

Review of Environmental Factors The Leagues Club Field, Gosford Park Redevelopment







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Signed

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Executive Summary

Gosford City Centre is undergoing a renewal of its urban design framework, aimed at strengthening its role as the regional capital city of the Central Coast. As a city shaped by rich cultural and social history, Gosford holds great potential as a leader in the public domain and place making sphere, with the possibility to emerge as a modern and strong regional city¹.

In May 2018, the Minister for Planning announced a project to deliver public domain upgrades in Gosford, supported by the vision of the Urban Design Framework (UDF) prepared for the City by the Government Architect on behalf of the Central Coast Co-ordinator General. The Hunter and Central Coast Development Corporation have been charged with the delivery of these public domain upgrades, which are focusing on the redevelopment of the Leagues Club Field park in Gosford south.

In accordance with the UDF, the parkland will be flexible in function and character, facilitating sport, play, gathering and environmental stewardship within its 2.4 hectare area. The park's design draws inspiration from the cultural and heritage values of Gosford, in particular the narrative of the Darkinjung people, being the traditional custodians of the land. The key park elements include a regional playground, community node, and sporting field. The waters of the adjacent bay are to be reintroduced to the landscape through a tidal terrace play space, offering a unique element of play that reconnects the space to the landscape's most iconic element, being Brisbane Water. The culture of the Darkinjung is embodied in the sculptural design and arrangement of the community node, whilst the European history of Gosford is held within the material composition of urban and sculptural site elements. The Gosford Leagues Club Field will be integral to a renewed public domain and provide a safe and contemporary space for visitors and locals alike to appreciate the rich character and culture of the region².

This Review of Environmental Factors (REF) has been prepared by Barr Property and Planning on behalf of Turf Landscape Architecture to consider the environmental impact of the proposed development of the park, in accordance with Park 5 of the Environmental Planning and Assessment Act 1979. The development will be undertaken by the Hunter and Central Coast Development Corporation on behalf of Central Coast Council.

The Leagues Club Field (referred throughout this REF as ('the Site') is approximately 24,000 square metres in area and is bounded by Georgiana Terrace in the north, Dane Drive in the west, the Central Coast Highway to the south-west, Vaughan Avenue to the south-east and the extension to Baker Street along with the Australian Tax Office and the vacant site at 26-32 Mann Street in the east. The Site consists of three lots, being Lot 7035 & 7036 in Deposited Plan 1020068 and Lot 5, Section 81 in Deposited Plan 758466. This REF provides the following:

- A description of the site context, including identification of the subject site, and surrounding development (Chapter 2),
- A description of the proposed activity (Chapter 3),
- An assessment of the proposed activity against the relevant statutory framework and relevant matters under Section 5.5 of the *Environmental Planning and Assessment Act* 1979 (Chapter 4),



¹Turf Landscape Design Architecture (2019). *Masterplan Report*. Issue A. Issued May 2019. Page 4. ² Ibid.

- Description of the consultation with relevant stakeholders undertaken during the design phase for the proposed activity (Chapter 4),
- Identification and environmental assessment of key issues relevant to the proposed activity (Chapter 6),
- Summary of the collective measures required to mitigate the impacts associated with the proposed activity Chapter 6), and
- The justification of the proposed activity, in light of the environmental assessment, with regard to ecologically sustainable development principles (Chapter 7).

The proposal, as detailed in Chapter 3, constitutes the redevelopment of the existing Leagues Club Field, which can be defined as *'recreation area'* under the *State Environmental Planning Policy (Gosford City Centre) 2018* (Gosford SEPP). The proposal is considered to be variously development permitted without consent or exempt development under the provisions of the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) (refer to section 5.5.1.2). The works to provide for the landscaping of the park are generally considered under cl 65 as development permitted without consent, with the park furniture and play equipment being exempt development of the park. As HCCDC are undertaking the works on behalf of the Central Coast Council, and are also a public authority, none of the proposed works require development approval under Part 4 of the *Environmental Planning and Assessment Act 1979*.

