BARTON PARK MASTERPLAN

DRAFT FOR EXHIBITION APRIL 2020

Bayside Council
Serving Our Community

Rev	Date	Description	Prepared By	Reviewed By	Approved By
A	17.04.2020	Draft for review			

CONTENTS

1. Introduction and Vision for Barton Park

This masterplan sets the VISION for the long term development of Barton Park. The masterplan contains four planning zones.

The Masterplan will address a range of issues including:

- The need to demolish some amenities and facilities;
- The need to upgrade sporting and recreation facilities to meet the needs of the growing community;
- Barton Park's location near population growth centres in Arncliffe, Banksia and Wolli Creek.

Bayside Council at its meeting of 11 March 2020 resolved

- That Council endorses the draft Barton Park Masterplan for public exhibition.
- That public exhibition of the draft Barton Park Masterplan be undertaken for a period of 28 days.
- That the activities as per the Community Engagement Plan are commenced.
- That a future report be prepared for Council's consideration in relation to submissions received during the public exhibition period.

Due to the outbreak of the Coronavirus crisis it is not possible to undertake the face to face Community Engagement Strategies originally planned for this project. An extended period of exhibition will now be undertaken with comments to be received until Tuesday 26 May 2020.

Council has developed the following objectives and design principles for the Draft Barton Park Masterplan

- Provide playing fields and other sporting facilities for active recreation to meet sporting group and user needs
- Improve amenity and lighting to meet user groups and regulatory requirements
- Upgrade site conditions in accordance with the opportunities identified in the Environmental Management Plan.
- Improve interface with Landing Lights Wetlands and other adjacent open space
- Improve landscape and biodiversity outcomes through increased plantings
- Identify integrated movement network with connections to adjacent areas
- Increase safety using Safety by Design (CPTED) principles

Council has installed signs in the park to notify park users of the draft masterplan. These public information boards are included on the pages that follow.

This report provides background information that has been considered in the development of the draft Barton Park Masterplan.

Figure 1.1 - Aerial photo of Barton Park (source: google earth)

2. Background

2.1. Current Site Context

Barton Park is located at 88-96 Bestic Street, Banksia to the west of Sydney Airport (Kingsford Smith Airport) and 10km south of the Sydney CBD, extending between Spring Street Drain on the north, Bestic Street on the south, and West Botany Street and Eve Street on the west and Muddy Creek on the east (Figure 2.1 - Location Plan)

The site is approximately 19 ha in size, zoned RE1 and is comprised of Lot 1 DP 576148, and Road Reserve owned by Bayside Council, a small square owned by Crown Land for controlled by Sydney Airport for operational requirements and the remainder owned by Department of Planning (part Lot 100 DP1133869), Roads and Maritime No, 88 Bestic Street (DP400546) and Crown (Lot 100 DP1228008). The Barton Park site is entirely within State Regional Environmental Plan 33 (Cooks Cove SREP33).

Banksia is a residential area comprised of mostly low density dwellings and some unit development. The site is 1km from Banksia Train Station and town centre, 1 km to the foreshore of Cook Park in Kyeemagh, is adjacent the banks of Muddy Creek within the Rockdale Wetlands Corridor identified as part of Sydney Green Grid recreational open space and wetlands. The Rockdale Town Centre and Brighton-Le Sands are both approximately 1.5km away. The end of the airport runway is only 600 metres away.

Barton Park has road access from Bestic Street connecting to arterial roads West Botany Road to the west and General Holmes Drive to the east, as well as from adjacent residential streets to the west. The site is serviced by a north south shared path that is well used by cyclists commuting to the airport and beyond.

Figure 2.1 - Location Plan

2.2. Historical Context

The traditional owners of the area are the Aboriginal Peoples of the Eora Nation including the Gamaygal, Gwegal, Bidjigal and Gadigal Clans and collectively they are known as the “water people”.

Prior to European settlement, the Bayside Local Government area was comprised of coastal, wetland, waterway and bushland environments that sustained the Eora Nation with plentiful resources to support a rich culture.

Banksia was named after Joseph Banks, a botanist with James Cook who visited Botany Bay in 1770. The suburb was heavily timbered until the late nineteenth century with residential development beginning once the railway line was developed in the 1880s.

Between 1895 and 1899, The Southern and Western Suburbs Ocean Outfall Sewer (SWOOS) was constructed for the disposal of sewage from much of Southern Sydney. It stretched from Marrickville to Rockdale. The sewage from this system flowed to a sewage farm located at present-day Barton Park. The extensive tract of open space including Barton Park, Firmstone Gardens, Riverine Park and Landing Lights Wetland is a significantly disturbed landscape with areas of it used for a Sewerage Farm servicing Sydney for 30 years until 1916. The sewerage farm which was 200 acre in size was Sydney’s earliest attempt at purifying sewage in the hope of beating the major sanitary problems of the era. The system is of considerable historical and scientific significance as one of the early sewers to service the southern, western and Illawarra suburbs of Sydney.

The secondary function of the Sewage Farm was to utilise the manure value of the sewage to produce much-needed vegetables for the household table. In the late 1890s, the Sewage Farm was extended to allow for the disposal of the sewage from the Western Suburbs, and by the turn of the century, the Sewage Farm was in crisis. There was too much sewage on too little land, and the establishment was unanimously disliked by Councils and residents. By then, government priorities were changing, and following parliamentary investigations between 1906 and 1908, the decision was made to transfer the sewage to a new ocean outfall at Long Bay.

In 1916 the SWSOOS was extended to Long Bay ocean outfall. The whole of the sewage of Cooks River and Wolli Creek valleys now drains to this outfall. The three brick barrels, which are encased in concrete, are an excellent example of the oviform brick construction method of the time, which have provided continuous service for over 100 years.

This area was then extensively sand mined for civil projects and later as recently as the late 1970s it was used as a council landfill site. Barton Park has relatively limited recreational facilities that do not match its enormous potential to serve the growing community of Bayside in a prime position along the foreshore of Muddy Creek.

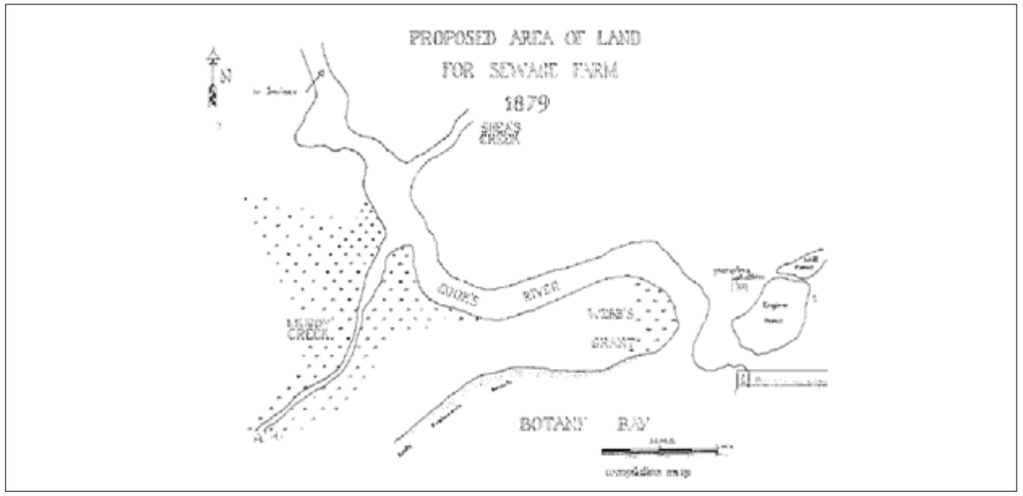
The history of the site is evident in its altered landform, disturbed vegetation and poorly developed infrastructure. There is little remaining of it former vegetation and no evidence of past use by traditional owners yet nature has opportunistically developed alternative habitats that thrive and are now highly valued in the Landing Lights Wetland and the enriched soils continue to support the adjoining heritage listed market gardens.

2.3. Historical Park Development

Barton Park was first gazetted as a park 10 June 1977 as a reserve bounded by Muddy Creek, Spring Street Canal and Bestic Street and Eve Street at Banksia.

The plan dated 1879 shows the extent of sewerage farms impacting the low lands of Barton Park.

YEAR 1879



The aerial photo taken in 1943 shows the original landform before the site was mined for sands used in Council construction of roads and other civil assets. The aerial shows that the adjacent Market Gardens in West Botany Street and across Muddy Creek are in operation. The Spring Street Canal also exists at that time as does significant residential development in the area. However, the generally denuded landscape is evidence of its industrial use as a sewage farm prior to 1916.

Figure 2.2 - The map shows the original Cooks River alignment and proposed realignment of Cooks River.

YEAR 1943

YEAR 1965

The aerial photo in the 1960s shows that the landform is already significantly disturbed. Muddy Creek and the mouth of the Cooks River have been substantially changed and are full of fishing boats.

By this time the site was operated as a land fill site for council operations. The crossing to Riverine Park is already established.

By 1977 some of the hard fill mounds and ponds which are now known as the Landing Lights Wetland are also visible. The site was also substantially artificially raised with hard fill to stabilise the site which was subject to combustion fires collapse. Three buildings have also been built, one near the mounds associated with the main field, a second building made out of containers halfway between Bestic St and the mounding and a third building in the Landing Lights Wetland. The construction of the stadium started in 1976.

The stadium opened to the public on 5 March 1978 to become one of Sydney's most popular football stadiums. The grandstand was not completed until 1979 and subsequently hosted international matches for the Socceroos and Young Socceroos and finals for Sydney based matches attracting large crowds for big events for over 10,000 people.

YEAR 1977

The stadium was privately funded by the former club, St George Budapest who were in the National Soccer League (NSL) when first grade soccer started being played in Sydney. The stadium and field are evident in the 1989 aerial photo.

In 1988 bicentennial funding was made available for various council projects including a large salt marsh project near the Spring Street Canal.

YEAR 1989

The 2000 aerial shows the extensive grass cover across the site which is used for sport fields. The Barton Park cycleway is also evident on the eastern side, providing the north/south connection.

YEAR 2000

There is little change in the park with the exception of the gravel carpark created to the south of the main field. The roof is still on the stadium at this point in time.

YEAR 2011

There is little change except that the stadium roof has been removed due to structural failure. The structure remains but the building is closed off to the public due to concerns for public safety. The grounds continue to be operated by the St George Soccer Club.

YEAR 2018

2.4. Existing Facilities

The park is dominated by active recreation:

- St George Football Stadium includes: fenced grandstand, buildings & spectator mounds
- Other sports fields and lighting
- Barton Park Cycleway along the banks of Muddy Creek connecting to Riverine Park
- Landing Lights Wetland
- Overland flow path from Bestic Street to the wetlands

Figure 2.3 - Existing Site

1: Football field and St George football stadium with the damaged roof structure

2: Lack of vegetation management in the area around the Landing Lights Wetland.

3: Peaceful waterview of Landing Lights Wetland with lush green backdrop

4: Existing Barton Park Cycleway. Photo shows aged bitumen surface and overgrown vegetation both sides of the cycleway.

5:Bestic Street Main Entrance

6:Poor pedestrian access from Bestic Street

7: Vehicle road and shared path resulting in user conflicts

8: Informal gravel carparking

9: View of the back of St George Football Stadium

10: Aged shelter and seating set

11: Informal pathway through the Mangrove forest south of the Landing Lights Wetland

12: Existing boardwalk near the Landing Lights Wetland is in poor condition.

13: Rain causes surface flooding at an open area near the residential zone

St George Football Stadium

The current lease between Council and St George Football Club is for the use of the area known as the St George Soccer Stadium which is the complex defined by security fences and includes the remains of the large grandstand (the roof was removed in 2012/2013 due to safety concerns), Senior sports fields including lighting and part of the spectator mounding. The subject buildings shown in green on the map were demolished in 2019 due to safety concerns arising from structural defects and included the entry building and adjoining amenities block. The lease with St George Football Club is due to expire in February 2022.

Sports fields and lighting

There are two senior grass covered sports fields that do not form part of the St George Soccer lease but are permitted annually to St George Football Club.

These fields are served by outdated lighting on wooden poles, an informal gravel carpark and an amenities building constructed from storage containers that do not provide adequate facilities for the community.

Figure 2.4 - Map showing buildings demolished in 2019

Barton Park cycleway along Banks of Muddy Creek connecting to Riverine Park

The shared path starts from Bestic Street in the south passing over the Spring Street drain to Spring Street and Banksia/ Rockdale to the West, or continuing north-bound to Riverine Park and under the M5 to provide off-road bicycle links to Wolli Creek, Sydney Airport and the CBD.

The path is subject to regular inundation due to the proximity to Muddy Creek and its tidal influence and flood prone location. The path way is not separated from vehicle access to the gravel carpark that services the St George Stadium. Users must ride this section of shared path cautiously to avoid conflict with vulnerable users and vehicles.

The asphalt surface is uneven and is reaching the end of its serviceable life but otherwise provides an excellent north/south link through public open space in a prime location along the foreshore.

Landing Lights Wetland

Landing Lights Wetlands is 4.9ha (approx.) and incorporates a low lying area of modified bushland, heavily disturbed bushland, planted, weedy and built environments.

The reserve occurs within soil landscapes mapped as 'Warriewood' as well as 'Disturbed' (Chapman and Murphy 1989). The reserve is bounded to the north by a channelized tributary of Muddy Creek, just prior to Muddy Creek entering the Cooks River, known as the Spring Street Drainage Channel. There is a swale running approximately north near the western boundary leading towards a standing body of saline water. Weeds occurring in the wetter lower lying areas are dominated by Juncus acutus. Weeds dominating higher areas are more varied and include Kikuyu, Green Cestrum, Lantana, Hydrocotyle bonariensis and Acacia saligna. Core bushland within the reserve is in poor to good condition.

Native species diversity is generally low. However the local communities associated with estuarine environments typically show a low species diversity compared to other local non-estuarine communities. Estuarine areas in the locality are also potentially dynamic, sometimes making identification of depauperate estuarine vegetation difficult. Bushland condition declines around the edges of the reserve and downstream from the exotic species infestations adjacent to the stormwater outlets.

Overland flow path from Bestic Street to the wetlands

This section of parkland is dominated by grass covered undulated land with a few scattered trees. It is bound to the west by the rear fences of private backyards however there is a generous opening to the residential area at the intersection of Oakleigh Avenue and Eve Street.

Park infrastructure is limited in this area to low log fencing. The entry to the path is unmarked and not supported with pathways or other park facilities.

This section of Barton Park is regularly flooded by overland flow and holds water that seeps into the Landing Lights Wetland. The batter of the former land fill site to the east impedes views across the site which once would have been relatively flat to the banks of Muddy Creek.

2.5. Management and Maintenance

Maintenance of Barton Park is primarily undertaken by Bayside Council.

Routine Park Maintenance

The parks staff undertake a range of routine park maintenance activities including mowing, litter collection, broad acre mowing of the outer fields and herbicide spraying.

Seasonal improvements are undertaken of the sports fields including

- Aerating
- Fertilising
- Top-dressing
- Turf repairs
- Filling uneven surfaces
- Turf weed control
- Line marking fields

Inside Stadium Field

The lease holder conducts mowing and detail maintenance of the stadium facilities. However Council does provide assistance with engaging contractors to top-dress field (with the cost borne by the user group) and watering.

Bush Regeneration

To protect the Landing Lights Wetland site Council has begun undertaking significant weed control and vegetation removal which has continued since 2016. These works have included the removal of Grey Mangroves (Avicennia marina), Casuarinas species and Acacia species within and adjacent to the main wetland. Removal has occurred to protect the existing salt-marsh from being invaded by trees and shrubs that should not exist in this area and to open up the site to ensure it continues to provide important habitat for threatened and migratory coastal birds.

Works that have been completed include:

- Treatment of the weed species Juncus acutus along the boardwalk and within the saltmarsh area
- Removal of mangroves within the wetland and Spring Street Drain
- Removal of Casuarinas growing adjacent to Spring Street Drain
- Treatment of woody weeds such as Mickey mouse plant (Ochna serrulata), Green Cestrum (Cestrum parquii) and Golden wattle (Acacia saligna)
- Treatment of the fast-growing vines, Coastal Morning Glory/Mile-a-minute (Ipomoea cairica), Turkey
- Rhubarb (Acetosa sagittata) and highly invasive groundcover Hydrocotyle bonariensis
- Replanting with native species using community volunteers along the boardwalk
- Removal of rubbish that was blocking the pipe outlet of the wetland

2.6. Adjoining Land Uses

Adjacent public open space

Riverine Park is located on the northern banks of the Spring Street Drain and can be accessed by cyclists and pedestrians via a small bridge near the mouth of the drain adjoining Muddy Creek. The access off West Botany Street allows vehicle access to the southern boundary of Riverine Park, the Landing Lights Wetland and Barton Park. Riverine Park is complementary open space to Barton Park and shares a similar history in terms of its development.

Lance Studdert Reserve is located on Bestic Street opposite Barton Park on the eastern banks of Muddy Creek. It has cycleway connection to the Kyeemagh Boat Ramp Reserve and contains the buildings once associated with the Brighton Fishermans Club, community gardens, playground, carpark and open space adjacent the Kyeemagh Market Gardens.

Figure 2.5 - Adjoining land use map

Arncliffe Market Gardens (also known as West Botany Street Market Gardens, Rockdale Market Gardens, Banksia Market Gardens and Chinese Market Gardens) – 212 West Botany Road, Banksia

The market gardens are located on Crown Land that is on the State Heritage Register.

The Statement of Significance states that the Arncliffe Chinese Market Gardens are of high significance for their association with the Chinese community and their demonstration of a continuous pattern of land usage since the late nineteenth century. They are one of only three such surviving market gardens in the Inner Sydney region and one of few similar surviving examples in the Sydney Metropolitan Region.

The site demonstrates prolonged and continuous use as a market garden. The site was first occupied as market gardens in 1892 by Sung Kuong War, Lee How and Sin Hop Sing. A 1930 aerial photograph shows the site still occupied as a market garden. Market gardens such as this played an important role in food production for the local and regional community, particularly during the Great Depression and Post and Inter-War periods. For much of the Great Depression, Chinese market gardens were the only source of vegetables for urban dwelling Australians.

The site consists of a market garden, under production, and an associated fibro building, in poor condition. The site has some archaeological potential associated with its use as a market garden. The garden is divided into small strips, each of which has a different type of produce under cultivation.

Figure 2.6 - The Arncliffe Market Gardens in 1895. (Source: Rockdale Library Photographic Collection).

Residential Land

Land zoned as residential (R2) adjoins Barton Park on the western side. This small pocket of residential land is bound by West Botany Street, Bestic Street and the market gardens with local residential streets including Highclere Avenue and Eve Street.

Unfortunately, most of the residences do not take advantage of their position adjacent to the open space and turn their backs onto the parkland with high boundary fences.

Sydney Water Assets

Muddy Creek Channel between Bestic Street and the Cooks River.

Sydney Water own and are responsible for the Muddy Creek storm water channel (SWC) which is a brick and concrete channel draining a catchment approximately 6.2km2 running for approximately 4.3km through the catchment draining to the Cooks River estuary. Sydney Water has commenced the design process for a naturalisation program for the section upstream of Bestic Street into the upper Muddy Creek catchment. Downstream of Bestic Street adjacent Barton Park the channel has been dredged and widened to form a tidal basin.

The channel conveys stormwater flows from Forest Road / Croydon Road Bexley to the Cooks River / Botany Bay. On the downstream eastern bank there is the former Brighton Fisherman's Club on Crown Land which provided safe harbour moorings for small watercraft and also has a boat ramp from the parking area. In 1994 Council undertook a project to address high quantities of siltation in the channel which caused boats to be grounded at low tide and prevented boats from travelling to the Cooks River / Botany Bay. Council undertook a major dredging project to remove a large quantity of material from the channel, constructed small islands along the western side of the channel into which were planted mangrove seedlings obtained locally and also constructed a large silt basin opposite the former club to collect sediment from the upstream Sydney Water concrete lined open channel. This basin has been cleaned twice since 1994. This pocket islands have since thrived and have propagated with mangroves now lining both sides of the Channel.

Council has responsibility for maintenance and ownership of assets such as the jetties, pontoons, slipways, and retaining structures.

Council owns water quality devices in the waterway and other associated drainage assets.

The moorings in the waterways are leased directly from NSW government.

Spring Street Drain through Barton Park (Council owned)

The brick and concrete lined open stormwater channel was constructed in the 1930's as part of a Public Works initiative to provide employment during the Depression. It conveys stormwater flows from a catchment approximately 2.7km2 from Forest Road / Wolli Creek Road Bexley to Muddy Creek / Cooks River / Botany Bay. The existing Channel is in very poor condition due to concrete cancer, subsidence of the subbase and jacking by plants growing in the drain. At its downstream end in Muddy Creek Council has constructed a silt basin designed to collect sediment that flows along this channel to prevent silting of Muddy Creek. To date this basin has been cleaned out on two occasions. This channel may be suitable for naturalisation potentially retaining the concrete channel floors and reconstructing the revetment walls with sandstone battered walls which can then be planted with plants endemic to the local area.

Roads

Barton Park may be accessed from Bestic Street connecting to West Botany Street to the West and beyond to the Princess Highway (State road) at Rockdale. To the east Bestic Street connects to General Holmes Drive (State Road) at Kyeemagh.

