants and owners of the Sydney region in 1788 is a question of continuing academic and cultural debate. Within this debate Aboriginal languages are accepted as surrogates for, or defining indicators of, discrete and identifiable groups of Aboriginal people. In 1788, and the years immediately thereafter, it is now generally accepted that the Sydney region

was occupied by two major language groups – the Darug and the Dharawal (see Attenbrow 2002, for further details/discussion).

The Darug language covered an extensive area – from the Blue Mountains north-west of Sydney ("Darug mountain"), across the Cumberland Plain ("Darug hinterland"), to the coast between Port Jackson and Botany Bay ("Darug coastal"). It is now widely accepted the Darug coastal dialect also extended to the north side of Port Jackson and north possibly as far as Broken Bay – an area that was previously identified as that of the "Guringai" language group.[1] The Darug language group therefore included the main Aboriginal peoples of the Hawkesbury and Hornsby region.

Within these much larger language groups Sydney's Aboriginal society was traditionally structured into clans, or local descent groups, who traced their identity from a common (usually male) ancestor. These local descent groups, or land-using groups, typically occupied an identifiable area. The nearest local group that can be reliably located in proximity to Crosslands Reserve is the "Durramurragal" (or "Tarra-merragal") group, which occupied the area around Turramurra and the headwaters of the Lane Cove River. The "Benowie" clan was previously thought to be a local sub-group of the Darug Nation (with this name being given the walking track developed through the area), however this has since been largely discounted.[2]

Berowra Creek and the flanking bushland would have been an attractive area for Aboriginal people offering an abundance of food and resources, with shelter in nearby caves and local freshwater supplies. Aboriginal people's occupation and intensive use of the area is evident from the abundance and variety of sites – such as occupation shelters, rock engravings, middens, art sites and hand stencils, and grinding grooves – remaining within the catchment.

An Aboriginal Heritage Study undertaken for Council in 1996 identified a total of 235 known or recorded Aboriginal heritage sites within the entire Hornsby Shire Council area. The summary listing of these sites (the detailed sites list and location details are confidential to assist in the protection and management of many of these sites) identified: [3]

- one site recorded as "Crosslands" – a combined shelter/art/midden containing a "charcoal drawing of ships, animals, figures and a red hand stencil" and "stone artefacts on surface of deposit"; and
- one site recorded as "Hornsby Heights" – a shelter/art site with "1 woman, 1 kangaroo, 1 wombat/possum, 1 red hand stencil, 14 indeterminate" motifs.

[1] Attenbrow, V., p. 34.

[2] Foster. G., p 16.

[3] Koettig. M., Appendix 1.

However a reconnaissance level survey of the study area, and flanking bushland, did not reveal any rock overhangs that could potentially harbour such sites, nor were any Aboriginal heritage locations matching these descriptions observed.

The NPWS has recorded 24 known Aboriginal heritage sites within the Berowra Valley Regional Park.[4] Many more remain known but unrecorded. However the DECC's data base of Aboriginal heritage sites – the Aboriginal Heritage Information Management System – lists no recorded sites within the flatter, developed areas of Crosslands Reserve and the site is not considered to have a high likelihood for the occurrence of "Aboriginal relics or places of significance" due to "the highly disturbed surrounding landscape".[5] However the prospect of sub-surface remains cannot be discounted. Middens are abundant along the foreshores of Berowra Creek along the Great North Walk, two small middens were observed on the Great North Walk a short distance north-east of the reserve.

All Aboriginal heritage objects – regardless of their type, size, significance, land tenure, or location – are automatically protected under the *National Parks and Wildlife Act* 1974.

Planning/Management Implications

- Any Aboriginal heritage objects/site's uncovered during development or management works on the site require appropriate protection and management.
- The site's Aboriginal history, heritage, and contemporary associations/ significance are of potential interpretive interest.

1.2.2 Geology and Landforms

Berowra Creek is a drowned river valley of steeply incised gorges sitting within the surrounding uplands of the Hornsby Plateau. The dominant rock type is Hawkesbury Sandstone – which forms blocky escarpments, steep slopes, overhangs, and large boulders. The incised nature of much of Berowra Creek has resulted in the very limited development of river flats and fringing wetlands.

The river terraces at Crosslands Reserve are one of the few such extended flat areas beside the middle and upper reaches of the estuary. Within the study area these flats vary from a maximum of 200 metres wide on the northern river bend, to only 75 metres wide in the vicinity of the existing carpark, to 120 metres wide in the southern landscaped area. The steep bushland covered hillslope rises abruptly from

[4] NPWS, p. 10.

[5] ibid, p. 9.

Figure 1.7: Wetland flanking the site's central and north-east margins.

the eastern margin of these flats. A wetland area comprises approximately half of the river flat at the northern end of the site, with a tidal channel extending south along the base of the hillslope at the rear of the carpark (see fig. 1.7).

Most soils in the area are derived from the underlying Hawkesbury Sandstone and are mainly sandy, shallow, very porous and low in nutrients. Deeper more fertile alluvial soils occur on the floodplains, tidal wetlands and flats adjoining the creekline.

Planning/Management Implications

- The site's rugged and seemingly remote bushland setting, as well as its steep winding road access, is an important part of its character and appeal to existing visitors. It can also deter other less confident or adventurous visitors.
- The steep bushland slopes at the rear (east) of the flatter creekside landscaped areas, and the rugged nature of most of the reserve, severely limit the space available for recreation use and development.
- The low fertility and erosion susceptibility of the site's soils must be recognised in visitor use planning, landscape design, development works and site management.

1.2.3 Temperature and Rainfall

Crosslands Reserve experiences similar climatic patterns to the rest of the Sydney basin with mean temperatures varying from 27.6 in January to 15.8 C in July. Mean rainfall varies from 123 mm in March to the driest in September of 54.3mm. Average yearly rainfall is 1000mm per year with heavy rain common between January and March. Rainfall is lower in winter and spring is the driest season.

1.2.4 Berowra Creek - Water Quality and Flooding

Crosslands Reserve is located within the "upper estuary" section of Berowra Creek. The upper estuary zone is very shallow, with depths of generally less than 1 metre and rarely exceeding 2 metres in some places. Numerous shallow sandbars and shoals of fluvial sands and muds occur across sections of the creek, such as the shallow bank between Crosslands Reserve and the Crosslands Convention and Field Study Centre at the mouth of Still Creek. Deeper holes occur on the outside of bends or around rocks and obstacles. Although anecdotal accounts report the upper creek areas as "silting up" and becoming shallower, the Berowra Creek Estuary Management Study and Management Plan found "an ongoing and gradual buildup of sediments over thousands of years, rather than a sudden increase" in this area.[6]

[6] Webb, McKoewn & Associates, p. 13.

Figure 1.8: The site's north-eastern end is inundated during king tides

Figure 1.9:
Guardrail at the northern end of the carpark flooded by a king tide

Despite its shallowness the upper estuary experiences an average spring tidal range of around 1.3 metres.[7] Parts of the study area are affected by tidal inundation. In the northern portion of the park, the lower-lying north-east corner of the landscaped areas is especially subject to flooding during king tides, with the extent of dead grass and bare earth in this area evidence of repeated salt water intrusion (see fig. 1.8). Council Rangers report that this area can be submerged as much as 100 millimetres during king tides. King tides also extend up the marshy tidal channel along the base of the hillslope at the rear/east of the carpark, with salt water penetrating to the edge of the bitumen seal and over some infrastructure (see fig. 1.9).

The southern areas of the Berowra Creek catchment, upstream and east of Crosslands Reserve, are generally highly developed – with residential, industrial and commercial land uses. The catchment's northern section is mainly natural bushland protected within several national parks and nature reserves. Semi-rural areas dominate the western areas of the catchment. The West Hornsby Sewerage Treatment Plant discharges an average of 10.5Ml of treated sewage daily into Berowra Creek upstream of Crosslands Reserve, and treated sewage effluent may dominate creek flows/inputs in the upper catchment during dry weather.[8] During wet weather these sewage inputs may be only partially treated and the upper estuary also receives urban runoff, sewerage system bypasses (untreated sewage) and overflows, and rural and bushland runoff. The result is that nutrients, suspended solids and faecal coliforms "all have major increases in the upper estuary after heavy rain" with levels "often above recommended Australian guidelines for the protection of estuary ecosystems [and] primary human contact".[9]

The Department of Infrastructure Planning and Natural Resources (DIPNR) co-ordinates the Hawkesbury-Nepean Recreational Water Assessment and Management Program (RWAMP), in conjunction with local government and other state agencies, to assess water quality and advise users at key recreational locations within the Hawkesbury-Nepean Catchment. Crosslands Reserve is one of 21 sites where water quality was monitored during the main bathing season (January to April) in 2004. Water quality at Crosslands Reserve was sampled on 20 occasions allowing an assessment of Berowra Creek for recreational use against the ANZECC Guidelines for Recreational Water Quality and Aesthetics – as attached (Appendix 1). These guidelines identify two categories of recreational use – "primary contact" activities (such as swimming, diving and water skiing) and "secondary contact" activities (such wading, fishing and boating) – with recreational water quality ratings based on faecal coliforms, enterococci, blue-green algae, pH and water temperature.

[7] ibid, p. 9.

[8] ibid, pp. 8 & 15.

[9] ibid, pp. 15-16.

Berowra Creek at Crosslands Reserve was assessed as generally "poor" for an estuarine setting and unsuitable for swimming, and other "primary contact" activities, due to high faecal coliform and enterococci bacterial levels. The overall compliance rating for "primary contact" activities was only 30% during the monitoring period.[10] Turbidity was also an occasional problem in Berowra Creek at Crosslands Reserve. The site returned a "fair" rating for "secondary contact" recreational uses with a 67% overall compliance rating, with elevated enterococci levels the main concern.[11] Point source wastewater discharges from the upstream Sewage Treatment Plants was acknowledged as contributing to water quality issues in the upper estuary section of Berowra Creek. The DIPNR water quality investigation also recognised that the 2004 monitoring period was not a particularly wet season, noting that "it is generally accepted that bacterial levels are more likely to exceed guidelines during [wet weather] events due to input from stormwater drains, occasional sewer overflows and overland flow".[12]

Council has been undertaking a water quality monitoring programme at 36 sites across the Hornsby area since 1994. Monitoring locations are established at Calna Creek (downstream of Crosslands Reserve) just upstream from its junction with Berowra Creek, and in the upper Berowra Creek catchment (well upstream of Crosslands Reserve) on Tunks Creek and Berowra Creek at Galston Gorge. A range of physical, chemical and biological parameters are measured at each site at periods ranging variously from daily to monthly intervals. The results are updated on Council's website. However no monitoring station has been established at Crosslands Reserve to-date.

River sediments in the upper estuary are low in heavy metals and nutrients – with copper, lead, zinc, phosphorus and total organic carbon levels measured at Crosslands Reserve found to be lower than those elsewhere in Berowra Creek.[13] No information is readily available about any possible health implications associated with catching and eating fish from the upper estuarine sections of Berowra Creek. However anecdotal reports identify that the area has been a constant, but not hugely popular, fishing spot for decades (fished mainly by a small group of long-time users) and that a variety of fish have recently returned to the creek at Crosslands Reserve in considerable numbers.

As a river terrace the site has been formed partly as a result of, and is regularly impacted by, flood events. The last major flood across the site occurred in 1988, when anecdotal reports suggest that the southern lawn area was entirely flooded to

[10] DIPNR(b), pp. 2-4.

[11] ibid, pp. 2-4.

[12] ibid, p. 6.

[13] Webb, McKoewn & Associates, p. 14.

Figure 1.10: Eroding water access point in the site's south-west

a depth of “8-9 feet” (2.4 to 2.7 metres) and floodwaters scoured the area as well as carrying away transportable toilets and other facilities that had been provided for an upcoming Scout Camp. The northern picnic and camping area was also submerged during this flood, with anecdotal reports of “floodwaters at least 6 feet (1.8 metres) deep and over a man’s head”.

Oral history and personal records of flooding at the site indicate a pattern of regular inundation, to considerable depths, across the area between the 1880s and the 1940s. Floods records kept by Heather Schweikert, the daughter of Mr Crossland, identify a maximum recorded flood height of “21ft 2in” (6.5 metres) in 1895 when the “floodwaters stayed up three weeks” (Appendix 2). Schweikert‘s records show 8 large floods, between “10ft 2in” (3.1 metres) and “15ft 1in” (3.7 metres) of usually 1 to 2 days duration, over this 60 year period at intervals of 3 to 17 years. She also records 16 other “destructive floods” during this time. Her records note that “many more [floods] have been just over the banks one to two feet”. Changes in catchment land uses since the 1940s have no doubt altered the flood regime at the site, however floods are still a recurring event in the Crosslands area.

More recent flood heights have also been informally recorded on-site in the Crosslands area. Flood height marks (labelled as maximum flood level and year) have been recorded since the 1960s on the rear steps of the Scout Hall at Camp Windeyere, on the north-west side of Still Creek opposite Crosslands Reserve.[14]

Although accurate empirical flood level data is not available for the site (and was not prepared as part of this project) available records and anecdotal evidence both indicate that all of the river flat/terrace portion of the site – to the base of the eastern flanking hillslope – will be subject to significant flooding at recurring intervals, and that these impacts may possibly be greater in the southern (upstream) landscaped areas.

Creek flows, both during high flow events as well as normal discharge and tidal actions, are impacting sections of the creekbank at Crosslands Reserve. Significant bank erosion, scarp formation and vegetation undercutting is occurring at the south-west corner of the southern landscaped area – facing downstream on Berowra Creek (see fig. 1.10). Smaller scarp with active bank retreat appears to be occurring at the northern point of the northern landscaped area – on the creek’s inner bend (see fig. 1.11). Erosion and bank retreat at both sites is exacerbated by visitors using these locations to access the creek and for associated recreation activities.

[14] Peter Quirke, Focus Group, pers. comm., 2005.

Figure 1.11:
Small beach on a bend in Berowra Creek at the site's northern end

Stormwater and local runoff impacts areas of the site, notably at the bottom of the entry road at the south-east corner of the northern lawn area. Here runoff from the adjacent hillslope and lawns is ponded by the mound along the sealed carpark entry, and may remain as a muddy wet area for several days after rain.

Planning/Management Implications

- Tidal inundation is limiting the utility, and appearance, of parts of the site – especially in the north-east.
- Flood risks, tidal inundation and local run-off require careful consideration in the siting and design of park facilities.
- Water quality will be a major constraint on swimming and other primary contact recreational use of Berowra Creek at Crosslands Reserve, with the area being (at present) generally unsuitable for such uses.
- Water quality in Berowra Creek presents fewer constraints, and is more often suitable, for canoeing, fishing and other secondary contact recreational uses.
- Continued water quality monitoring is required.
- Visitors need to be suitably advised of water quality constraints and risks potentially associated with water-based activities as required/practicable.

1.2.5 Native Vegetation

The majority of the site is a modified landscape, dominated by extensive lawn areas of introduced grasses and scattered mature Eucalyptus and other tree species. Small areas of recent community plantings have contributed a mixture of new tree, shrub and native grass plantings within mulched areas as a first step towards the replacement of aging trees and prevention of dieback within the developed park area. The trees also provide a major aesthetic contribution to the park's character, as noted by the Focus Group. The site's cultural/modified landscape is further addressed in Part Two Site Analysis, Issues and Opportunities.

While the site's riverside flats have been extensively cleared and modified, the bushland covered rocky hillslopes and mangrove-lined banks of Berowra Creek both contain and provide an attractive natural backdrop to the main recreation areas. Visitors acknowledge this natural bushland "backdrop" and setting as a major part of the area's character and appeal.

Originally the site's riverside flats probably supported tall open forests (remnants of which can be seen north of the reserve beside Berowra Creek), *Casuarina* closed-forest, and possibly salt marsh.[15] Today the main tree species include Sydney Blue Gums *Eucalyptus saligna*, Grey Ironbarks *Eucalyptus paniculata*, Rough-barked Apples *Angophora floribunda*, Turpentines *Syncarpia glomulifera*, and Blackbutts

Figure 1.12: One of the larger of the few existing gaps in the mangroves flanking Berowra Creek

Eucalyptus pilularis. Many of these species may be remnants from any tall open forest found across the site's flatter and deeper soils, they may also have been established from propagules from extant Blue Gum High Forest communities upstream in the catchment that were brought down Berowra Creek and deposited on the fringing flats during flood events. Many are no doubt cultural plantings from the site's long history as managed parkland.

Swamp Oaks *Casuarina glauca* are commonly interspersed with these gum species in the landscaped areas, and dominate the site's eastern margins fringing and throughout the salt marsh/wetland area along the site's north-east edge. This salt marsh herbland is dominated by Glasswort *Sarcorcornia quinqueflora* and Seablite *Suaeda australis*.

The bank of Berowra Creek is lined by Grey Mangroves *Avicennia marina* and River Mangroves *Aegiceras corniculatum* with Swamps Oaks *Casuarina glauca* also common. The mangroves form extended, almost continuous, stands along the creek's edge with only occasional gaps as a result of bank erosion, continued water access, and infrastructure (see fig. 1.12). The loss of individual mangrove trees, from dieback, in and around the Crosslands area was noted by the *Berowra Creek Estuary Management Study and Management Plan*. However this was not seen to be a serious concern, as mangrove communities have reportedly expanded in neighbouring areas along Berowra Creek over recent decades.[16] Mangrove species provide valuable habitat for fish, shellfish and birds. The importance of protecting foreshore mangrove communities, to protect fish habitat, is recognised in the Hawkesbury-Nepean River System Habitat Protection Plan prepared by NSW Fisheries (as described in section 2.12 Planting in Part Two Site Analysis, Issues and Opportunities).

The steep hillslopes and plateau areas, that make up most of Crosslands Reserve and contain the site in the east, are dominated by dry sclerophyll forests, open forest, and woodland. Major species include Blackbutts *Eucalyptus pilularis*, Smooth-barked Apples *Angophora costata*, Sydney Peppermints *Eucalyptus piperita*, and Red Bloodwoods *Corymbia gummifera*. Small pockets of littoral rainforest occur across Berowra Valley Regional Park in sheltered gullies and moister slopes, and some rainforest species can be found among other drier species on the slope behind the site's southern section.

More than 10 rare or threatened native flora species have been recorded from across Berowra Valley Regional Park as a whole.[17] However none are located within the landscaped areas or adjoining bushland of the study area. Three of the

[15] Foster, G., pp. 74-80.

[16] Webb, McKoewn & Associates, p. 17.

[17] Conacher Travers Pty Ltd, p. 9.

vegetation communities in and around Crosslands Reserve are considered under-represented in the Hornsby Shire Council area (comprising 1% or less of the Shire's total bushland areas). These are the *Eucalyptus pilularis - Acacia floribunda* tall open forest community (in the Crosslands area), the *Casuarina glauca* closed forest community (in the Crosslands/Calna Creek area), and the saltmarsh community (in the Crosslands/Calna Creek area).[18] The tall open forest and saltmarsh communities occur around the margins of the study area, chiefly in the centre and north of the area.

Both naturally occurring trees and the older/larger landscape or cultural plantings can present a hazard for visitors, especially campers who generally remain on the site for longer periods and under more varied conditions than do day visitors. The 2001 tragedy, when a tree felled by fierce storms killed two visiting schoolgirls camped at the reserve, is profoundly remembered by the local community and many park visitors. Council and the NPWS have been vigilant in managing tree safety within the reserve both before and since this time. A Tree Hazard Survey was undertaken as part of this study, including a new survey of the south-west portion of the reserve and an update of an earlier survey of the north-east area, as further discussed in Part 3 Masterplan.

Planning/Management Implications

- Vegetation communities of local conservation significance occur around the margins of the landscaped/modified areas, and warrant protection from further encroachment or development.
- The site's natural bushland "backdrop" and setting is a major part of the area's character and appeal for visitors.
- Potential tree hazard for visitors, especially campers, need to be identified and appropriately addressed/managed.

1.2.6 Native Animals

Many of the native mammals within Crosslands Reserve are nocturnal and rarely seen by visitors. Common species include bats, possums, bandicoots, and marsupial mice. Birds are the most obvious wildlife with a variety of parrots and honey-eaters frequently seen as well as cormorants, herons and waterbirds along Berowra Creek and its banks. A range of smaller lizards, and occasionally larger dragon and monitor species, are seen in the area's bushland during the warmer months. A variety of saltwater fish species occur in Berowra Creek, with anecdotal accounts reporting recent increases in the abundance and variety of fish at Crosslands Reserve.

[18] HSC 1996(b), p. 16.

There are anecdotal reports of Swamp Wallabies, Lyrebirds and Brush Turkeys being occasionally seen along the reserve's bushland margins.

The area within a 1 kilometre radius of Crosslands Reserve, as well as the *Allocasuarina* and *Casuarina* stands described as being located mostly "around Crosslands Reserve", were identified as 2 of the 5 "major faunal habitats" within the then Berowra Valley Bushland Park.[19]

A number of native fauna species considered rare or threatened have been recorded from across Berowra Valley Regional Park as a whole.[20] However the landscaped and modified character of the study area would largely preclude any species of significance from regularly using, or being dependent on, this area.

Planning/Management Implications

- The natural bushland surrounding the riverside landscaped/modified areas has been identified as an important local/regional fauna habitat zone, and warrants protection from further encroachment or development as well as in the management of appropriate visitor uses/activities.
- Observations and encounters with native wildlife enhance visitor's experience of the site.
- Monitor lizards are known to be present within the park and may be a hazard if visitors encourage their proximity by offering food.

1.2.7 Introduced Plants and Animals

The study area is predominantly a modified landscape set within a natural bushland context. Most of the lawned picnic and camping areas are dominated by introduced grasses, and also contain a number of weed species typical of such lawn environments. Native grasses, groundcovers, and sedges as well as scattered shrub species merge with these introduced grasses along the margins of the modified/ landscaped areas, often creating a narrow transition zone (especially in the site's north-east). The stands of trees scattered amongst these lawn areas are a mixture of remnant or natural vegetation as well as deliberate plantings during the site's long history as modified parkland. However these clumps of taller vegetation, even where they are cultural plantings, are chiefly endemic or native tree species. Community bush regeneration and planting efforts have also occurred at selected locations across the site over recent years, again these have focused on using endemic or native shrub and tree species.

[19] HSC 1996(b), p. 21.

[20] Conacher Travers Pty Ltd, p. 10.

As a result of its extended urban interface and numerous stormwater discharge points, the introduction and spread of weeds is a major management issue for Berowra Valley Regional Park as a whole. The importation of fill and landscape works, and to a lesser degree vehicle traffic and visitor use, are also powerful vectors for the introduction and spread of weeds. Common problem weeds in the park include Lantana, Blackberry, Honeysuckle, Privet, Crofton Weed and Wandering Jew.[21] Several of these species occur in and around the site, but do not appear to be major infestations at present. The richer and moister soils of the Crosslands area, as well as the site's high usage character, makes it especially vulnerable to weed introduction and spread.

Feral Cats, Foxes and Rabbits all occur within Berowra Valley Regional Park, and can be expected to be found within Crosslands Reserve including the study area. Feral Cats and Foxes are devastating predators of native wildlife. Hornsby Shire Council is part of the Sydney North Regional Co-operative Fox Control Programme which as been effective in reducing Fox numbers and encouraging substantial increases in native animal populations across the region.[22]

Dogs are not permitted within Crosslands Reserve under the provisions of the Plan of Management for Berowra Valley Regional Park. However existing dog control signposting is confusing and the reserve is frequently used for walking and exercising dogs, both on and off-leash, both during the week (especially afternoons and mornings) and on the weekends.

Future management of the Crosslands Reserve shall provide a consistent reponse to all parts of the park with dogs not permitted in the entirety of the reserve for wildlife protection reasons.

Planning/Management Implications

- Some weed species may present a nuisance to visitors.
- Visitors may be a vector for the introduction and spread of weeds, both into the reserve and the surrounding bushland.
- Risks associated with the introduction and spread of weeds need to be recognised in all landscape works, especially those involving fill and earthworks.
- Council has a responsibility for the control and/or eradication of declared noxious weeds.
- Dogs are not permitted within the park under the requirements of the current plans of management, by-laws and regulations.

[21] Foster, G., p. 132.

[22] ibid, p. 140.

1.2.8 European Settlement

Timber and stone

The area was opened up by the timber industry with a timber-getting lease established in the Hornsby valley in 1819.[23] In 1860 Burton Crosland (later Crossland) was appointed caretaker of Matthew Charlton's 43 acres on Berowra Creek, later purchasing some for himself, and eventually owning land on both sides of the creek. He built a house on the flat land, planted an orchard, and constructed a track up to Somerville Road. (see fig. 1.13 and fig. 1.14).

Leisure

During the 1890s and early 1900s Crosslands became a popular picnic area with "turf-covered banks...[and] dozens of white canvas tents nestle amongst the willows and firs".[24] The Reserve has been maintained by Hornsby Shire Council since 1921 and was developed further by Council in the 1960s when a series of state-wide marked walking trails was constructed. One of these trails was the Benowie Walking Track, subsequently part of the Great North Walk. After petitions from local residents at that time sought improved boating and other recreational facilities, Hornsby Shire Council decided to keep the area free of building but to fill some of the swamp areas on flat land, and to preserve all large trees and native flora.[25]

By June 1968 Crosslands was developed as a passive recreation area, but objections to dredging meant development was restricted. In 1977, water was connected to Crosslands and the Seventh Day Adventist Church site opposite and since that time the facilities have become popular for local scout and other youth groups.[26] In 1987 the area was incorporated into Berowra Valley Bushland Park, 38 square kilometres of bushland stretching from Pennant Hills to Berowra Waters.[27]

Boat building and river use

As an enterprising pioneer Burton Crossland became a skilled boat builder, logging She-oaks (*Casuarina glauca*) for roofing shingles to supply Sydney builders. On his return trips he would bring back sandstone as ballast and was thus able to build in both stone and timber.[28] Lime was burnt on the site (from shell brought into the area by boat) for building purposes[29] (see fig. 1.15). By 1885 steam launches would make pleasure trips from Sydney up to Berowra; the Crosslands' boat *White Cloud* also made regular trips.[30] Channels and wharves were built at Crosslands to assist boat

[23] Salt, B., p. 13..

[24] Dewey, p. 14.

[25] ibid, p. 16.

[26] ibid, p. 16

[27] LVF3

[28] Dewey, P., p. 14.

[29] LVF3

[30] Salt, B. p. 14.

building and the export of materials. During the threat of invasion from Japanese forces in March 1942, 2000 small sailing craft were impounded at Crosslands as a safe haven but that same month the biggest flood of the twentieth century in Berowra Creek destroyed all the boats.[31]

Environmental awareness

Through the 1920s and 1930s development continued in the area and conservationist John Tipper noticed unique plant and animal life which were rare elsewhere.[32] In 1934 he leased 250ha, later expanded to 1200ha of Muogamarra Sanctuary. The early 1960s proposal to mine sand at Crosslands began a campaign for the reservation of vacant Crown Lands along Berowra Creek.[33] Current concerns over water quality as a result of urban impact have led to the preparation of the Berowra Creek Estuary Management Study and Management Plan as a means of coordinating improved catchment health.[34]

Planning/Management Implications

- Potential heritage sites/resources may be uncovered during excavation or landscape works on the site, and may warrant more detailed investigation or the preparation of a Heritage Impact Statement.
- The site's varied European settlement and land use history, and any heritage sites/resources remaining, are of potential interpretive interest.

1.2.9 Utilities

The reserve is connected to mains water and electricity supplies extending west from Somerville Road (the site's access road is discussed in detail in section 6.1 below).

The reserve is serviced by an overland water supply pipeline, of 40 millimetre galvanized mild steel. This line also connects with an under-creek pipeline that supplies water to the Crosslands Convention and Field Studies Centre. The pipeline commences from the northern end of Somerville road and descends overland down the steep rocky hillside for approximately 1 kilometre to the southern end of the landscaped recreation areas. The system is gravity operated with two holding/break tanks located along the pipeline to cancel out pressure build-up. These holding/break tanks were originally sized, along with pipeline sizing and friction loss considerations, to service 8 toilet cisterns, 4 hand basins and 7 tap outlets – which was the anticipated capacity needs when the system was installed prior to 1979.

[31] Salt, B. p. 15.

[32] ibid, p. 15.

[33] ibid, p. 16.

[34] Conacher Travers Pty Ltd, p. 21.

However since this time the demands on the system have increased, while at the same time its condition has progressively deteriorated. Breaks in the above-ground pipeline and failure of the tanks and valve systems are now common. Water supplies to the northern toilet block have repeatedly failed in the past and, although these more critical supply problems have been addressed, peak demands in the day-use and camping areas or at the Crosslands Convention and Field Studies Centre can still result in seriously inadequate water supplies.

A number of alternatives for upgrading the reserve's water supply have been considered in the past, but none have yet been implemented. It is recognised that the system has reached the end of its useful life and has been requiring increasingly significant repairs at considerable ongoing cost.

In contrast, the reserve's electricity supply was substantially upgraded in 2003 by the NPWS to support installation of the "Ecomax" sewage treatment system. Underground power now extends the length of the riverside landscaped areas between the two existing toilet blocks. This system has the additional capacity to accommodate electric barbecues and other needs.

No public telephone is provided on-site at present. However recent upgrading of the communications tower at Berowra Heights has significantly improved the operation of mobile telephones in most parts of the site.

Planning/Management Implications

- The reserve's water supply is in urgent need of upgrading to meet current demands, in addition to any future needs.

1.3 Community Consultation In The Planning Process

Hornsby Shire Council has a strong commitment to the meaningful involvement of the community in all planning for open space, community lands, and other public assets.

Therefore two very important components of this study have been the recognition of community expectations surrounding the reserve as well as the close involvement of stakeholders and the community throughout the process.

The Crosslands Reserve Focus Group was established by Council to play a pivotal role in providing the community input, engagement and review essential to the Recreation Plan and Masterplan's preparation.

1.3.1 Crosslands Reserve Focus Group

The Crosslands Reserve Focus Group was a small community, user and stakeholder consultative group formed by Council to work with the Consultant Project Team and provide advice and input to the project's Steering Committee (which comprised Council and NPWS officers). The aim was to improve the planning process through early community input as well as to ensure that the Council moved forward with the community in the planning, development and management of Crosslands Reserve.

Membership of the Focus Group was determined through discussions within the Steering Committee and with the Consultant Project Team. It balanced the need to provide representation of user groups, interest groups and general community with maintaining a workable group size. Importantly the Group included representatives of the general community, drawn from respondents to a broader Council invitation to the community to be involved in consultations regarding Council projects, in addition to the more obvious user groups and stakeholders.

The Focus Group comprised 10 members:

- 4 members representing conservation interests/stakeholders – including the Berowra Creek Estuary Management Committee;
- 4 members representing reserve users/user groups – including the Crosslands Convention and Field Study Centre, commercial operators, the Great North Walk, and the Scouts; and
- 2 general community representatives.

A full list of Focus Group Members, and meeting attendances, is attached (Appendix 3).

The Focus Group functioned:

- as a forum for working with the community;
- as a source of information and local knowledge;
- as a forum for sharing knowledge and aspirations and the two-way exchange of information and opinions;
- as venue for rigorous debate, when required;
- to identify reserve values, uses and planning/management issues;
- in representing the views of users and neighbours plus other stakeholders;
- as a forum to explore and review management options and test management ideas/directions;
- to provide a "reality check" before the project's outputs are exhibited to the wider community; and
- as an endorsement and advocacy body for the project outcomes.

Focus Group Members were free to discuss all matters raised with others from the organisations or groups they represented, or the wider community. All Focus Group Meetings were minuted, all divergent opinions were accepted and recorded, and the minutes provided to the Steering Committee for consideration and subsequent direction of Consultant Project Team in preparation of the recreation plan and masterplan.

The Focus Group consultations do not replace the formal plan approval processes of Council, with the finished Draft Recreation Plan and Masterplan to be presented to Councillors' to endorse public exhibition. Nor did the Focus Group replace the wider community exhibition and review process, with the Draft Recreation Plan and Masterplan – once endorsed for exhibition by Council – still placed on public exhibition for community comment and review.

Focus Group Meetings

The Focus Group met on 3 occasions. The minutes of each Focus Group Meeting are attached (Appendix 4, 6 and 7).

Meeting 1 was in early April 2005 (Appendix 4).

This meeting provided a background to the Recreation Plan and Masterplan and a project outline, explained the role and rules of the Focus Group, "set the scene" in term of Crosslands Reserve and the study area (covering subjects such as split land tenure but co-operative management, current plans and planning directions, regional context, and budget realities), and then was principally an open forum where Members outlined the values of the site to them or their group as well as the uses they made of the area.

This process was assisted by an exercise where Members responded to 36 captioned photographs of various aspects of the site (Appendix 5, Meeting 1, "Exercise" Comments and Inputs"). It also built on Members' inputs via a simple "pre-planning submission" form, that had been distributed for their consideration and completion prior to the meeting (an example of this form is attached at Appendix 8).

The meeting concluded with a brief discussion of perceived planning and management issues, for more detailed consideration at the next meeting.

Meeting 2 was in early May 2005 (Appendix 6).

This meeting addressed the management issues previously identified by Members (in their responses to the "pre-planning submission" forms and at the last meeting), and briefly discussed the preliminary reports into the site's access road and tree hazards. The bulk of this meeting centred on a discussion of the opportunity and constraints analysis of the site, physical planning issues, and possible development/

management options including reconfiguration possibilities for the central carpark and opportunities to improve the presentation and environmental performance of the toilet blocks. Possible interpretive themes were briefly discussed.

The meeting endorsed the broad recreation planning direction of "no major repositioning of the site" – in terms of the standard of access, facilities, overall character, visitor experiences, and appropriate activities – as the basis for a "role and character statement" to guide future planning and management. The physical masterplanning directions discussed by the Group were also endorsed for further refinement and documentation. It was also agreed that, due to the consensus obtained to-date, a follow-up Focus Group Meeting was not required prior to consideration of the draft plans.

Meeting 3 was in early June 2005 (Appendix 7).

The meeting reviewed and endorsed the proposed role and character statement for the reserve and reviewed, in detail, and fine-tuned and supported the site planning and design elements presented in the draft Masterplan. Indicative costings, and priorities, for the proposed works were also briefly discussed.

Focus Group Inputs and Directions

The Focus Group provided a valuable source of local knowledge about the site, its usage history, the functioning of the area, user needs and preferences, and visitor attitudes/experiences. It also served as a valuable "sounding board" for possible planning and management options.

The Focus Group provided valuable information and opinions across a range of issues associated with the appeal, usage and management of the Crosslands Reserve – chiefly the day-use and camping areas. Issues that were canvassed included the existing unsealed access road which was generally seen as an important part of the site's character and visitors' experience; the site's unique appeal as a vehicle accessible bushland camping destination and an undeveloped park in close proximity to urban areas but a place that is generally not over-crowded; "caring and appreciative" existing users with a harmonious mix of campers and picnickers; the site's present informality and relaxed nature without a heavy-handed management presence; the site's appeal for first-time, inexperienced and young family campers; the appealing shallow safe tidal waterway; the local Scout Groups' long association with the area; the attractive bushland setting; the area's low profile and lack of promotion; changing usage patterns such as canoeing as a growing activity but a decline in the launching of "tinnies" from the boat ramp and the continuing popularity of family cycling; water quality issues; significant school use of the area; carparking and both interpretation and information/orientation signposting issues; site security and top-gate locking; presentation of the area's historic and Aboriginal connections;

and protection of the mangrove zone.

In limited discussions, the Focus Group was divided in its opinions on the suitability of the reserve for on-leash dog walking. The Focus Group also had mixed views on the benefits of maintaining firepits in the park. Recent increases in Council camping fees were also seen to have caused hardship for long-term larger group users, among some Focus Group Members.

The minutes of the Focus Group Meetings (Appendix 4, 6 and 7) provide further details of these discussions.

The Focus Group expressed strong support for Crosslands Reserve remaining as a low-key, nature-based destination characterised as a modified landscaped site within a natural setting, offering a limited array of basic standard facilities.

The Focus Group also expressed support for retention of the access road as an unsealed 2WD route.

In terms of the physical planning, organisation and presentation of the landscaped day-use and camping areas, the consultant team floated a number of ideas or options for the area's planning and management to test the responses and views of the attendees at Focus Group Meetings. Focus Group attendees were generally supportive of the ideas presented and discussed. Options such as the proposal for centralised barbecues, temporary fencing around mulched zones, pontoon/viewing platforms through existing gaps in the mangrove fringe, a creekside interpretive walk, modification of the central carpark, upgrading of the site's sewerage infrastructure, relocation of northern toilet block, and increasing the appeal and use of the low-lying northern area were all seen as desirable (but not specifically located or detailed) future upgrading and management works.

Again the minutes of the Focus Group Meetings (Appendix 4, 6 and 7) provide further details of these discussions.

1.3.2 Other Community Inputs

Wider community consultation, beyond the Focus Group, was not a requirement of the draft Recreation Plan and Masterplan's development.

However the planning process was also informed by the findings of an earlier, very brief, user survey at the Reserve in October 2002 undertaken by a student assisting Council.[35] This face-to-face on-site survey had an extremely small sample size of

[35] Nichols, S.

12 respondents only. However the findings of this study – in terms of the site's fundamental appeal to visitors, and respondents' attitudes towards the area and its management – closely mirrored the general flavour and intent of the views expressed by the Focus Group.

1.4 Planning Context

Planning for the future management of Crosslands Reserve must recognise, and to a degree be guided by, a range of legislative and land use planning controls and existing planning documents that relate to the reserve.

1.4.1 Legislative and Land Use/Development Controls

A wide range of state and Federal legislation, planning polices, and land use and development controls potentially require consideration in the planning, development and management of Crosslands Reserve. However the principal legislative, policy and land use controls that warrant close consideration include the following.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act* provides for the establishment, preservation and management of national parks, nature reserves, historic sites, regional parks and other reserves as well as for the protection of native flora and fauna and Aboriginal objects.

Section 30H of the Act describes the purpose of reserving an area as a regional park as being – "to identify, protect and conserve areas in a natural or modified landscape that are suitable for public recreation and enjoyment". The Act then identifies guiding management principles for regional parks as the:

- provision of opportunities, in an outdoor setting, for recreation and enjoyment in natural or modified landscapes;
- identification, interpretation, management and conservation of the park so as to maintain and enhance significant landscape values;
- conservation of natural and cultural values;
- promotion of public appreciation and understanding of the regional park's natural and cultural values;
- provision for sustainable visitor use and enjoyment that is compatible with the conservation of the regional park's natural and cultural values; and
- provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the regional park's natural and cultural values.

Local Government Act 1993

As discussed in section 1.2 above, the south-western portion of the study area is Community Land under the ownership of Hornsby Shire Council.

The *Local Government Act* 1993 (as amended) sets out specific guidelines for local councils to follow in the planning, and subsequent management, of areas classified as "Community Land". The Act requires that a plan of management be prepared for an area, or areas, of Community Land and that these lands be categorised into one or more specified types, each with its own management objectives as described by the Act. Under section 36(4) of the Act, Community Land must be categorised as – a natural area, a sportsground, a park, an area of cultural significance, or as general community use. Community Land categorised as a "natural area" must be further categorised as one or more of the following – bushland, wetland, escarpment, watercourse, foreshore, or a category prescribed by the regulations.

The Act includes specific "core management objectives" for each of these categories. Once selected, these categories and their management objectives must be reflected in the plan of management and the operational management strategies for an area. The Act also includes specific requirements in respect of community land comprising the habitat of endangered or threatened species, containing significant natural features, or comprising areas of cultural significance.

No specific plan of management has been prepared for Crosslands Reserve. The area is addressed within several wider planning documents – as further described below. However planning and management of the reserve, and the south-western area in particular, must recognise the broad land use categories and management objectives for Community Land as set out in the Act.

State Environmental Planning Policies and Regional Environmental Plans

State environmental planning policies (SEPPs) address land use planning, amenity, and natural and cultural resource management issues that are considered significant to the state and people of New South Wales. They are made by the Minister for Planning, usually publicly exhibited, and are gazetted as legal documents.

The relevant SEPPs that warrant consideration in planning for Crosslands Reserve include the following.

- SEPP No. 19 Bushland in Urban Areas (1986). SEPP 19 is intended to protect and preserve bushland within selected urban areas as part of a region's natural heritage or for recreational, educational and scientific purposes. It is designed to protect bushland in public open space zones and reservations, and to ensure that bush preservation is given a high priority in the preparation of local environmental plans for urban areas.

- SEPP No. 35 Maintenance Dredging of Tidal Waterways (1993). This SEPP enables public authorities to carry out maintenance dredging of waterways in an appropriate, timely and environmentally responsible manner.

SEPP 14 Coastal Wetlands, Seagrasses and Mangroves (1985) does not apply to Berowra Creek, as it only has effect outside the Sydney metropolitan area.

Regional Environmental Plans (REPs) typically address issues such as urban growth, commercial centres, extractive industries, recreational needs, rural lands, and heritage and conservation at the regional scale. They provide the framework for detailed local planning by councils and are gazetted planning documents. Only one REP applies to the Berowra Creek system and Crosslands Reserve, as follows.

- REP No. 20 Hawkesbury–Nepean River (No. 2 - 1997). This REP integrates land use planning with catchment management to protect the Hawkesbury-Nepean River system. It is aimed at ensuring that the impacts of future land uses are considered in a regional context and covers issues relating to water quality and quantity, environmentally sensitive areas, riverine scenic quality, agriculture, and urban and rural residential development. The REP controls development that has the potential to impact on the river environment and applies to all parts of the catchment in the Sydney Region.

Hornsby Shire Local Environmental Plan

The Hornsby Shire Local Environment Plan 1994 (HSLEP) controls land use and development within the Shire.

The south-western area of land that is owned by Council is zoned Open Space A (Public Recreation – Local). The objectives of this zoning are as follows.

a) To ensure there is provision of adequate open space to meet the needs of the community and to enhance the environmental quality of the Hornsby area;

b) To encourage a diversity of recreational settings and facilities.

c) To protect and preserve areas of urban bushland which are considered valuable in terms of their ecology.

Within this zone activities and land uses that are permitted without Development Consent are bushfire hazard reduction (except ancillary buildings), gardening or landscaping. Council has in the past accepted gardening and landscaping activities to include “bushland regeneration, weed control, landscaping, minor earth works associated with bushland regeneration, signage, augmentation of existing walking tracks, and so on”.[36]

[36] HSC 1996(b), p. 34.

Activities and land uses that may be permitted with Council's approval include – agricultural structures; agriculture; aquaculture; buildings ancillary to bushfire hazard reduction, gardening or landscaping; camp or caravan sites; carparks; cemeteries; child care centres; community facilities; dams; demolitions; entertainment facilities; forestry; intensive animal establishments; intensive horticultural establishments; public buildings; recreation areas; recreation facilities; utility installations; and subdivision. All land uses and activities other than those identified are prohibited within this zone.

Clause 6 of the HSLEP identifies saving provisions that include development that may be carried out by or on behalf of Council without Development Consent. These include a range of works including road, pathways and stormwater construction, installation of park furniture and signs, shelters, BBQs, playground equipment, boardwalks.[37] Clause 18 of the HSLEP identifies Heritage Controls. Under subclause (2) development consent is not required by the heritage provisions of Clause 18 of the HSLEP if the Council is of the opinion that the proposed development would not adversely affect the heritage significance of the heritage item.[38] Under sub clause (6) the Council must consider a conservation plan for Crosslands Reserve prior to determining a development application.[39]

The unmade road reserve along the foreshore of Berowra Creek on the reserve's south-western edge and the north western section of Crosslands Reserve is zoned Open Space B (Public Recreation – District) under the HSLEP. The objectives of this zoning are as follows.

a) To ensure there is provision of adequate open space to meet the needs of the regional community and to enhance the environmental quality of the Hornsby area;

b) To encourage a diversity of recreational settings and facilities.

c) To protect and preserve areas of urban bushland which are considered valuable in terms of their ecology.

The activities and land uses that are permitted without Council approval, permitted with Council's approval, and prohibited are the same as for the Open Space A (Public Recreation – Local) zoning above.

The HSLEP also identifies Crosslands Reserve as a heritage item of "regional" significance, which triggers the additional protective measures and land use/ development controls as set out in Council's more detailed Heritage Development Control Plan.

[37] HSLEP, p. 4.

[38] ibid, p. 52.

[39] ibid, p. 53.

1.4.2 Existing Plans and Management Directions

Berowra Valley Regional Park Plan of Management 2005

Prepared in 2003, with the involvement of a cross-section of the local community and other stakeholders, this plan was adopted on 27 April 2005 by the Minister for the Environment.

It identifies a range of general and specific management objectives for the Park founded on the area's recreation and conservation values and uses. Major objectives include the upgrading and development of recreational areas, rehabilitation and regeneration of disturbed bushland areas, and the protection and enhancement of the area's conservation values. While recognising the imperative for co-operative management of the entire developed recreation area at Crosslands Reserve, the Plan only relates to the north-eastern section of the reserve that is part of Berowra Valley Regional Park.

The plan includes a number of management strategies specific to Crosslands Reserve as well as a wider set of other, more general, strategies that may also impact on the management of this area (see fig. 1.16).

Hornsby Shire Council Parks and Reserves Generic Plan of Management, 1996

This plan is applicable to Council-managed parks, reserves and open space in the Hornsby area. Originally prepared in 1996 it is now somewhat dated and is progressively being replaced by plans of management for Council's parks and reserve that are based on planning districts. Crosslands Reserve is within Planning District 4, the pan for which is at present expected to be developed during the 2005/06 financial year. (The directions from this recreation and masterplanning exercise for Crosslands Reserve will be incorporated/reflected in this wider plan when developed.) .

The current, 1996, Generic Plan of Management contains a number of Desired Outcomes, Management Statements and Actions in relation to the Hornsby area's parks and reserves – although none specifically refer to Crosslands Reserve.

The Plan only relates to areas that are under Council's ownership or where care, control and management has been formally vested in the Council (such as the unmade road reserve in the south of the study area). Hence the Plan is only applicable to the south-western section of Crosslands Reserve. As the Parks and Reserves Generic Plan of Management was adopted by Council in August 1996, it therefore takes precedence for the control and management of Council owned lands over the earlier Berowra Valley Bushland Park, Plan of Management, Stage 2, which was adopted in February 1996.

The Generic Plan of Management's general Management Statements and Actions

contain a number of items potentially applicable or relevant to Crosslands Reserve (see fig. 1.17).