An access also exists off West Botany Street adjacent the Market Gardens.

Both Bestic Street and West Botany Street have regional road status and are controlled by Council.

Figure 2.7 - Year 1989 aerial photograph

Figure 2.8 - Year 2000 aerial photograph shows extension of bank of Muddy Creek. This has effectively added reclaimed land to the banks of Barton Park

2.7. Biodiversity, Ecology and Tree Canopy

Landing Lights Wetland (also known as Riverine Park Wetlands), is an environmentally significant natural area. The site contains some of the last remaining saline wetlands on the Cooks River and includes vegetation identified as threatened under NSW legislation

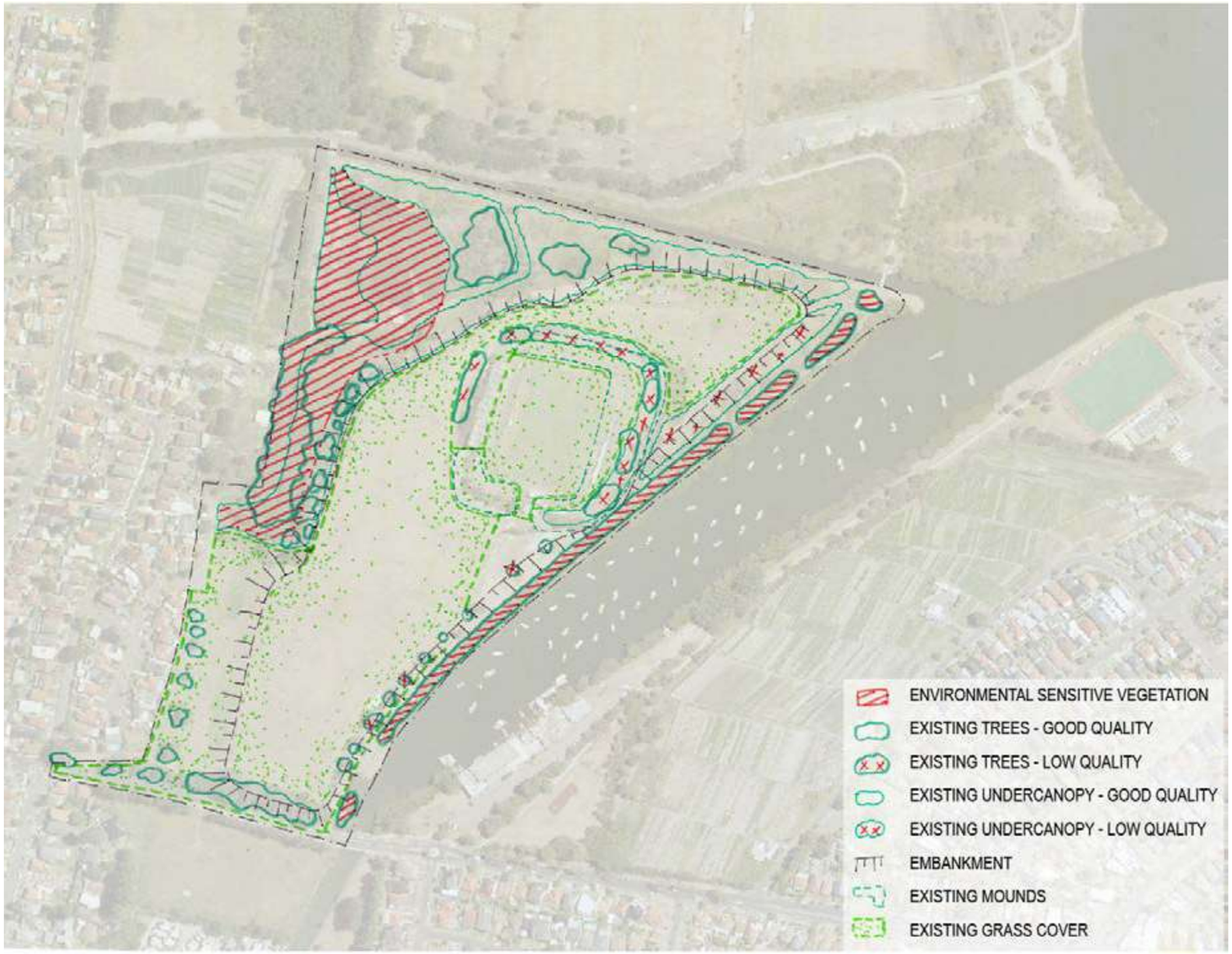
- Saltmarsh: identified as an endangered ecological community;
- Reedland and Mangroves: identified as significant vegetation

The wetland provides habitat to a number of threatened Australian coastal bird species and migratory birds from as far away as Siberia, who visit during the warmer months to feed and fatten up before returning to the Northern Hemisphere to breed. With the significant urban development that has occurred along the Australian coast, Landing Lights Wetland is one of the few suitable sites in Botany Bay that can provide this important habitat. Critical species are:

- Migratory birds (threatened species: the Terek Sandpiper, Broad-billed Sandpiper, Great Knot, Sanderling, Black-tailed Godwit and the Lesser Sand Plover)
- The Green and Gold Bell frog (GGBF, listed as Endangered under the Threatened Species Conservation Act 1995).

Muddy Creek is an important tributary of the Cooks River. There remains significant Mangrove (Avicennia marina) forest and riparian vegetation adjacent to the banks of Muddy Creek. Mangroves are protected in New South Wales (NSW) under the Fisheries Management Act 1994 due to their importance as habitat for fish and fish breeding environments. Mangroves also protect foreshore land by absorbing the energy of tidal currents and storm-driven wind and wave action, creating a natural breakwater that helps stop erosion.

Barton Park has tree canopy covering approximately 20-30% of the site however the quality varies significantly and large amounts of this vegetation consists of woody weed and invasive species that are not endemic to the area.



2.8. Heritage and Conservation Assets

There are three properties near Barton Park that are identified as Heritage Items in Schedule 5 Environmental Heritage of the Rockdale Local Environmental Plan 2011 (Rockdale LEP). These properties are also on the State Heritage Register as having significance for the people of NSW under the Heritage Act 1977 (NSW).

The Arncliffe Market Gardens are also listed in the Heritage Schedule of the Sydney Regional Environmental Plan and in Schedule 3 of Sydney Regional Environmental Plan No 33 – Cooks Cove (SREP 33).

Suburb	Item Name	Address	Property description	Significance	SHR
Arncliffe	Southern and Western Suburbs Ocean Outfall Sewer (SWOOS) Western Main Carrier	11 & 13a Marsh St	Lot 17, DP 1069479; Part Lot 5, Lot 9 & Lot 10 DP1050923	State	01647
Banksia	Arncliffe Market Gardens	212 West Botany Street	Lot 1, DP 514811	State	01395
Kyeemagh	Kyeemagh Market Gardens	2A, 2B, 2D and 2E Occupation Road	Lots 2, 3 & Part Lot 4 DP 171133; Lot 4, DP 529923	State	01393

Barton Park is not in itself listed as a heritage item. However, it has a legacy of continued use as a public reserve since 1930 when according to Ron Rathbone Rockdale Council purchased 89 acres from the Water Board for 5 pounds per acre for the purpose of recreational purposes. This was in conjunction with other acquisitions from adjacent land owners and set about reclamation works in 1932 “to convert a low lying mosquito infested wasteland into the St George Sporting Complex”. Philip Geeves also describes the acquisition of 120 acres of the then disused North Brighton Sewage Farm.

Rathbone also wrote that “The naming of such a large sporting facility generated considerable controversy” Some of the aldermen favoured retaining the name, St George Sporting Complex, while others believed it should be named after Alderman George Barton, Mayor of Rockdale, the man who had inspired the project in the first instance. When it was put to the Council to decide, the voting was four all with four aldermen absent. Alderman Barton then used his casting vote to name the complex after himself.

The adjoining Landing Lights Wetlands are evidence of sand mining activities undertaken by the council during the mid 20th century where a rich and vibrant wetlands now exists.

The wetlands and Barton Park are not considered to have any Aboriginal Site Sensitivity.

2.9. Climate Change

The Report by BMT WBM "Botany Bay Western Foreshore Coastal Hazard Risk Assessment and Management Options Study completed in 2013 provides a discussion of the geomorphology and coastal processes of Botany Bay and the surrounding study area followed by a risk based assessment of coastal hazard and their consequence. The study considered coastal inundation due to high water levels during storms resulting in inundation into rivers, creeks, drains connecting with the ocean and permanent inundation due to sea level rise. Sea level rise was calculated to increase 0.4m by 2050, and 0.9m by 2100 above 1900 mean sea level. That was widely accepted as competent scientific opinion based on reports by IPCC (2007) and CSIRO (2007) for NSW in the absence of other suitable recommendations although these figures are no longer prescribed by the NSW State Government.

The low lying areas within Barton Park are subject to inundation as a consequence of sea level rise.

The importance of protecting and regenerating coastal ecosystems

Blue carbon refers to the carbon captured by the world's coastal ecosystems, which are predominantly made up of seagrasses, mangroves and salt marshes. Blue carbon ecosystems play an important role in climate change mitigation as they store carbon dioxide up to 40 times faster than inland forests due to an ability to store large amounts of carbon in their soils and for far longer than terrestrial systems. It is estimated four times more carbon is sequestered in Australian soil beneath marine ecosystems over a given area than in other environments.

Other than storing large amounts of carbon, mangroves, tidal marshes and seagrasses are critical ecosystems, supporting coastal water quality, healthy fisheries, and coastal protection against floods and storms.

However, large areas of blue carbon ecosystems have been lost due to land reclamation, clearing, pollution and severe weather events. Tidal salt marshes cover roughly 140 million hectares of Earth's surface, this is roughly half of their historical area and this area is continuing to decrease at a rate of 1-2% per year.

Coastal ecosystems are big carbon sinks so when they are degraded or destroyed. They emit large amounts of carbon. Experts estimate that as much as 1.02 billion tons of carbon dioxide are being released annually from degraded coastal ecosystems.

2.10. Hydrology and Flooding

Barton Park is located in the Spring Street and Muddy Creek sub-catchment.

The topography of the catchment is relatively flat with the upper reaches of the Muddy Creek catchment generally sloping in a south-easterly direction with the lower reaches draining north east towards the Cooks River. Muddy Creek is a small tributary of Cooks River.

The Spring Street Drain has a peak elevation of 55.5m AHD with the catchment draining eastwards. The catchment is a highly modified landscape, comprising medium to high-density residential and commercial developments. It also includes major infrastructure assets where raised above the natural ground level, restrict surface flows from west to east. The topography of the former land fill site impedes natural drainage which acts as a barrier for natural water flows from the west and exacerbates the impact of tides and flood waters along the banks of Muddy Creek along the east.

There are two relevant flood studies for this area including:

1. Cooks River Flood Study, MWH and PB, 2009 Sydney Water commissioned this report to determine baseline conditions of the Cooks River Catchment to enable the design of naturalisation options to be considered as part of their ongoing asset renewal program.

2. Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments 2D Flood Study Review, BMT WBM, 2017 this study was commissioned by council to understand the existing flood behaviour and to establish the basis for floodplain management activities.

Figure 2.9 - Cooks River Catchment

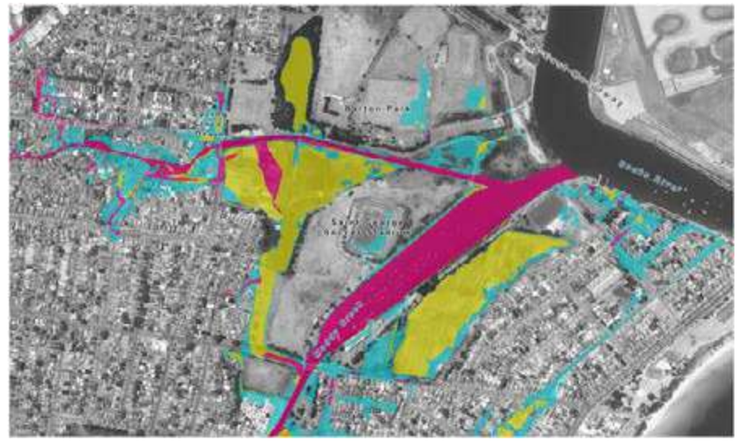


Figure 2.10 - Hydraulic Categories within Lower Muddy Creek

Figure 2.11 - Extent of 1:100 Year flood of Lower Muddy Creek Catchment

2.11. Access and Transport Links

Barton Park has the benefit of community access from a number of defined pathways. The access road from Bestic Street leads to Barton Park soccer fields services an informal gravel carpark and is well-utilised by both recreational and commuting bicycle riders as an off-road coastal (mangrove) cycling path.

Barton Park can also be accessed from the north via an entry off West Botany Street through Riverine Park by vehicle, bicycle and pedestrian.

There is opportunity to improve the quality of these paths for the recreational benefit and safety of riders and pedestrians. Currently the embankment does not have any formal pathways through it.

2.12. Key Stakeholders

The St George Stadium complex is a fenced area leased to the St George Football Association. The existing Lease is due to expire in February 2022.

Sydney Airport has tenure over site AD4 – Utilities Reservation Zone" for special uses within the Landing Lights Wetland. See section 2.15. Key Consideration – Close proximity to Kingsford Smith International Airport The remainder of the site is not otherwise leased or licensed to any specific user group.

2.13. Visual and Spatial Impact

The landscape is still considered by some to be a wasteland having been significantly disturbed since the mid 19th century with vast tracks of it used for a Sewerage Farm that serviced Sydney for 30 years until 1916. The subsequent sand mining for council civil projects and later as a council landfill site.

As the topography is significantly altered the site is not easily understood by those that do not understand its past resulting from industrial beginnings.

The highly valued wetlands are the result of previous sand mining activities. The heritage listed Market Gardens continue to benefit from Sewage Farm deposits that have enriched the soil artificially.

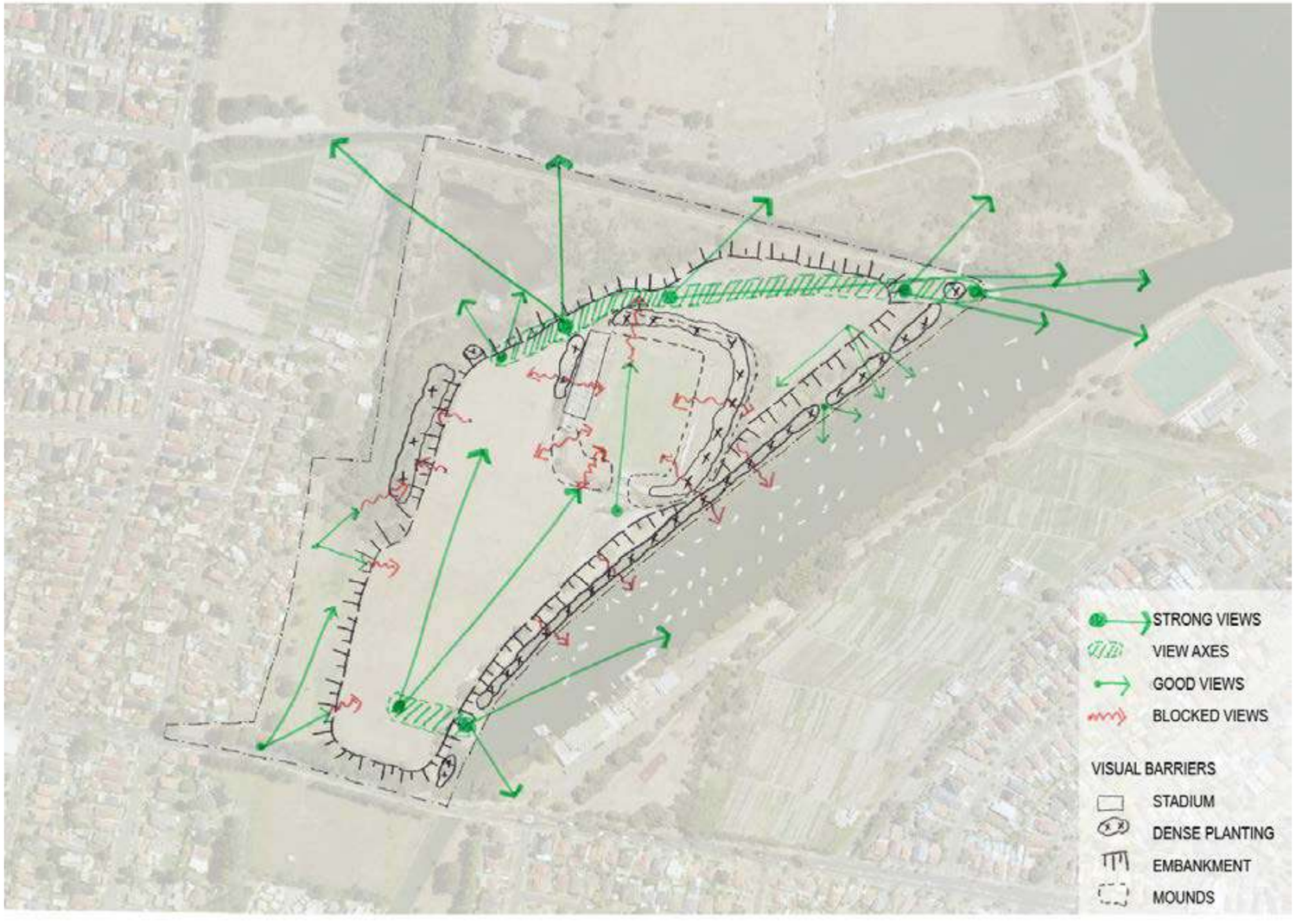
The poor quality of tree canopy and vegetation that is dominated by weeds is the result of poor land management practices over long periods of time.

The Mangrove Forest is also the result of neglected land management practices and is now heavily blocking site lines to the water with only two openings along the cycleway which is adjacent to the waterway.

There is little remaining evidence of former dune and woodland vegetation and it is unlikely to be any remaining evidence of past use by traditional owners.

Today the site is dominated by the vast monoculture of grassland required to contain the disturbed soils below with limited interruptions to the long views which are artificially directed upward to the northern part of the site.

The altered elevation provides advantageous sweeping views at the northern extreme towards the airport and across to the Landing Lights Wetlands, Market Gardens, Spring Street Drain, Muddy Creek, Cooks River, and residential areas of Arncliffe and Banksia.



2.14. Key Consideration – Close proximity to Kingsford Smith International Airport

Close proximity to Sydney Airport impacts the height of structures, the style and intensity of lighting that can be provided within the Masterplan area as well land use constraints. The National Airport Safeguarding Framework (NASF) applies to all airports in Australia and affects planning and development around airports including development activity that might impact operational airspace and/or affect navigation of aircraft.

The NASF is comprised of 8 guidelines (refer Figure 2.12) with an additional guideline relating to Public Safety Areas (PSA) proposed to be finalised in the near future. Some of these guidelines impact development and design outcomes within Barton Park.

Figure 2.12 - NASF Guidelines (source: Sydney Airport Master Plan 2039)

Obstacle Limitation Surface (OLS)

The OLS is defined by international specifications, as adopted by CASA. It defines the airspace surrounding an airport that must be protected from obstacles to ensure aircraft flying in good weather during the initial and final stages of flight, or in the vicinity of the airport, can do so safely. Figure 2.13 Mapping of OLS (Gap analysis between OLS and AHD contours) identifies the constraints of the OLS as it impacts the heights of structures to under 10m in some sections of the park that can be constructed within Barton Park.

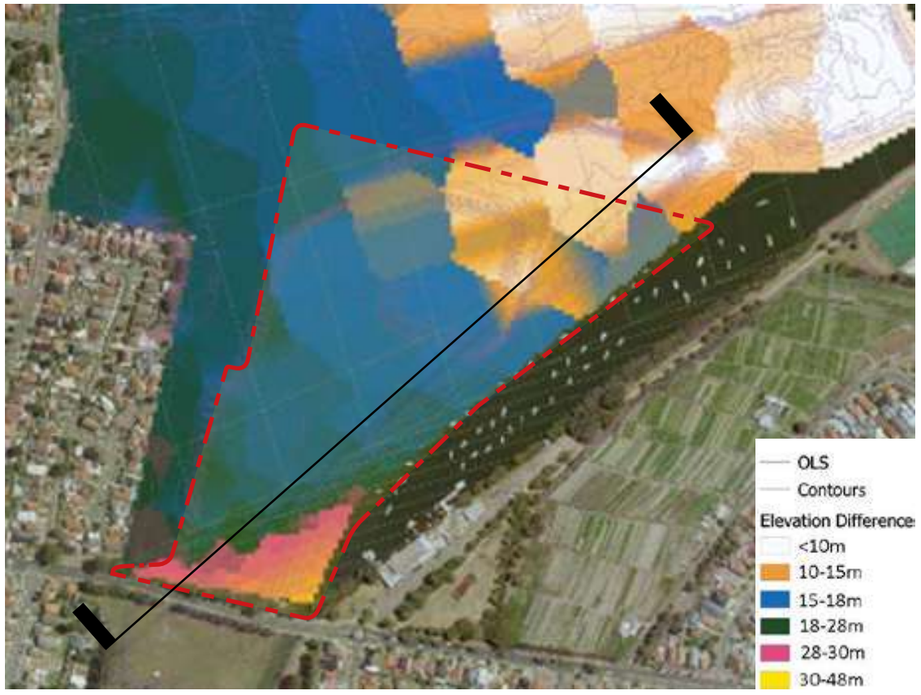


Figure 2.13 - Mapping of OLS (Gap analysis between OLS and AHD contours

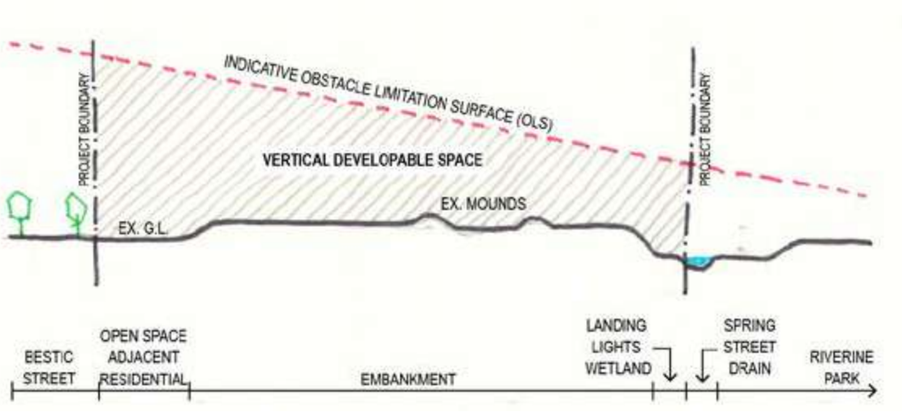


Figure 2.14 - Indicative Section - Vertical Developable Space

Sydney Airport – Utilities reservation

The Sydney Airport Masterplan 2039 (Figure 2.15) identifies a very small parcel of land as an "AD4 – Utilities Reservation Zone" within Barton Park south west of the M5 East Motorway. This is within the Landing Lights Wetland. This parcel accommodates special uses of the airport.