Berowra Valley Bushland Park, Plan of Management, Stage 2, 1996

This 1996 Plan of Management prepared by Hornsby Shire Council identified a detailed and costed programme of management actions to protect and manage the natural, recreational and scenic values of Berowra Valley Bushland Park as well as mitigating the adverse impacts of adjoining urban and rural land uses. It was based on a resources and policy document previously prepared by Council in 1990. Berowra Valley Bushland Park subsequently became Berowra Valley Regional Park, a possibility flagged in this plan, and at the time included the entire area of the current Crosslands Reserve.

The plan was adopted by Council in February 1996 (prior to the adoption of Council's Parks and Reserves Generic Plan of Management, which was adopted in August 1996 and therefore takes precedence for the control and management of Council owned lands). It was also adopted by the Berowra Valley Regional Park as the interim plan of management for the area, until the imminent gazettal of the new Berowra Valley Regional Park Plan of Management.

The Plan identifies several management actions specific to Crosslands Reserve, as well as several relevant general management actions (see fig. 1.18).

Berowra Creek Estuary Management Study and Management Plan 2002

This document is intended to protect the environment of Berowra Creek and ensure that resource use and impacts within the estuary are managed sustainably. While focusing on the estuary, the plan takes an overall catchment management approach. As such it is applicable to the entire Crosslands Reserve area, both along the immediate margins of Berowra Creek and beyond.

The Plan recommends strategies that are a mix of planning controls, on-site works, public education and monitoring efforts. Its implementation is overseen by Hornsby Shire Council through the Berowra Creek Estuary Management Committee.

The Plan identifies a range of management objectives relevant to Crosslands Reserve, as well as several management actions specific to Crosslands Reserve and other more general actions that may also impact on the management of this area (see fig. 1.19).

Other Plans and Strategies

The following additional adopted plans and strategies also warrant consideration, to varying degrees, during the planning and management of Crosslands Reserve.

Management Strategies Specific to Crosslands Reserve (and Identified Priority)	General Management Strategies Broadly Applicable to Crosslands Reserve (and Identified Priority)
Introduced Species Dogs specifically will not be permitted at Crosslands Reserve or in proximity to picnic or BBQ areas. (high) Recreation Opportunities Users of the Park are provided with high quality day use recreational opportunities within a natural bushland setting. (Desired Outcome) The upgrading of water supply and sewerage at Crosslands Reserve will be addressed. (high) The Trust will negotiate with Hornsby Shire Council in order to seek consistent management at Crosslands Reserve. Matters for discussion will include: • consistency in policies for the two tenures at Crosslands Reserve; • funding of upgrade works at Crosslands Reserve including investigation of cost recovery options for public use of Crosslands Reserve; and • reserve planning to ensure appropriate utilisation of space at Crosslands Reserve for the range of recreational uses including • day use picnicking, large group use, car base camping and backpack camping. (high) A Redevelopment Plan for Crosslands Reserve will be prepared. The Plan will cover a range of aspects including: • access and infrastructure requirements; • visitation and capacity; • water supply; • waste management; and • current use and visitor needs and perceptions. (high) Current wood burning barbecues within the Park will be progressively replaced with gas or electric alternatives, users will be encouraged to supply their own gas where possible. (high)	Geology and Landform All significant geological and landscape features in the Park will be identified to ensure they are protected from any development works. (medium) Collaborative management with other consent authorities will be pursued to protect identified escarpments and areas of high scenic quality. (medium) Rare or Threatened Flora Species Management programs such as ... recreational management activities will consider long term impacts on vegetation communities and plant populations. (on-going) Only suitable native species will be used in bushland restoration and landscape works. (high) Native Animals Habitats of threatened or biogeographically significant fauna species will be protected from visitor impacts ... (on-going) Aboriginal Heritage Archaeological survey and cultural assessment will be undertaken prior to all works with the potential to impact on Aboriginal sites and places. (high) Soil Erosion All works will be designed and undertaken in a manner which minimizes soil erosion. (on-going) Water Quality and Catchment Management Activities which may have an effect on catchment management goals will be carried out in accordance with the recommendations of the Berowra Creek Water Quality Management Strategy and Berowra Creek Estuary Management Study and Management Plan (2000). Introduced Species Dogs specifically will not be permitted on tracks or trails within core bushland areas of the Park such as along the Great North Walk ... (high)

Figure 1.16:
Berowra Valley Regional Park, Draft Plan of Management 2003 - Management Strategies Applicable to Crosslands Reserve

Management Strategies Specific to Crosslands Reserve (and Identified Priority)	General Management Strategies Broadly Applicable to Crosslands Reserve (and Identified Priority)
Car-based camping will be restricted to Crosslands Reserve to avoid potential conflict with day visitation. (high) Large group camping will continue to be permitted within Crosslands Reserve and will be managed according to a booking system. This system will be used to manage numbers of campers in the area at any one time in order to establish a carrying capacity for the Reserve and to avoid overcrowding. (on-going) The provision of a fire pit area at Crosslands Reserve will be accessible for group use via this same booking system. Unauthorised use of the fire pit area will be policed. (high)	<u>Recreation Opportunities</u> The Trust will endeavour to develop and adopt a grading system for bushwalking tracks within the Park including using appropriate signage to identify tracks, difficulty levels and length. (medium) Possible routes for short, circular, easy grade walks will be examined, without causing undesirable duplication or proliferation of tracks. (medium) Further development and redevelopment of recreational sites will consider aged/disabled access. (on-going) <u>Research and Monitoring</u> Priorities for research will include ... recreational uses of the Park. (high) A prospectus will be prepared as a guide to preferred research projects in ... visitor use of the area ... preferred topics will be those of direct relevance to management and will include ... recreational use patterns and the impact of different activities on natural and cultural resources ... (medium) <u>Leases and Licences</u> Leases, licences and consents may prescribe the approved activities, location and frequency of activities, maximum group sizes and minimum guide ratios for each activity, guide standards, fees, appropriate behaviour and other special provisions to ensure the long term protection of the Park, Park visitors and recreational opportunities. (on-going) Prior approval will be required for organised activities by schools, community and other groups of over 20 people. Limits may be placed on group sizes, locations and frequency of use to minimise environmental impacts and conflicts with other Park users. (on-going) The Trust may consider operating leases for compatible recreational uses of the Park. (medium) <u>Management Facilities and Operations</u> Develop a Memorandum of Understanding for the maintenance of the Great North Walk traversing Berowra Valley Regional Park with the Department of Land and Water Conservation. (medium)

General Management Statements and Actions Potentially Applicable to Crosslands Reserve

- Provide access for disabled users and strollers into parks and reserves where topography and space allow. Incorporate into future open space design.
- Prevent general vehicular access into parks and reserves by use of fencing and bollards.
- Provision of parking for parks and reserves aimed at a larger catchment area than the immediate neighbourhood. Identify sites suitable for park and reserve developments aimed at a larger catchment area.
- Parks and reserves facilities are not to expand beyond a "carrying" capacity. Visitor movements and activities are to stay within reasonable limits. Landscape design should incorporate the maintenance of ecological sustainability. Determine reasonable limits for developments of parks and reserves. Ensure development does not exceed limits.
- Maintain all parks and reserves to a satisfactory standard in response to the needs and expectations of users and the general community.
- Provide high quality parks and reserves in terms of aesthetics and safety.
- Improve appearance of parks and reserves by minimising litter and encouraging recycling.
- Ensure management of parks and reserves is compatible with surrounding natural areas. Where required, install physical barriers between parks and reserves and surrounding natural areas, such as logs, pathways, fencing, garden beds.
- Minimise water and the use of chemicals and minimise top dressing where parks and reserves adjoin bushland. Monitor soils and test to ensure that chemical application, top dressing and watering are applied at an appropriate level to all parks and reserves.
- Channel runoff away from bushland.
- Wherever possible, use indigenous species for landscaping where parks and reserves adjoin or are in proximity to bushland.
- Increase quality and usability of parks and reserves by improving irrigation and/or drainage systems, on a priority basis.
- Ensure that irrigation and drainage has minimal impact on surrounding natural areas.
- Conserve water through the treatment and recycling of waste water for irrigation, where safety, treatment and economic factors allow.
- Design of parks and reserves will take advantage of existing vegetation and natural features whenever possible. Whenever possible, landscape design should incorporate indigenous species from local seed stock. Whenever possible existing landscape and indigenous vegetation to be incorporated into future landscape design.
- Ensure all aspects of parks and reserves meet the relevant safety standards.
- Enhance visual quality of parks and reserves and provide shade for user, through the retention of existing trees and/or planting of appropriate species. Landscape design should incorporate indigenous species including; trees, grasses, groundcovers, climbers, etc. Existing trees to be utilized for the provision of shade in the design of parks and reserves. Additional trees to be planted where required in existing parks and reserves. Whenever possible use indigenous species.
- Granting of leases and licences and easements over Council-owned land be considered on individual merits.
- Planning and design be used to reduce opportunities for vandalism and undesirable behaviour in parks and reserves.

Figure 1.17:
Hornsby Shire Council Parks and Reserves Generic Plan of Management Plan, 1996 - General Management Statements and Actions Potentially Applicable to Crosslands Reserve

Management Actions Specific to Crosslands Reserve	General Management Actions Relevant to Crosslands Reserve
Education, Interpretation and Community Involvement ... interpretative signage will be placed on two walking tracks. Preference would be given to ... the Crosslands Circuit as these tracks provide the greatest interpretative opportunities and link in with the proposed locations of the interpretative shelters. Signage could interpret natural features, areas of historical interest or management challenges. Vegetation Management It is these communities which will be given the highest priority for comprehensive weeding strategies ... E. pilularis - A. floribunda tall open forest (Crosslands), Casuarina glauca closed forest (Crosslands/Calna Creek), saltmarsh (Crosslands/ Calna Creek). ... major faunal habitats of limited distribution will be restored and maintained through the regeneration programme. Major faunal habitats have been identified as:- a) 1 km radius around Crosslands ... Animals Prohibit dogs from the Crosslands area (high value fauna habitat) Fire Management Control burns will be spaced and timed to always allow unburnt habitat to remain adjacent to any known areas of faunal significance, whilst at the same time managing fuel levels in these areas to minimise the possibility of high intensity wildfire which would seriously impact on faunal population. This refers especially to the area of 1 km radius around Crosslands, ... Recreation and Leisure Facilities Areas that will be targeted for improvement within the management plan are: ... 3. Improving picnicking and camping facilities at Crosslands ... While no funding is dedicated during the life of this Plan of Management, a study into the provision of shower facilities and additional barbecue and playground equipment is to be undertaken. The study will investigate environmentally sustainable ways of providing these facilities. Should additional funding eventuate, the facilities can be carried out according to the findings of the study. Cultural Heritage Sites Proposed walking tracks near Crosslands will make provision for interpretation of known Aboriginal and historically in the vicinity of Crosslands.	Education, Interpretation and Community Involvement Promote the use of then park to schools for environmental studies. Design interpretation walking tracks. Recreation and Leisure Facilities Provide high quality passive recreation facilities in the park without compromising other management objectives. Areas that will be targeted for improvement within the management plan are: 1. Building of new walking track circuits ... 7. Fostering development of ecotourism activities. Council considers that primary recreation contact in Berowra Creek is not safe, particularly after wet weather. The Statement of Joint Intent ... pledges to work towards the achievement of water quality suitable for primary recreation contact. The water quality remediation measures mentioned in the Plan of Management will contribute to these aims. If and when the water quality goals are achieved, then water based activities shall receive greater funding. Cultural Heritage Sites Recognise and preserve Aboriginal and other historically or culturally significant sites within the park in some suitable cases making them an educational resource. Suitable Aboriginal and other culturally significant sites will be interpreted for visitors in a way which encourages an understanding of Aboriginal culture and park pre-history.

Figure 1.18:
Berowra Valley Bushland Park, Plan of Management, Stage 2, 1996

Relevant Management Objectives Potentially Applicable to Crosslands Reserve	
• To establish formal monitoring, identification and warning procedures as required, so as to safeguard public health and minimise disruption to recreational and commercial waterway users. • To sufficiently reduce the level of catchment sourced pollutants so as to protect aquatic ecosystems, and allow for primary human contact and the production of edible fish, crustacea and shellfish. • To meet the reasonable requirements of recreational users of the waterway in a way that facilitates use whilst minimising the impacts on the environment, residents and users. • To provide increased opportunities for estuary based tourism by improving the available facilities and access/parking arrangements, in a way that ensures safety and minimises adverse impacts on the environment, residents and users. • To prevent further damage to the middens, either by controlling the damage source or by providing physical protection to the middens. • To ensure that mangroves generally ... are protected and conserved. • To restore and maintain healthy native vegetation within the riparian zone.	
Management Actions Specific to Crosslands Reserve (and Identified Priority)	**General Management Actions Applicable to Crosslands Reserve (and Identified Priority)**
<u>Estuary Recreation Facilities</u> Improve maintenance schedule for Somerville Road. (moderate) Consider improved recreation/education facilities at Crosslands, such as an information and education centre. (medium) <u>Estuary Tourism Facilities</u> Investigate the potential for tourist related eco-focused activities at Crosslands, such as canoe hire. (low) Construct an interpretive boardwalk through the wetland and mangrove areas in Crosslands Reserve, illustrating cultural and natural values. (medium) <u>Noxious Weeds</u> Bush regeneration works be undertaken around the wetlands area in Crosslands Reserve. (medium) The boat ramp at Crosslands be restricted for use by non-trailable boats only. (medium) Personal watercraft use, except for through passage is banned upstream of Neverfail Bay. (high)	<u>Human Health and Safety</u> Council to monitor estuary surface waters and to be responsible for algal bloom testing. (high). Monitor recreational water quality after significant catchment rainfall or when notified of STP bypassing. (high) Inform the community of algal blooms, faecal pollution and aquatic stingers through warning signs near waterway access locations. When appropriate Council to communicate warning through newspaper, radio and the Internet. (high) <u>Estuary Tourism Facilities</u> Investigate program of spotlighting and wildlife field trips run by NPWS volunteers. (-) <u>Mangroves and Saltmarsh</u> Monitor the extent of saltmarsh and mangrove areas and determine management actions. (medium)

Figure 1.19:
Berowra Creek Estuary Management Study and Management Plan 2002 – Relevant Management Objectives and Management Strategies Applicable to Crosslands Reserve

Other Plans and Strategies

The following additional adopted plans and strategies also warrant consideration, to varying degrees, during the planning and management of Crosslands Reserve.

- Hawkesbury-Nepean River System Habitat Protection Plan. Prepared by NSW Fisheries under the Fisheries Management Act 1994 this plan is intended to protect fish habitat in the Hawkesbury-Nepean River System, including Berowra Creek. The plan addresses activities that may impact fish spawning, nursery, shelter and feeding areas including – among others – pollution, erosion and sedimentation, reclamation, the construction of jetties or ramps or pontoons, drainage and river control works, clearing of riparian or floodplain vegetation, and fishing and collecting.
- Berowra Creek Water Quality Management Strategy. A strategy for joint state and local agency co-ordination to achieve water quality levels in Berowra Creek (downstream from Fishponds) that are suitable for water-based recreation activities.
- Berowra Catchment Stormwater Plan. Based on total catchment management and ecologically sustainable development principles, this plan is intended to improve stormwater management in the catchment to sustain the area's agreed values and land uses.

1.5 Regional Context

The planning and management of recreational use of Crosslands Reserve cannot be addressed in isolation from the site's regional context – in terms of the patterns of land use and, in particular, the regional supply of open space and recreation areas of differing types as well as the demand for and uses made of these areas.

1.5.1 Regional Land Use

The broad pattern of land use around the Berowra Creek Catchment is one of highly developed residential, commercial and industrial land uses in the south around Hornsby and adjacent suburbs; isolated residential areas and intervening natural areas to the east; semi-rural land uses to the west; and predominantly bushland and natural areas in the north (downstream of Crosslands Reserve).[40]

Focusing on the Crosslands Reserve area, the land use pattern is one of development and access that is strongly controlled by the prevailing rugged topography. The low-density elongated residential area of Hornsby Heights is the only suburb with direct access to the reserve, connecting with the suburbs of Asquith and Hornsby some 3-4 kilometres further south. The "village suburbs" of Mount Colah, Mount Ku-ring-gai and Berowra are situated east of the reserve, spread northwards along the Pacific Highway, but do not have direct access to the site due to the intervening barriers of Calna and Berowra Creeks and the steep topography. Similarly the semi-rural area of Galston to the west is made more remote by Galston Gorge and the rugged upper catchment area.

Hornsby Heights and most neighbouring suburbs are not undergoing rapid population increases, nor have the capacity to do so under present planning controls. However the Hornsby-Waitara area further south-east has recorded considerable population growth as a result of recent medium and high-density residential development along the transport corridor and around this regional centre.[41] This population growth is likely to continue into the short to medium term. As a consequence of the limited opportunities to develop new major open space resources within the immediate locality of this growth area, this population increase will place additional demand pressures on the range of parks and open space areas within the wider Hornsby area – including Crosslands Reserve.

Further to the west of Berowra Creek – accessible via Galston Road (which intersects with Somerville Road) – are the major metropolitan growth centres of the North-west Sector in the Baulkham Hills and Kellyville districts. Population growth in this area

[40] Webb, McKoewn & Associates, p. iv.

[41] DIPNR 2004(a), p. 5.

is predicted to be substantial. However as a largely "greenfield" urban development area, the provision of open space and recreation areas will be more effectively planned for and provided as part of the urbanisation process. The result will be that this significant population growth is unlikely to place significant immediate demand pressures on Crosslands Reserve, but can be expected to contribute to an overall increase in visitor numbers/pressures in the mid to long term.

The reserve's developed recreation areas are located 2.5 kilometres, at the closest point, from Hornsby Heights and further from other suburbs and growth centres. Therefore the area is primarily accessed by vehicle, and this tends to make it a destination for both local and regional users.

1.5.2 Regional Open Space Supply and Use/Demand

Demand – Expressed (Usage), Unmet/Latent and Future Pressures

Council's 2000 Hornsby Leisure Strategic Plan identified that 5 of the top 10 most popular away-from-home leisure activities reported by the residents of Hornsby Shire Council were activities undertaken in open space and parkland areas such as Crosslands Reserve,[42] including:

- visiting parks/gardens – ranked as the 3rd most popular activity, with an 88.6 % participation rate in the previous 12 months, and a 17% regular (more than 20 times per year) participation rate;
- picnics/barbeques in public areas – ranked 5th, with 78.7 % and 8.1% participation rates (as above);
- walking or walking the dog – ranked 6th, 75.3% and 51.0% participation rates;
- bushwalking – ranked 8th, 69.0% and 10.2 % participation rates; and
- taking kids to parks/playgrounds – ranked 10th, 65.7% and 21.0% participation rates.

Participation rates for these activities were also consistently high across all major age ranges, showing only a very minor decline in participation rates with age.[43]

The 2000 Hornsby Leisure Strategic Plan also identified "bushland/national park" as the most frequently used leisure setting/facility within Council's area – with 83.8% of respondents having visited such a location within the Hornsby area at least once the previous year (and 28.2% using similar sites beyond the Council's area). Parkland/formal garden", "picnic/bbq area" and "waterway/foreshore" settings within the Council's area received 80.6%, 77.3% and 63.9% responses respectively for at least once a year usage.[44] This clearly reflects the popularity of these settings as

[42] Recreation Planning Associates, p. 31.

[43] ibid, p. 41.

[44] ibid, p. 33.

outdoor recreation venues.

Significantly, Crosslands Reserve could be considered to combine all four of these leisure setting categories and so is potentially a very appealing recreation attraction for local residents. The 2000 Hornsby Leisure Strategic Plan acknowledged that "it is parks that combine a variety of features and uses – contact with nature, pleasant social settings, children's play, cultural interest, varied topography – that are the most valued and used".[45]

Council's 1990 Recreation Needs Survey also identified much higher levels of recreational use of the Shire's bushland than had previously been suspected. This study identified bushland as the most preferred setting for outdoor recreation within the Shire (followed by outdoor sports facilities and parks and playgrounds).[46]

A more recent and wider recreation survey, undertaken across the northern Sydney Region as a whole, also reflected similar participation patterns and preferences – identifying that "Northern Sydney residents enjoy sightseeing and bushwalking, above other activities, along with viewing scenery and learning about nature ... they visit and walk in bushland and natural areas at a rate much higher than the national average".[47]

A logical extension of these high usage and popularity levels is community support for Council expenditure on these settings and facilities. The Hornsby Leisure Strategic Plan found "bushland management" to be clearly respondents' highest priority area for Council expenditure across all leisure facilities and services – with 88.7% of respondents ranking this area as the top spending priority. Expenditure on "parklands and gardens" and "cycleways/bicycle paths" were ranked 6th (16.1%) and 7th (14.6%) priorities respectively.[48]

Respondents to the 2000 leisure survey expressed unmet demand for the following leisure and recreation activities that are potentially of relevance to Crosslands Reserve – cycling/mountain bike riding was the 2nd most frequently nominated unmet demand identified by 6.4% of people, jogging/walking for pleasure/walking the dog was ranked 3rd in terms of unsatisfied demand with 3.1% of all respondents, bushwalking was the 7th ranked response (1.8% of respondents), and visiting parks/playgrounds/picnic area the 11th ranked response (1.3% of respondents).[49] However the reasons for such demands being unmet included factors such as "lack of time", "lack of child care" and other reasons beyond simply to unavailability of an

[45] Recreation Planning Associates, p. 55.

[46] HSC 1996(b), p. 37.

[47] DIPNR 2004(a), p. 21.

[48] Recreation Planning Associates, p. 40.

[49] ibid, p. 38

appropriate venue or distance-cost factors.

Significant demand was also recognised in Council's most recent leisure strategies for "off-leash" dog areas, safe cycling facilities and an extended cycle path network, improved access and activities for older people, greater access and more destination choices for people with disabilities, and a general improvement in the standard and provision of park facilities/furniture such as "seating, shade, signs, play facilities and access" especially in major park settings).[50] The Strategy also advocated enhancing the "public awareness and appreciation of environmentally significant areas of open space through further development of interpretation programmes".[51]

The suburbs of Hornsby Heights, Asquith, Berowra Creek, Mount Colah and Mount Ku-ring-gai (Planning District No. 4) together had a resident population of just over 19,000 people in 1996 – or 14% of the Shire's total population at that time.[52] This population had increased to 20,100 in 2000 and was projected to grow to over 20,500 persons by 2005.[53]

Compared with the wider metropolitan and state population averages the overall Hornsby area exhibited a high rate of population increase, a high proportion of couple families with children, relatively high incomes, and slightly above average ethnic diversity. The population profiles of the Planning District No. 4 suburbs (closest to Crosslands Reserve) also exhibited some other notable variations from the metropolitan and state averages, including – a higher proportion of children and young people (aged 0-19 years), and a lower proportion of older people (aged 65 years and upwards).

These population characteristics will ensure continuing strong levels of demand for the leisure and recreation activities and settings at present offered by Crosslands Reserve. The persistence in participation rates with age for activities such as visiting parks, walking and bushwalking will mean that demand for many of the activities provided by Crosslands Reserve will not decline, and may in fact increase marginally, under aging population scenarios.

The continuing population growth anticipated in the Hornsby area will also increase recreation demands within both the local area and regionally. Based on current trends, a substantial proportion of this population growth may comprise people from non-English speaking backgrounds (NESB). Surveys elsewhere have demonstrated a lower than average participation rate in traditional open space/outdoor recreation

[50] Recreation Planning Associates 2000 & 2003.