Public Safety Areas (PSA)

Public Safety Areas are implemented at airports to protect the safety of the public from aviation activities and accidents. Barton Park is within the accepted zones of 1,000 metres before the runway on approach or within 500 metres beyond the runway on departure. These zones are generally accepted standards set by the International Civil Aviation Organisation (ICAO).

Lighting near the airport

CASA has the authority under the Civil Aviation Regulations 1988 to control ground lights where they have the potential to cause confusion or distraction from glare to pilots in the air. Design Guidelines have been prepared to assist lighting designers and installation contractors to determine the location and permitted intensities of ground lights within a six kilometre radius of an airport. Sports field lighting and street lighting require careful consideration.

The intensity of reflected sunlight may also be considered under the regulatory regime.

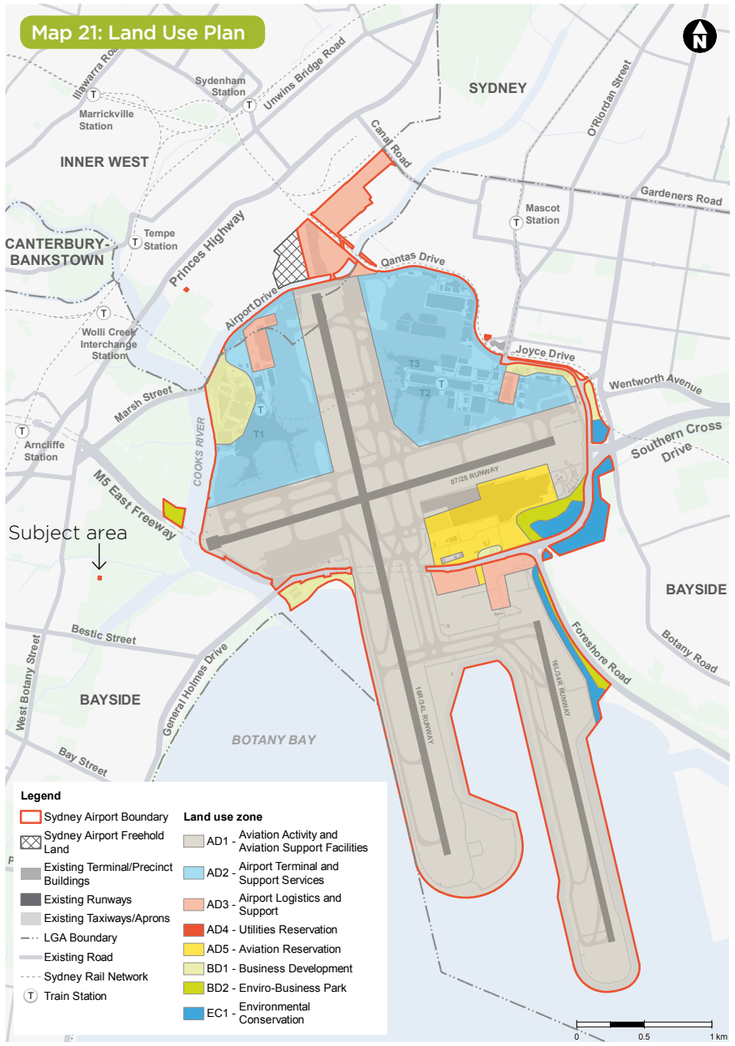


Figure 2.15 - Airport Utilities Reservation Map (Note AD4 in Landing Lights Wetland) (source: Sydney Airport Master Plan 2039)

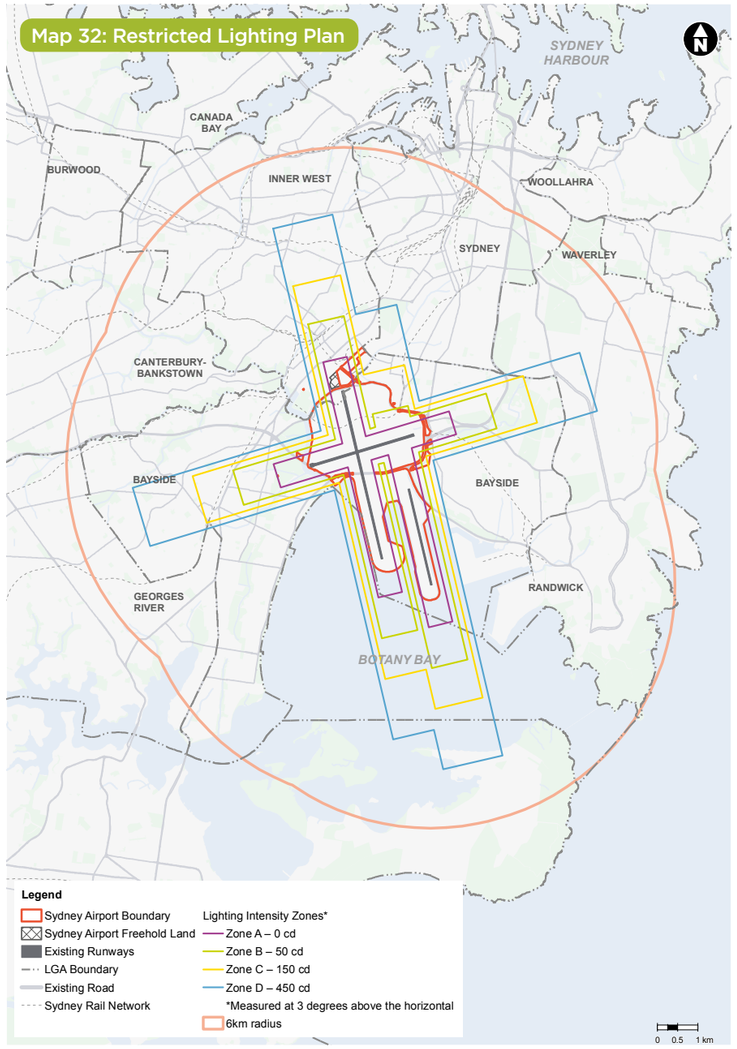


Figure 2.16 - Sydney Airport Lighting Constraint Plan (source: Sydney Airport Master Plan 2039)

2.15. Key Consideration - Historical landfill Site

The use of the site as a sewage farm, sand mine and an uncontrolled fill site means that the legacy of contamination must now be carefully managed and monitored.

A Long Term Management Plan (LTMP) has been prepared for the site. This Plan provides guidance on:

- Contaminants upon the land
- Measures to reduce landfill leachate generation rates by improving site drainage
- Measures to ensure appropriate soil cover is maintained
- Measures to monitor and manage landfill gas
- Responsibilities and obligations of relevant parties to administer the Long Term Management Plan
- Robust processes for the management, maintenance and upgrade works to the site.
- Sets out environmental monitoring requirements

The NSW Environment Protection Authority (EPA) has reviewed the LTMP and have concluded that the site will not require regulation, provided the LTMP is implemented.

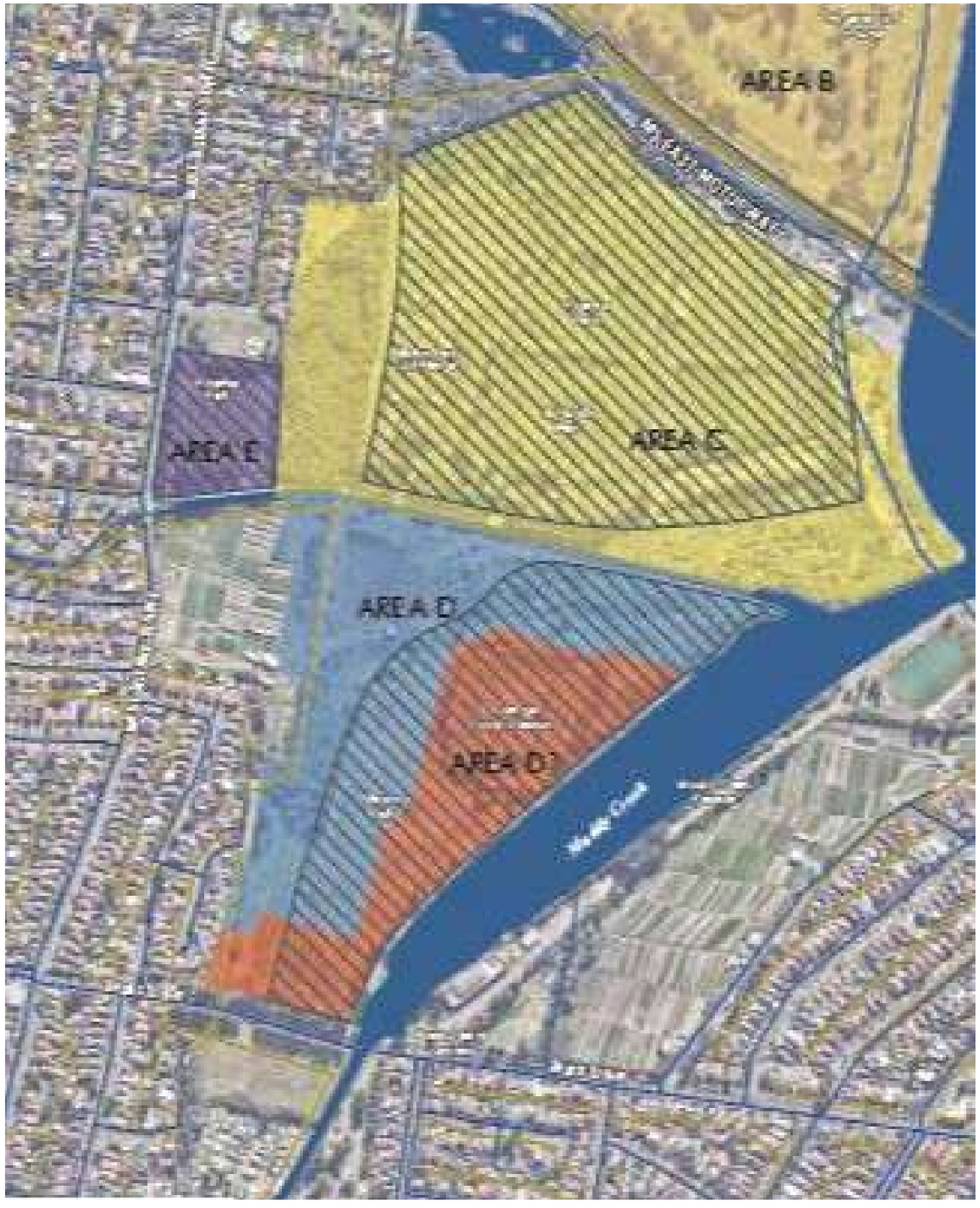


Figure 2.17 - Hatched Areas subject to historical land fill

3. Planning Framework

Sydney Green Grid

The Sydney Green Grid is an integral part of the Greater Sydney Regional and District Plans. Green space is a key liveability factor in urban areas that is made up of a network of green space that connects town centres, public transport hubs and major residential areas. The Green Grid is the State Government's green infrastructure policy that promotes sustainable development while maximising quality of life and well-being. Specifically the Green Grid promotes the linkages between open space within the wider public realm through enhancing creek corridors, transport routes, suburban streets, footpaths and cycleways.

The Sydney Green Grid document identifies 4 major zones in the Bayside Local Government Area.

Barton Park is within the group identified as CD.1.12 Rockdale Wetlands with the dominant grid layer identified as "ecological". This group of projects have a very high conservation value extending from the Cooks to the Georges River along Muddy Creek, through Eve Street Wetlands, Spring Creek Wetlands, Landing Light Wetland, Patmore Swamp, Scarborough Park Ponds and through to Sans Souci. Opportunities include wetland restoration, education, interpretation and an improved pedestrian and cyclist environment.

It is also described as a very important recreational corridor with a significant amount of active sports grounds and facilities, cycle and walking trails.

The Green Grid framework aims to protect and enhance this important hydrological and ecological asset and create a connected open space corridor for walking, cycling and urban greening along the F6 corridor from the airport to the Sans Souci and beyond the LGA to Sutherland.

Sydney Regional Environmental Plan No. 33 (Cooks Cove)

Barton Park is within Sydney Regional Environmental Plan No. 33 (Cooks Cove) (the SREP 33) and is zoned as 'Open Space' & 'Special Use' under that instrument.

The Cooks Cove SREP 33 was gazetted on 25 June 2004. Clause 2 articulates the aims of the plan that are relevant to the Barton Park masterplan.
(f) to provide open space for a range of recreational uses
(g) to provide good public access through the Cooks Cove site and along the Cooks River foreshores,
(h) to enhance the Botany Bay to Homebush Bay regional cycleway and pedestrian/cycle network
(i) to protect environmentally significant wetlands and the habitat of the endangered Green and Golden Bell Frog
(j) to establish vegetated riparian areas along the Cooks River and Muddy Creek foreshores
(k) to provide vegetated riparian buffers around the Marsh Street, Eve Street Spring Creek and Landing Lights Wetlands.

It is noted that as the area subject to the Barton Park Masterplan is under the care, control and management of Council. Clause 8 of State Government Planning Policy (Infrastructure) 2011 prevails over SREP 33. Division 12 of Part 3 and the implementation of the draft masterplan is permissible.

The objectives for the Open Space Zone include:
(a) to provide for active sporting and recreational land uses and club facilities, and
(b) to provide public access along the Cooks River and Muddy Creek foreshores, and
(c) to protect significant wetland areas within the Cooks Cove site and along the Cooks River foreshores, and
(d) to provide for facilities that are ancillary to the recreational use of public open space, and
(e) to provide vegetated riparian areas to enhance biological connectivity along the Cooks River and Muddy Creek foreshores,
(f) to protect and enhance the habitat of the Green and Golden Bell Frog established within Cooks Cove.

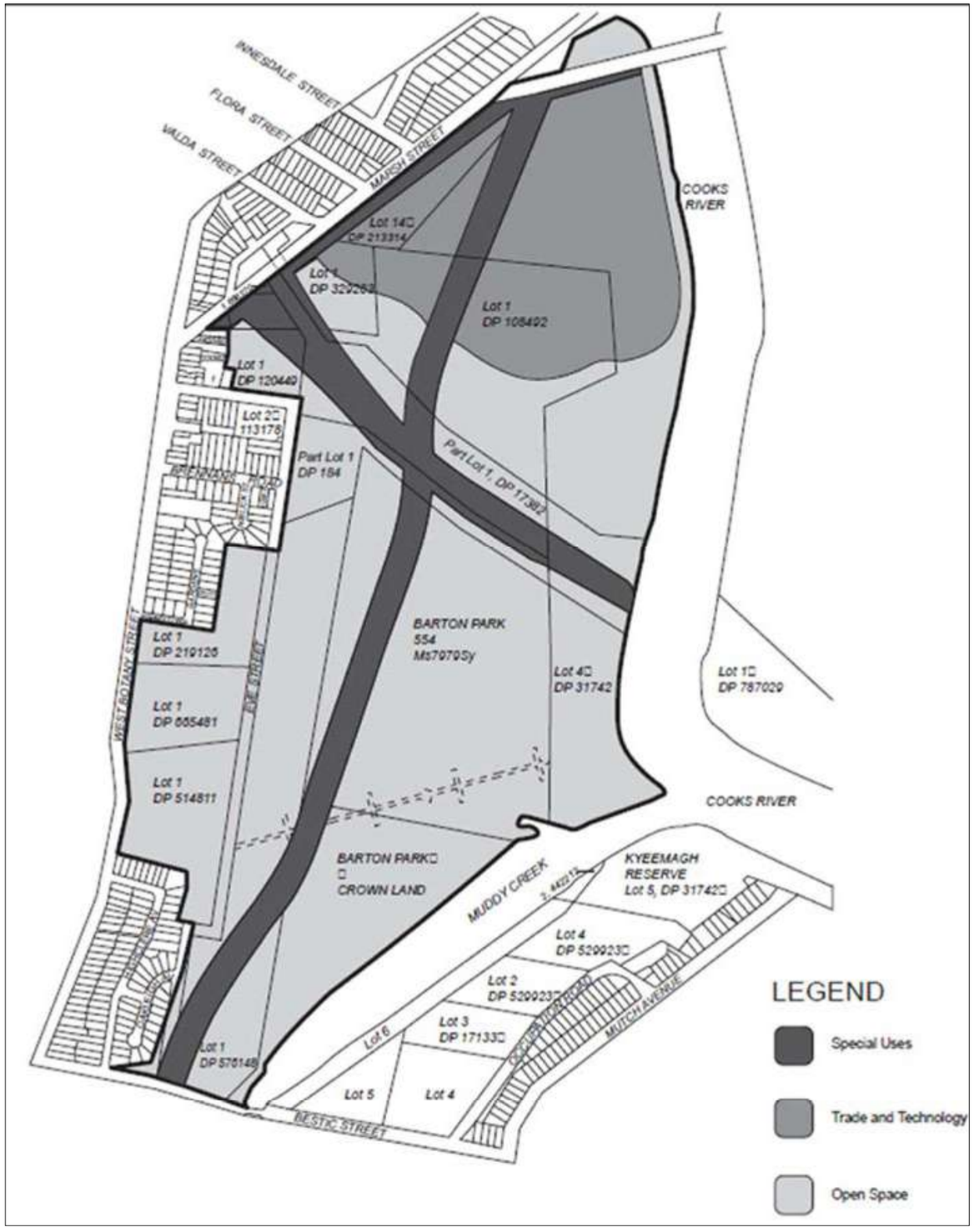


Figure 3.1 - Current zoning map of the Cooks Cove Precinct, under the Cooks Cove SREP

M6 Reserved Corridor traverses Barton Park

The instrument includes a “Special Uses Zone’ that includes:
- South West Sydney Ocean Outfall Sewer (SWOOS)
- M5 Corridor
- M6 Corridor (traverses Barton Park) as indicated by red hatch in figure 3.2

Environmental sensitivity & flood

Under the SREP 33 there are associated requirements for the development of:

- Wetlands Environmental Management Plan
- Soil and Water Management Plan Map
- Green and Golden Bell Frog Management Plan
- Environmental management
- special requirements
- Development of Flood prone land with low lying area generally impacted by 1:100 year flood in accordance with the relevant flood studies for Spring Street and Muddy Creek.
- Heritage Assessments and impact statements

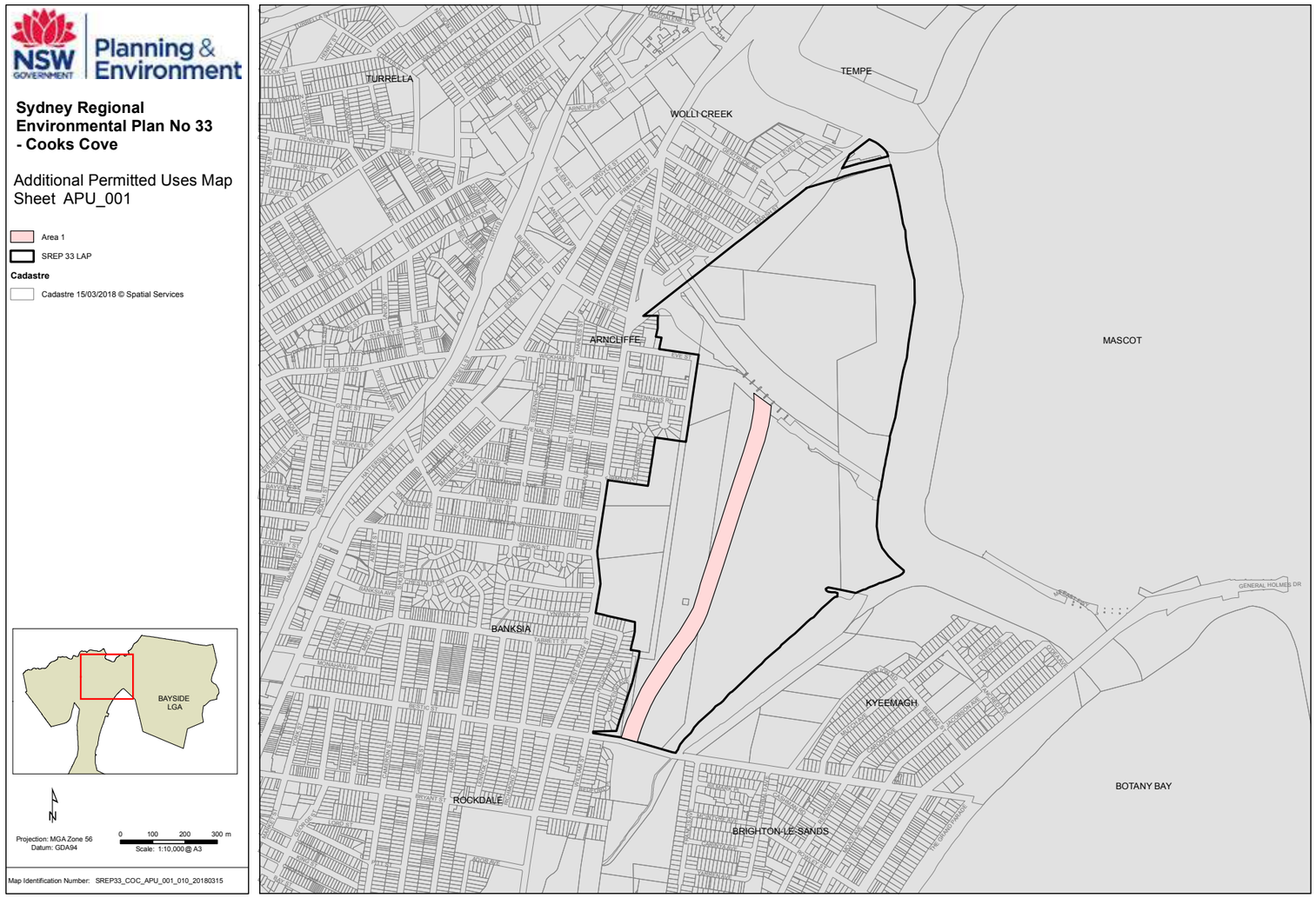


Figure 3.2 - Sydney Regional Environmental Plan No 33 - Cooks Cove

State Environmental Planning Policy (Coastal Management) 2018

Section 5 of the Coastal Management Act 2016 provides that the coastal zone means the area of land comprised of the following coastal management areas

- the coastal wetlands and littoral rainforests area,
- the coastal vulnerability area,
- the coastal environment area,
- the coastal use area. This area is mapped and shows that Barton Park is affected by SEPP Coastal Management 2018

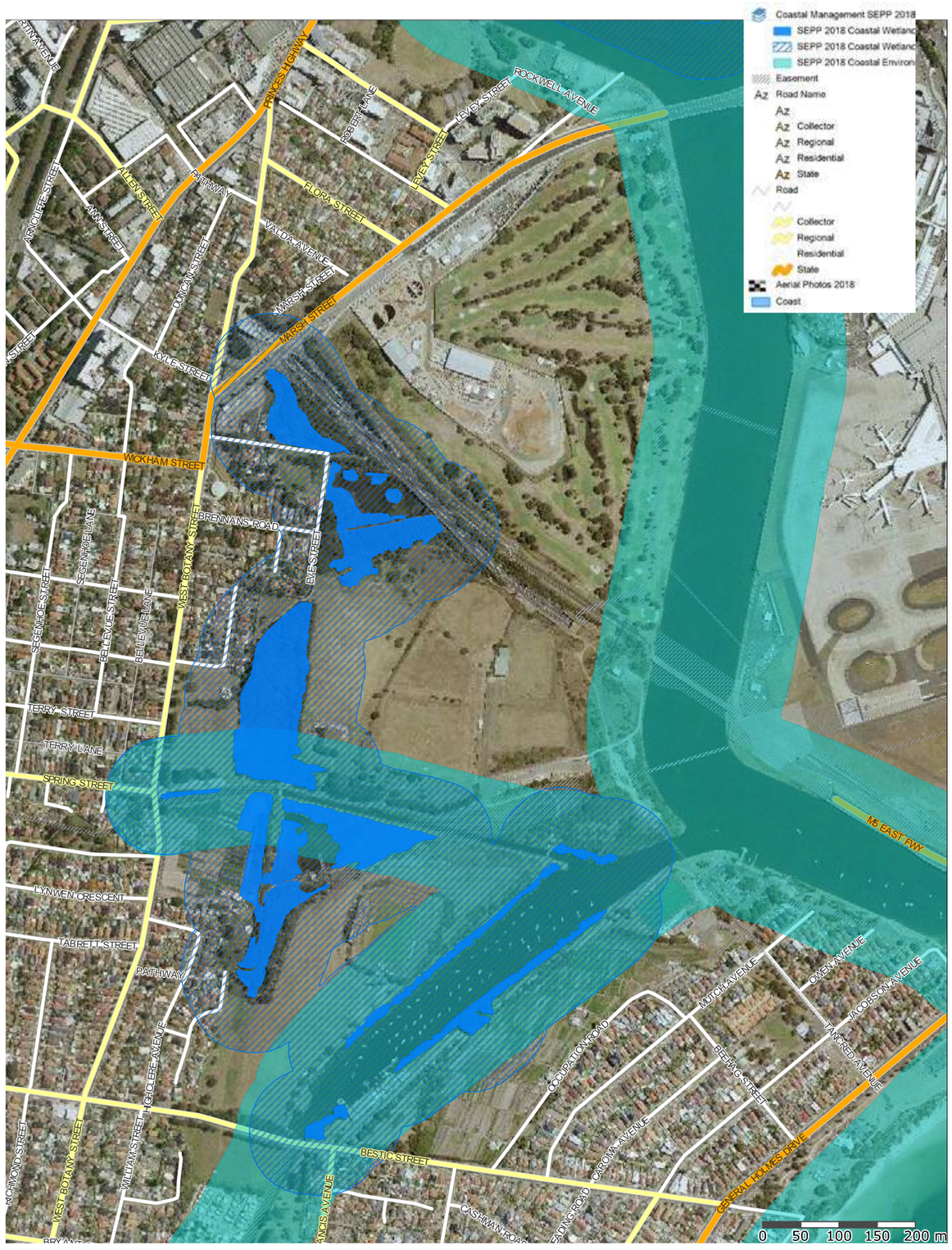


Figure 3.3 - SEPP Costal Management

Plan of Management Community Lands and Open Spaces 2015

Barton Park has several categories of land as identified in the former Rockdale City Council Plan of Management Community Lands and Open Spaces. This plan provides high level planning controls and opportunities framework for the development of Barton Park. All of Barton Park is Community Land see Section 6.1 of the Plan of Management for details regarding Permitted Use in all categories. In addition Barton Park is also identified in the plan as having the following open space categories:

- Wetland and Water Courses –
- Current and Future Permitted Uses · Sports Grounds –Current and Future Permitted Use

Wetland and Water Courses - Current and Future Permitted Uses									
Locality / Water Course	Park Name / Wetland	Current Use (refer to current Asset Management Plan for condition)				Future			
						Permitted Purposes	Permitted Development		Scale and Intensity of Permitted Use / Development
		Land	Vegetagion	Buildings	Improvements	Land	Buildings	Improvements	
	Barton Park	Passive Recreation Bush generation, regeneration and endemic planting	Mangrove Forest Swamp Paperbark Scrub	International Airport Building	Access road	Passive Recreation activities and events Active transport links to and through open space, but NOT where it will have a negative impact on ECCs, threatened flora and threatened fauna habitat or significant negative impact on environmentally sensitive areas Environmental restoration works	International Airport Building No new buildings where it will have a negative impact on ECCs, threatened flora and threatened fauna habitat or significant negative impact on environmentally sensitive areas	Access road Passive Recreation - furniture, landscape, etc, Active transport Infrastructure Play equipment / space, Landscaped, Park furniture, Shared path, Car park Bush regeneration, re-vegetation and endemic planting	Access road

Sports Grounds - Current and Future Permitted Uses						
Precinct	Park Name	Current Use (refer to current Asset Management Plan for condition)		Future		
				Use	Permitted Purposes	Scale and Intensity Use / Development
Barton Park	Barton Park	Land	Active Recreation - Soccer	Active Recreation	Related to active recreation needs - Sportsground amenities, park furniture, stormwater harvesting and/or mitigation development Large cultural events / activities e.g festivals Affected by Cooks Cove Development SEPP	Appropriate scale and intensity developments to the size for the active open space area and the sites necessities for the level (local) Subject to REP No. 33 - Cooks Cove
		Building	Sports Amenities Building	Sports Amenities Building		
		Improvements	Lighting, Irrigation and/or Drainage, Car Park	Lighting, Sportsground levelling and resurfacing, irrigation and/or drainage		
	St George Soccer Stadium	Land	Active Recreation - Soccer	Active Recreation		
		Building	Sports Amenities Building	Sports Amenities / Stadium		
		Improvements	Lighting, Irrigation and/or Drainage, Car Park	Lighting, Sportsground leveling and resurfacing, irrigation and/or drainage		

Biodiversity Strategy 2014 – A strategy for the Natural Assets of the City of Rockdale

This strategy provides high level goals and targets to guide the development of open spaces with an emphasis on restoration and protection and enhancement of natural areas, improvement of waterway quality and creation of linkages along corridors of open space.

The strategy identifies the following priorities for Landing Lights Wetlands in conjunction with nearby Marsh Street Wetlands, Eve Street Wetlands and Spring Street Wetlands:

- Provide foraging and roosting habitat for a range of migratory and non-migratory shorebirds and small bush birds.
- Marsh/Eve Street Wetlands is known habitat for the threatened Green and Golden Bell Frog.
- Potentially constrained by proximity to Sydney Airport (given attraction to birds)
- Comprise of a sequence of threatened estuarine and freshwater vegetation assemblages and coastal saltmarsh.
- Function as important wetland links in the Wetlands Biodiversity Corridor.
- M5 and neighbouring market gardens.
- Within Landing Lights wetland coastal saltmarsh are currently heavily impacted by the weed species Juncusacutus and are being out-competed by more dominant mangroves.

Figure 1: Vegetation communities

Figure 2: Endangered ecological communities and known and potential habitat for threatened flora

Figure 3: Known and potential habitat for threatened fauna and shorebirds

Bayside West Precinct Plan 2018

This Plan sets out strategic land use and infrastructure planning to guide the future transformation of the Bayside West Precincts. The Plan will inform future changes to the planning controls to enable the rezoning of the Arncliffe and Banksia Precincts, through future amendments to the Rockdale Local Environmental Plan 2011 (LEP 2011).

The Bayside West Precinct identifies the importance of open space that is accessible, functional and adaptable to different stages of life for local residents and is reliant on provision to be provided by the large parks in Cooks Cove including Barton Park and to improve connections for pedestrians and cyclists.

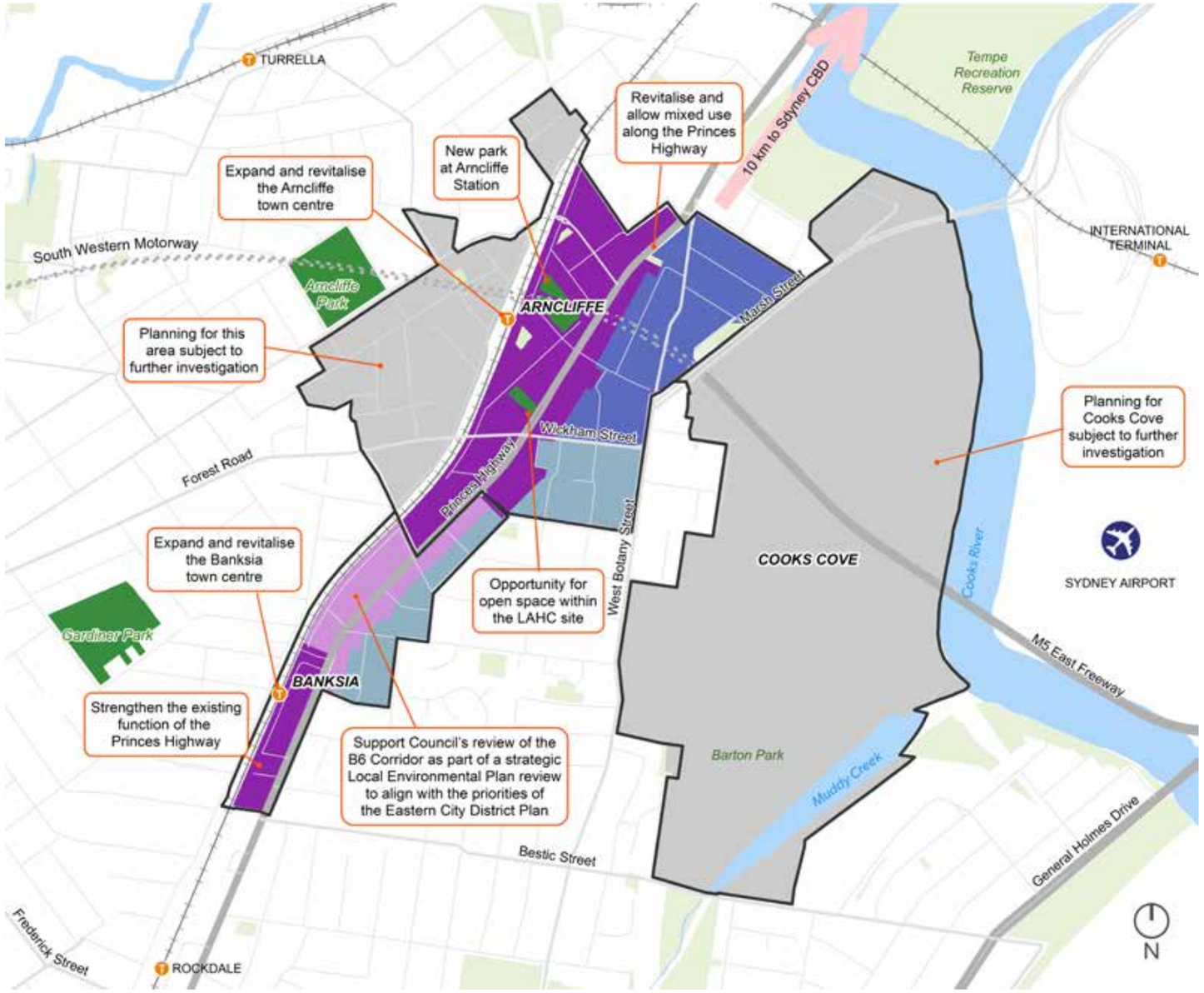


Figure 3.4 - Bayside West Precincts 2036 Plan

4. Key Design Opportunities

4.1. Key Opportunities - Access & Connection

Currently there is poor access into and though Barton Park except for the the existing north/south route.

- Creation of formal routes and wayfinding signage using standards developed for use in Bayside Council.
- Enhance the already existing north/south route.
- Remove conflicts between vehicles and vulnerable users such as cyclists and pedestrians
- Improve safety for increased usage by cyclists and pedestrians in a shared environment.
- Creation of a pathway hierarchy to provide enjoyable routes for all users through and around the park and to the waterfront.
- Create opportunities for better east/west connections
- Improve links to the broader network to connect to local transport nodes including Arncliffe station and Wolli Creek Station.
- Potential to link to the rest of Rockdale Wetland Corridor. Enhance Barton Park Cycleway, which is part of the popular Bay-to Bay cycle network
- Improve access and pedestrian access in the Landing Lights Wetland including boardwalks through otherwise inaccessible areas.
- Provide areas of parking situated to service a range of recreation options and to provide disabled access in the most suitable locations.

4.2. Environment and Water zones 2,3,4

The rich ecological resources of the Landing Lights Wetland and Muddy Creek Foreshore :

- Extend/enhance the wetland and vegetated environment to areas heavily impacted by overland flow in Zone 3 to improve water quality entering the Landing Lights Wetland.
- Improve the quality of vegetated areas. An opportunity exists to remove extensive areas of weeds including woody and noxious species. The works will primarily involve reconstruction rather than regeneration of vegetation including the protection of some large canopy trees.

Remediate the heavily disturbed land with planting, especially canopy trees using endemic species.

Improve pedestrian access and promote complementary activities such as the development of an educational route, art trail and/or heritage interpretation route.

Provide spaces that encourage passive recreation focuses on bird watching and enjoyment of locations adjacent water bodies

Introduction of rocks/boulders in swale areas to encourage exploration and water play

The foreshore of Muddy Creek has been allowed to become enclosed by a mangrove forest due to lack of maintenance over a long period of time. Whilst mangroves are protected there is a good case for selective removal to improve view corridors and public safety.

Opportunity to create freshwater ponds to create detention for freshwater species such as the Green and Golden Bell Frog.

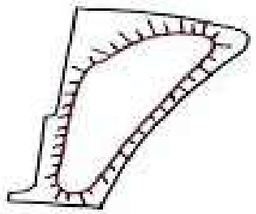
The Spring Street Drain is part of the Riverine Park area however there are opportunities for naturalisation of the southern banks adjoining Barton Park.

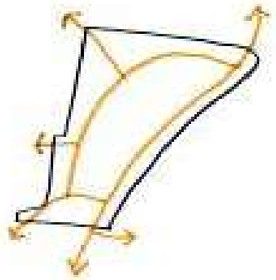
Promotion of park as a wetlands park and nature reserve.

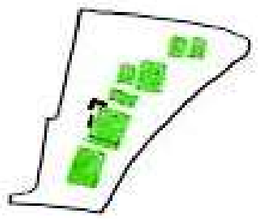
4.3. Key Opportunities - Open Space & Recreational Uses

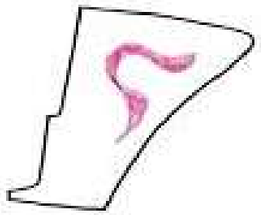
- Creation of sporting fields and activities that take advantage of the available flat mildly undulating land above flood level. Environmental management is to ensure grassed cover at all times
- Upgrade sporting facilities to meet the demands of increasing population in the catchments
- Provision of higher standard of sports fields including lighting and drainage.
- New sporting facilities to be supported with new amenities to the high standard Bayside Council has provided in other parks such as Scarborough Park to provide facilities for organised sport as well as casual users.
- Removal of some mounds will allow the provision of multi-purpose courts.
- Provision of facilities to serve casual users such as play spaces, exercise hubs, picnic tables, seating
- Provision of lighting throughout the park to create safe access and usage to support night time use.

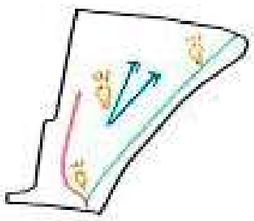
5. Principles and Strategies











Design Principles	1. PROTECT ENVIRONMENTAL QUALITY	2. RESPECT SITE CONTEXT	3. CONNECTIVITY WITHIN & BEYOND	4. SPORTS & COMPETITION	5. ACTIVE LIFESTYLES	6. SAFETY FOR ALL
Design Strategies	Expand the ecological communities to enhance their viability and protection Protect places with ecological value Improve landscape quality in all Zones Improve connections to Landing Lights Wetlands Reconstruct natural environments Regenerate native vegetation Improve water quality Allow community access and interaction Manage use and limit dog access in vulnerable ecological areas Harness the effects of flooding for the benefit of the environment Educate the community on why its valuable	Respect site history & topography Design responds to modified environment Incorporate land management measures to limit impacts from past contamination Recognise context of site in the early development of industrial Sydney Interpret the site history in the context of the adjoining heritage and civil assets	Connect to broader active transport network Improved access and parking within in the park A hierarchy of access for cohesiveness and legibility An inclusive path system to provide opportunities for a range of users in terms of ages and abilities Reinforce access to the site by providing a sense of arrival and destination	Upgrade sports fields and facilities for active recreation to meet sporting group and user needs Improve amenity and lighting to meet compliance and best practice standards Provide for growing community demand Encourage sport participation	Provide opportunities for diverse recreational participation Provide recreation for a range of ages and abilities Dynamic passive recreational corridor linking facilities and features. Opportunity for heritage, environmental or art trail Create places of interest and delight Promote health and fitness within the local area with various routes possible as circuits of various lengths Create places for relaxation, viewing, contemplation and socialising Design areas to shelter so park can be used in hot weather or inclement weather	Adopt Safety by Design (CPTED) principles to ensure that users are safe and also feel safe when in the park Lighting along path, road and parking network Allow safe access to the water Mitigate the effects of flooding to protect the community Encourage high levels of use to promote the sense of safety for users Improve site surveillance by opening up site lines and avoid hidden areas New facilities are designed to meet current compliance codes as a minimum and where possible enhanced best practice

6. Functional Zoning

The Masterplan area has been divided into four zones.

Zone 1 – Active & Passive Park Zone

- Extensively grassed area on top of the old land fill embankment.
- Least impacted by flooding, generally undulating sloping from the high point in the northern part of the site to the lowest point in Bestic Street.
- Design is constrained by limitations of airport proximity and is development is restricted by Obstacle Limitation Surface (OLS), Public Safety Area (PSA) and M6 corridors. This zone is generally suitable to cater for the increasing sports and recreational demands in the LGA.