[51] Recreation Planning Associates, p. 17.

[52] ibid, pp. 11-13.

[53] ibid, p. 17.

activities among NESB populations. However Council's 2000 Hornsby Leisure Strategic Plan suggested that the leisure/recreation participation rates for Hornsby's NESB community are closer to those of the general population.

Open Space Supply

A very substantial proportion, around 50%, of the Hornsby Shire Council area comprises national parks or nature reserves – which does much to give the area its bushland character and abundance of natural open spaces.[54] Major NPWS-managed areas include Ku-ring-gai Chase National Park, Marramarra National Park, Lane Cove National Park and Muogamarra Nature Reserve.

There are also substantial natural areas remaining in private ownership.

In addition to these extensive natural areas Hornsby Shire Council is responsible for managing a further 1,800 hectares or more of bushland spread across more than 400 reserves, and over 180 parks (excluding sportsgrounds) covering more than 182 hectares.[55]

The parks and reserves managed by Hornsby Shire Council can be classed as either local, district or regional parks.

Local parks are small open spaces that provide short-term play and rest opportunities primarily serving users from the immediate vicinity (most often within walking distance) and usually have minimal facilities only. Waninga Road Park, the small reserve at the corner of Bowral Close and Waninga Road at Hornsby Heights, is an example of a local park in the vicinity of Crosslands Reserve.

Neighbourhood parks are larger local parks with a wider catchment and may draw users from the surrounding suburbs/areas, but still mostly within walking or cycling distance. They can have a greater mix and standard of facilities, often include significant landscape/vegetation features, and may be linked to other open spaces. Hunt Reserve at Mount Colah is an example of a neighbourhood park.

District and regional parks are larger reserves with commensurately more sophisticated and diverse facilities – such as picnic areas, toilets, walking tracks, larger playgrounds, court sports, skateboard ramps – as well as other features such as significant natural or cultural heritage items and major landscapes/vegetation/views. They serve collections of suburbs or whole districts, and are most usually accessed by vehicle or by public transport. Management presence is usually overt and frequent, and can often have associated commercial uses/licences. Crosslands

[54] ibid, p. 11.

[55] Recreation Planning Associates, pp. 70 & 91.

Figure 1.20: Fagan Park at Galston, a park of regional significance that is managed by Council.
Source: *HSC*

Reserve is considered a District Park in the Council managed park system.

Council has also identified a number of other large parks as District Parks – including Lisgar Gardens and Crosslands Reserve (as further discussed below). Fagan Park and McKell Park are considered parks of regional significance that are managed by Council.

Council's open space planning district 4 (the suburbs of Hornsby Heights, Asquith, Berowra Creek, Mount Colah and Mount Ku-ring-gai) is supplied with 28 Council-managed parks, covering over 24 hectares.[56] This represents 15% of the Shire's total Council-managed open space estate, and the area is considered to be adequately supplied with open space as based on metropolitan and state standards and comparisons.

1.5.3 Comparable Regional Destinations and the "Positioning" of Crosslands Reserve

Regional and District Parks Under Hornsby Shire Council Management

Crosslands Reserve is one of four District or Regional Parks managed by Council.

Fagan Park at Galston and McKell Park at Brooklyn are considered parks of regional significance. Lisgar Garden at Hornsby and Crosslands Reserve are classed as District Parks. Lilian Fraser Garden at Pennant Hills is another major Council managed destination.

However its natural setting, sense of remoteness, facilities and management sets Crosslands Reserve very much apart from these other major attractions.

Fagan Park covers over 50 hectares on Arcadia Road, Galston, and is the largest park under Council's management. It is a developed and landscaped area that also features significant heritage values (including Netherby Cottage, the original Fagan family homestead) as well as built attractions (including rural museums). The park is provided with high standard facilities – including large picnic shelters, electric barbecues, numerous small picnic shelters, toilets, accessible facilities, playgrounds, bike paths, and large open lawn areas (see fig. 1.20). It also features the 10 hectare "Gardens of Many Nations" and an "Eco Garden". Areas of bushland are accessed by short walking trails. The park is open daylight hours only, and vehicle entry fees apply. The park is an extremely popular and busy attraction with considerable large group use (such as by sports and social clubs, weddings, company picnics, and other "events"). The area is subject to high levels of Council management, and has an active "Friends Group" and on-site manager. Of all the designated "major parks" Fagan Park is the most approximately comparable to Crosslands Reserve

[56] ibid, p. 72.

Figure 1.21: Lisgar Gardens at Hornsby, a District Park
Source: *HSC*

Figure 1.22: McKell Reserve at Brooklyn, a Regional Park

but is substantially more modified, landscaped, developed and intensively used and managed.

McKell Park is a split-level reserve on Flat Rock Point in the Hawkesbury River at Brooklyn. The upper level is very much smaller than Crosslands Reserve and offers picnic and barbecue shelters, and toilets, in a grassed setting fringed by bushland and water views (see fig. 1.22). It is accessed by a sealed dead-end road, through an adjacent urban/retail area, and subject to high levels of use and management. The lower level has an even more developed character, even through it is fringed at the rear by a bushland slope and has the Hawkesbury River frontage to the north. It is accessed via a commercial/marina zone and elongated dominant sealed carpark. The area has a "busy boating and river foreshore" quality – with jetties and moorings, a netted tidal swimming enclosure, foreshore walking track, and fishing spots. This narrow area has recently been upgraded with pathways, lighting, signage, picnic and barbecue shelters and playground improvements.

Lisgar Gardens at Hornsby is terraced into a steep hillside. The gardens are an intensively modified and managed landscape featuring formal gardens (see fig. 1.21), pavilions and gazebos, fish ponds, waterfalls, informal law areas, picnic tables and a short rainforest walk. The gardens are open to the public and can be booked for weddings and other ceremonies, group excursions and garden inspections (for large groups) and professional filming and photography. Despite being a designated "major park", Lisgar Gardens offers a vastly different recreation setting and visitor experience to Crosslands Reserve.

Lilian Fraser Garden at Pennant Hills is a woodland garden, with a wide range of plants, and passive recreation area. It has significant heritage values due to its association with Dr Lilian Fraser and the Fraser family. This intensively modified area is closely managed by the Friends of the Lilian Fraser Garden on Council's behalf. The garden is open to the public, however again it offers a vastly different recreation setting and visitor experience to Crosslands Reserve.

Smaller forested areas in council-managed reserves, such as in Pennant Hills Park and at Florence Cotton Park, are only indirectly comparable with Crosslands Reserve.

Other District Parks Managed By Hornsby Shire Council

Of the other district parks or larger open space areas managed by Council the venues most closely comparable to Crosslands Reserve, in terms of setting and locations (requiring travel beyond the Shire's major urban areas) are Berowra Waters West on the west bank of Berowra Waters (see fig. 1.23) and Galston Recreation Reserve at Galston. However – like McKell Park above – these destinations are day-use areas only in more developed settings, making them a fundamentally different attraction

Figure 1.23: Berowra Waters West, downstream from Crosslands Reserve and substantially more developed

and visitor experience to Crosslands Reserve.

Destinations Managed By Other Agencies

It is also necessary to compare the reserve with other significant parks managed by other agencies in the surrounding region.

Intending visitors rarely make their destination and activity decisions based on the tenure or management agency responsible for a park (unless this is indirectly influenced by differing management regimes, such as regarding entry fees or activity regulations). Therefore it is necessary to also consider Crosslands Reserve within the context of lands managed by agencies such as the NPWS, or Department of Lands.

The most significant of these other-agency destinations is the Bobbin Head Picnic Area in Ku-ring-gai Chase National Park, approximately 12 kilometres north-east of the Hornsby CBD. The area is located in a very similar natural setting to Crosslands Reserve and, in terms of day-uses, caters for a very similar range of activities. However the area is a day-use destination only with no camping, and is a much more developed attraction than Crosslands Reserve as well as being more intensively used and managed (see fig. 1.24). It features 2 large shelter sheds, numerous smaller picnic shelters, gas and electric barbecues, park furniture, extensive sealed/ kerbed parking areas, a large central playground, sea walls, a canoe launching ramp, and a mangrove boardwalk with suspension bridge. The Bobbin Head area also has a kiosk, the Gibberagong Field Studies Centre, and the Halvorsen Marina complex with deep water/large boat access – which all significantly add to the sense of development, "civilization" and security. The area is very heavily used with over-crowding often a problem, and can regularly be closed due to excessive visitor loads at peak times. Other significant features that differentiate this area markedly from Crosslands Reserve are the $11 per vehicle national park entry fee and the fully sealed access road (which is also a through route).

Beyond the immediate regional catchment for Crosslands Reserve there are few other comparable destinations, the most significant ones being the following.

- Parts of the picnic area complex in the Lane Cove National Park – again these areas offer a more developed, landscaped, crowded and intensively managed destination.
- Davidson Park in Garigal National Park on Middle Harbour at Roseville – a very comparable location comprising landscaped "trees and lawns" river flats backed

Figure 1.24: Bobbin Head Picnic Area, a developed and heavily used destination in nearby Ku-ring-gai Chase NP
Source: *NPWS/DEC*

Figure 1.25:
Davidson Park picnic area, in Garigal NP on Middle Harbour

by bushland offering well-maintained facilities for picnicking, socialising, and river-based activities (see fig. 1.25). However the area is a day-use venue only, has sealed road access and an entry/use fee, receives far higher levels of use than Crosslands Reserve, includes views of nearby residential areas and major developments (such as Roseville Bridge), has a large boat ramp and parking area adjacent, and is managed with a high NPWS presence.

- The Basin Campground and Picnic Area in Ku-ring-gai Chase National Park, on the western foreshore of Pittwater – a very comparable experience and similar setting, but differentiated entirely from Crosslands Reserve as a boat-access or extended walk-in site only.
- Cattai National Park offers picnicking and car-based camping beside the Hawkesbury River north of Windsor – however the site's physical/natural environment is a more cleared, open, and modified setting than found at Crosslands Reserve.
- Car-based camping, of a comparable standard to that at Crosslands Reserve, is available in a few NPWS areas around the outskirts of Sydney – including Bents Basin State Conservation Area in the far south-west, at Mill Creek in Dharug National Park on the north side of the Hawkesbury River at Wisemans Ferry, and at Putty Beach in Bouddi National Park on the northern side of Broken Bay – however all these sites are well beyond primary user catchment area of Crosslands Reserve.
- The Department of Sport and Recreation operates two activity and camping centres at locations on the Hawkesbury River – however these sites are more developed and closely managed than Crosslands Reserve and generally not open to large-scale casual public use.

In addition, there are already three field study centres operating in the northern Sydney region,[57] including the Crosslands Convention and Field Study Centre.

Special Attributes of Crosslands Reserve

From the above comparisons it is evident that Crosslands Reserve offers an uncommon set of attributes and attractions when considered against other day-use and camping area settings across northern Sydney.

[57] HSC 1996(b), p. 11.

Crosslands Reserve offers:

- a “rare” undeveloped bushland park in close proximity to urban areas;
- one of the few, perhaps the only, vehicle-accessible bushland camping area in northern Sydney;
- an unsealed access road suitable for conventional vehicles, and buses (with care);
- an easily accessible but seemingly remote location within a spectacular bushland setting;
- a comparatively safe, convenient and comfortable location for first-time, novice or young-family camping groups;
- the major point on the upper Berowra Creek estuary that is accessible by motor vehicle; and
- a shallow safe tidal waterway, one of the few places offering this in a natural setting in northern Sydney.

1.6 Existing Visitor Use Characteristics

This section provides an overview of the existing visitor use of the site, including the provision of facilities and management of the area for visitors, and the implications of this for visitor use planning and management.

1.6.1 Access

The Crosslands Reserve’s day-use and camping area is principally accessed by the 2.5 kilometre unsealed northern extension of Somerville Road. Somerville Road is an extended ridgetop suburban collector road that leads northwards from Galston Road. This intersection is reached from the old Pacific Highway 3 kilometres to the east or through Galston Gorge 6 kilometres to the west.

The site is also accessed by walkers on the Great North Walk beside Berowra Creek, and for a few users by boat on Berowra Creek itself.

The reserve can be reached from the Berowra or Mount Ku-ring-gai Railway Stations.

Park Entry Road

The park entry road extends 2.5 kilometres from the reserve’s boundary to the existing day-use and camping area beside Berowra Creek. The road is partly within Berowra

Figure 1.26: The access road is steep, unsealed and curving – but part of the Crosslands experience and appeal

Valley Regional Park under the control of the National Parks and Wildlife Service and partly on a road reserve under Hornsby Shire Council's management. However management of the entire 2.5 kilometre access road is undertaken by Council.

This route is constructed on a generally curving alignment with an increasingly steep downgrade over the road's north-western section as it descends to Berowra Creek and the study site (see fig. 1.26). The road is approximately 5 metres wide, with some narrower sections. It accommodates two-way traffic, including regular use by buses, on a predominately unsealed surface of recycled asphalt profiling. Surface drainage predominately consists of table drains with limited formal drainage works. Lengths of timber post and weldmesh "catch" fence have been constructed on sections where there is a substantial fall away from the carriageway. Limited use has also been made of white frangible posts as road alignment markers to delineate the carriageway and assist motorists to negotiate the road – particularly along sections of table drain, at culverts and through the tighter curves. Advisory signposting is generally limited to the road's entry and end points, with some additional intermediate signposting.

In 2004/05 Council spent approximately $87,000 on maintaining the 2.5km access road. These costs are primarily attributable to regrading the road surface, which is regraded on an annual basis. The condition of the road at any given time can be attributed to the following factors:

- length of time since the road was last graded;
- traffic volumes;
- weather conditions; and
- gradient and horizontal alignment.

It is noted that the surface conditions of the road change throughout the year as a consequence of the above factors and that any increase in traffic volume generated may lead to a need for an increased annual commitment or a decision to seal all or part of the roadway. Council has evaluated the need to upgrade the surface of the unsealed section of Somerville Road and is planning to commit funds towards these works, commencing in the 2009/10 financial year.

As part of this project a traffic engineer was commissioned to undertake an assessment of the access road – considering issues such as usage levels, road width, pavement condition, alignment, signposting, accident history and safety.[58] A copy of this report is attached (Appendix 9), and the findings discussed in section 1.7.2 below. A draft Road Safety Audit was conducted for the park entry road by Hornsby Shire Council's Works Division in July 2002.[59] The draft report, which was

[58] Ray Dowsett Traffic and Transport Planning Pty Ltd

[59] Jenkins, J. and Smith, P.

never formally adopted by Council, was referenced in preparation of the latest Access Road Report and is also attached for information (Appendix 10).The draft Road Safety Audit Report estimated daily usage levels on the entry road, in 2002, as 35 vehicles (70 vehicle movements total, 35 each way) on a typical weekday, and in the order of 130-135 vehicles on Saturdays (264 vehicle movements) and 220-225 vehicles on Sundays (448 vehicle movements).[60] However it should be noted that these estimates were based on a July study, and winter usage levels can reasonably be expected to be lower than the peak autumn and spring visitor use periods. By comparison it was estimated that approximately 500-700 vehicles visited the reserve on Easter Sunday 2005, considered a peak use day.

The access road is predominantly used by conventional vehicles and light 4WDs, as driven by most visitors. Easter 2005 observations indicate that comparatively few vehicles with boat trailers or box trailers accessed the reserve. Chartered buses – mini buses, 40-seater "school" buses, and 60-65 seat coaches – access the site for group and school use. Such use principally occurs on weekdays. Buses also occasionally remain overnight in the existing carpark, in association with camping groups.

Buses servicing the Crosslands Convention and Field Study Centre, opposite the study area on the western side of Berowra Creek, use the reserve as a preferred access point (due to the steep and winding character of the Centre's western access road, which prevents access by larger vehicles). Groups as large as 200 visitors, or 4 large coaches, can access the Centre via the reserve's access road and carpark, including both commercial tour/educational groups (usually the larger group sizes) and private bookings. Patrons are taken across Berowra Creek to the Centre by punt, from two informal landing places on the creek's eastern bank – one at the southern end of the existing carpark where informal steps and a rough concrete landing has been constructed and the other at a break in the mangroves in the southern lawn area) depending on the prevailing tidal and flow conditions. Again such bus group access to the Convention Centre usually occurs on weekdays.

School camping groups who book to use Crosslands Reserve for camping rely on 65 seater coaches to access the park during the week also.

The July 2002 draft Road Safety Audit survey identified the road as a low speed environment, with 85th percentile vehicle speeds of 35km/hour and 36km/hour for north and southbound traffic respectively.[61]

[60] ibid, pp. 2-4.

[61] Jenkins, J. and Smith, P., p. 4.

Figure 1.27: The Great North Walk links through the site's developed areas beside Berowra Creek

A local public bus service operates along Somerville Road to a turnaround area at the reserve's top entry gate.
Somerville Road from Galston Gorge Road to the Berowra Valley Regional Park entrance is designated an RTA Regional Cycle Route. From the reserve's top entrance to the day-use and camping area the road is designated a Recreational Cycle Route in Council's Bike Plan. However very limited use of the access road by cyclists was observed during this study.

Hornsby Shire Council Rangers report that the road is also used by small numbers of pedestrians, especially on weekday mornings and afternoons/evenings.

The access road is an integral part of the park's character and visitor' perceptions of the destination. It directly affects the numbers and types of visitors that are attracted to the park, as well as their expectations and experiences. As discussed in section 1.5.3 above, Crosslands Reserve is significant as the major vehicle access point to Berowra Creek in the upper catchment (and one of only three such accesses along the entire creek).

Great North Walk
The majority of walkers access the day-use and camping area via the Great North Walk, which follows the eastern side of Berowra Creek providing access to the study area from both the north and the south (see fig. 1.27).

The Great North Walk is a well-defined and maintained walking track with numerous informal campsites or resting places with limited facilities, this includes sites each side of Crosslands Reserve. The site features on the Great North Walk maps and is actively promoted to walkers, especially as an overnight stop for a weekend/two-day walk on the northern outskirts of Sydney (a popular and heavily used section of the Walk).

Upgrading and maintenance work is at present underway on the section of Great North Walk immediately north from Crosslands Reserve from the mangrove boardwalk to Calna Creek.

Berowra Creek

Very small numbers of visitors access the study area by boat, up Berowra Creek – mainly for day-use, picnicking and fishing as well as, less frequently, for camping visits (see fig. 1.28).

Figure 1.28: A very small number of campers access the reserve by boat along Berowra Creek

Figure 1.29: The carpark's size, layout and vehicle-walker-cyclists conflicts were identified as issues by the Focus Group.

1.6.2 Visitor Numbers, Profiles and Activities

Council's 1996 Plan of Management for Berowra Valley Bushland Park identified Crosslands Reserve as "undoubtedly the recreation centre of Berowra Valley Bushland Park" and a site catering for "walking, picnicking, cycling, camping, and water sports".[62]

This view was borne out by the 2000 Hornsby Leisure Strategic Plan which identified Crosslands Reserve as the third most popular or preferred leisure destination/setting in the Shire, with 3.3% of respondents identifying it as their most preferred park – behind Fagan Park at 9.7% and Pennant Hills Park at 3.8%, and just ahead of Ruddock Park at 3.2%.[63]

The reserve is undoubtedly a popular venue, mainly on weekends and during holiday periods (especially during Spring and Autumn) for picnicking, relaxing and socialising, camping, and increasingly for canoeing.

Visitor Numbers, Profiles and Activities

Despite Crossland Reserve's popularity and long history of recreational use, no reliable counts of the site's total visitor usage levels are at present available.

Use of the area has been variously estimated as between 50 and 150 people per day.[64] While this may be a reasonable "annual average' figure, it is not accurate with regard to the site's peak use periods. Observations at midday on Easter Sunday 2005 (fine and sunny, 25°) recorded 141 vehicles in the carpark (with approximately 20% unused parking capacity) (see fig. 1.29). Assuming an occupancy rate of 2.5 people per vehicle this would equate to approximately 350 visitors on-site at that point in time. A major Scout Camp was also taking place in the southern lawn area during Easter 2005, involving over 200 scouts. Therefore, allowing for additional visitors both before and after the midday count, the total visitor load for Easter Sunday 2005 could be reasonably estimated to be in the order of 550-750 people.

Council Rangers reported that Anzac Day 2005 was an especially busy day, with the carpark full with some vehicles "centre-parking" while others parked on the shoulders along the lower section of the access road. (The Bobbin Head Picnic Area was closed due to over-crowding on this day also.) On an approximation of 200 vehicles on site, and applying the same vehicle occupancy rates as above, this peak point-in-time visitor load could be estimated as 500 people.

[62] HSC 1996(b), p. 39.

[63] Recreation Planning Associates, p. 35

[64] Webb, McKoewn & Associates, p. 18.

Figure 1.30: Picnickers, Easter 2005.

Figure 1.31:
Picnicking, socialising and casual games, Easter 2005

No reliable estimates are available regarding the number of visitors accessing the site along the Great North Walk or via Berowra Creek itself.

Little information is available regarding the origin of visitors. However Council's Parks Booking Officer estimates that the users of Crosslands Reserve come – 50% from the local area (5 kilometre radius), 25% from the rest of the Hornsby area, 20% from the remainder of the Sydney area, and 5% from the Central Coast or elsewhere. These figures relate to booked campers only, and may not accurately reflect the origins of day-visitors.

The landscaped river flat recreation areas are used predominantly for short-term day-use activities – chiefly picnicking, barbecues, socialising and casual games (see fig. 1.30 and fig. 1.31). During the warmer weekends and holiday periods these day visitors are typically extended family groups or gatherings of friends, with single family group and couples generally in the minority. During the Easter 2005 weekend more than two-thirds of all picnicking groups were observed to be extended family groups of larger gatherings (usually 8-15 people), although this can be expected to be a peak period for such larger family picnics or gatherings.

This skewing in user types gives the area a very "social" or friendly character. Notably the Focus Groups Members reflected the view that there was little user conflict or congestion at the reserve, even during busy periods, with "generally a harmonious sharing of the lawn areas by visitors" and noting that this "informality and friendliness should be encouraged". Council and NPWS Rangers, while having to deal with usage conflicts/issues more often and more directly, still did not perceive the site to have any serious user conflict problems.

Picnickers appeared to be equally comfortable using the bench tables provided or bringing their own chairs and rugs to picnic on the grass. Activities typically associated with these picnics/barbecues and social gatherings include bike riding, short walks, casual ball games or other "family fun", relaxing and reading, and occasionally fishing. Considerable numbers of cyclists were noted using the area during site inspections over the Easter 2005 weekend - notably young/learner riders, children and youths, and family groups (see fig. 1.32). Over 10% of all vehicles in the carpark on Easter Sunday 2005 had bike-racks, indicating that visitors were driving to the reserve and then using the area as a safe family cycling venue.

Picnickers also make use of the reserve during the week, however in far more limited numbers with only one or two groups being observed during each weekday site visit for this project. Weekday users tend to be more short-term visitors, such as short walks or jogging/exercise before and after school or work. This includes substantial weekday use by dog walkers. The reserve's open lawn areas and playground were also patronised by mothers with pre-school children, both as individual family parties

Figure 1.32:
Family cycling was a popular activity during Easter, 2005

Figure 1.33: Large group “heavy” campers, Easter 2005.

Figure 1.34: Small group “light” campers, Easter 2005

and in groups, during the week.