Zone 2 – Foreshore Environment Zone

- A narrow strip of land adjacent the Muddy Creek foreshore.
- Zone 2 is impacted by flooding, tidal and sea-level rise.
- Opportunity for environmental and landscape improvements

Zone 3– Open Space Adjacent Residential

- A low lying grassed area between residential area, the embankment and Landing Lightings Wetland.
- Subject to flood and occasionally tidal backwash. Partially within M6 Reserved Corridor.
- Investigate options for passive recreation, opportunities for habitat creation and integration with other zones

Zone 4 – Landing Lights Wetland

- A low lying wetland area with large salt marsh area between the embankment and Spring Street Drain
- Subject to flood and airport operational restrictions
- Suitable for passive recreational use especially for bird watching

7. Masterplan

ZONE 4
LANDING LIGHTS WETLAND

NEW AMENITIES BUILDING

RELOCATED FOOTBALL FACILITIES

WATER MEADOW

ZONE 3
OPEN SPACE ADJACENT RESI-DENTIAL

NEW ACCESS ROAD

ZONE 1
ACTIVE & PASSIVE PARK

ZONE 2
FORESHORE ENVIRONMENT ZONE

4 x MULTI-USE COURTS

RIVERINE PARK

COOKS RIVER

SPRING STREET DRAIN

SHARE PATH TO AIRPORT

ARNCLIFFE MARKET GARDENS

KYEEMAGH MARKET GARDENS

LANCE STUDDERT RESERVE

WHITEOAK RESERVE

MUDDY CREEK

KYEEMAGH CYCLE WAY

BARTON PARK CYCLE WAY

BESTIC STREET

WEST BOTANY STREET

HIGHCLERE AVE

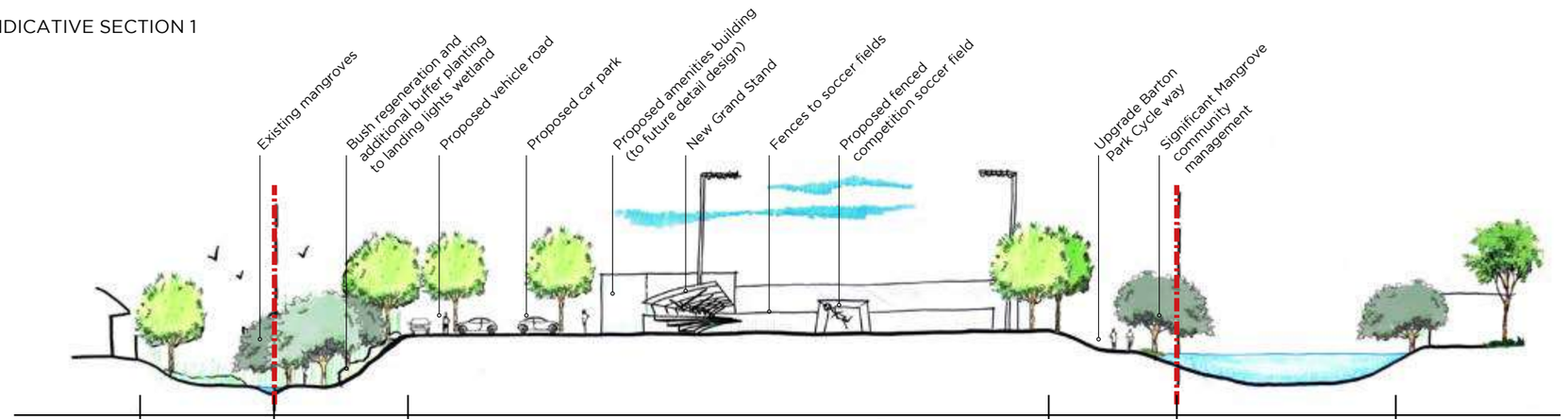
OAKLEIGH AVE

N

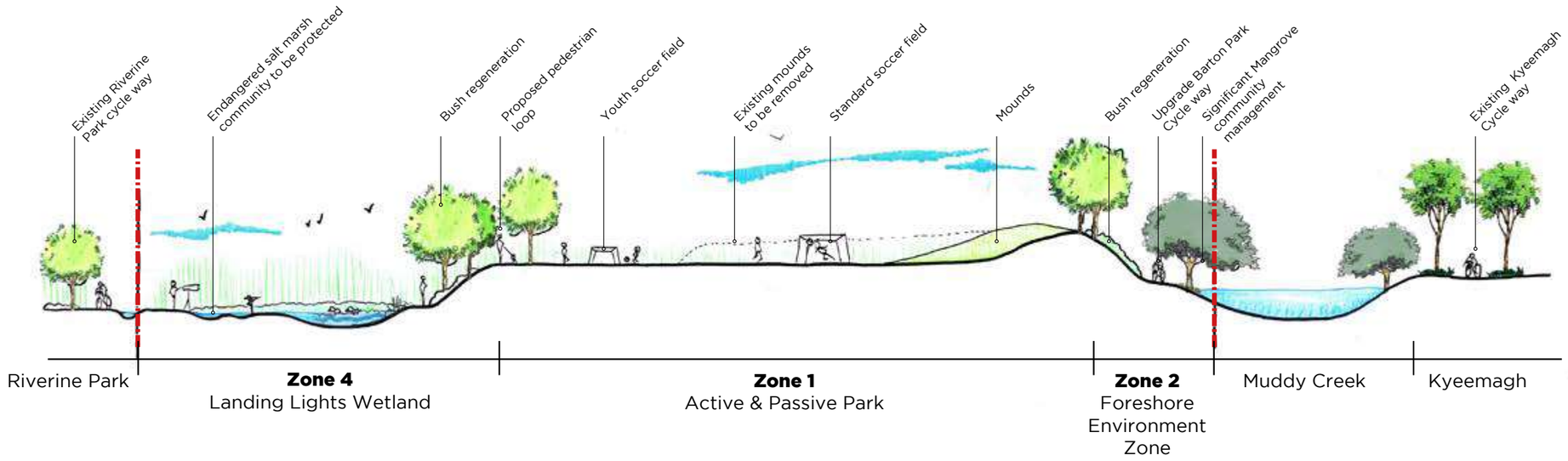
0 50 100 150 200M

7.1. Landscape Sections

INDICATIVE SECTION 1



INDICATIVE SECTION 2



8. Landscape Design Frameworks

8.1. Access and Circulation

Access to park:

- Existing vehicle entrance location to be improved
- Create a sense of arrival
- Separate vehicle entry from vulnerable users and provide separated shared path. One close to the bus stop on Bestic Street and one from residential area in Eve Street.

A hierarchy of access

- Vehicle road meanders within M6 Reserved corridor and links major sports fields and amenities building.
- Upgrade existing cycleway into a safe shared pathway that runs alongside the Muddy Creek foreshore.
- Primary pedestrian path provides complimentary access alongside the new road and connects to north/south shared path connecting to Riverine Park to the north and south to Bestic Street
- Secondary paths to provide internal connections east/west and between facilities connecting 4 zones.
- Opportunity to integrate interpretative, heritage, educational or art trail into network
- A safe path system
- Path network to meet Australian Standards for universal access
- Separate vehicle access from vulnerable users to reduce conflicts.
- Clearly line marked areas for cyclists and pedestrians to manage user conflicts
- Provide a high standard of lighting along pathways

Improved Parking:

- Provide parking at regular locations along the new vehicle road
- Provide good access to new facilities with shade and lighting

8.2. Natural Environment

Protect and enhance natural resources

- Protect environmentally sensitive environments
- Enhance and extend sensitive zones to create buffer to Landing Lights Wetland, particularly to protect from increased nutrient loads
- Protect trees in good health and of high ecological value
- Develop a vegetation management plan and remove woody and noxious weeks to allow for reconstruction of long term ecology
- Undertake bush regeneration especially to stabilise embankment slopes and to connect habitat zones including species found in Coastal Saltmarsh and Swamp Oak Floodplain Forest.

Improve water quality

- Mitigate impacts of flooding by harnessing overland flow into detention facilities such as water meadows or bio-retention at overland flood path to improve water quality through natural filtration of flood waters entering Landing Lights Wetland
- Water meadows/biodetention of fresh water arising from stormwater will create habitat for frogs including the Green and Golden Bell Frog.
- Arrested flood waters reduces erosion and slows down sedimentation of drainage channels and waterways and protects properties upstream.

8.3. Recreation and provision for future generations

- Implement high standard of sporting and recreation facilities to provide for a range of ages and abilities
- Provide a home for St George Football Club including grandstand
- Enhanced recreational route with upgraded shared pathway including lighting to connect the north/south route through Barton Park from Riverine Park to White Oak Reserve.
- Pedestrian routes to connect east/west and north/south within and beyond Barton Park with a range of options to suit the growing community needs.
- Opportunities to enjoy the natural outdoor environment in the context of its past industrial history adjacent the growing vibrant city.
- A place for socialising, competition, relaxation, contemplation, and recreation for today's and future generations of Bayside.

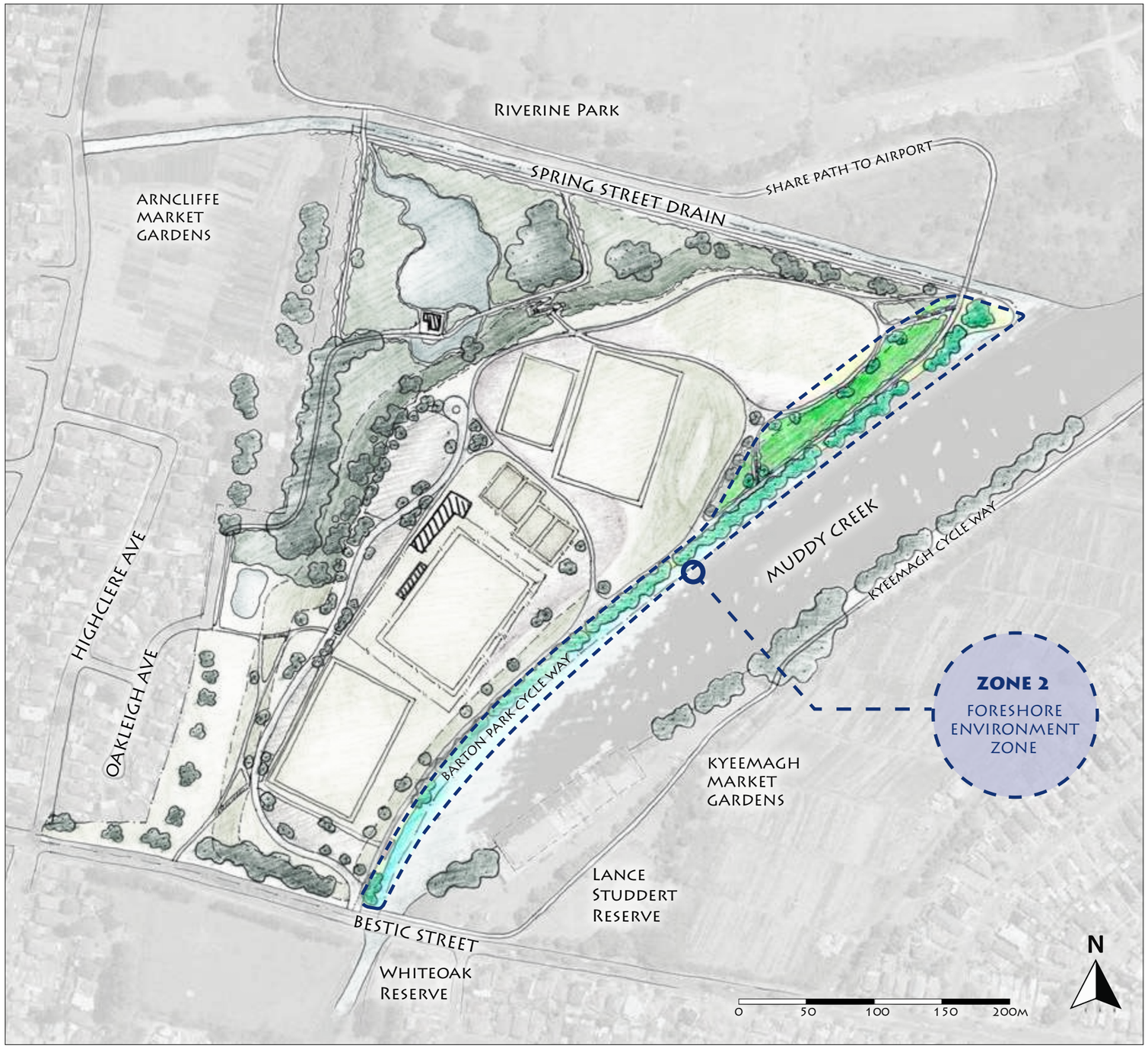
8.4. Zone 1 – Active & Passive Park

Zone 1 – Active & Passive Park Zone

- Extensively grassed area on top of the old land fill embankment.
- Requires demolition of substantial structures associated with St George Football Stadium including grandstand, buildings and some portions of spectator mounds.
- Demolition of some of the existing mounds will open the long views across the park to the long views of the city beyond Wolli Creek and east to the airport and west to Arncliffe over the wetlands. This will also improve passive surveillance within the park
- This zone may sustain a range of recreational facilities including:
    - New home for St George Football Stadium including grandstand
    - Amenities building to serve the sports fields, multi-use courts and casual users of the park.
    - Grassed sports fields of various sizes
    - Multi-use synthetic courts
    - Exercise hubs
    - Picnic and seating areas for socialising
    - Potential for other facilities such as playground and viewing areas
    - Tree lined access road and associated parking
    - Network of pathways to service facilities and recreational routes within the park

- Long term contamination management works will require careful consideration during the design and construction phases to ensure longevity of structures. Design considerations include the nature of drainage, limitations on depths and type of excavation, location of services, materials selection and structural considerations. In the long term maintenance of grass cover in this area is critical.

8.5. Zone 2 – Foreshore Environment Zone



Zone 2 – Foreshore Environment Zone

- Travels through existing environmentally significant mangrove forest along Muddy Creek, an existing cycleway - part of (Homebush) Bay to (Brighton) Bay cycle network, and past a steep batter of land fill abutting the north-west section of the cycleway.
- Opportunity to upgrade to a shared pathway as part of recreational route including lighting connecting to Riverine Park to the north and White Oak Reserve to the south as part of the Rockdale Wetlands corridor.
- Visual connection to Muddy Creek is possible with selective thinning of the mangroves with opportunities to stop along the route for relaxation and contemplation and enhanced cyclist experience.
- The improvements will create a destination within Barton Park including seating and lookouts as well as servicing the north/south route as part of the broader recreational route.
- Vehicle access will be restricted to service vehicles only to improve safety for vulnerable users.

8.6. Zone 3 - Open Space Adjacent Residential

Zone 3– Open Space Adjacent Residential

- The proposal will explore flood management options in this area to improve water quality draining into Landing Lights Wetland and to mitigate the impacts of flood waters
- Improve pedestrian connections to Zone 1 Active and Passive Zone and Zone 4 Landing Lights Wetland

8.7. Zone 4 – Significant Environmental Sensitive – Landing Lights Wetland

Zone 4 – Landing Lights Wetland

- Environmentally significant wetland to be protected as it is favoured by migratory birds including Threatened Species.
- Must exclude dogs from this sensitive environment
- Opportunity to enhance public access over boardwalk and to create areas of relaxation and contemplation
- Opportunities for inclusion as part of environmental, heritage, art, educational trail.

9. Funding strategy

Council has a range of funding sources that may be used to deliver this significant project.

The list below provides an indication of how the project could be funded.

- Special Rates Variation (SRV) is currently collected for area covering Barton Park. This funding is available to fund replacements of existing infrastructure with modern equivalent.
    - Sporting infrastructure, buildings, stadium seating, road and parking but not drainage infrastructure. Irrigation of stadium field including tanks. Fencing around stadium and stadium infrastructure. All signage & wayfinding. Some park pathways, furniture and playground.
- Council collects contributions from developments that generate additional demand and growth of infrastructure such as recreational facilities. These funds are collected under Section 7.11 and S7.12 of Environmental Planning & Assessment Act, 1979 (EP&A Act). This could include:
    - Fitness stations, pathways, park furniture, playground, off leash dog facilities, new types of fencing, irrigation of other fields including tanks.
- Council also collects a Special Variation Rate (SRV) specifically for enhancing community safety. Examples of projects that can be funded are: Pedestrian lighting, and pathways
- Council will also pro-actively seek assistance from other government agencies to help achieve the vision for Barton Park. Various possibilities include:
    - Metropolitan Green space Grants
    - Environmental Grants for interface with wetland areas eg. Lookouts, interpretation, bush regeneration etc
    - Sport and Recreation grants
    - Water quality grants
    - Coastal grants
    - vegetation management grants
    - art and education grants

Barton Park - preliminary schedule of works

ZONE 1 Active and Passive Park	Standard	Size	Qty	Unit	Potential Funding source
Football field incl. drainage & irrigation Fields 1, 2, 3	Fifa	68x105 m	3	item	SRV
Mini fields - Field 4	Youth 10 x 2 or 1 x Senior field	45x60 m	2	item	SRV
Football field - Field 5	Youth 10	45x60 m	1	item	SRV
Water supply tanks	Extent to be confirmed	100,000 litres	2	item	TBC
Field lighting - stadium	200 lux	Pole max 18m	6	poles	SRV
Field lighting - training	50-100 lux	Pole max 18m	6	poles	SRV
Stadium score board & screen	To be confirmed	TBC	1	item	TBC
Stadium fencing - low internal, two pedestrian gates & 1 vehicle acces	Metal fence	1.0 m tall	374	l m	SRV
Stadium fencing - high boundary, two pedestrian gates & 1 vehicle access	Security type	1.8 m tall	465	l m	SRV
Concrete path around fence	Concrete	1 m wide	465	l m	SRV
Hard stand around buildings	Extent to be confirmed	131 long x 20 m wide	2620	sq m	SRV
Grandstand seating	400 seats		1	item	SRV
Amenities building including public toilets, change rooms, canteen	Standard Bayside + 30%	TBC	1	m	SRV
Synthetic multi-use courts including fencing	To be confirmed	TBC	4	item	SRV / S7.11
Internal road including lighting	2 lanes x 3m	620	6	l m	SRV
Turning area including lighting	Cul de sac	Approx 10 m wide	1	sq m	SRV
Carparking & number of spaces including lighting	To be confirmed	7400	TBC	sq m	SRV / S7.11
Primary paths including lighting	To be confirmed	1.5-2.5m wide	960	l m	S7.11 & other
Secondary path (lighting to be investigated)	To be confirmed	1.2-1.8 m wide	1000	l m	S7.11 & other
Exercise hubs	To be confirmed	To be confirmed	2-4	item	S7.11 & other
Viewing platforms	To be confirmed	To be confirmed	TBC	item	S7.11 & other
Playground	To be confirmed	To be confirmed	1	item	S7.11 & other
Off leash dog area	To be confirmed	To be confirmed	1	item	S7.11 & other
Wayfinding, signage and interpretation	To be confirmed	To be confirmed	TBC	item	SRV / S7.11
Bush regeneration areas	Extent to be confirmed	To be confirmed	TBC	sq m	Grants

ZONE 2 Foreshore environment including coastal wetland zone	Standard	Size	Qty	Unit	Potential Funding source
Upgrade of existing active transport route	Concrete	4 m wide	650	l m	SRV & grants
Lighting along route	To be confirmed	TBC	TBC	item	SRV & grants
Bush regeneration areas	Best practice	Approximate	4750	sq m	Grants
Passive recreation opportunities including lookouts, picnic areas,					

10. Next steps

The draft Barton Park Masterplan will be exhibited for 6 weeks until Tuesday 26 May 2020.

The Covid-19 (Coronavirus) situation has meant that council has not been able to undertake face to face community engagement activities.

Display boards are located in several locations on the site. Letters will be sent to adjacent residents and stakeholders including St George Football Club, Sydney Airport, Sydney Water and the operators of the Arncliffe Market Gardens.

We will continue to refine the Masterplan. We will develop a staging plan and funding strategy for the long term implementation plan of approximately 10 years.

Investigations such as detail survey and geotechnical will commence soon specifically in the areas identified for large structures such as buildings and grandstand.

Budget to deliver design and documentation will be proposed in the City Projects Program 2020-2021.

The results of the Have Your Say process and feedback received will be reported to Council in mid 2020

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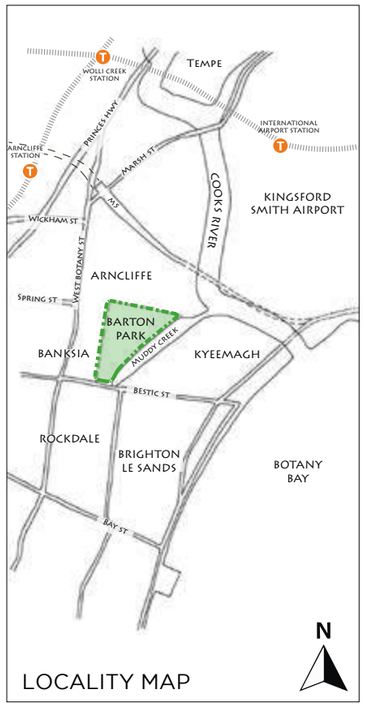
12. Appendix A

Community consultation board



HAVE YOUR SAY

www.haveyoursay.bayside.nsw.gov.au

We have prepared a draft Masterplan for Barton Park. We will be implementing Zones 1 & 2 first then Zones 3 & 4. Your feedback will help us to develop the detail design and set the priorities.