No large-group organised weekday use, such as retirement home outings or club use, was observed during the site visits. Rangers reported that such use only occurs infrequently at present.

Campers make up a smaller percentage of the site's visitor numbers, but obviously represent a disproportionately greater visitor "load" than these raw numbers would suggest due to their greater length of stay. Campers also tend to be a more varied user group - ranging from families and extended families, groups of youths/ friends, couples, organised groups (both large and small), commercial parties, and backpackers on the Great North Walk (see fig. 1.33 and fig. 1.34).

The site's convenient vehicle access, perceived security, proximity to urban areas, and facilities (especially flushing toilets and potable water) make it a very attractive destination for novice or first-time campers. These factors also contribute to the "heavy" character of the site's camping use, typically involving considerable equipment and supplies (which some groups were observed to transport between the carpark and their campsites by wheelbarrow or trolleys). This "heavy" camping can have greater impacts on an area, but novice campers also tend to use a site for shorter periods which can balance these effects.

Council and NPWS Rangers report that the area has a high level of "repeat" or "regular" campers who have been visiting the site over extended periods.

Campers generally enjoy a similar range of relaxed casual activities as do day-users. Few empty tent sites were observed over the Easter 2005 weekend, suggesting that campers did not venture far from the landscaped areas or make great use of the surrounding bushland but stayed close to their "bases" and the attractions and facilities of the riverside recreation areas. They also tend to make greater use of Berowra Creek for canoeing, fishing and swimming.

Canoeing has long been a popular activity at Crosslands Reserve, encouraged by the Crosslands Convention and Field Study Centre and the site's long association with the Scouting movement. The area's appeal for this activity has reportedly increased in recent years, with improvements in water quality and a decrease in motorised boating in the area (due to downstream sandbars). Regular canoe activity at the boat ramp was observed over the Easter 2005 weekend, and approximately 5% of vehicles in the carpark had canoe-racks. By comparison, small aluminium boats ("tinnies") were rarely seen. Canoeists included both dedicated paddlers on longer explorations of Berowra Creek and casual paddlers who stayed around the immediate area. Canoeists were largely single/pair or small group user and also used the carpark and boat ramp areas for picnics or as a "shore base" for their

Figure 1.35: The existing boat ramp and adjacent shade was well patronised by canoeists over Easter 2005

Figure 1.36: Scout Camp, Easter 2005

Figure 1.37: Long distance walkers on the Great North Walk traversing the carpark, Easter 2005

activities (see fig. 1.35).

Comparatively few visitors were seen swimming in Berowra Creek over the Easter 2005 break, despite the warm sunny conditions. There is a perception that the upstream Sewage Treatment Plant has degraded water quality in the creek make it unsuitable for swimming. However both Council and NPWS rangers, and staff from the Crosslands Convention and Field Studies Centre, report that swimming still occurs at the site. The area's shallow depths would make it an attractive and reasonably safe venue for this activity if/when water quality allows.

Scouts are a long-term user group at the reserve, their association with the area dating back to the 1960s or before. Today the local Scout Groups use the site for a variety of activities ranging from small group backpacking on the Great North Walk, through day-use training events and smaller overnight group camps, to large organised weekend camps involving over 200 people (such as during Easter 2005) (see fig. 1.36). These larger events are arranged in close co-operation with Council. Few conflicts between these occasional large group events and other visitors have been reported.

The use of Crosslands Reserve by walkers on the Great North Walk can vary. Dedicated walkers seeking an experience without the disruption of vehicles, other visitors and developments may see the area as an unwelcome intrusion on the enjoyment of the longer walk (see fig. 1.37). This is likely to be exacerbated by the present requirement to walk through the carpark and centre of the landscaped picnic/camping areas to link the north and south trackheads. Less experienced walkers may view the site's facilities as a welcome and logical stopping point on their walk. Many people use the reserve as an access point for day or overnight trips on the Great north Walk.

The site receives considerable educational use, chiefly by secondary and primary schools but also on occasion by tertiary institutions. The majority of this use occurs during the week, and usually involves one or more bus groups.

As described in section 6.1.1 above, the site also serves as an access point for visitors to the Crosslands Convention and Field Studies Centre on the opposite bank of Berowra Creek. This may involve up to 4 large coaches dropping-off or picking-up groups of up to 200 visitors, mainly children and school groups, to be ferried to and from the Centre. Some of the Centre's outdoor education groups also make use of the site – frequently camping in the southern landscaped area, or accessing the Great North Walk. A major commercial tour operator and outdoor education/recreation provider that has a long association with the Centre, Southbound Adventures, is a regular user of Crosslands Reserve – chiefly for water-based activities, as an access point to the Great north Walk and adjoining bushland, and a service/support

centre.

The reserve is also the venue for a number of Council's educational or organised activities – such as a regular Eco History walk, guided Aboriginal heritage walks, and wildlife spotlighting activities.

Visitor Satisfaction

No comprehensive survey programme is in place to determine users' motivations for visiting or levels of satisfaction with Crosslands Reserve, nor to identify the perceptions of the site among non-visitors.

Anecdotal evidence from Council Rangers, and feedback from the Focus Group members as discussed in section 3.1 above, is that there are generally high levels of satisfaction existing users of the site.

The 2002 student visitor survey of the reserve did draw out some satisfaction indicators from the few face-to-face on-site surveys undertaken. This very small snapshot (of only 12 respondents) identified that "Crosslands is valued by the majority of users for its natural setting, solitude, open space and picnic facilities", that it was also seen as "a safe place for children to ride their bikes and play", and the "majority of users appreciate the main attributes of Crosslands and do not want to see it 'overdeveloped' by the provision of extra facilities, such as a kiosk and more cycle paths".[65] All 12 respondents "thought that dogs should be allowed at Crosslands" and the survey noted general confusion regarding dog regulations at the site. The two camping groups surveyed were especially supportive of "the security of having the top gate locked at night".

The brief survey concluded that "most users are happy with the status quo and are keen to keep Crosslands as their local secret!".[66] The majority of respondents also preferred Council as the site's manager, noting that "Council has been doing a good job so far so why change something that works".[67] Suggestions for the site's improvement were only minor – including improved on-site map/brochure and orientation information, an honorary camping fee collection system, improved bushfire information (risk, advice and evacuation routes), and a list of off-leash dogs areas within the Shire to assist in on-site dog management.

Council records show occasional complaints about the site – mainly regarding condition of the access road, odours and cleanliness of the toilet blocks, dogs, and the inappropriate behaviour of other visitors. However the level of complaints is generally lower than would be expected for a destination of this scale and visitor

[65] Nichols, S., pp. 1-2.

[66] ibid, p. 2

[67] Nichols, S., p. 2.

numbers.

1.6.3 Visitor Facilities and Management

On-site Facilities

Crosslands Reserve has been used, and progressively developed and modified, as a recreation area in both private and public ownership for more than a century. Despite this extended history the site remains at the lower end of the development spectrum – in terms of the type, standard and number of visitor facilities provided. Overall the park has been minimally developed to reflect the style of place that it is – and in response to both community needs and asset management requirements. The type, standard and number of facilities provided reflects the nature of the visitor experiences sought at this less-developed end of the recreation opportunity spectrum. As already discussed, this low level of development is a central element in the area's appeal to the existing users.

A detailed discussion of the facilities and infrastructure now found on the site is provided in Part Two Site Analysis, Issues and Opportunities.

Reserve Promotion and Public Awareness

Crosslands Reserve is promoted through Council's website, as well as by a coloured brochure prepared in 2003 by the Berowra Valley Regional Park Trust and jointly published by Council and the NPWS.

The NPWS *2005 Guide to NSW National Parks* includes an entry for Berowra Valley Regional Park, and recommends Crosslands Reserve as the main vehicle entry point as well as an attractive picnicking and canoeing venue. However it makes no reference to the site as a vehicle-based camping area.

As a dead-end access road, and with only very small signposting to the site at the junction of Galston and Somerville Roads (and similarly at the junction of Crosslands Road and Galston Road on the opposite, western, side of Galston Gorge), the reserve is not significantly exposed to passing or casual visitor traffic. Compared with other similar sized and developed reserves elsewhere across northern Sydney Crosslands Reserve has, at present, a low public profile and appears known to only a limited set of regular users or local residents. Use by schools, scouts and other organised groups has, reportedly, been one of the main means by which new users have been introduced to the area in the past.

Maintenance and Management Presence

The site has no permanent on-site management presence. However staff from the Crosslands Convention and Field Study Centre on the opposite bank of Berowra

Creek occasionally fulfill a defacto site protection role and call Council Rangers or the Police in instances of anti-social, inappropriate or potentially damaging/ dangerous behaviour within the riverside recreation areas.

Hornsby Shire Council's by-laws and the National Parks and Wildlife Regulations apply to the respective parts of the reserve and can be enforced by the relevant agencies. However, at present, there are no reciprocal enforcement arrangements in place.

Council Rangers visit the reserve daily, or more frequently, as required during peak use periods. There is also an emergency after-hours call out service for Council's duty ranger. NPWS Rangers also regularly visit the reserve and are available on an as-required basis.

Routine cleaning and maintenance works – such as daily cleaning of the toilet blocks, rubbish disposal, and periodic lawn mowing – are undertaken by Council's contractors or day labour. Larger landscaping projects, facility repair/maintenance or construction, and bushland regeneration are undertaken by the relevant sections of Council. Kindling and firewood for the barbecues and firepits is regularly supplied by Council.

Community groups and volunteers have been involved in planting and bush regeneration projects on the site in the recent past. However there is at present no "Friends Group" associated with the site, nor are regular user groups routinely involved in the area's upkeep and improvement.

The area around Hornsby Heights, Crosslands Reserve and Berowra Heights is one of three "hotspots" in the Berowra Valley Regional Park for unplanned fires and, as a result of its steep topography, the area also has a high bushfire behaviour potential.[68] However, due to its limited access and high potential for entrapment, Crosslands Reserve is not identified as a key fire fighting location, water supply point or emergency helipad in the Berowra Valley Regional Park Fire Management Plan.[69]

Crosslands Reserve is an important vehicular access point and central location for Department of Lands' work/maintenance crews along the Great North Walk. It is also a valuable access point for search and rescue or other emergency operations. Department of Lands' work/maintenance crews, the RFS and other emergency services occasionally require vehicle access directly to the Great North Walk trackheads in the north and south of the site. The Department of Lands also uses the

[68] Berowra Valley Regional Park Trust & NPWS, pp. 32 & 46.

[69] ibid, pp. 32 & 46.

existing boat ramp occasionally for launching and retrieving a punt (5 metres long by 2.5 metres wide) used for access and track work along the Great North Walk.

1.6.4 Regulating Visitor Access and Use

Entry Gate and Vehicle Access

Vehicle access to the reserve is controlled by a gate at the top of the entry road, at the end of the sealed section of Somerville Road, which is locked and unlocked daily by Council Rangers. Gate opening times vary seasonally – from 7.30am and 7.30pm during the summer months, and 8.00am to 5.30pm during winter. This regime of nightly closure of the access road was introduced several years ago to control after-hours vehicle access and associated inappropriate activities (such as "burn-outs", vehicle dumping and fires), and has proven reasonably effective as well as being welcomed by the greater majority of visitors. Campers can obtain a key to the top gate for the duration of their visit, for an additional fee and substantial bond. After-hours contact details for the Council Rangers, to allow for emergency access and other assistance, are available on-site. Access keys are also held by appropriate emergency services – such as the Police and RFS.

Within the study area vehicles are usually restricted to the fenced carpark area. Larger organised camping groups can obtain a key from Council, on a fee and bond basis, to allow temporary access to the grassed areas to set-up or pull-down campsites. Large organised groups, such as Scouts or school camping groups and commercial operators, can make special vehicle access arrangements according to case-by-case or regular-user arrangements.

Camping Bookings

Intending camping groups are required to book with Hornsby Shire Council prior to their visit. This requirement is advertised through the Council's website and in publications such as the joint Council-NPWS "Park Guide" and, according to Council staff, is adhered to by the majority of visitors. Camping fees are, at present, $4 per person per night plus a $12 administration fee (as a flat fee per booking). Camping bookings are for a maximum of 10 days, and an adult (18 years of age, or over) must be present at all times. Camping groups bookings are checked on-site by Council Rangers, but no monies are collected on-site (for staff safety and OH&S reasons) and all bookings and payments must be made through Council's Parks Booking Officer.

There is, at present, no fee for day-use of the site by private visitors/groups.

Commercial, Special-event and Large Group Users

Commercial operators, special events and large group users (that would displace or effect other visitors' enjoyment of the day-use and camping areas, or potentially impact the reserve) require a licence from Council. Such licences typically include conditions relating to matters such as vehicle access, the approved area or areas to be used, additional toilets and other facilities, cleaning and site protection, food and drink sales, alcohol, music and noise controls, curfews, insurance, and prior notification of reserve neighbours.

Reserve Closures and Restrictions

Since 2003 Crosslands Reserve has not been automatically closed to visitor access/ use during Total Fire Bans. The present protocol is that the RFS advises Council on park closures, due to unacceptable bushfire risks, when a Total Fire Ban is in force as well as at other times of extreme weather conditions.

During Total Fire Bans Council rangers erect temporary signs at key points on the reserve, advising visitors of the restrictions applying to the use of fires. The NPWS may also declare a "Park Fire Ban", having effect on NPWS lands only, which can be a source of some confusion for visitors.

The reserve may also be closed as required due to floods, storms, emergency operations or for other management purposes.

Extended or unforeseen closures of the reserve can both have implications for the activities of licensed commercial operators, including access to and from the Crosslands Convention and Field Study Centre, as well as inconveniencing intending visitors.

The day-use and camping areas are a declared alcohol free zone, however this restriction is enforced at the discretion of Council Rangers.

1.7. Vision Statement for Crosslands Reserve and Key Planning Directions

This section establishes the broad planning directions to guide the future use, development and management of the riverside landscaped recreation areas at Crosslands Reserve. Central to this is definition of a vision statement for the site. Planning directions are also identified regarding access to the site, utilities and services, preferred uses, and management initiatives.

More tangible physical planning, organisation, presentation and design directions for the day-use and camping areas themselves are detailed in Part Three Masterplan.

1.7.1 Vision Statement for Crosslands Reserve

This vision statement identifies the "type of place" the creekside landscaped recreation areas at Crosslands Reserve will be in the forseeable future period, the experiences they will offer visitors, a preferred capacity, the standard of visitor and management facilities, and the intensity of Council-NPWS management.
The vision statement relates principally to visitor management issues. It provides a broad template against which future – as yet unforeseen – planning, development, usage and management decisions can be placed. It is also a useful tool in the site's promotion, and an input to the wider park and regional planning processes of Council and within the Berowra Valley Regional Park as a whole.

An intended vision statement for the site has been derived from several sources, all previously discussed, including:

- existing planning documents, policies and legislative requirements;
- the Council and NPWS management directions for the site, as set out in the project brief and articulated by Council and NPWS staff;
- the site's regional open space context and its place within Berowra Valley Regional Park, and especially the site's special attributes/characteristics;
- inputs and views of the community Focus Group;
- the values, opportunities and constraints presented by the site's cultural and natural resources;
- existing visitor use numbers, patterns, and impacts; and
- the available management resources and expertise.

Accordingly, the desired role and character for the Crosslands Reserve creekside recreation areas is as follows. Overall the site will be:

> "A modified landscape located within a natural bushland setting, offering a sense of both remoteness and security, accessed by an unsealed or predominantly unsealed 2WD road, catering for both day-use and regulated camping activities. There shall be an emphasis on low-key parkland and bushland oriented visitor activities as well as educational uses, without a perception of over-crowding. The reserve shall be serviced by an array of basic standard but well-presented and maintained facilities and managed without a high degree of regimentation and overt regulatory presence."

1.7.2 Key Planning Directions

The following planning directions primarily relate to access to the riverside landscaped

usage areas, utilities and services, preferred uses, and management initiatives. More tangible site planning and design directions for the area are detailed in Part Three Masterplan.

Access Road

The traffic engineering assessment of the site's access road found that there was limited scope to provide major improvements to the road, such as widening or re-alignment, without undertaking substantial road reconstruction. It was considered that this would be cost prohibitive and difficult to justify on existing or projected usage levels and site capacity.

However the report recommended a number of actions and improvements to provide immediate and longer term safety benefits to users of Crosslands Reserve, including the following.

- Continue with the current yearly program of maintenance of the road surface and table drains, with particular attention given after periods of inclement weather. The maintenance period may need to be reviewed in light of any increase in traffic volume, especially buses and other heavy vehicles.
- Provide additional white frangible alignment posts along the edge of the carriageway to delineate table drains and through each curve.
- Replace the timber post weldmesh "'catch" fence with a steel guardrail. The priority for this work will increase if it is found that there are increases in traffic volume along the road.
- Undertake a range of minor signage improvements.

The report did not identify a requirement to fully seal the access road, from a road safety viewpoint. For economic reasons, Council may however choose in future to fully seal the road on the basis that the annual costs of grading the unsealed road are too high. Council has undertaken preliminary investigations of the need to upgrade the road surface and it is forseeable that parts of the access road may be sealed in 5-10 years time.

The traffic report concluded that it was not possible to accurately predict a traffic volume threshold at which the road would require significant upgrading. Increased use by all vehicles and in particular heavier vehicles, such as large charter buses, would add to the frequency for maintenance of the road surface but not necessarily warrant full sealing.

The report noted that the maximum recorded traffic volume on the reserve access road is in the order of 450 vehicles on a Sunday in 2002, with an 'estimated' maximum of 500-700 vehicles per day over Easter 2005, but that weekday volumes are significantly lower at approximately 70 vehicles per day. The report concluded that any significant upgrading of the road/road surface, such as full length sealing,

was neither required or warranted from a traffic management perspective – based on available known numbers of vehicles accessing the reserve or projected usage levels. Such sealing would result in both an undesirable increase in vehicle travel speeds, with a possible increase in accidents requiring consideration of the introduction of traffic slowing measures.

It is noted that a full sealing of the access road is likely to impact on the site's character, visitor experiences, usage levels, management demands, and development pressures. The unsealed access road is considered a key contributor to the area's low-usage numbers and profile. It also contributes to the park's character and visitor' perceptions and experience of the destination, and as an uncommon feature at the regional scale – as described in sections 1.3.1, 1.5.3 and 1.6.1 above.

Sealing of the road is expected to have the following effects, all of which impact on the desired vision for Crosslands Reserve.

- Usage levels may increase, as the perceived barrier of an unsealed winding road is removed and the area becomes a more "mainstream" destination with a comparable standard of access to other heavily used urban reserves.
- Much of this potential increased usage is likely to be in picnicking and short-term visitors which would change the character of the reserve and result in increased crowding and a "busy" feel across the site, particularly during peak weekends. Campers would be especially disadvantaged by this increased day usage, and conflict between campers and picnickers could be expected and may lead to a requirement to stop the use of the park for overnight camping. Conflict between picnickers and other short-term users may increase as visitor numbers escalate.
- Present users of Crosslands Reserve, who are attracted by the site's existing character and facilities, may choose to visit other more remote settings in seeking more informal recreation settings.
- Greater use of the park, occurring as a consequence of a road upgrade, will increase demands on Council (and the NPWS) for management and maintenance efforts at Crosslands Reserve. This will extend across all aspects of site management, from day-to-day visitor control and enforcement to the cleaning and upkeep of facilities. Greater usage impacts on the area's lawns, landscapes and amenity values would be also experienced.
- Significantly greater usage levels would increase the demands on the site's sewage systems which are already under pressure and in need of immediate upgrading – as proposed in Part Three Masterplan.
- The sites' carparking capacity, which is currently only exceeded on exceptionally busy days, may be found to be inadequate to cope with the more frequent and greater parking demands that the site's increased accessibility would generate. Parking congestion, visitor frustration, and on-site management/regulatory

demands would all increase.

- The site's changing user profile may also place additional pressures on Council for additional and better maintained facilities, as these growing numbers of short-term visitors typically demand higher levels of comfort and facilities than are required or desired by the area's existing patrons.

The Focus Group also expressed support for retention of the access road as an unsealed 2WD route – as described in section 1.3.1 above.

Accordingly it is noted that if portions of the access road are sealed or substantially upgraded it will have flow-on effects in Crosslands Reserve that may lead to changes in the management and operation of the park. Any future decision to partly or fully seal the road and construct appropriate table drains should also give consideration to include funding to provide traffic slowing measures and up-grade the chain wire safety barriers. It should also give consideration to the potential impact of the works on the functioning and operation of Crosslands Reserve.

While there is no apparent evidence to suggest buses are having any significant difficulties in accessing Crosslands Reserve, the access road report acknowledged that when a bus and car meet on a narrower section of the road one vehicle may be required to give way. This situation is understood to already occur on infrequent occasions, but is limited by the usage patterns of bus groups (mostly weekdays) and the bulk of independent car-based visitors (on weekends and holidays). Any increase in bus activity along the road may create the potential for this situation to arise more frequently and may give rise to consideration of imposing restrictions on access to the reserve by vehicles of a determined length, such as vehicles exceeding 7.0m in length.

It is recommended that prior to introducing restrictions on the size of vehicle permitted along the access road, there should be further evaluation of the demand and the extent of traffic conflict associated with buses accessing Crosslands Reserve. This evaluation should be undertaken in association with investigations identified in Part Three Masterplan, aimed at determining the capacity of bus parking facilities to be provided within the reserve.

Improvements and modifications to the access road's lower entry into the riverside recreation areas, and reorganisation and refurbishment of the existing central carpark including the provision of additional creekside "greenspace", are detailed in Part Three Masterplan.

Walking Track Access

Consideration should be given to separating pedestrian and vehicle traffic on the access road, which is occasionally used by walkers to access the site.

It is proposed that Council and the NPWS jointly investigate the routing and development of a walking track link between the day-use camping areas and the reserve's top entry or Somerville Road area. This walking track route should be well away from the access road to avoid users being drawn to this alternative route.

Water Supplies

The reserve's water supply is in urgent need of replacement.

Council has previously proposed the complete replacement of the water pipeline, with a new underground service following the access road from Somerville Road into the reserve. Council has attempted to negotiate a three-way agreement with the NPWS and Crosslands Convention and Field Studies Centre for the funding of these works. However to-date funding has not been identified by all parties, and the works have therefore not proceeded. Negotiations will continue, as a priority, towards the joint upgrading of the reserve's water supplies. Further investigation of the options for this upgrade are currently being undertaken. If the cost of a replacement pipeline connected to the Sydney Water system is found to not be feasible it is possible that alternative systems utilising bore water and water tanks may be implemented, and that these systems do not involve the service extending to the Crosslands Convention Centre.

It is also proposed that the reserve's toilet blocks should incorporate rainwater tanks to supplement other water sources to assist in reducing water consumption.

The provision of showers, especially for campers at the site, has been suggested at various times in the past. The current water supply pipeline would in no way support the installation of showers or dishwashing facilities. Even if these water supplies were to be upgraded, as discussed above, the site's existing and proposed upgraded sewage disposal systems would be inadequate to cope with the greatly increased waste water loads that showers would generate. Showers would also increase the site's amenity and so encourage longer stays by campers, in turn increasing the area's usage levels and maintenance demands.

Upgrading of the site's toilet facilities, and sewage disposal systems, is discussed in detail in Part Three Masterplan.