For more information and to Have Your Say please visit our website on https://haveyoursay.bayside.nsw.gov.au/

Comments will be received until **Tuesday 19 May, 2020**.

Phone: 1300 581 299
Email: council@bayside.nsw.gov.au
Web: www.bayside.nsw.nsw.gov.au

Objectives

- Provide playing fields and other sporting facilities for active recreation to meet sporting group and user needs
- Improve amenity and lighting to meet user groups and regulatory requirements
- Upgrade site conditions in accordance with the opportunities identified in the Environmental Management Plan
- Improve interface with Landing Lights Wetlands and other adjacent open space
- Improve landscape and biodiversity outcomes through increased plantings
- Identify integrated movement network with connections to adjacent areas
- Increase safety using Safety by Design (CPTED) principles

Zone 1 – Active & Passive Park

This area is best suited to provide high quality sporting and passive recreation. The zone includes opportunities to:

- relocated St George Football facilities
- upgraded turf sports fields
- 4 x multi-use synthetic courts
- new amenities building & grand stand
- potential for passive recreation facilities
- new park road and parking areas to service the new facilities
- pedestrian path networks & viewing areas
- the removal of sections of mounds to improve the spatial quality of the site & better integrate the sporting facilities

Zone 2 – Foreshore Environment Zone

This area is located adjacent the banks of Muddy Creek and provides a significant north/south connection of open space. The zone includes opportunities to:

- upgrade the recreational pathway for pedestrians and cyclists
- provide lighting along the foreshore of Muddy Creek for improved safety and user amenity
- Make strong connect through to Riverine Park to the north and Whiteoak Reserve to the south as part of the Rockdale Wetlands Corridor
- separate vulnerable users such as pedestrians and cyclists from vehicles to remove conflicts
- activate the foreshore of Muddy Creek taking advantage of its waterside location

Zone 3 - Open Space Adjacent Residential

Open Space adjacent residential This area is best suited for passive recreation, pedestrian connectivity and environmental management. The zone includes opportunities to:

- improve pedestrian connections from Bestic Street and adjoining residential areas to adjoining zones 1 and 4
- improve visual and park amenity
- improve water quality to the Landing Lights Wetland where this land drains by introducing a water meadow to take advantage of the overland flow
- improve vegetation management

Zone 4 – Significant Environmental Sensitive – Landing Lights Wetland

This area encompasses the Landing Lights Wetland including a significant salt marsh habitat that provides habitat for migratory birds including Threatened Species. This zone includes opportunities for:

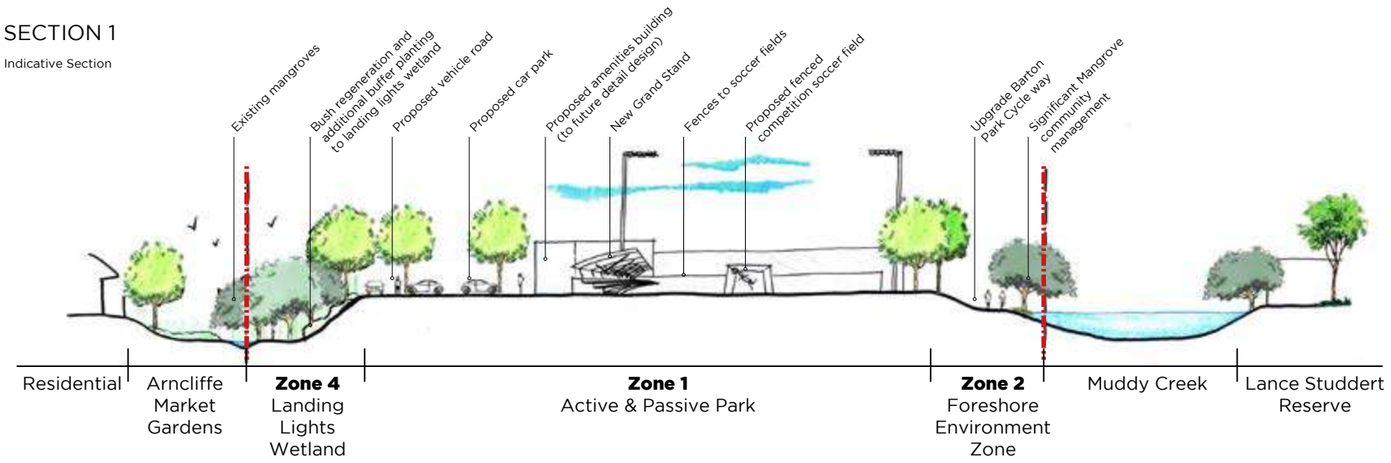
- improved passive recreation
- conservation of high environmental quality
- upgrade of boardwalks and access
- greater access to the valuable educational resource for the community

Barton Park, Banksia - Draft Masterplan

Bayside Council
Serving Our Community

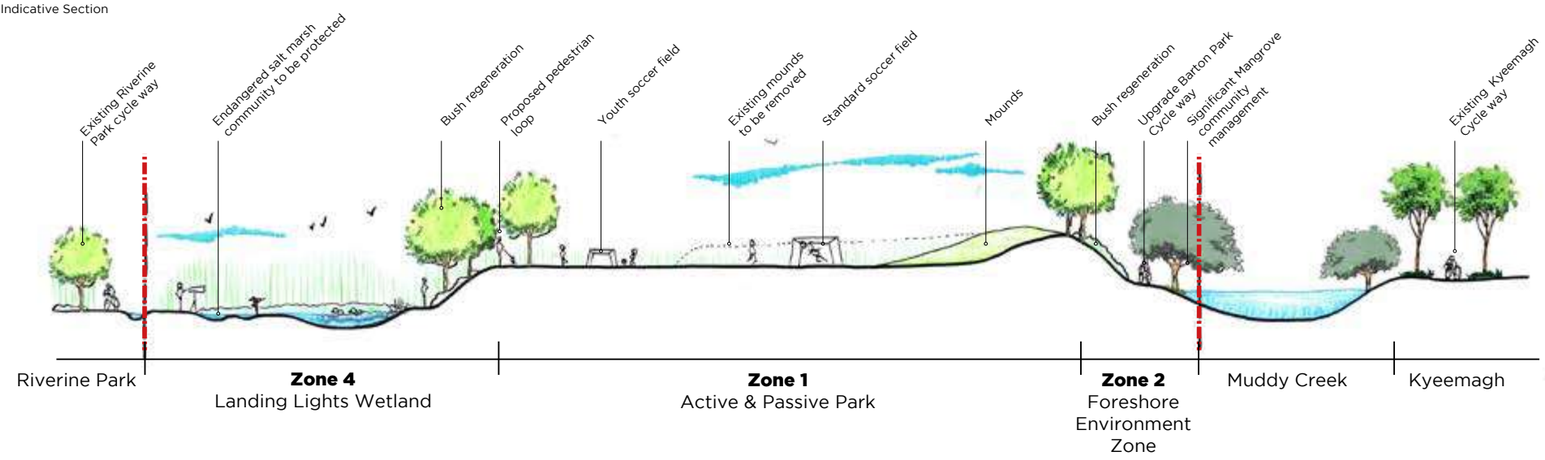
SECTION 1

Indicative Section



SECTION 2

Indicative Section



SPORTS FIELDS

MULTI-USE SYNTHETIC COURTS

GRANDSTAND

PEDESTRIAN PATH

SHARED PATH

Precedent image only, detail to future design

Barton Park, Banksia - Draft Masterplan

Bayside Council
Serving Our Community

13. Appendix B

Photos and articles provided by Rockdale Library Local History Librarian

BARTON PARK, ROCKDALE.

BIG RECLAMATION SCHEME.

The Rockdale Municipal Council is carrying out, without assistance from the Government, a reclamation scheme which will considerably enhance the value of property in that area, as well as providing a public park of 120 acres on a self-supporting basis.

For years the sewerage farm area has been the prolific breeding ground of mosquitoes and other pests. That land was secured from the Water Board at a cost of £885. Tenders were invited for the reclamation, one of the conditions being that the contract charges would be met by deferred payments. Six firms tendered for the work, the successful tenderer being Mr. A. T. Keirle, Manly, at £12,721, payment to be 25 per cent. of the cost as the work proceeds, the balance to be spread over a period of 15 years, annual outstanding balances to carry interest at the rate of 5 per cent. per annum.

The filling-in will vary from an inch to three feet. More than 300,000 cubic yards of material will be used. This will be obtained from the banks of the Muddy Creek rivulet. The reclamation will be so carried out that this stagnant swamp will be converted into a splendid sheet of clear water, which, in future, will be the venue of many aquatic sports. The top soil for the reclaimed land is being laid by the Rockdale council, so as to provide sporting facilities for Rockdale and Arncliffe in the near future.

The council has named the area to be reclaimed Barton Park, in honour of the present mayor (Alderman E. G. Barton). The reclamation is being supervised by Mr. T. Gifford, on behalf of the council. The park land will lend itself to a beautification scheme, there being an area 100 feet wide, on the opposite side of the lake, where trees and gardens could be planted.

ROCKDALE

Its Beginning and Development

By

PHILIP GEEVES and JAMES JERVIS

(Revised 1986 by Alderman R. W. Rathbone)

THE COUNCIL OF THE MUNICIPALITY OF ROCKDALE

It should also be explained that Sydney's expanding suburbs were then plagued by a whole variety of unpleasant odours from the "noxious trades" mentioned briefly in a previous chapter. These consisted mainly of boiling down offal, grinding bones in bone mills, tanning and treatment of fleeces, and fellmongering. Boiling down was the commonest for, in an age of candles, the tallow chandler was often a tycoon. Such enterprises were widespread in the metropolitan area, in fact twenty municipalities submitted a petition to the Premier requesting governmental action. In 1890 Rockdale could boast 45 market gardens, 22 dairies, 5 boiling-down establishments, a tannery and fellmongery, and a slaughteryard. Some of these had probably moved into the district in the pious hope that their odours would commingle with those of the sewage farm and so pass unnoticed. However, gross objection was taken by residents who endeavoured to goad Council into stern action. The Bucknell family at Arncliffe set the pattern by launching a prosecution against a "noxious" neighbour. . . . "Alderman Judd deprecated the existence of the establishment, and said that the smell got in the houses, hung to the drapery, and upon a foggy morning it came like a cloud." Probably the most overworked man in the district was Council's Inspector of Nuisances, Mr W. Williamson.

By an odd circumstance, a leading alderman was involved in the business of boiling down, and made it a point of honour to fight for his industry against the combined voices of his confrères: "He for one, would not prosecute or persecute. All the industry wanted was a place to go and erect their establishments and, as for the business being dangerous to health, he denied it. He thought as a man he was a fair specimen, and he had slept by the side of a digester for years."

As the months went by, worthy families were threatening to move from the district and a few had already done so. A petition signed by almost a hundred leading Arncliffe citizens urged Council into action. As a result, a prosecution was launched against McNamara's boiling-down works at Arncliffe, resulting in a verdict and costs for Council. The wealthy McNamara ceased operations for a short time, only to begin again later at the same place. Another prosecution was threatened. Meanwhile, a meeting of ratepayers was convened in the Town Hall to discuss the general question of noxious trades. It was a packed house, in every sense of the term. The ratepayers found themselves outnumbered by angry proprietors and employees of noxious trades from every district about Sydney. In one of the rowdiest meetings on record, the Mayor, aldermen and ratepayers were shouted down by the "invaders", and the meeting closed by passing a resolution calling on the Government to set aside a specific area of Sydney for the operation of noxious trades. Incidentally, one of the official suggestions for the location was the Kurnell headland, but this proposal was sternly combated by local interests.

Meanwhile the nuisance from the sewage farm continued unabated for many years. Official complaints on a high level had become so general that in 1905 an attempt was made to treat the sewage by a less objectionable method, but already the question of an ocean outfall was under consideration. Ten years later it was complete. On 14th September 1916 the last junction was connected to the ocean outfall and from that date the sewage farm ceased to operate. Eventually the whole of the land, except a small portion carrying the main sewers, was disposed of in the manner indicated on page 114.

On this land sprang up farms, homes and extensive sporting areas. The Kyeemagh Polo Ground, the Sydney headquarters of the New South Wales Polo Association, was later to give its name to a flourishing new suburb. It was here, too, that Alderman E. G. Barton devoted his mayoral term to the reclamation of 120 acres of low-lying, swamp land; today, Barton Park is a tribute to his efforts.

As for noxious trades, their disabilities were largely overcome by advances in chemistry and technology, plus the tendency for tallow and soap making to come under the control of a few big firms. An industrial drift towards Botany and Waterloo centralized most of these operations in those areas. And just as Hercules diverted a river to cleanse the Augean stables, so the later diversion of Cook's River has practically removed the landmarks by which to locate the old sewage farm.

and by 1932 there were 131 camps and humpies constructed from all manner of second hand materials in the area. At one time the North Brighton sand hills gave shelter to nearly 400 persons. Because there were no services whatever, outbreaks of gastro enteritis and outbursts of lawlessness were common and the Council was urged to move the campers. Realising, however, that these unfortunate people had nowhere else to go, the Council formed the residents into an Unemployed Campers League to bring some order to the administration of the camp and provided it with running water and a sewage collection service. The last of the camps was not removed until 1947 when the Commonwealth Government, as part of the extension of Sydney Airport after the Second World War, diverted Cook's River through the area.

The economic stringencies of the Depression era severely curtailed the Council's ability to undertake its normal works and improvements programmes but by skilfully channelling the aid money it received into projects which would be of lasting benefit to the municipality many valuable improvements were, nevertheless, effected. During these years Scarborough Park, still then a primeval tidal swamp, was drained and filled, the artificial lakes created and the area developed as one of the most important sporting venues in the St George District while 120 acres of the now disused North Brighton Sewage Farm were acquired, raised and provided with 23 cricket wickets and opened as Barton Park. But the Council's lot was never an easy one.

Not only was the municipality subjected to almost continual rain throughout the 1930's which resulted in a series of floods sweeping away bridges and inundating large areas of low lying land—especially in the Scarborough Ward, but an exceptionally high tide during one of these downpours caused Cook's River to break its banks cutting the Princes Highway and flooding large areas of Arncliffe to a depth of four feet. This followed hot on the heels of the most serious health hazard the municipality had so far experienced.

In March, 1931 the Water Board announced that it intended to divert 25 million gallons of untreated raw sewage into Cook's River and Botany Bay while it repaired the leaking and overloaded western outfall sewer carrier. For nearly six months the Bay was sickeningly discoloured and the beaches at North Brighton and Ramsgate were heavily polluted. The stench was so appalling that in December, 1931 at the height of the swimming season the Council had to close the new Brighton Baths.

In an attempt to restore their popularity and at the same time raise funds for the unemployed, the Council decided to organize a huge carnival at Brighton which featured a re-enactment of the landing of Captain Cook with the Mayor, Alderman E. G. S. Barton in the role of Cook, a beauty contest to select "The Pearl of the Pacific" and an ill-fated parachute jump in which the parachutist landed on a fence at Sandringham instead of in the Baths at Brighton. Despite these mishaps the exercise was an unqualified success raising over £700 and providing a week's work for 125 unemployed men. To mark the occasion the Council produced a film entitled "In the Days of Captain Cook". Having not seen the light of day for nearly 40 years this epic of the silent screen was rediscovered in the tower of the Town Hall during the Council's Centenary Celebrations in 1971 and re-issued with appropriate musical accompaniment to delight all who have subsequently seen it.

Throughout this difficult period in the municipality's history the one great diversion which took people's minds off their troubles was the district's pre-eminence in sport. For more than half a century the St George District has had a reputation for producing outstanding sportsmen and there is no doubt that many of these champions were nurtured and developed on the playing fields of Rockdale. At some time or other the St George Baseball Team whose home ground was at Bexley Oval, the St George Hockey Team which operated from Gardiner Park, tennis heroes like John Bromwich, Vivian McGrath and Arthur Huxley, all of whom trained on the Illawarra Lawn Tennis Association Courts at Rockdale have reigned supreme in their field. It is worthy of note that during the 1930's and 1940's the Illawarra Lawn Tennis Association was the largest tennis organization in the world. But it was in cricket, more than in any other sport that the district

conducted an extensive immunisation programme as a result of which the scourge of diphtheria was removed from the municipality and the incidence of poliomyelitis dropped from 24 cases in 1950 to nil in 1957. Rockdale was one of the first Councils in the State to introduce the Sanivan method of garbage collection with a fleet of enclosed garbage vehicles in which the waste matter was compacted before it was disposed of. Much of this garbage was used to reclaim the areas of open space previously acquired and to convert them into useable playing fields or passive recreation sites. The most spectacular of these projects was along the beachfront at Botany Bay.

The beachfront from Kyeemagh to Ramsgate consisted of sand dunes 15 to 20 feet high. They were not only unsightly but in strong winds the sand frequently blew across the roadway into the front gardens of houses and sand blown under their tiled roofs caused the ceilings to sag and collapse. To eliminate these undesirable conditions and to improve the appearance of the area, the council proposed a scheme which involved the removal of the sand to approximately 20 feet below road level, the filling of the void with compacted garbage and the levelling and beautifying of the surface. As a consequence the area is no longer unsightly, there are no sanddrifts to endanger traffic or property and residents and passing motorists now enjoy a view of the Bay which previously was obscured by barren sandhills. It is estimated that in excess of 50,000 people use the amenities of the beachfront on a hot weekend in summer. Household garbage was also used to raise the level of the tide and water affected Barton Park. Between 1950 and 1955 the Council provided additional bathing enclosures at Kyeemagh, Ramsgate and Dolls Point but during these years the hand of the Council could be seen everywhere.

It acquired and redeveloped the old Arncliffe School of Arts as the Coronation and Elizabeth Halls; it established municipal tennis courts in Bexley Road; it developed then leased the bowling greens at Bexley to the Bexley Bowling Club; it further developed and improved the Bexley Golf Course. It provided playing areas at Gilchrist Park, Evatt Park and Donnan's Reserve and set aside Stotts Reserve as an area for native Australian trees and plants and it undertook the progressive improvement of Cahill Park at Arncliffe to make it one of the most attractive recreation areas in Sydney.

Ultimately its years of endeavour were recognised. The most covetted award any Council can receive is the A. R. Bluett Award—given each year to the most progressive Council in the State. In May, 1951 the Council learned it had been selected for the award because of its previous year's work. In order to fittingly celebrate this event it decided to provide the Mayor with a robe and chain of office which were worn for the first time on 28th November, 1951 at the official presentation of the award. The Council also produced a film for the occasion entitled "Achievement in Service" and commissioned Mr Philip Geeves—a councillor of the Royal Australian Historical Society—whose grandmother, Mary Ann Geeves had given Rockdale its name, to write an official history of the district.

insulator production, tin foil cutting and the processing of horse hair for upholstery purposes at Irwin and Davis's factory in Hill Street, were just a few of the undertakings but surely one of the most unusual was D. Little and Company's leadlighting and stained glass works in Barden Street.

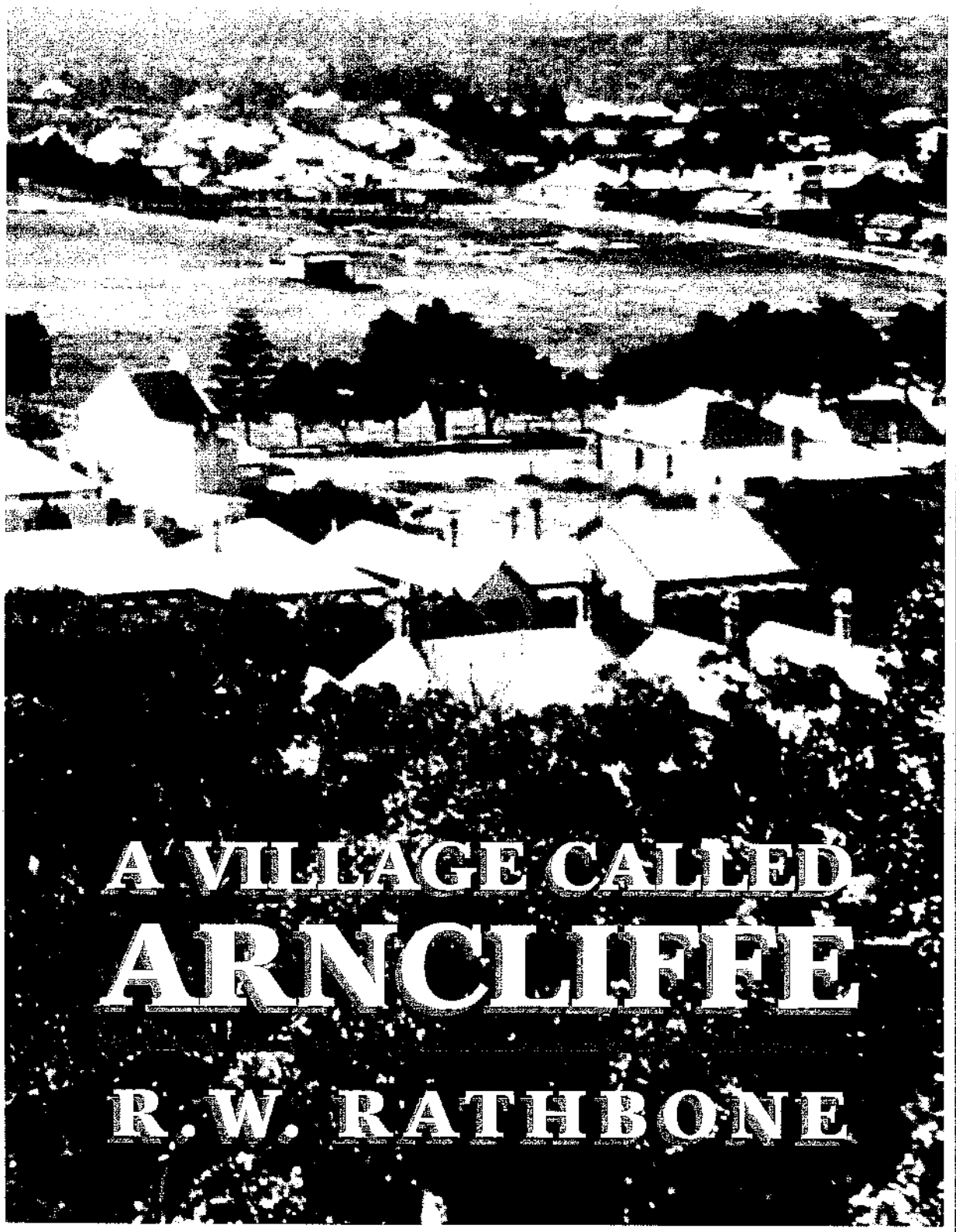
It was during these years that a number of the most significant open space areas in Arncliffe were developed. The most important of them was Barton Park. When the Arncliffe Sewage Farm was closed down in 1916, the land on the eastern side of Muddy Creek was sold or leased to the North Brighton Golf Club and the N.S.W. Polo Association, but the portion on the western side of the creek remained largely vacant. In 1930, Rockdale Council approached the Water Board with an offer to purchase 89 acres of the land for recreational purposes. The Board agreed to sell at £5 per acre and with a further 33 acres which the Council was able to acquire from adjoining landowners, it set to work to convert a low lying mosquito infested wasteland into the St. George Sporting Complex. Reclamation began in 1932, and ultimately twenty-two concrete cricket wickets were laid down on the area.

The naming of such a large sporting facility generated considerable controversy. Some of the aldermen favoured retaining the name, St. George Sporting Complex while others believed it should be named after Alderman George Barton, Mayor of Rockdale, and the man who had inspired the project in the first instance. When it was put to the Council to decide, the voting was four all with four aldermen absent. Alderman Barton then used his casting vote to name the complex after himself.

Between 1933 and 1935, Hopetoun Park was upgraded and renamed Gardiner Park in honour of long serving Alderman E.J. Gardiner and the landscaping of this picturesque park dates from that period. The development was, unfortunately, marred by the accidental death of ganger William Crossling who was fatally injured by a rock fall during the park's reconstruction.

Fourteen acres of land off Lorraine Avenue, most of which is now included in the Bardwell Valley Golf Course, was also acquired. Much of the area was rough and uneven but a section along the Lorraine Avenue frontage was filled and developed as a children's playground and called Silver Jubilee Park to commemorate the silver jubilee of King George V's accession to the throne.

The most important acquisition during the 1930s was the land now known as Cahill Park. Once an inlet from Cooks River backed by a tidal swamp covered in mangroves, the area was used as a dump for spoil taken from the river when it was dredged between 1898 and 1919. Despite the filling, it was



A VILLAGE CALLED ARNCLIFFE

R. W. RATHBONE

Removing the Stain: The Botany-Rockdale Sewage Farm, Sydney, NSW

COLLEEN CALLAGHAN

This study of Sydney's only sewage farm is concerned with a significant aspect of the urban process. Introduced as state of the art ideology during a short-lived phase of dynamic urban development in the late 1880s, it operated only thirty years before being superceded by the newer technology of ocean outfall disposal - a policy only now recognised as having far greater long term problems. The writer proposes that the lack of surviving visual evidence of this experiment in recycling human waste was part of a deliberate policy to erase it from urban memory. This research was carried as part of a BA Honours program.

The Botany-Rockdale Sewage Farm was a socio-environmental experiment which was formulated in response to the critical sanitary problems in the 1870s. Sanctioned by contemporary ideologies, it employed home-grown empiricism to mutate imported technology into an indigenous enterprise. It was Sydney's only sewage farm, and the earliest, major, government-funded project which attempted to purify, and to utilise, human waste products. The timespan of the Sewage Farm coincided with a period of dynamic urbanisation. During this period, a new ideology of sewage management was introduced. This was in ideological opposition to that which had motivated the formation of the Sewage Farm, and was based on cost-efficient, technolo-emphatic sewage schemes for large-scale urban problems. For a time the Sewage Farm operated as a small self-contained cog serving as a component of the larger, urban machine. Ultimately it was destroyed by the large-scale system, and was closed in 1916; a scant thirty years after it had been opened.

Since the Sewage Farm closed, the Water Board has published two official histories which encompass the water supply, sewerage and drainage works in the Sydney metropolitan area.[1] These histories do not provide an historical synthesis of sewage treatment, and it is apparent that selective historiographic processes have been employed to emphasise specific ideological messages. The Sewage Farm is only briefly mentioned, and emphasis is placed on later ideological developments in sewage technology e.g. the cost and size of the system, how the system works; and constructional difficulties overcome in its production. This historiographic method enforces the existing order, and at the same time, allows the influence of the present to be felt in the perceived past.[2] As a result, the Sewage Farm and the cultural ideologies which validated its establishment have become historically disenfranchised.

The site of the former Sewage Farm has been intensely modified, and all distinguishing landmarks have been eradicated. The surviving physical evidence is scattered, disparate, and insulate – a ruined corner of a building, a cluster of introduced trees, and a raised earthern platform. These physical remains are anonymous objects, which provide no visual mnemonic to trigger any remembrance of the Sewage Farm. They regain their original integrity only when they are translated into the composite of the total archaeological site. Mark Leone contends that our conceptions of the past are constrained by the past that survives;[3] and the past, in the direct physical form of the Sewage Farm, and indirectly in the ideologies of sewage management that it embodied, has not survived. Like its literary analogue, the Sewage Farm has become physically disenfranchised.

It is evident from the historiographic process used in the official histories of the Water Board that in order to reinforce the progressive nature of later ideological developments in sewage technology it was necessary to devalue the historical significance of the Sewage Farm. It is probable that a rationale of a similar nature can be applied to explain the intense modifications to the archaeological site, as well as the absence of any prominent physical evidence pertaining to the Sewage Farm. This paper therefore proposes the following hypothesis: to reinforce the validity of later ideological developments in sewage technology which disposed of urban sewage by ocean outfall, it was the preferred policy of the Water Board to diminish the physical evidence which distinguished the site of a government-funded Sewage Farm which had employed resource-management and anti-pollution to dispose of urban sewage.

To test the validity of this hypothesis the industrial archaeological site of the Sewage Farm will be examined within a broad historical intepretive construct in order to gain an understanding of the purpose of the Sewage Farm and the ideologies which led to its establishment; the broad-scale ramifications of the later ideological developments in sewage technology which ultimately led to the Farm's closure; and the ensuing partition of, and modifications to, the lands on which the Sewage Farm was situated. The archaeological site and its remains will be located and identified, and examined against relevant documentary evidence. No detailed survey is presented, nor was any excavation undertaken.

DOCUMENTARY SOURCES

There are four main sources for the historical understanding of the Sewage Farm. Each presents a separate argument, and facts are manipulated to suit the purposes of the particular vested interest. Therefore none can be taken at face value.

First: the Annual General Reports of the Water Board were prepared for the Legislative Assembly and tend to accentuate positive aspects of the operation and ignored or glossed over negative aspects. These Reports are the only documents which provide consecutive accounts of

the yearly activities at the Sewage Farm.

Second: the Minutes of Evidence 1875 relate to the Sydney City and Suburban and Health (SCSSH) Board's inquiry into the best means of disposing of Sydney's sewage. They detail the appalling sanitary conditions in the city and suburbs, and a pragmatic attitude to human waste which spanned the class spectrum from judges, to Chinese market gardeners.

Third: the Minutes of Evidence 1906-1908 relate to the Parliamentary Standing Committee on Public Works Inquiry into a Scheme of Sewerage for the Illawarra Suburbs. Among those who gave evidence were the manager of the Sewage Farm who outlined the Farm's physical limitations, operating difficulties, future prospects and other matters, as well as officials and private individuals from neighbouring suburbs who commented upon local attitudes to the sewage farm, and to sanitary/medical matters in general. None of this material is included in any secondary source.

Fourth: the two official histories of the Water Board, which do not present an historical synthesis of sewage or sewage treatment, and the Sewage Farm is only briefly mentioned. Instead, they emphasise and chronicle the technological achievments involved in the metropolitan sewage networks, from point of entry to point of disposal.

It is not possible to confront these historical sources with detailed archaeological evidence. Nevertheless, when viewed as a total archaeological component the site itself illuminates the contradictions and misrepresentations in the documentary sources.

PROPOSED SEWERAGE SCHEMES FOR SYDNEY

The SCSSH Board was appointed in 1875 to inquire into, and report on, the best means of sewage disposal for the city and suburbs.[4] Board members included scientists with a knowledge of physical and natural sciences, medical professionals involved in the public health arena, and civil engineers. The latter belonged to a new class of professional men attaining prominence in governmental matters involving civic planning and administration, who relied on science and technology to solve the problems created by mass urban living.[5] The Board's investigations revealed that there was a critical sanitary situation in the city and suburbs, and that the problem of providing adequate water supplies and efficient sewerage systems had assumed metropolitan proportions.[6] Current medical ideology held that most diseases were either directly, or indirectly, attributable to the gaseous stenches, or miasmas, emitted by putrifying matter, and the Board considered the greatest health risk to the community came from the 'the immediate and palpable evil' generated by commonly used cesspits.[7] These were virtual on-site storage depots for human excreta, and it was not unusual for a common cesspit straddled by three or four privies, to be shared by the inhabitants of several houses as well as by the the patrons of commercial establishments. The removal of such waste products to some remote location was, *ipso facto*, essential for 'the public good'.

Two sewerage systems were recommended for the city and suburbs. Both cut across Municipal boundaries, and both were capable of being controlled by a single overriding authority.[8] They were to be water-carriage systems; with watertight, underground sewerage mains for transport; and with final disposal points as far removed from human habitation as possible. The first system proposed to intercept the sewage entering Port Jackson through sewers built during the 1850s, and divert it into a tunnel for discharge via ocean outfall at Ben Buckler Point near Bondi.

The second system proposed to sewer the southern slopes of the city, which had an estimated population of only 20 000.[9] These slopes formed the watershed of the north side of Botany Bay, and included portions of Surry Hills, Redfern, Newtown and other suburbs. Although Sydney's geographicial position made ocean outfall the most effective and cost-efficient method of sewage disposal, the SCSSH Board was aware that the Government would not approve the expense of constructing a second ocean outfall to service an area with such a small population. They therefore recommended that the sewage from the southern slopes be intercepted and collected in a similar manner to the Northern system, and disposed of at Botany. There the sewage would undergo a form of land treatment to purify the effluent and render it 'harmless' before discharge into Botany Bay. At the same time, the manurial value of the sewage would be utilised to produce vegetable crops for sale, the revenue from which would be used to offset running costs.[10]

This latter proposal was simply an extension of a relatively common domestic activity. A lack of embarrassment towards the functions of the body and its byproducts made it culturally acceptable for home, and market gardeners, to improve the poor quality soil in Sydney by fertilising their gardens and vegetable crops with liquid sewage, 'soup' from boiling-downs, or dried blood. The Board also knew from their investigations of English and European sewage farms that 'the most surprising fertility'[11] had resulted from irrigating raw sea sand with sewage, and they were of the opinion that the same results could be achieved at Webb's Grant. The soil was light and sandy, it could be easily cleared, and with proper management and the application of night soil, Sydney's mild winters would allow 'a luxuriant growth of a great variety of useful plants [to] be maintained here throughout the year'.[12]

Webb's Grant, the site chosen for the Sewage Farm, was a 120 ha (300 acres) tongue-shaped tract of land on the southern side of the mouth of Cook's River (Fig.1). It was almost uninhabited. It was an accessible place of deposit, and 'however much then the city and suburbs may extend, it may be made to remain for indefinite period almost isolated... [with] no possibility of any watercourse being polluted'.[13] The northern side of the river was mainly occupied by small market gardens, generally run by Chinese. These establishments provided most of Sydney's garden produce, and as settlement spread and land use became more intensified, they had gradually been pushed to unwanted areas on the periphery of the city. The Botany Swamps, at that time the source of Sydney's water supply, were also on the northern side of the river. In the 1850s a series of dams had been created along the Lachlan Stream. An engine pond was excavated, and an engine house constructed to pump water to Paddington Heights.[14]

THE BOTANY SEWAGE FARM 1880-1889

In 1889 the Metropolitan Water and Sewerage Act Amendment was passed by Parliament, and all existing sewerage systems, including the Sewage Farm, came under the centralised control of the Board of Water Supply and Sewerage, generally called the Water Board.

The main works of the Southern Sewage System were constructed between 1880-1889. Sewage discharged into a recessed chamber inside the Inlet House on the northern bank of Cook's River (Fig.2), and was passed through three sets of circular mesh screens. It was then transferred via an under-bed inverted syphon to a well inside the Outlet House on the southern side of the River from where it gravitated through the eastern portion of the farm in an open, concrete main carrier. The sewage was used to

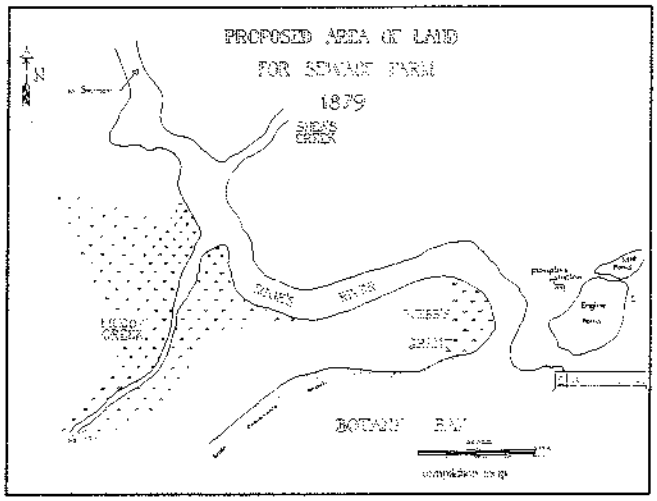


Fig. 1: Map of Botany-Rockdale Sewage Farm.

irrigate the beds on either side of the carrier, and the filtered effluent discharged into Cook's River and Botany Bay. A manually controlled Priestman grab mounted on a travelling gantry dredged the remaining sludge in the screening chambers for transfer into waiting skips, via chutes set into the side of the Inlet House. It was trucked by locomotive across a wooden bridge spanning Cook's River to the irrigation beds, where the farm's labourers manually dug it into the beds as manure (Fig.3). Crops were grown on the sheltered, northern side of the main carrier in a series of terraced, ridged and furrowed irrigation beds, which were separated by earth banks. On the exposed southern side, about 4 ha (10 acres) of partially underdrained ground was laid out in filtration beds. These received surplus sewage during heavy rainfall.

The farm commenced operating in 1887, and seven labourers were employed under the control of a manager. After three years of continual applications of sludge, about 8 ha (4 acres) of land were converted to a good loam from which successful crops of cabbages, turnips, lucerne and sorghum and other produce were grown. The Water Board's annual reports noted that the quality of the crops evidenced the value of liquid sewage when properly applied to raw sand, and lengthy inclusions from the Government Analytical Chemist declared that the high quality of the effluent demonstrated the suitability of the site and soil for purifying sewage by land filtration. However the Farm never produced enough income to cover operating expenses. To generate additional income some land was let for agistment, and around 1892 some land near Muddy Creek was leased for market gardens to Chinese and Europeans.

The Farm was in an exposed position. Sand blown by prevailing south-east winds destroyed early attempts at crop growing on the southern side of the main carrier. This limited the amount of land capable of producing crops, and reduced anticipated income. Documentary sources do not indicate if the SCSSH Board was aware of this factor when choosing the land, but site inspections testify to the fact that strong breezes sweep across the area, even on the calmest day. Although never clearly specified in official accounts, irrigation with crude sewage was not completely successful, and prolific growth could only be expected during a good rainy season. It was excellent for established crops, but was generally too strong for irrigating newly seeded land, as it burnt the plants.[15]

Webb's Grant was limited in size, and in choosing the English method of intermittent downward filtration the decisive factor had been the increased filtering capacity provided by underbed drains which were laid on the herringbone principle about a metre deep. To prevent soil clogging and maintain maximum filtering capacity, sewage applications were rotated. These aplications could also be varied i.e. broad irrigation, ridge-and-furrow irrigation or flood irrigation.[16] However, the imported system did not adapt successfully to local conditions as the sand was so fine it filtered through the gaskets choking the underground drains, and preventing the flow of sub-soil effluent. This impeded the filtration rate and the beds became sewage-logged. In one unsuccessful attempt to remedy this fault, the effluent drains were dug up, 'and after some trouble a cement joint, made of Nepean sand and cement mixed in proportions sufficient to make it porous, and at the same time, cohesive', was adopted.[17]

Around 1894, it was discovered that 'a coir mat wrapped around each joint and sewn on',[18] would successfully serve the purpose. Some of the material, 'made in the form of a mat', was found 'to be as sound as the day it was put in', after being buried in one of the filtration beds for over twelve months.[19] In line with the models proposed by Birmingham and Jeans, and later by Schreuder, this is a classic example of the modifications required before an imported technology could be adapted, mutated and eventually 'indiginised'.[20] Unfortunately the available information is tantalisingly insufficient. The Water Board's reports add little more, and it is doubtful if any other sources would elaborate on such a detailed point. The form of the coir used is unknown, and although the situation was critical, to wrap and hand-sew coir mats around every joint in all the underground effluent drains seems an extraordinarily laborious procedure. Furthermore, it seems too cumbersome a method to repel fine sand. As it is likely that many of the drains are still *in situ*, archaeological excavation is the only method which would explain exactly how this ingenious solution was accomplished.

Contemporary Attitudes to the Sewage Farm

Official histories relegate the role of the Sewage Farm to that of an experimental, temporary expedient. However, contemporary accounts belie this pejorative depiction, as does the quality of the buildings which were erected on the site. The deliberate matching of the Inlet and Outlet Houses, and the elaborate architectural detailing of their facades, represent a formal expression of civic pride in the establishment, and an external indication of the importance placed on the modern technological equipment which they housed. Pride in the establishment is also evidenced in the May 1892 edition of the *Illustrated Sydney News*, which describes, and illustrates, the Southern Sewerage System in considerable detail. A visit to the Sewage Farm is recommended; the best time being after a heavy storm to see how the 'inky tide within the carrier swells and threatens to become a banker'. Indirectly the article also indicates a lack of embarassment regarding the evacuation processes of the body that is alien in today's society, but which made the concept of the Sewage Farm acceptable to nineteenth century society.

Each year specific monies were allocated to improve the appearance of the Sewage Farm. Although never a stated policy, documentary and archaeological evidence indicate that the Water Board's longterm intention was to transform the Sewage Farm into an environmentally attractive, self-sufficient working environment. A substantial tree-planting program was instigated, which was still in progress in 1908. Fifteen hundred ornamental trees and shrubs were purchased from the Director of

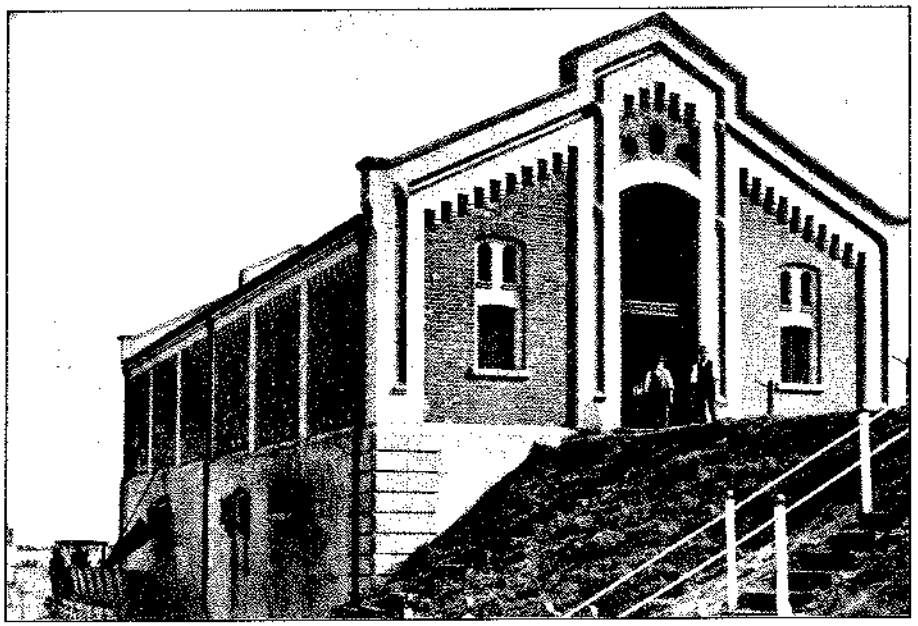


Fig. 2: The Inlet House at Botany Sewage Farm. (Archives of Sydney Water Board).