Balancing Day and Overnight Uses, and Overall Usage Character

The present mixing of picnicking/day-use and camping activities was not seen to be problematic within the riverside landscaped recreation areas. Both activities are considered by visitors, the Steering Committee, and Focus Group to be legitimate and desirable uses of the area. Therefore it is proposed that both picnicking/day-use

and camping uses continue to be permitted at the site.

However both uses have the potential to increase significantly. The reserve may become a more heavily used destination for vehicle-based camping as other locations for this activity in the Sydney Basin become increasingly regulated, restricted or close. The location of vehicle-based campers can be manipulated by the positioning of facilities – especially toilets, vehicle access or carparking, and firepits. Vehicle-based camping may need to be more closely managed in the future – by capping camping bookings over any given period, or defining those parts of the site where camping is permitted (either by regulation and/or discrete identification on-site), or both.

However it is proposed that picnicking and associated day uses can occur across all parts of the site.

It is proposed that the existing requirement for campers to book their use of the site prior to arrival, and the overnight locking arrangements for the reserve entry gate, are continued.

Commercial and group use of the area is also proposed to continue under Council's current booking, approval or licensing system – but will be subject to continuing review. Commercial use of the site, such as ecotourism ventures or retail activities, will be low-key in nature and not require major structural or built elements.

Restricted Activities

It is proposed that the present warnings against swimming and other primary contact uses of Berowra Creek be continued. Advisory signage will be improved to this end. Council will also consider establishing a permanent water quality monitoring site at Crosslands Reserve, as part of its Shire-wide water quality monitoring programme and the results made accessible via Council's website for the advice and information/ education of potential visitors.

Dogs will not be permitted anywhere in the Crosslands Reserve. This is in recognition of the area's recorded habitat significance, its location deep within a larger natural area, and the exclusion of dogs from the area under the terms of the Berowra Valley Regional Park Plan of Management and as set out in Council's 1996 Berowra Valley Bushland Park Plan of Management (Stage 2). On-site signage, as well as park brochures and other off-site information, will be revised to clearly present this "no dogs" restriction.

It is proposed that the existing boat ramp be redesigned and upgraded to cater for the carry-launching of canoes and other small boats only, and no longer provide for its use by vehicles and trailer-launched boats – as detailed in Part Three Masterplan.

Facilities, Built Mass and Site Character

The extent of the landscaped and modified riverside recreation areas will not be extended. Environmental protection of the site and surrounding areas will be given high priority in all management operations.

It is proposed that visitor facilities will be improved and upgraded across the site, and a number of additional facilities provided – as described in detail in Part Three Masterplan. The existing open space nature and "trees and lawn" character of the site will be maintained.

No field studies centres, ecotourism or retail facilities, group use facilities or other major built elements will be developed anywhere on-site. The proposed mangrove viewing platforms, picnic and barbecues shelters, and improvements to the existing toilet blocks will represent the upper limit of built elements envisaged on the site during the life of this Masterplan.

As all areas of the site are subject to flooding, the protection of facilities from flood damage and avoiding adverse environmental impacts during floods will be considered in the design of all visitor and other facilities.

Entry Fees and Reserve Promotion

The introduction of day-use fees for general reserve visitors is not considered desirable or practical at present. The current fees and charging arrangements will be continued for campers, large group, commercial and other booked users of the site – and be subject to review and change as required.

However a day-use or entry fee may be appropriate should visitor numbers to the reserve increase markedly – such as should the access road be upgraded or sealed – and will be re-assessed at such time.

Promotion of the reserve has the potential to considerably increase visitor numbers. Increases in visitor levels may also come about through the proposed selective improvement in park facilities. It is proposed that the reserve not be actively or widely promoted but remain a "discovered" destination used primarily by local residents, established users, word-of-mouth, and highly motivated visitors who actively seek out areas such as Crosslands Reserve.

Any limited promotion of the site should only take place after any effects on visitor numbers from the improvements proposed in this Recreation and Masterplan have become evident.

Management Regimes

Day-to-day management regimes that require minimal input from Council and the NPWS will be favoured in the area's on-going management. This especially relates to special visitor/vehicle access provisions and the management of camping.

It is proposed that Council and the NPWS investigate reciprocal enforcement arrangements regarding each agency's by-laws and regulations. In particular, Total Fire Ban and Park Fire Ban declarations and enforcement will continue to be co-ordinated across the site as a whole.

Operational management, presence and patrol arrangements, and enforcement activities by each agency will be co-ordinated across the site as a whole to present a single seamless destination and experience for visitors.

Part Two

Site Analysis

Issues and Opportunities

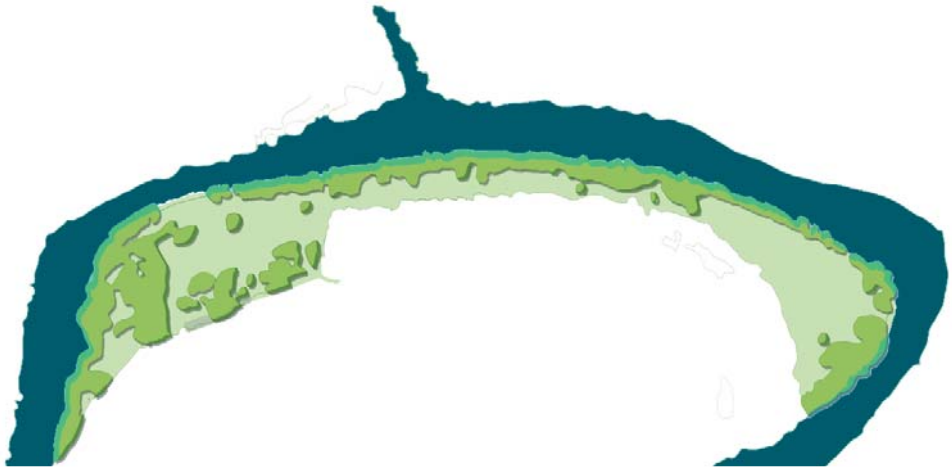


Figure 2.1: Berowra Creek looking west from Salt marsh Creek Walking Track towards Crosslands Reserve

Figure 2.2: Trackhead - Great North Walk - Northern Area

2.1 Introduction

Crosslands Reserve is an attractive and popular recreation destination situated on the eastern bank of Berowra Creek. (see fig. 2.1) The reserve largely comprises natural bushland on steep sandstone slopes above the creek. The lower-lying creek flats have been developed as two extensive grassed and landscaped open space areas, arranged at each end of a large sealed central car park.

The recreation value of the reserve has been recognised since the 1890s and early 1900s, and the site has a long history of visitor use. In 1924 the area was described as “the most ideal spot on the river where acres of turf covered banks slope down to the water’s edge”. Today, the reserve offers the facilities and the familiarity of an urban park, but in a bushland setting with a sense of remoteness and escape. Accordingly the reserve is a popular destination for picnicking, barbeques, bushwalking, swimming, canoe and motorised water-based activities, and regulated camping.

The Great North Walk which bisects the reserve’s lowlands, and the Crosslands Convention and Field Studies Centre on the opposite bank of Berowra Creek (and not part of the reserve), add additional dimensions to the area’s appeal and visitor use. (see fig. 2.2)

The reserve’s landscaped parklands have been progressively developed with barbeques (of a variety of styles), picnic and park furniture, picnic shelters, a playground, toilets, water supplies, a small sealed bicycle/ shared path, landscape amenity plantings, and fencing. A recently opened interpretive boardwalk leads for 500 metres through mangroves and bushland beside Berowra Creek from the northern picnic area. A small unsealed boat ramp accesses Berowra Creek from the centre of the large car park. Many of these facilities are aging and warrant replacement or upgrading to improve the reserves presentation and visitor experiences.

2.2 Setting

The park setting is characterised by three distinct areas:

2.2.1 The Northern Area

The northern area of the site is bounded by the Berowra Creek to the west and north as it flows towards the east with a dramatic bend. The southern boundary is a swing gate, which seals the northern area from

Figure 2.3: View across Northern area

Figure 2.4: View looking north along access track

traffic; to the east is the Casuarina wetland area which forms the entrance to the boardwalk and the continuation of the Great North Walk.

The site has a predominantly open character with a dramatic appreciation of the sandstone topography and features beyond the site. The distance from the car park also lends quite a serene atmosphere to the site, demonstrating considerable qualities as a passive recreational space.

There are three covered picnic shelters in fair condition.

The ground plane is predominantly mown turf which flows to the edge of creek banks to the north and west and towards the Casuarina wetland to the east. (see fig. 2.3) There are several large Eucalypts towards the central area of the northern part of the site providing shade and amenity.

The site is bisected by a three metre partially sealed road which leads from the gate, gradually tapering to two 900mm pathways. (see fig. 2.4) There is a branch path to the west and a circular one to the east, both enclosing large mulched planted areas. (Refer to Section 2.2.2) The east path encloses a mound forming part of an Ecomax environmental treatment system for the adjacent brick toilet block. The mound is vegetated with trees, shrubs and ground covers within a mulched garden bed.

At the northern end, the area terminates in a low eroded open bank with spectacular views of the sandstone outcrops on the opposite bank.

On the eastern boundary, flanked with mangroves, the banks to the creek are steeper and more eroded in places where some informal access takes place. The boundary to the east is marked by an entry shelter leading to a boardwalk. A large turfed area closest to the Casuarina wetland is quite often waterlogged and is less suitable for visitor use.

The majority of activity is along the western and northern edges of the site where picnic settings and shelters are sited.

Figure 2.5: Community plantings Northern Area

Figure 2.6: Community plantings Northern Area

Mulched planting areas within the Northern Area

Two large mulched planting areas contribute a variety of qualities to the experience and use of the site. (see fig. 2.5 and fig. 2.6)

As areas of community planting, they contribute social value to the site in terms of community ownership and interest. They also contain new tree plantings, many of which are developing successfully and are be expected to make a significant contribution to the long term amenity of the setting.

However as continuous areas of mulched plantings they form a visual and functional barrier in the middle of the site. They block significant view-lines to surrounding hills and ridge lines and break the open 'trees-in-grass' landscape character of the Reserve. Their location also limits greater recreational use of the overall space of the Northern area.

Although many of the plantings are developing successfully, there are some shrub and ground covers that are failing and the presence of weeds detracts from the qualities of the site. Many of these shrub and groundcover plantings have shorter life expectancies and it is considered that they may be progressively removed over the medium to long term to address the visual and recreation issues identified above.

2.2.2 Central Car Parking Area

The central area of the reserve is used for car parking, generally allowing 90 degree parking on both sides of an access road. (see fig. 2.7) The boundary of this area is formed by the NPWS gate to the north and the turning eastwards of the entrance road to the south.

The parking pushes to the edges of this landscape corridor with mangrove planting on the western side and a flooded area of Casuarinas on the eastern edge. The resulting effect is of a poorly managed carparking area, dominated by paved surfaces. There are a series of rounded speed humps crossing the road, which appear quite large and over-designed for the site, but help prevent activities such as "burn-outs" by cars.

A small concrete ramp at the southern end of the carparking area is used to pick up visitors to the Convention Centre on the other

Figure 2.7: Central Parking Area

Figure 2.8: Conference Centre pick-up point

Figure 2.9: Boat Ramp Area

side of the river. The ramp is concrete to high-water mark, with mud exposed at low-water mark. (see fig. 2.8)

In the middle of the carparking area is a large mud ramp cut through the bank which is used for trailer-launching boats as well as hand-carried canoes. (see fig. 2.9)

2.2.3 Southern Area

The southern area is bounded by the entrance road to the north, a steep escarpment to the east, Berowra Creek to the west and bushland and the Great North Walk to the south. The area has an open character consisting of a large open grassed area with clumps of trees at the base of the ridgeline to the east and a more tightly spaced grouping of trees to the north. The northern edge has a long mound which separates the area from parking which lines the entrance road.

A single track road runs through the open grassed area terminating amongst trees at the northern end. This track is used by large camping groups when unloading camping equipment. It also provides service access through the parkland and to the toilets.

At the centre of the grassed area is a small childrens' playground. (see fig. 2.10) The grassed area surrounding the playground is mostly used for informal family recreation such as football or cricket.

To the west are two covered picnic shelters in fair condition. Scattered through the site are picnic settings and a number of small pedestal barbecues which appear to be well used, although in poor condition. In the southern area of the site is a large brick barbeque in poor condition close to a toilet block.

The western edge is flanked with mangroves and small openings have provided informal access points to banks along the edge. (see fig. 2.11) The site is often used for large camping groups who tend to cluster under the trees in the southern area of the site and adjacent to the mangroves on the waters' edge. This is, in general, the most active and busy part of the southern area when large camping groups are present. At peak times, such as the Easter holiday weekend, there is more limited use of the site by other park users except those using the playground.

The car parking area on the northern edge of the site along the entry

Figure 2.10: Existing playground on Southern Area

Figure 2.11: Mangroves

road can become quite congested during peak holiday weekends.

2.3 Traffic and car parking

The only entrance to the site is along Somerville Road which runs north from Galston Road through Hornsby Heights to the reserve entrance. The road, which turns into an unsealed surface, drops steeply to the reserve through a series of switchbacks. The park entrance at the top is defined by signage and a turning circle for large vehicles. As the road enters the park, there is car parking along its southern edge and the road turns northwards into the central car parking area. The road has no markings or edge treatment indicating a cycleway.

There is a distinct change in character between the approach down the escarpment, which has a rural feel, and the large car parking area in the reserve itself which exhibit many of the conflicts often found in urban areas between pedestrians, cyclists and vehicles. The carpark has no demarcation for pedestrain or cycle users and as consequence the reserve does not have a successful link for pedestrians through the central area.

The central parking space is large and except on specific occasions, is mostly underutilised. Although the current sealed area is adequate for parking, users tend to park on the grass clearings beyond the sealed area, causing damage to the adjacent trees. The condition of the seal is poor and requires refurbishment. The carpark is poorly managed in terms of controlling the arrangement of cars and limiting their damage to adjoining trees and river edge areas.

Vehicular access through both the northern and southern areas, either side of the central carpark is currently controlled by gates.

In the northern area, an unsealed track, which can be used by vehicles, crosses the middle of the site. The track forms two branches, one of them a loop track, gradually narrowing into a footpath width.

Buses

Up to 55-seater buses drop off visitors travelling over to the Convention Centre, and school and community groups arriving for camping trips. These coaches park close to the right angle bend in the entry road close to the large information sign and turn around

Figure 2.12: Central parking area

Figure 2.13: Central parking area, north end

by reversing into clearings off the central parking area. The current arrangements for the turning and parking of buses are uncontrolled and in conflict with pedestrians and cyclists accessing the southern area of the reserve, as well as cars accessing the central carpark.

2.3.1 Opportunities and Constraints

Opportunities

Central Parking area

Increase the available landscape open space by removing parking from the western landscape edge.

Increase landscaped open space by reducing extent of sealed road and the number of parking spaces.

Improve efficiency of existing sealed area with line markings.

Possible reorganised entry area

Relocate existing roadside parking to create a new landscaped vista towards the river.

Provide new identification and orientation signage at eastern end of the road and remove existing signage at western end of the road.

Relocate bus turning area to within the entry road, to remove bus access from the central parking area.

Possible new service road for campers

If the existing track through the middle of the southern area is removed, provision could be made for a new service road/ carparking area for campers along the eastern edge. This area may be signposted to reflect its designation for use by campers only. (see fig. 2.14)

Constraints

Consider vehicle movements and safety.

Minimise disturbance to wetland.

Improved organisation of the carpark and expansion of the adjacent landscaped area will reduce the capacity of the carpark during peak event times.

There is a need to ensure management of the carpark is self regulating, with minimal external input required to control the parking areas.

Maintenance vehicle access is required to all areas.

Figure 2.14: Site for new car park

Figure 2.15: Entry area

2.4 Pathways, Entries and Connections

The main entry into the reserve at the top of the escarpment is marked by signage and a bus turning circle. The space could be improved with some minor upgrading of bollards and signage, creating a more significant entrance to the park. Other minor improvements may be undertaken to the gravel access roadway, as recommended in Section 1.7.2.

Pedestrian arrival and movement through the site is generated from two sources:

2.4.1 The arrival of people to the site by car

The movement of people from the car park to other areas of the reserve is currently informal and to some extent haphazard. Moving to either the northern or southern edges of the reserve means walking on the road or along the western grass edge, which is awkward for strollers and wheel chairs. Pedestrians find this lack of connection confusing. In general, there is a conflict between pedestrians using the car park area and drivers. The possibility of a separate pedestrian accessway should be considered.

2.4.2 The movement of walkers across the site using The Great North Walk.

There is currently no clear linkage or pathway between the north and south track-heads of the Great North Walk at each end of the reserve. Pedestrian access from north to south, as part of the Great North Walk access is currently undefined, particularly through the central car parking area.

Northern end path

An unsealed roadway runs from the gate at the car park on the southern end, circumnavigates a mound and returns as a pathway link. This track was originally created for people to use as a bike track and is still used. The position of the track which forms two branches does not assist the movement around the site to picnic areas and does not lead to the Great North Walk track-head. (see fig. 2.17)

Southern end

An unsealed track runs from the gate to the group of trees in the middle of the site. It is used by camping groups when unloading

Figure 2.16: Site entry

Figure 2.17: Great North Walk users

equipment on the site. Access through the gate is by key for camping groups only. Use of the track by vehicles is generally in conflict with pedestrians.

2.4.3 Opportunities and Constraints

Opportunities

The two main connections lacking pedestrian footpaths are:

a) Through the central parking area.

b) Linking north/south access to the two track-heads of the Great North Walk. This is currently undertaken in a random fashion through the site. The link could be improved by a pathway along the river offering the opportunity for access.

Constraints

The riverine environment is vulnerable to erosion. Any new construction of foot paths should not be in close proximity to the tops of banks.

Floodwater movement on the site mostly affects the northern area with small areas also significantly affected in the northern part of the southern area.

In some areas existing trees are closely spaced and may restrict the alignment of the pathway.

Maintenance vehicle access is required to all areas of the park. The alignment scale and material finish of paths needs to allow for the potential use of the paths by maintenance vehicles.

2.5 Visitor Amenities

2.5.1 Toilet Blocks

Two toilet blocks are situated on site – one at the northern and one at the southern end. The toilets appear to be of 1970s masonry construction, rectangular in form. Male and female toilets are situated in the same block with three toilets in each of the male and female facilities. The number of cubicles in each toilet and the capacity of existing septic and storage tanks is not adequate for busy visitor days at the reserve.

Figure 2.18: Visitor Amenities, Northern Area

Figure 2.19: Visitor Amenities, Southern Area

Opportunities and Constraints

The facilities require upgrading and need to be brought into line with contemporary standards. In the case of both buildings, the architectural qualities of the buildings are not in keeping with the aesthetic qualities of the site and call for a more discreet building form with materials sympathetic to the landscape setting.

Northern toilet

The location of the northern area toilet block on the western edge of the area, gives the building undue prominence on the site. (see fig. 2.18) The installation of the Ecomax septic system in 2003 has been an important initiative for the recycling of waste on site. Due to the flood levels of the site, it has been necessary to raise the level of the tanks and cover with mounding. The mound has then been mulched and planted. It would assist the use of the northern area if the toilet facility were to be moved to a more discreet location, such as to the east of the site close to the northern track-head of the Great North Walk, linking to the same Ecomax facility as required. In addition, as found by recent investigations, new septic and storage tanks and an expanded drain field are required to ensure the wastewater system meets the requirements of current standards.

Southern Toilet

The location of the toilet at the southern end has a more sympathetic siting than the northern facility. (see fig. 2.19) Situated adjacent to the slope, the siting of this toilet block does not conflict with circulation and is accessible and visible to walkers using the Great North Walk. The provision of toilets is generally not adequate for large groups who bring portable toilets to the site for additional capacity. As with the northern toilet, new septic and storage tanks, and an expanded drain field, sized to cope with peak loading, are need to ensure the system meets the requirements of current standards.

The location of the toilet on the site suggests that there should be no need for a complete demolition of the building and it could be redeveloped to expand the number of cubicles and upgrade fittings and fitments. Alternatively, Council could elect to replace the entire building following more detailed evaluation of the design requirements.

Figure 2.20: Boat ramp

Figure 2.21: Conference Centre “pick-up” point

2.6 Edges and Access to Berowra Creek

2.6.1 Boat Ramp

A boat ramp consisting of a cutting through the bank is located off the central car parking area. (see fig. 2.20) It services the launching and exiting of aluminium boats ('tinnies') and canoes. Currently 'tinnies' are brought by cars and 4WDs with trailers and backed down the ramp. Canoes and kayaks are usually carried from cars parked close by. The surrounding banks are eroded from constant movement and there are mangroves regenerating close to the toe of the ramp. Crowded car parking surrounding the ramp restricts the use of the surrounding area for canoe preparation before launching.

Opportunities and Constraints

NPWS and Council are planning to discontinue public use of the ramp for trailer launched boats. Public use of the ramp will be restricted to hand-carried craft only. The ramp will also continue to be used for emergency access only by NPWS, Council and those carrying out maintenance on the Great North Walk. The ramp and its surrounds should be designed to manage the parking, handling and launching of tinnies and canoes by hand and the overall area of the ramp narrowed. Importantly, the surrounding banks should be stabilised to allow the mangroves to regenerate without conflict with launching canoes and boats.

2.6.2 Access to the Crossland Convention and Field Study Centre

Access to the convention centre is currently via a small punt that disembarks from a small concrete ramp at the western end of the entry road. (see fig. 2.21) Narrow sandstone steps lead down to the ramp. There are currently a number of sandbanks in the crossing area which forces the operator, during low tide, to use a small beach access about 80m to the south.

Opportunities and Constraints

The current landing place, provides a direct access from the carpark to Berowra Creek. The existing access steps and the ramp itself require upgrading. A proposal to formalise a new access way about 80m south of these steps has been ruled out by DECC. An alternative solution may be to require the punt to use the boat ramp area, although this is also constrained by shallow waters and the presence of sandbanks.

Figure 2.22: Erosion of banks, Southern Area

Figure 2.23: Typical camping arrangements Southern Area

2.6.3 Openings to the Creek

Access to the creek is made at two major points, one at the far northern end of the reserve and the other at the southern end. At the northern end, a shallow beach has been formed mostly through the continuous erosion of the surrounding turfed banks. This is a good vantage point for viewing the surrounding cliffs. At the southern end the beach has been made in a similar fashion and is surrounded by continuously eroding banks. (see fig. 2.22) The exposed areas of the bank are mostly very muddy.

Informal edges

There are a number of places where tracks through the mangroves have been made and erosion has taken place, particularly in the southern area of the site close to camping areas.

Weed Infestation

Colonisation by Acacias in the southern area is quite prevalent at the water's edge and require removal.

Opportunities and Constraints

Main open bank area, northern and southern ends

Access to the waters' edge, particularly in hot weather, is a common occurrence, mostly at the northern end. There is little or no conflict with the regrowth of the mangroves in the northern area, however there is significant erosion to the upper bank edge. Retaining structures are required to control this erosion.

At the southern end, the eroded banks, could be regraded and fenced off to encourage mangrove recolonisation. The openly accessible gap to the bank should be reduced.

Informal edges

Informal access to the water erodes banks and destroys vegetation. These areas should be screened with planting or fenced temporarily to allow mangroves to regenerate.