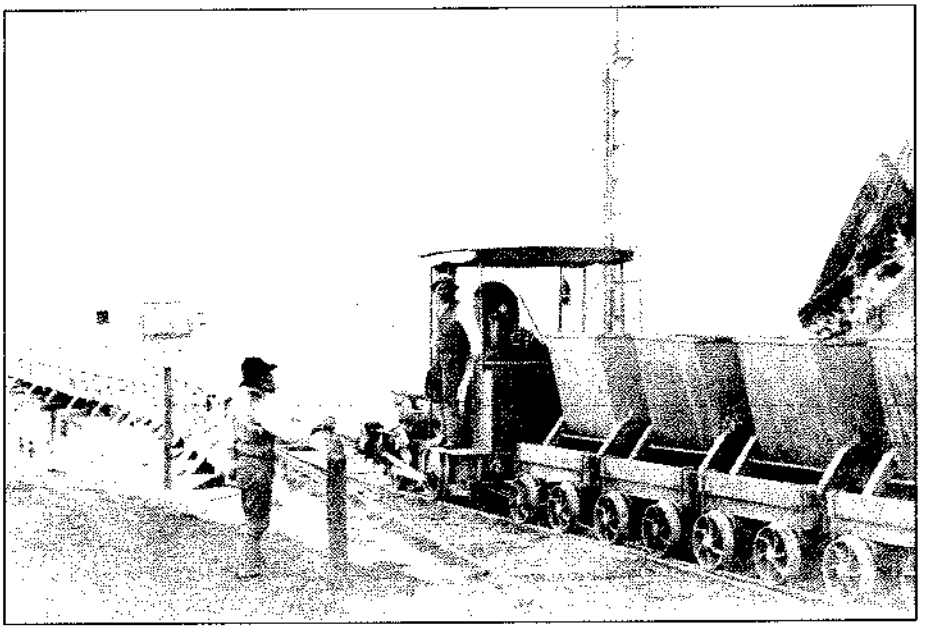


Fig. 3: Sludge being deposited into a waiting skip from the side of the Inlet House. (Archives of Sydney Water Board).

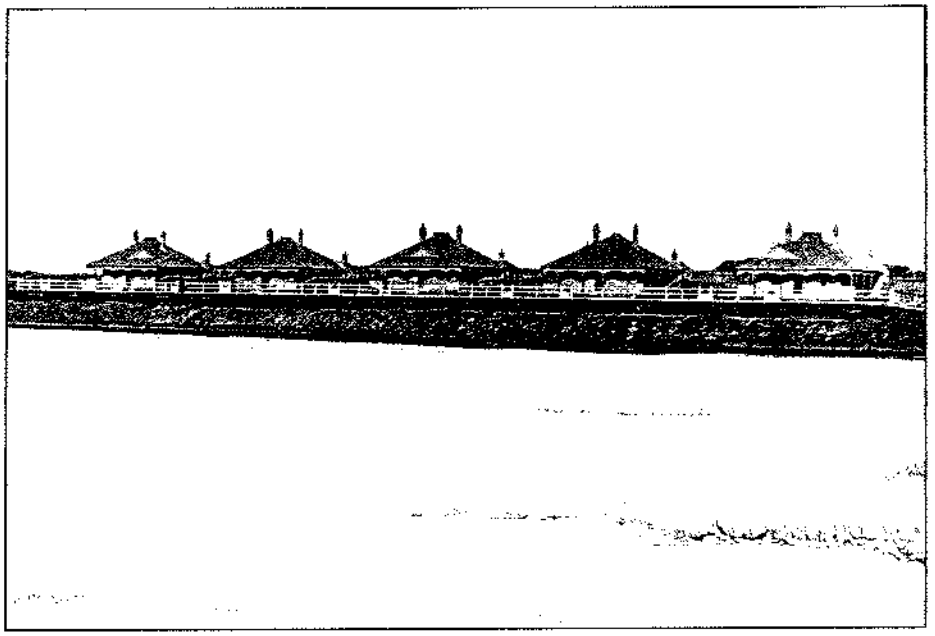


Fig. 4: Cottages built for the labourers at the sewage farm in 1898.

Botanical Gardens in the first year, and after trial and error it was found that Norfolk Island pines and Moreton Bay figs did especially well. Over 6 000 willows were also purchased. Apart from their attractive appearance, these were mainly planted in water-logged areas where their moisture- absorbing capacaties would do most good. The trees were intended to enhance the Farm's appearance, provide useful and ornamental windbreaks, and afford shade for the cattle.

The manager was provided with a residence at the Botany end of the Farm, and in 1898, five workmen's cottages in 'brick with tiled roofs to neat design', were erected on resumed land at Lady Robinson's Beach.[21] (Fig.4). The cottages were rented to the Farm's labourers, and were intended to conduce the appearance of the place. The foreshore bank of Botany Bay was trimmed and grassed, and the land enclosed by a substantial fence with entrance gates to keep out trespasses. The railway was also extended across Muddy Creek to the new western perimeter of the Farm at Eve Street, Rockdale, principally to convey farm employees' children to school.

Western Suburbs Sewerage Scheme

During the 1890s work commenced on the nucleus of the immense Western Suburbs Sewerage Scheme, which proposed draining portions of nineteen municipal districts, and was designed to meet the future requirements of the entire area. The Scheme was based on the superiority of a technologically-emphasised system which would eventually underpin the total suburban landscape with a network of self-regulating and self-cleansing sewers unobtrusively transporting all sewage to ocean outfalls for final disposal. The decision was taken to dispose of the sewage from this large system on resumed land adjacent to the Sewage Farm. An additional 124 ha (309 acres) of land were resumed to the west of Webb's Grant to form the Botany-Rockdale Sewage Farm, which placed the western perimeter on the edge of the populated Illawarra suburbs. Much of the resumed land was totally unsuitable for filtration or crop growing purposes as it was swampy, and subject to tidal influence. Saltwater could be found about 20–22 cm (8 or 9 inches) under the surface of the sand,[22] and when maximum filtering capacity was required it was necessary to flood the land with sewage to a depth of 30 cm. To make way for the larger and more cost-efficient urban sewage scheme, the Sewage Farm became a disposal area for immense quantities of urban sewage. In 1896 the Board had been able to report that 'the high standard of purity hitherto reached is still maintained',[23] but by 1902 analyses of the effluent showed that it was 'merely clarified sewage', which putrified when it was incubated.[24] The resource-management and anti-pollution ideology which had motivated the establishment of the Sewage Farm was now superseded by a different ideology of sewage.

The scattered nature of the Illawarra suburbs had begun to change with the construction of a railway from Sydney to Wollongong in the 1880s, and by the turn of the century the locality was undergoing its own process of urbanisation. The changed nature of the newer method of sewage management had began to alter private perceptions of human waste products, and while not yet a universal desire, many people considered that until their suburb was supplied with an efficient sewerage scheme it lacked total gentrification. It was deeply resented that the sewage from the western suburbs was dumped on the local doorstep. It was generally demanded that the Sewage Farm be totally abolished, and all sewage be disposed at sea where it could not be seen or smelt. Despite the fact that miasmatic-based medical beliefs were no longer current, it was considered to be a malodorous blot on the local landscape which depressed property prices in the locality; deterred a 'better class' of people from settling in the area; and prevented any 'decent residences' from being built for many years.[25] One resident described it as a foul nightmare which looked like a 'big sheet of water' in wet weather.[26]

Partition and Disappearance

Following a Parliamentary Inquiry held between 1905-1908, it was recommended that the Sewage Farm be abolished, and the sewage disposed into the ocean at Long Bay. The Botany-Rockdale Sewage Farm ceased operating in September 1916, when the Southern and Western Suburbs Ocean Outfall Sewer (SWOOS) No.1 was completed. The Farm cottages were let, and the plant and railway were sold in 1919. SWOOS No.2 was constructed in 1941. Both systems traversed the Sewage Farm and the existence of archaeological remains along their paths is unlikely, as their construction created considerable ground disturbance. The main carrier is not visible in aerial photographs taken in 1947, and was probably demolished when SWOOS No.2 was built. Sections of the concrete foundations could still exist in archaeological form.

Excepting about 18 ha (45 acres) retained by the Water Board along the path of the ocean outfall line, the lands were disposed during the 1930s. Rockdale Council reclaimed an area in the south-western corner to create a large recreational park.[27] The main areas of activity (irrigation and filtration beds) were occuped by a public area abutting Botany Bay, designated Cook Park, and two golf links on the northern side of the peninsula. Crop marks from ridge-and-furrow cultivation methods in the irrigation beds were visible in a 1950s aerial photograph, indicating minimal ground disturbance when these new land uses were developed. Consequently some below-ground archaeological evidence may have survived, particularly the filtration drains with their coir wrappings, as it would have been an unnecessary expense to remove them.

Between 1947-1956, Cook's River was diverted south of its original mouth to a new outlet into Botany Bay, to allow for extensions to Kingsford Smith Airport. A large area of land was resumed, including much of the site of the Sewage Farm, and during the ensuing civil engineering works, the Inlet and Outlets Houses were demolished. The foundations were probably left *in situ*, as the ground level was raised to create a new east-west runway, and the demolition rubble used as fill in the old river bed. The under-river syphons were probably left *in situ*, along with other archaeological deposits, some of which could predate the original installation in the 1880s. The workmen's cottages were demolished following the 1963 extension of the north-south runway into Botany Bay.

The Site Today

The site of the original Botany Sewage Farm now forms part of the airport complex, and orientation is extremely difficult as all distinguishing landmarks were obliterated by the airport extension (Fig.5). Nevertheless, site inspections are invaluable as they animate a comprehension of the environmental context, which allows an appreciation of the Sewage Farm as a working entity in a specific physical location. Despite busy airport traffic, the area still has a feeling of isolation which makes it easier to understand why the site was chosen in the first place. Yet the exposure of the land to the winds from the Bay, the fine sandy soil, and the scrubby nature of existing vegetation, clearly demonstrates the unsuitability of the

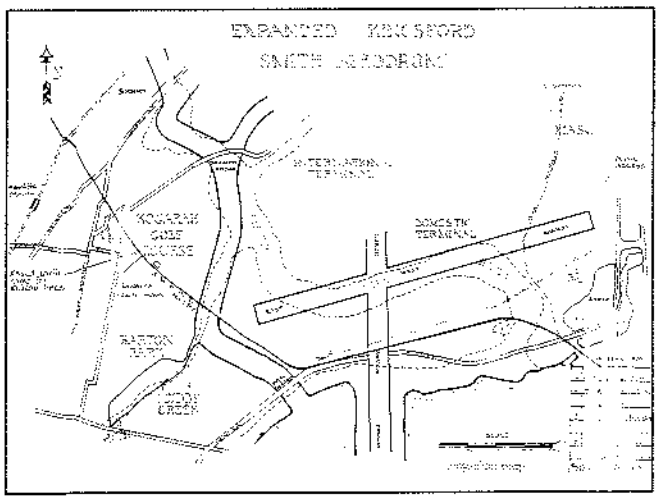


Fig. 5: The site today.

location for crop growing activities on a commercial scale.

The diversion of Cook's River had a radical effect on the physical site of the Sewage Farm. The new course of the river bisected Webb's Grant, alienating the Botany end of the Sewage Farm from the Rockdale extension. Also, the archaeological remains associated with the Botany water works and Mill Pond, which were originally on the opposite side of the River, became adjacent to the site of the Botany Sewage Farm when the disused river bed was filled in. Consequently the physical site of the Sewage Farm has become more obscured by the proximity and prominence of these archaeological remains, which are associated with some of Sydney's earliest history.[28] One direct link to the past is provided by a group of small Chinese market gardens which still operate alongside Muddy Creek, on low-lying land that was formerly part of the Sewage Farm.

A rear corner from one of the workers' cottages, eight brick-courses high, is the only remaining above-ground bricks and mortar structure from the Sewage Farm. Located outside the perimeter of the airport alongside General Holmes Drive, the site is discernable by demolition rubble, possibly from the former cottages, which is scattered between fairly dense native shrubbery resulting from natural revegetation. Despite the passing traffic, the site of the workmen's cottages is isolated. This isolation would have been even more pronounced when the cottages were first built, as they were situated on the extreme south-east perimeter of the Sewage Farm, quite remote from any other habitation. This remoteness must have increased the construction costs of the dwellings, reinforcing the fact that, at the time, the Sewage Farm was sufficiently important to have its workers housed on site, despite the expense. The context in which these cottages were built also highlights the more fundamental attitude to human waste products which then prevailed. The Sewage Farm would have been the focal point for those who lived in this isolated enclave, as external contact could only be gained by traversing the Farm to Arncliffe in the west, or by crossing Cook's River to Botany in the north.

On the western perimeter of the site is a small area of land now known as the Eve Street Wetlands. These are a relic of a larger water system originally paralleling the western margins of Botany Bay, and may be a surviving remnant of a pre-European landscape. The Wetlands are a valuable archaeological indicator, as a portion of this system was incorporated into Rockdale Sewage Farm. The land was left largely untouched because it was unsuitable either as a filtering medium or for crop-growing purposes. This very unsuitability illustrates the change in ideologies pertaining to sewage technology. With the commencement of the Western Suburbs Sewerage Scheme, it was ideologically more important to have a disposal area for large quantities of urban sewage, than to have a sewage farm which could purify and husband the resources of relatively small quantities of sewage. The swampy, low-lying nature of the area also demonstrates the physical difficulties in draining and desalinating the land to make it suitable as a filtering medium, and the magnitude of filling carried out during, and since, the closure of the Farm, which increases the survival rate of archaeological remains.

It is possible that a brick building used by Rockdale Council, which is adjacent to the the Wetlands, could contain some archaeological evidence. It is situated almost directly over the site of the screening chamber, which was in use at this end of the Farm.[29] However the only above-ground archaeological evidence at the Rockdale end of the Farm is a stretch of earthern embankment, which carried the railway past the swamplands to its termination point at Marsh Street, Rockdale, and a stand of pine trees, which are remnants of the Farm's tree-planting programme.

The two disparate sets of archaeological evidence – the remains of the worker's cottages on the south-eastern perimeter and the railway embankment and pine trees on the western perimeter - are virtually located on opposing extremities of the Sewage Farm, and are out of sight of each other. In conjunction with each other, they serve as archaeological indicators delineating the spatial distribution, as well as the size of the Sewage Farm, which appears far too large to have been attended successfully by a manager and seven labourers. Significantly, both sets are associated with the attempts to improve the appearance of the Sewage Farm and to make it a self-sufficient working environment. All traces of the working establishment have been totally abolished.

DISCUSSION

Despite miasmatic-based medical opinions, nineteenth century pragmatism saw nothing amiss with utilising human excreta to improve the soil and encourage crop growth; such practices were an indication of good husbandry. A government-funded sewage farm which proposed purifying sewage by land treatment, as well as utilising the manurial value of the sewage to produce and sell vegetables commercially, was therefore neither unusual not unacceptable; indeed there was considerable civic pride in the establishment, as witnessed by the elaborate public buildings which were erected at the Farm. Contemporary literature also indicates that, for most of the 1890s, the Sewage Farm managed to fulfil its goals, and was well regarded. However during this decade the ideologies which had motivated the establishment of the Botany Sewage Farm in the mid 1870s were superseded by an ideology of sewage management which was based on large-scale and cost-efficient technologies. The Sewage Farm became officially expendable in the late 1890s when it was extended to provide a sewage disposal area for the immense Western Suburbs Sewerage Scheme.

The twenty years prior to the turn of the century had been characterised by intense urbanisation. One of the effects of this process on the residents in the adjacent Illawarra suburbs had been to develop an awareness of their own collective identity. Miasmatic-based medical opinions had altered, but so had earlier fundamental attitudes to human waste products. While many residents considered the prestige of the area would be enhanced by

an efficient scheme of sewerage similar to that of the Western Suburbs, the majority strongly resented the sewage from the Western Suburbs Scheme being deposited so close to their suburbs. The Sewage Farm became privately expendable, when its malodorous proximity was considered to be a threat to the welfare and prosperity of the local community.

When the lands were partitioned during the 1930s, almost all of the site of the Sewage Farm was alienated for sport or recreational facilities. Rockdale Council created a large park, by raising the level of the land and obliterating the swamp lands in the south-west corner. An action which could be regarded as vindicative, as by totally changing the landscape, unpleasant memories associated with former landmarks were effectively eradicated. In 1939 the Sewage Farm became historically expendable when it was virtually written out of the Water Board's first official history. An historical process that was to continue when the second history was published in 1969.

Although it was never a stated policy of the Water Board, archaeological expendability was simply the final step in the process of reducing the Sewage Farm to a non-event in terms of sewage disposal techniques. No official, or private, objections were raised when the extensions to Kingsford Smith Airport proposed restructuring most of the site and demolishing the remaining buildings associated with the Sewage Farm. Significantly the archaeological evidence associated with the earlier Botany water works and Mill Pond survived the massive extensions to the Airport; the Inlet and Outlet Houses did not. Failing any hard evidence to the contrary, it would appear that the severe modification to the archaeological site of the Sewage Farm, as well as the absence of any prominent physical evidence, came about not through neglect or disuse, but by a change in the official ideology of sewage management. This ideological change caused the Sewage Farm to become defunct. It also caused the Sewage Farm to become such an anathema to the people in the local neighbourhood, that any action by any authority which aimed to replace or obfuscate the Sewage Farm with a 'respectable' alternative would not have been discouraged.

In the late twentieth century the disposal of sewage by ocean outfall has become a culturally acceptable fact of urbanised living, and the method of disposal is seldom called into question, despite pollution of the city's beaches. So far has the cultural pendulum swung from the more fundamental approach of the nineteenth century, it is probably fair to say that most people are unaware that Sydney once had a sewage farm which employed resource-management and anti-pollution techniques to dispose of urban sewage. To paraphrase Mark Leone, we only know the past by what we can see, and ignorance of the Sewage Farm has been fostered by the absence of any conspicuous archaeological evidence and the severe modifications to the site. This absence has had the effect of allowing its memory to fade from the collective consciousness, while simultaneously it has reinforced the ideological validity of current sewage technology. The past has been reinterpreted to buttress modern identity, and there is no place in this modern identity for the Sewage Farm.

NOTES

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3. Leone, M. 1981. 'Archaeology's Relationship to the Present and the Past' in R.A. Gould & M.B. Schiffer (eds), *Modern Material Culture: The Archaeology of Us*, Academic Press, pp. 5-13.
4. Twelfth and Final Report, SCSSH Board, 11 May 1877, p.1.
5. For discussion on the ramifications of self-perpetuating technological systems such as the sewerage system of Sydney see Beder, S., 1990. 'Early Environmentalists and the Battle against Sewers in Sydney'. *Journal of the RAHS*, 76:24-41.
6. F.J.J. Henry *op.cit.* p.1.
7. Twelfth and Final Report, SCSSH Board, 11 May 1877, p.4.
8. Debate on Sewage Disposal, Minutes of Evidence SCSSH Board, 1875, p.142.
9. Minutes of Evidence SCSSH Board p.134.
10. Debate on Sewage Disposal, Minutes of Evidence SCSSH Board, 1875, p.142.
11. Debate on Sewage Disposal, Minutes of Evidence, 1875, p.142.
12. Twelfth and Final Report SCSSH Board, 11 May 1875, p.54.
13. Twelfth and Final Report SCSSH Board, 11 May 1875, p.6.
14. Thorpe N.J., 1953. 'The History of the Botany Water Supply, Sydney', *Water Board Journal* 3: 74-86; Jeans D. N., 1973. 'Nineteenth Century Botany Bay', D.J. Anderson (ed.) *The Botany Bay Project* pp. 51-58.
15. Mr. Brooks, Manager, Botany Sewage Farm: Minutes of Evidence PSC on PW Scheme of Sewerage for the Illawarra Suburbs, January 1908, pp 234-237.
16. Stanbridge, H.H., *1976. History of Sewage Treatment in Britain: Land Treatment* 5:18.
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18. *ibid.* p. 61.
19. Eleventh Annual Report, MBWS&S, 1899, p.20.
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21. Ninth Annual Report, MBWS&S, 1896, p 6.
22. Mr. Brooks, *op.cit.*, pp. 252-255.
23. Eleventh Annual Report, MBWS&S, 1899, p.83.
24. Fifteenth Annual Report, MBWS&S, 1902, p.37.
25 Minutes of Evidence, PSC on PW, 1907, p.72.
26. Arthur Goddard, Land and Estate Agent, Arncliffe, 1905. Scheme of Sewerage for the Illawarra Suburbs. Parliamentary Standing Committee on Public Works p.70.
27. Geeves P. & Jervis, J., 1986. *Rockdale Its Beginning & Development*, Council of the Municipality of Rockdale, p.113.
28. These remains are currently under review as part of the Botany Wetlands Heritage Study Report prepared for the Federal Airports Corp. & the Sydney Water Board, May, 1991, W. Thorp, B. McDonald, C. Burton, T. Brassil.
29. Oral information supplied by N.J. Thorpe.