2.7 Camping

Camping on site takes the form of individual camping, mostly at the northern end and group camping which takes place at the southern

Figure 2.24: Existing picnic bench and barbeque

Figure 2.25: Roofed picnic setting

end. (see fig. 2.23) Crosslands Reserve is used by a variety of community groups including scouts for large camping events. Camping is mostly concentrated on the edge of the creek and under the trees to the south. Camp sites are not currently regulated by numbering or location.

Opportunities and Constraints

It is desirable to restrict large scale group camping to the southern area of the site but still maintain the informal location of camp sites. Vehicular access needs to be better managed and controlled. In the northern section, camping should be restricted to walk-in campers (i.e. to campers who have walked in from the Great North Walk and campers who have parked in the carpark and have carried their gear in).

2.8 Park Elements

2.8.1 Roofed Picnic Settings

There are five roofed picnic settings on the site, two in the southern area close to the entry gate on the western side and three in the northern area close to the toilet facility. These facilities comprise tables with fixed bench seats and a corrugated iron roof, set on a paved slab. (see fig. 2.24) The condition of all elements is fair. The picnic settings seat a maximum of 6 people.

Opportunities and Constraints

Whilst the existing elements are used often and are relatively well sited, more picnic shelters could be considered for the site, as part of a customized suite, to contribute to identifying the site as a distinct destination, however an evaluation of the benefit of customising in the context of budget objectives and consideration of the guidelines in the NPWS Park Facilities Manual is required.

2.8.2 Picnic Settings

The picnic settings in the site consist of freestanding timber seat and bench construction and are sited both in the northern and southern areas of the site. (see fig. 2.25) Most are in poor condition and require replacement. A customised design for a picnic setting could be developed as part of a suite of details, including roofed picnic settings.

Figure 2.26: Playground

Figure 2.27: Central car parking area - bollards and speed humps

2.8.3 Playground

The playground is situated in the middle of the southern area of the reserve. The location is prominent within the reserve and the playground lacks any shade or surrounding seating equipment. It consists of a multi-play equipment unit to accommodate younger children. The playground surface is bark mulch with timber edges. (see fig. 2.26)

Opportunities and Constraints

The playground area provides an additional recreation experience that is not considered an essential element in a park setting of this nature, especially given the wide variety of alternative recreation opportunities already available within the park. If a playground facility is required long-term in the park, it should be moved to a more discreet area where there is more shade and where it does not conflict with other users. Consideration will also need to be given to the site's environmental conditions, including the flooding potential of some of the lands. The playground could also offer a more diverse range of play experience.

2.8.4 Fencing and bollards

a) Fencing

The car parking area off the entry road is fenced by a timber bollard and steel bar barrier.

b) Bollards

Bollards are used to reinforce edges of the central car parking area both on the eastern and western edges and on key corners of the entrance road including parking areas. (see fig. 2.27)

Opportunities and Constraints

Bollards and fencing to control parking and vehicular access will continue to be needed on the site, but in different locations. There is a lack of uniformity to the bollards and fencing and the current arrangement of controls fail to provide adequate protection for existing trees adjacent to the carpark.

2.8.5 Barbeques and Open Fire Pits

A variety of cooking facilities exist on site:

a) Pedestal style barbeque for individual use – approximately 6 on the site. The pedestal barbeque is popular and is often used at weekends. Kindling is made available by Council.

Figure 2.28: Turf, Northern Area

Figure 2.29: Main entry sign

Figure 2.30: Northern Area, looking north

b) A large brick barbeque is situated in the southern part of the site and appears to be largely unused.

c) Large open fire pits exist at both the northern and southern end of the site.

Opportunities and Constraints

Most of the barbeques are in poor condition, do not meet current standards and should be replaced. The communal fire pits should be retained although their siting should be reviewed to ensure they do not conflict with other uses.

2.8.6 Ground Surfaces

Two main ground surfaces are used in the park:

a) Turf

Mown turf is the main ground surface in the northern and southern (see fig. 2.28)

b) Two coat seal bitumen road surface/ blue metal gravel surface

A two coat seal bitumen surface is the predominant finish on the roads within the central parking area. There is no formal edge between the road and turfed areas. The parking areas are an extension of this road surface. Most surfaces are in poor condition.

Opportunities and Constraints

Most of the sealed surfaces will require refurbishment in the near future. Better management of run-off from the carpark should also be considered.

2.9 Signage

Signage on the site is limited to regulatory and informational, including 'No Consumption of Alcohol' signs and other regulatory matters. (see fig. 2.29)

2.9.1 Main Entry Sign

The main park entry sign at the top of Somerville Road is a timber construction, a typical National Parks sign with routed lettering. The

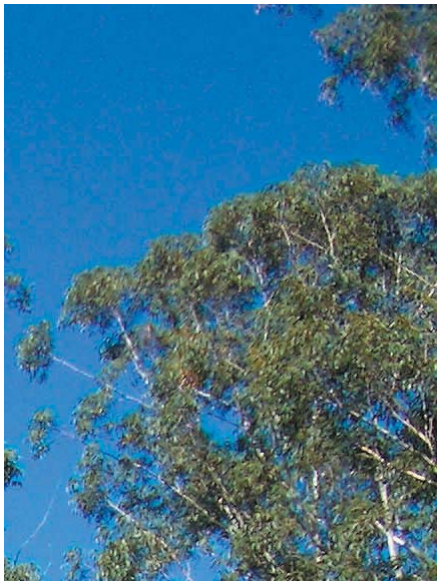


Figure 2.31: Typical tree groups, Southern Area

Figure 2.32: Trees and shrubs, Northern Area

sign shows the joint logos of Hornsby Shire Council and National Parks and has a series of regulatory symbols showing permissible recreational activities. A second sign displaying similar information is located in Crosslands Reserve where the access road meets Berowra Creek.

Opportunities and Constraints

Signage design on the site should be within a unified set of design principles which can be applied to interpretive, directional and informational signage. Directional signage is required to assist north/south orientation, particularly for those accessing the Great North Walk.

2.10 Environmental Elements

2.10.1 Noise

Generally in the Reserve there is a sense of quiet, a valuable quality considering the site's proximity to suburbia. That quality can be maintained by controlling movement of traffic on the access road, and by restricting car speeds.

2.10.2 Sun and Shade

The northern area of the site has large canopy trees clustered in groups around the centre of the site and at the southern end where the picnic shelters are located. The turfed areas are fringed with Casuarina woodland which offers some shade in summer. The car park area is mostly in full sun with some shading from Casuarina groupings on the western edge. The southern area has a large area of full sun in the central and northern areas. The most shaded areas are under large groups of Eucalypts in the southern area of the site.

2.11 View Corridors

The linear shape of the site, its relationship to Berowra Creek, and the surrounding dramatic sandstone topography offer both long vistas and short views across the site, contributing strongly to the reserve's aesthetic appeal.

Figure 2.33: View west from the entry

Figure 2.34: View north cross the carpark

Figure 2.35: Bank, Northern Area

2.11.1 View West from the Entry

The view west from the entry point in the site is dominated by the presence of parked cars. Views south show the expanse of the southern area of the reserve, although this view is obscured by some plantings. (see fig. 2.33)

2.11.2 View South across the Southern Area

This major view corridor of the southern area takes in the grassed area with the playground the ridge to the east and the creek edge. The playground in the foreground is an impediment to this vista and should be removed to a more discreet position. The overall view is a wide vista of trees and the wooded slopes on either side.

2.11.3 View north across the Car Parking area

Framed by Casuarina woodland, this vista does not give a strong sense of being in a reserve as the open space area to the north and south of the site is not visible from the car park. (see fig. 2.34)

2.11.4 View north from NPWS gate

The view north from the car park gate at the southern edge of the northern area is framed by the steep slopes, with visible sandstone outcrops framed by groups of large mature Eucalypts.

2.11.5 View across the creek from the north of the Reserve

The most northerly part of the site has a wide view of the sandstone cliffs and slopes surrounding Berowra Creek and the coastal Casuarina woodland to the east. This view is the most impressive across the reserve and reveals a wide range of landscape types that surround the site.

Currently, significant views from within the northern area are affected by:

- The existing toilet block on the western edge: the building is prominently and unsympathetically sited in the middle of view-lines towards the creek.

- Two large mulched planting areas running through the middle of the site: view-lines across the site towards the surrounding spectacular topography are compromised. (Refer also to Section 2.2.1)

Figure 2.36: Typical tree group

2.12 Planting

The character of the planting on site is an informal arrangement of tree planting in grass in both the northern and southern areas which contributes to the site character of a park in a bushland setting. Surrounding the site are Casuarina species that form a strong edge to the more park-like character of the rest of the site. The mature trees on the site are a significant asset to the open space of Crosslands and are a strong attractor to the site as a recreational facility. The older trees in the reserve are often conceived as more valuable than younger trees as they offer more in the way of landscape amenity, habitat, and landscape features.

Tree species within the reserve are predominantly, *Angophora floribunda, Eucalyptus saligna, Eucalyptus paniculata* and *Eucalyptus pilularis.*

Many of the trees are reaching maturity and require pruning and in some cases should be removed as they have been damaged by camping in close proximity. The arborist's report prepared by Tony Lydon of TLC Tree Solutions (see Appendix A) includes an assessment of trees based on a hazard and significance rating system. This system establishes a significance rating that determines the relative merits of trees of equal Hazard Rating. Since the Significance Rating applied is wholly subjective, alternative interpretations of each tree's significance or value may be equally valid and may be used to amend or revise the priorities or suggestions made.

The condition of the trees as listed in the table in Appendix A, show a range of actions that need to be carried out - from tree removal, to major and minor pruning. Council has reviewed the recommendations of this report and undertaken further inspections of trees identified as requiring further observation, remedial action or removal. In some cases the Council's tree management officers did not support the recommendations for removal or pruning. Where the tree management officers did support the recommendations, trees were either pruned or removed in accordance with the recommendations of TLC Tree Solutions.

Opportunities and Constraints

Tree planting is required on the site to manage the following actions:

Figure 2.37: Scattered tree groups: Southern Area

Figure 2.38: Typical tree groups: Northern Area

Replanting

The age and maturity of the trees in many of the open grass areas are old and there are few young trees. This lack of diversity in the age of the tree stock is an issue as it is contributing to a reduction in the available tree cover in the park. A landscape plan should be prepared with the aim of replanting trees within the site to ensure that the tree canopy on the site is sustainable in the long term.

New plantings to create enclosure

All areas of site need replanting to create enclosure, more shade and include more feature planting.

Entry Area

If, as proposed, cars are more effectively controlled in the entry area, tree planting could be incorporated along this edge to improve the landscape vista.

Central Area

There are opportunities for tree planting along the western landscape edge of the carpark.

Southern Area

The large open space` within the southern area of the site requires more enclosure on the western edge closer to the mangroves whilst leaving a clear open space for recreation. There are also opportunities to supplement existing tree groupings and provide more spaces for shade and recreation. (see fig. 2.37)

Northern Area

Within the northern area, opportunities for tree planting would exist on the open eastern side and to supplement existing tree groupings in other areas. (see fig. 2.38)

Part Three

Masterplan

3.0 Introduction

The Masterplan for Crosslands Reserve responds to the strategies and objectives of the Recreation Plan and the Plan of Management.

The Masterplan proposes a number of key elements for the improvement of recreational and environmental amenity and the management of pedestrian and vehicular circulation on the site:

1. Entry Area Improvements

2. New Riverside Interpretation Walk

3. Existing Vehicular Track Removal

4. Reorganisation and Refurbishment of the Central Carparking Area

5. Reorganisation of Boat Launching Ramp Area

6. River Bank Improvement Works

7. Visitor Amenity Structures

8. Topdressing and Turf Enhancement Works in the northern area

9. Tree Planting

10. Interpretation

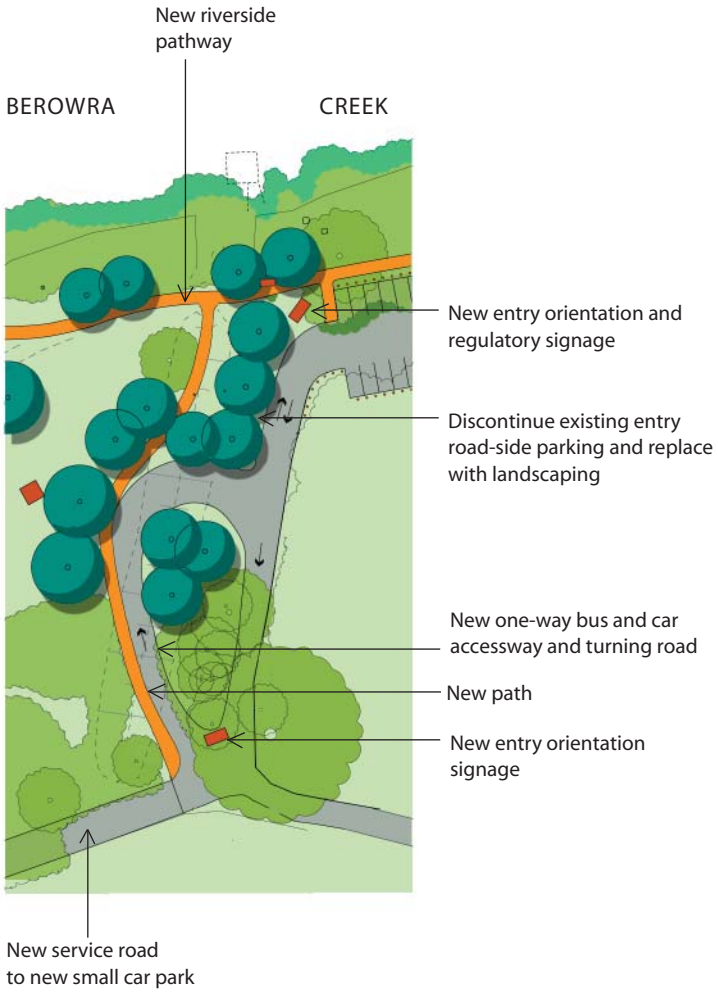


Figure 3.1: Entry area plan

Figure 3.2: Proposed location for new car park Southern Area

3.1 Entry Area Improvements

The main entry into the reserve at the top of the escarpment requires minor upgrading, including signage and traffic control elements such as bollards to improve its overall presentation and function. Other works to the gravel access roadway, Somerville Road, as recommended in the traffic report, may also be undertaken. (Refer Section 2.4)

A reconfiguration of the entry area into the site at the end of Somerville Road is proposed to improve vehicular management and pedestrian linkages.

3.1.1 Removal of existing parking

In the longer term, car parking is to be removed from the side of the existing entry road and the area landscaped to improve the site entry vista and allow for more effective pickup, setdown and circulation for bus movements, in accordance with current road construction standards.

3.1.2 New bus and car accessway and turning road

Buses currently enter the site and turn around by reversing into clearings off the main central parking area, sometimes at the far northern end. There is no designated area for the parking or turning of buses and their movement through the site is uncontrolled.

A new one-way bus and car accessway, entered from the eastern end of the existing entry road is proposed, conferring the following benefits: (see also fig. 3.1)

- An improvement in safety, by providing a full forward turning circle for buses, removing the need for reversing.
- Improvement to the central parking area by removing the need for buses to enter this area, enabling the sealed area to be reduced, the landscaped area to be increased and the removal of car parking from clearings currently used by buses for reversing.

The design of the bus turning area will accommodate three buses. Further evaluation of the proposed requirements for the bus turning area is required to determine the number of buses that need to be accommodated. It is expected that the works will lead to the loss of a small number of trees alongside the roadway, however these are not significant specimens and it is considered that there will be a greater benefit to the park and open space experiences of the visitors by providing the bus turning area in this location.

Figure 3.3: Example of low key entry signage

Figure 3.4: Tree grouping, close to mangroves

3.1.3 New car parking area

At the eastern end of the new accessway and turning road, the Masterplan proposes a small carparking area to accommodate approximately 8 cars, that can be used by campers. (see fig. 3.2) The same access way may also be used for general maintenance access, and an extension further into the site is possible.

A further extension of the carpark may be developed in future, providing a greater number of parking spaces and service access to the southern area. This may impact on a small number of trees and recent community plantings but will not affect any significant trees within the area. Prior to proceeding with the development of this additional carpark there will be an evaluation of the appropriateness of its construction that includes a review of its potential impact on the adjacent park areas, bushland vegetation and the camping experience of using this area.

3.1.4 Signage

The entry will also be marked with new directional, informational and regulatory signage to provide improved site identity, information and orientation. (see fig. 3.3) The first signage-point will be at the eastern end of the entry road at the turn-off into the new Southern carparking area and the bus turning and car accessway.

Existing signage at the western end of the entry road will be removed and replaced with alternative signage that provides detailed welcome/ entry directions for pedestrians within the carpark area.

3.1.5 Drainage

It may be necessary to introduce additional drainage structures to address issues associated with peak drainage flows, sedimentation and collection and dispersal of water within the grassed areas adjacent to the new carpark and turning area. The design of drainage infrastructure must be sensitive to the estuarine hydrology and water quality in the area whilst giving consideration to recreation opportunities within the developed park areas.

3.2 New Riverside Interpretation Walk

A riverside walk is proposed to link the south and north trackheads of the Great North Walk. The new pathway will become the new north/south pedestrian link through the Reserve.

It is recommended the riverside walk is developed as a 2-3 metre wide pathway

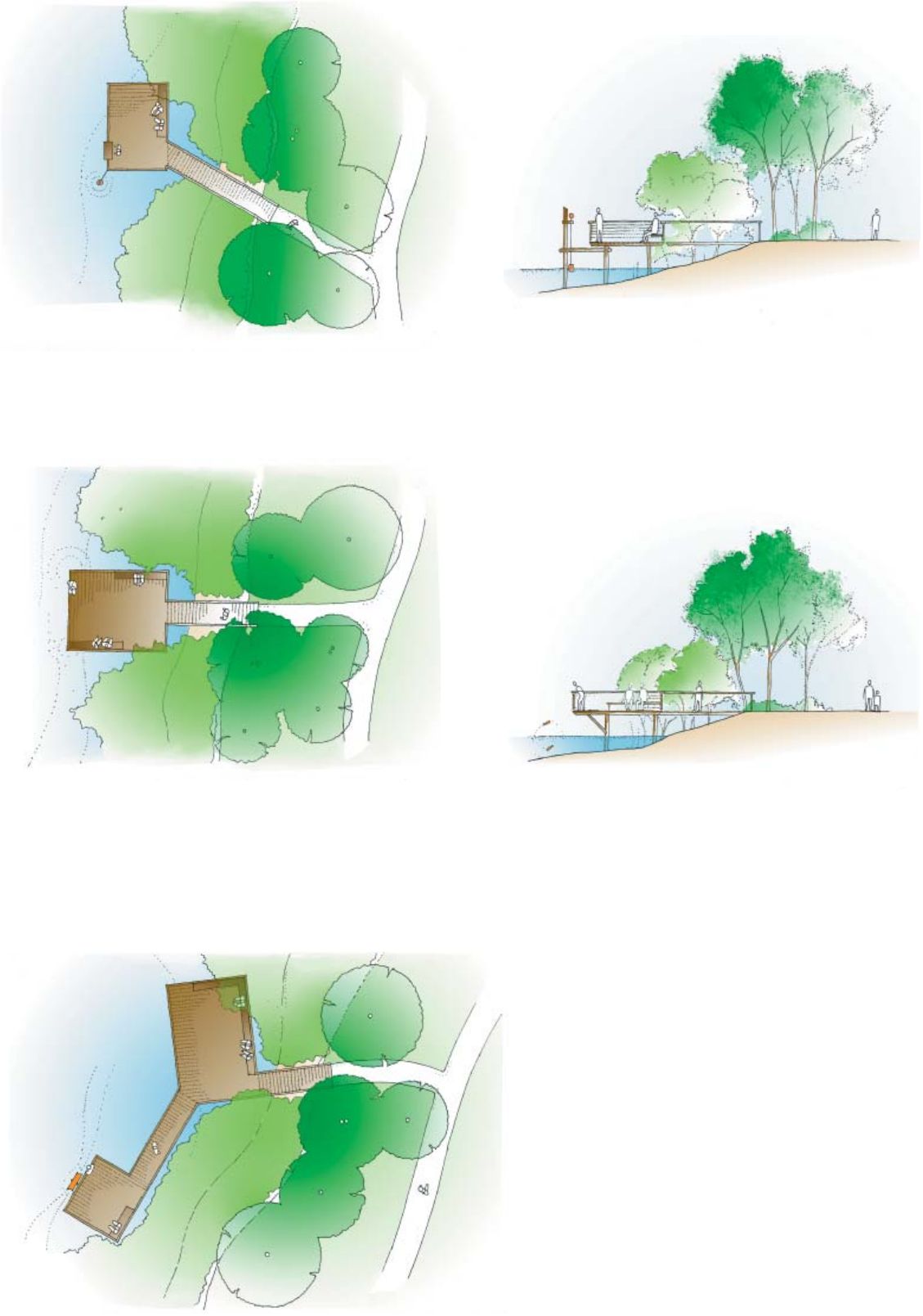


Figure 3.5: Possible concepts for riverside platforms

of crushed stone construction. It will be designed for pedestrians but may also accommodate small maintenance vehicles where required. It is intended that the pathway will be a defining element on the site and be part of the setting for seating and interpretive signage. Importantly, the path will provide pedestrian circulation past the central parking area.

Platforms

The Masterplan proposes riverside platform elements linked to the new pathway in the Southern, Central and Northern sections of the Reserve. These platforms should be designed with connecting elevated walkways to minimise impact on the mangrove edge.

The platforms will provide a low-impact riverine experience without users needing to access the bank area, with the associated problems of erosion and damage to mangroves. As an alternative disturbed embankments may be stabilised with stone.

The platforms will all be used for passive recreation and could also be used for interpretation and possibly site artworks which interact with the riverine environment. The specific siting of the platforms is subject to detailed design.

It is proposed to retain and upgrade the existing ramp/steps at the western end of the entry road as it is below acceptable safety standards.

New Hornsby Heights Link Track

In addition to the new riverside walk, a new bush track may be developed to link from Hornsby Heights to Crosslands. There needs to be further investigation of the possible alignment of the pathway although it is thought that it may enter the reserve from the southern end, in the vicinity of the Great North Walk south track head.

3.3 Existing Vehicular Track Removal

Both the Southern and Northern area of the Reserve are bisected by vehicle tracks which divide and prevent the most effective utilisation of the open space.

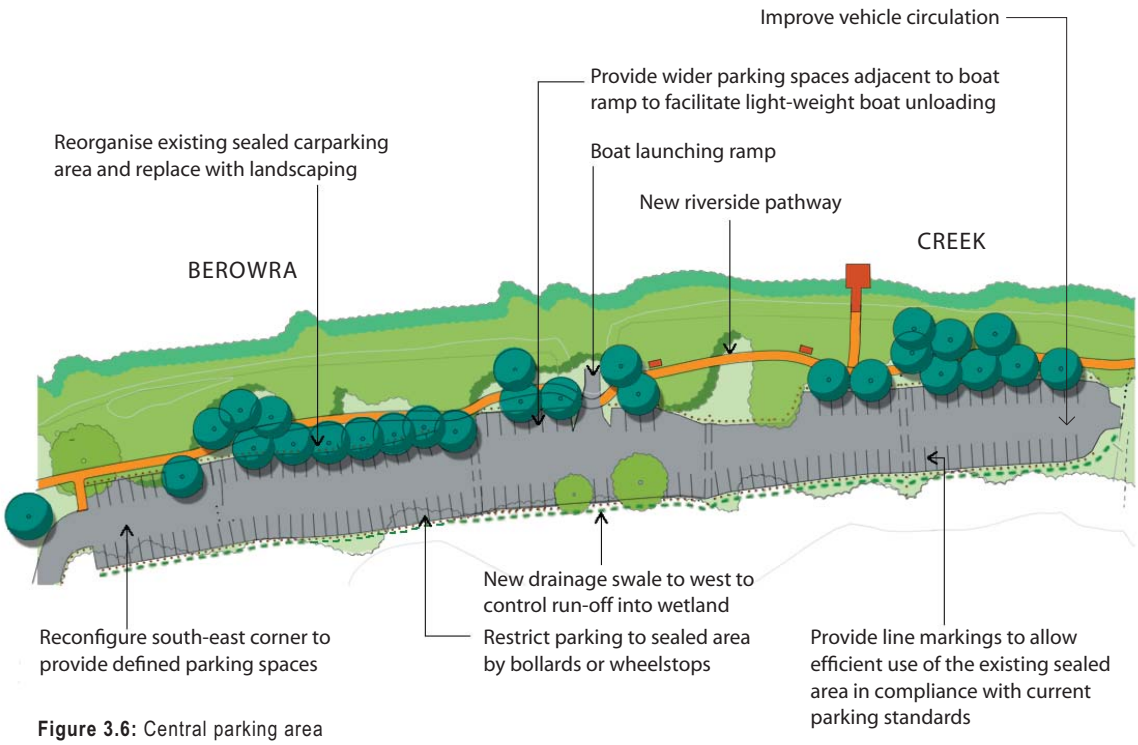


Figure 3.6: Central parking area

Figure 3.7: Central parking area

In the Southern area, the existing track through the middle of the space will be replaced by the new riverside pathway. (Refer Section 3.2)

In the Northern area, a new riverside pathway will replace the existing pathway, except where the spacing of existing trees restricts the realignment of the pathway. In the northern area it is proposed to remove the existing tracks and to progressively manage the adjacent mulched planting areas by gradually returning them to trees in grass over the medium to long term. While these young tree plantings in the mulched areas will help to replace aging tree stock in the park, they will need to be supplemented with additional tree plantings in adjoining open grass areas.

Removing existing tracks and returning the mulched planting areas to trees and grass will significantly improve the recreational experience of the Northern area by:

- opening up views of surrounding bushland and escarpments;
- providing a feeling of spaciousness within the area; and
- providing valuable new grassed areas amongst trees for passive recreation in the middle of the site.

Following removal of the existing tracks, the new Riverside Interpretation Walk will become the main pedestrian access path into the Northern and Southern sections of the reserve, both for Great North Walk users and the general public. Regular access for small maintenance vehicles may be provided by driving along the path or over the grass. It is envisaged that existing limited vehicular access be kept to an absolute minimum. Vehicles will continue to be required to be moved out of the camping areas and into the developed parking areas, immediately after dropping or picking up equipment.

3.4 Reorganisation and Refurbishment of the Central Carparking Area

The central car parking area requires refurbishment and reorganization to allow it to operate more efficiently in less space, improve management of parking and reduce impact of vehicles on adjoining vegetated areas. It is a large sealed area on the middle of the Reserve, that is poorly organised and mostly underutilised, except in a small number of peak times, such as the Easter long weekend.

Barriers

Users of the carpark typically park in grassed clearings beyond the sealed area on both sides, even though the existing sealed area is more than adequate for two-way access and parallel or 90 degree parking.

It is proposed to restrict users to the existing sealed area by the use of bollards or wheel stops. This will 'free up' existing space on the western side for a permanent landscaped pedestrian area and provide for a landscape curtilage beween the car park and the proposed new pathway.

Improved organisation of the road and parking area

It is proposed to reduce the width of the sealed carparking area on the south western side and return the area to landscape. This will improve vistas when first arriving at the car park from the entry road as well as providing curtilage for the new riverside path.

The eastern and western sides of the main carpark will be reconfigured to provide 90 degree right angle parking on both sides and to improve vehicular circulation. This will aim to provide parking close to the Southern and Northern areas of the reserve (Refer Section 3.1) As discussed in 3.1.3 above a new parking area will also be provided for campers on the eastern edge of the southern area. The reconfigured carpark will provide for at least a total of approximately 120 cars. It is noted that the arrangement of the carparking areas is subject to detail design investigations that will also aim to improve vehicular circulation.

Line Markings and efficiency

It is recommended that line marking or dots should be introduced to formally define parking spaces throughout the car parking area, leading to more efficient use of the existing sealed area and enable the parking arrangements to meet current standards.

Re-surfacing

The existing car parking surface is in poor condition. It should be resealed and the existing speed hump profiles altered to 75mm overall height to ensure vehicles do not scrape the top of the humps, while still being effectively slowed by the speed humps. There are three main alternatives for resealing and finishing the car park:

1. High end treatment; 10 - 20 yr life: 75mm thick AC14 asphalt overlay over prepared existing surface i.e. fill potholes mechanical wire brush and tack coat.
2. Mid treatment, 5-15 Yr life: 2 Coat 7/10 spray seal on a prepared existing surface i.e. fill potholes, mechanical wire brush and tack coat.

Figure 3.8: Boat Ramp

3. Low treatment 5 year life: fill potholes and patch only.

It is recommended that Option 2 - Mid treatment should be the minimum acceptable standard for refurbishment to be implemented.

Drainage Management

The falls on the parking area should be maintained as broadly west to east. A swale type drain, either a grassed swale or concrete dish drain, is proposed to control run-off into the wetland along the eastern side of carpark with a new grass swale developed to direct the stormwater into the adjacent landscape areas.

3.5 Reorganisation of Boat Launching Ramp Area

The boat launching area of the Reserve requires re-organisation and refurbishment to manage boat and pedestrian access and control erosion of the adjacent bank. (see fig. 3.8)

Bollards and control of public access

It is proposed to discontinue public access of trailer launched boats by placing lockable bollards at the top of the ramp. This will allow public use of the ramp for light-weight hand-carried craft to continue as well as ongoing trailer access for maintenance and use by statutory and emergency authorities.

Ramp Refurbishment

The existing mud ramp should be upgraded with a hexagonal grid stabilisation mat or other reinforcing material to accommodate light traffic. This should provide sufficient low-impact erosion resistance, given the proposed reduced use by trailers, and will improve slip resistance.

The overall width of the ramp cutting should be reduced if possible and the edges upgraded and reinforced with grid mats to encourage mangrove recolonisation.

Canoe Wash-down

A canoe wash-down area should be provided. This could either be:

- A concrete or bitumen apron across the top of the ramp, or

- A small concrete area or slatted timber platform on the bank adjacent the ramp.

Management of run-off from the wash-down area should be carefully considered.

Signage

Signage for regulations related specifically to ramp use and water-based activities

Figure 3.9: Bank, Northern Area

Figure 3.10: Eroded bank, Southern Area

should be located adjacent the ramp.

Parking

The line marked parking spaces either side of the ramp entry on the western side of the car parking area, should be made wider than standard to facilitate the hand-unloading of craft from vehicles.

3.6 River Bank Improvement Works

The bank's edge of the reserve has been eroded by constant access in two main areas: the North area and in the South. There are other smaller areas elsewhere. In general, it would be preferable to fence off these areas along the water's edge which have been damaged by informal access and allow the mangroves to regenerate.

The Northern Bank Area

This place on the site offers dramatic views across the water to the sandstone outcrops beyond as well as a strong appreciation of the bend in the river at this point. (see fig. 3.9) The erosion at the top of the bank along the beach should be controlled by, for example, a timber 'vertical pile' type retaining wall, or alternatively a stone retaining wall treatment.

Southern Bank Area

The large open bank area in the southern part of the site is eroded with tree roots emerging from surrounding slopes and recession of the mangrove zone. (see fig. 3.10) It is suggested that the accessible gap to the river be reduced and adjacent banks be stabilised by regrading and fencing off to encourage mangrove recolonisation.

3.7 Visitor Amenity Structures

3.7.1 Toilet Buildings

The two main structures on the site are the toilet facilities both of which require refurbishment. The refurbishment works will require robust construction, to ensure that the structures are resistant to damage from vandalism.

North Building

This building is badly sited on the river side, being prominent in the middle of the main view line of pedestrian access into the Northern area. It is proposed to demolish it and build a new facility on the eastern edge of the site, adjacent to the end of the board walk on the Great North Walk.

The toilet building should be designed as a light-weight structure, having regard to its landscape setting as well as security and maintenance considerations. It should provide for a larger number of toilets to cater for peak use situations. The new building should be located at a higher level on the proposed filled area to both limit the possibility of flooding and still provide disabled access.

South Building

The location of the toilet building in the south is appropriate, being close to the end of the track for the Great North Walk and set back against the eastern edge. The building is suitable for adaptive re-use and should be upgraded and expanded to more adequately cater for larger capacity. Alternatively, it could be demolished with a new building developed with a similar architectural design to the north building. Its architectural appearance should also be improved and made more appropriate to its landscape setting. (see fig. 3.11)

Water use and storage

Consideration should be given to the use of rainwater storage tanks for both toilet facilities to conserve water by supplementing piped supplies. Water-efficient fittings should be used for toilet flushing and basins. Consideration should be given to the use of waterless type urinals.

Effluent Treatment System

The existing Ecomax septic system will continue to be used for both toilet facilities. This system allows the dispersal to occur over a longer period of time, while maintaining the same outfall. The Ecomax system is the most appropriate long term system for the site when taking into account the other options for waste disposal and treatment. However, in accordance with the findings of the Water Supply and Wastewater Review, prepared by Martens and Associates new larger and septic and holding tanks and drainfields are required for both facilities to allow for greater capacity during peak times, and to meet the requirements of AS 1547,2000.

3.7.2 Picnic and Barbeque Structures

The existing roofed picnic structures are in fair condition. The Masterplan proposes additional roofed picnic structures in new locations.

Consideration should be given to developing an architecturally customised alternative form of picnic structure design appropriate to the landscape setting, to be used both for the new structures and for replacing the existing ones. It should be recognised that replacement with a customised suite will contribute to identifying the park as a distinct site however these benefits need to be balanced against budget and asset management objectives for Crosslands Reserve.

3.7.3 Barbecues and Fire Pits

All of the existing open flame barbecues in the Reserve are considered inappropriate and most are in poor condition. They should be removed. New roofed barbeque structures with double electric or gas powered hot plate elements are proposed. The design of the shelters shall be coordinated to match the new picnic structures.

Fire pits

It is considered appropriate to continue the use of fire pits, a long standing tradition of camping in the reserve. The master plan proposes that the existing fire pits be removed and new fire pits, one each for the Northern and Southern Areas, be provided in new locations, away from the general picnicking areas. Consideration should be given to using steel box construction, set flush into the ground, for the new fire pits.

3.7.4 Picnic Settings

Existing unroofed table and bench picnic settings are in fair to poor condition. They should be increased and distributed to include picnic settings in currently underutilised areas.

3.7.5 The Playground

The provision of playground facilities on site is to be maintained. The setting of the playground in the middle of the open area space is considered visually and functionally inappropriate as it obstructs views into the southern area, lacks shade and divides an otherwise large open space. The playground should be relocated from its current location to a more appropriate setting on the eastern edge of the Southern area. The materials and play experience should be appropriate to the site character and be set within trees, offer more shade and be installed in such a way as to ensure it is not prone to regular inundation or flooding. Consideration should be given to locating the play area on mounding. The selection of any new equipment may also look to provide a play experience for older age groups.

3.8 Topdressing and Turf Enhancement Works in the Northern Area

In the north-eastern corner of the Northern area of the site, the condition of the grass is quite poor, as a significant area is regularly flooded with tidal waters. As a consequence, the area does not attract much use and it is considered desirable to undertake topdressing and turf enhancement works while allowing low lying areas to regenerate, creating a buffer to existing bushland. This area should also be planted with trees to improve opportunities for picnicking and camping.

(See Fig. 3.11)

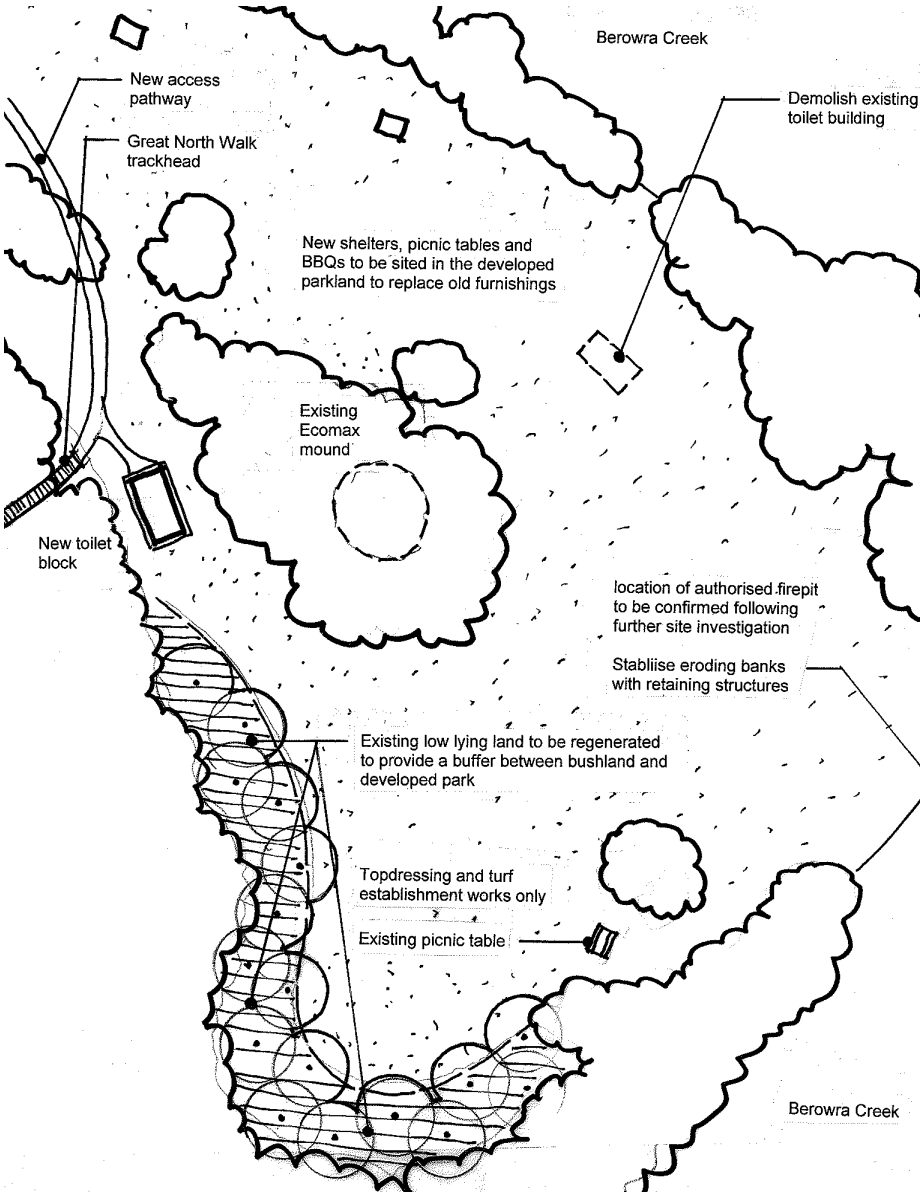


Figure 3.11: Park improvement works to the northern area

Figure 3.12: Example of interpretation infrastructure

3.9 Tree Planting

The preservation, management and evolution of the tree canopy at Crosslands is an essential part of the site character. The proposed new tree canopy should enhance existing groupings and provide replacement planting where trees are removed due to tree management issues and senescence.

Planting should be designed in scattered groupings to enhance the naturalistic arrangement of species that are on site now. The existing site landscape character of grouped trees in grass should be maintained.

Tree planting should be focused within the following areas:

a) To replace trees that are identified as hazardous and require removal.
b) To infill gaps in the canopy along the new Riverside Interpretation Walk.
c) To infill areas along the western edge of the car park and define the eastern edge of the footpath.
d) To define the southern edge of the new footpath on the proposed bus and car accessway/turning road.
e) To areas where existing vehicle paths have been demolished and there is an opportunity to provide enclosure while maintaining maintenance access throughout the reserve.
f) To the proposed regeration areas in the northern parkland areas.

There is also a need to improve management of the recently planted areas in the north of the site to remove weed growth and over the longer term, as eucalypt plantings mature and other shorter lived species reach maturity, progressively reduce mulch areas and thin shorter lived plantings to open up views across the site and enable use of the areas for picnicking and other passive recreation uses.

New species should include a mixture of tree plantings including *Syncarpia glomulifera, Angophora floribunda, Angophora costata, Banksia integrifolia*, and *Casuarina glauca, Eucalyptus saligna, Eucalyptus paniculata,* and *Eucalyptus pilularis.*

Plantings may be undertaken in small or linked mulch areas or as specimen plantings of more advanced trees in grass.

3.10 Interpretation

An overall Interpretation Plan for the Reserve should be developed as part of the proposed riverside interpretation walk. Consideration should be given to linking interpretive ideas with the Salt Marsh Creek Walk leading to Calna Creek.

3.10.1 Themes

Site interpretation can take the form of both signage and public art to express the natural themes and cultural values of the site.

Cultural and natural themes which could be interpreted include the following:

1. Setting and Significance

2. Aboriginal heritage

3. European settlement and Leisure

4. Environmental awareness including Flora and Fauna

5. Estuarine issues and the relationship of Berowra Creek to the Hawkesbury River catchment.

Estuarine themes would include:

- tidal flushing
- water and sediment quality
- ecology (mangroves and seagrasses provide important aquatic fauna habitat, damaged by storms and boating activity, weeds intrude from upstream)
- benefits of flooding, where it occurs on site

Issues surrounding the riverine environment could be explored using interpretive groups on environmental issues such as tidal conditions, flooding, and salt levels in the water. Site interpretive artwork may be the best form of communication tool for these ideas and could be located on the riverside platforms. Ideas include measuring devices for tidal flows, salt monitoring or mapping type ideas.

3.10.2 Signage

Interpretive signage should be located along the proposed Riverine Interpretive Walk, and also on the proposed platforms.

The signage should consist of text, historic photographs and quotations to illustrate the themes. (see fig. 3.12)

Part Four

Implementation

4.1 Introduction

This section of the report sets out an implementation plan for works identified in the Masterplan. The Masterplan is a long-term plan for the development of the park and its full implementation is expected to extend beyond five years. Identified improvements have been split into stages, however the specific scope of works undertaken in each stage will only be confirmed as funding is identified.

4.2 Funding

The successful implementation of the Masterplan will rely on a range of funding sources, depending on the nature of the works.

Possible funding sources include:

- In accordance with the Memorandum of Understanding between NPWS and Council, the implementation of the Crosslands Masterplan will be jointly funded by both organisations in an equitable manner;
- Council has identified approximately $400,000 (ex GST) from S94 Contributions for District Park facilities. Funding will therefore be sought from the Department of Environment and Climate Change, NPWS to match Council's contribution to enable the stage 1 development to proceed. If it is found that the DECC are not forthcoming with funding, Council will determine a reduced stage 1 scope of works funded from alternative sources;
- Subject to the outcome of further investigation of options, the water supply upgrade may be funded jointly from NPWS, Crosslands Convention Centre and Council;
- Funding for general park improvements will be sought from various State and Federal Government Grant funding programs;
- Convention Centre accessways to the river and possibly a portion of the bus turning area may be partly funded by the Crosslands Convention Centre;
- The path construction works and interpretive signage may be partly funded from the Department of Lands, Great North Walk;
- Interpretive signage, carpark swales/sediment basins and bank stabilisation works may be funded from Council Catchment Remediation Rate funding, State Government Estuary Management Grants and Federal Government Community Water Grants.

4.3 Staging of Park Development

An evaluation of the total scope of the development works identified in the masterplan has determined that it is likely that the works will develop over a number of years in a series of stages.

It is considered that short term development is likely to include:

- water supply and sewer infrastructure upgrades and improvements;
- pathway works linking north and south trackheads including the development of a landscaped corridor alongside the carpark and directional and interpretive signage;
- upgrading park facilities including the southern toilet block, southern deck, northern toilet block, BBQs, picnic tables and seating;
- tree planting and river bank stabilisation works; and
- limited carpark upgrade works.

The above works have been costed and may form the first stage of construction. Other medium to long term works that may proceed later include:

- park entry, vehicle turning, facility and central carpark paved surface upgrade;
- additional and replacement picnic shelter facilities as well as central and northern decks onto Berowra Creek;
- playground reconstruction; and
- topdressing and turfing works at the north eastern corner of the park.

The following preliminary costings are subject to change as a consequence of further more detailed investigation, approval requirements, funding availability and unforseen requirements. The Stage 1 works are expected to be developed within the next 2-3 years. The stage 2 and 3 works are longer term and no specific program is identified for these.

The preliminary costings are based on:

- Cost planning undertaken by BDA Consultants, Quantity Surveyors and Building Economists
- Detailed review of the allowances by Hornsby Shire Council and Phillips Marler Consultants.
- Costing allowances nominated by Hornsby Council

Stage 1 (Next 2 - 3 years)

Stage 1	
Preliminaries (12 weeks x $2,500)	$30,000
Water supply upgrade/replacement	$100,000
Sewer infrastructure improvements	$30,000
Pathway works linking north and south trackheads	$132,000
Development of a landscaped corridor alongside the central carpark area	$20,000
Minor works to improve the central carparking area	$70,000
Demolition works	$14,150
Upgrading of the BBQs to electric	$70,000
Replacement of existing picnic tables and seating	$40,000
Southern toilet block upgrade and expansion	$120,000
Northern toilet block demolition	$5,250
Northern toilet block, construction of a new building	$150,000
Southern deck	$60,000
Tree planting works	$10,500
River bank stabilisation	$13,500
Plant establishment	$7,800
Boat ramp	$6,825
Interpretive and directional signage	$20,000
Builders profit 8%	$49,180
Sub total	$972,027
Contingency 15%	135,004
Design and project management 10%	$90,003
GST	$119,703
Total for stage 1	**$1,316,736**

Stage 2 (Medium to long term)

Preliminaries (12 x $2,500)	$30,000
Car park entry and vehicle turning facility and central carpark paved surface upgrade	$300,000
Additional/replacement picnic shelter facilities	$40,000
Builders profit 8%	$29,600
Sub total	$399,600
Contingency 15%	$55,500
Design and project management 10%	$37,000
Total for Stage 2	**$492,100**

Stage 3 (Medium to long-term)

Preliminaries (12 x $2,500)	$30,000
New car park for camping users (First gravel service road extension 1)	$45,000
Playground removal	$7,000
New playground construction	$37,400
Central and northern deck off pathway	$73,000
Mounding/filling in the northern area	$50,000
Builders profit 8%	$19,392
Sub total	$261,792
Contingency 15%	$36,360
Design and project management 10%	$24,240
GST	$32,239
Total for stage 3	**$354,634**

Exclusions:

Works excluded from the costings include:

- Improvements to the end of Somerville Road in Hornsby Heights;
- Improvements to the gravel section of the access road, outside of the developed park area;
- Extension to the camping carpark area; and
- Development of a new walking trail linking Hornsby Heights to Crosslands Reserve.

Part Five

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