Notwithstanding the above, this REF considers the proposed development in relation to the local planning controls, comprising the State Environmental Planning Policy (Gosford City Centre) 2018. The proposal has also been assessed in relation to the "Everyone Can Play" Guidelines and provides a high level of compliance with these.

The detailed design for the proposal has been carefully developed with the objective of minimising potential impacts on the local environment, particularly impacts to traffic, heritage, biodiversity, other infrastructure in the vicinity, adjoining residents and businesses. Any potential environmental impacts of the development are considered to be manageable through the implementation of the proposed mitigation measures, contained within this REF. The construction methodology will be developed with this overriding objective in mind, taking into account the input of stakeholders.

Having regard to the provisions of section 5.5 of the EPA Act, the likely impacts of the proposal (after mitigation) are not considered to be significant and an environmental impact statement is not required.



Declaration

I, Michael Cassel, Chief Executive of the Hunter and Central Coast Development Corporation, have examined and considered the Review of Environmental Factors in accordance with the provisions of s5.5 of the *Environmental Planning and Assessment Act 1979* and the *State Environmental Planning Policy (Infrastructure) 2007*, under which the works are permissible and determine that the proposed development may be carried out as development without consent, subject to compliance with the conditions to manage environmental impacts outlined within the REF.

Signed,

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Michael Cassel Chief Executive Hunter and Central Coast Development Corporation



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1 Introduction

This Chapter describes the background of the proposal, the proposal's need and objectives, provides an overview of the proposal, and outlines the structure of this Review of Environmental Factors (REF).

1.1 Purpose of this Review of Environmental Factors

This REF describes the proposal (Chapter 3), documents its likely environmental and social impacts (Chapter 6) and details the measures that would be implemented to safeguard and manage any adverse effects. The REF has been prepared to meet the environmental assessment requirements of Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EPA Act).

The description of the proposal and associated environmental impacts have been undertaken in the context of cl.228(2) of the *Environmental Planning and Assessment Regulation 2000* (EPA Regulation), the *Biodiversity Conservation Act 2016* (BC Act), and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The REF helps fulfil the requirements of section 5.5 of the EPA Act. The findings of the REF will be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the need for an Environmental Impact Statement (EIS) to be prepared and approval to be sought from the Minister for Planning and Environment under Part 5, Division 5.2 of the EPA Act.
- The significance of any impact on threatened species, populations and communities as defined by the BC Act, in accordance with section 1.7 of the EPA Act and therefore the requirement to prepare a species impact statement (SIS).
- The potential for the proposal to significantly impact a Matter of National Environmental Significance (MNES) or Commonwealth land and the need to make a referral to the Commonwealth Department of the Environment and Energy for a decision by its Minister on whether assessment and approval is required under the EPBC Act.

1.2 Background

Hunter & Central Coast Development Corporation (HCCDC) is a NSW State Government agency charged with accelerating growth, private investment and development in the Central Coast Region of New South Wales. HCCDC strives to ensure that development projects, such as this proposal, achieve the best possible outcome from an urban design, environment, sustainability, economic, social and community perspective. HCCDC has been tasked with facilitating the development of regional centres and renewal corridors across the Central Coast, and the broader Hunter Region of NSW.

This project forms part of the Gosford CBD Revitalisation Project emerging from the Office of the Co-Ordinator General for the Central Coast. An Urban Design Framework was prepared for the Gosford CBD, by the Government Architect's office, seeking to activate the city to attract people, jobs growth, new enterprises and tourism to Gosford. This is in the context of the Central Coast Regional Plan 2036, which identifies Gosford as the Capital of the Coast. The government is investing \$10 million in the public domain upgrades program to transform the city centre by strengthening connections between the city and waterfront, through delivering attractive public spaces that connect to the CBD. The focus of this expenditure is the upgrade to the Leagues Club Field which forms this project.



The existing Gosford Leagues Club Field will be redeveloped in accordance with the recommendations of the *Gosford Urban Design Framework, Place report 3 – Gosford City South*³ ('UDF Report'). The UDF report provides a place-based approach for change in Gosford and considers three key areas:

- 1. Green Infrastructure the development of a Green Infrastructure strategy that can support the establishment of a network of well-connected places that create an attractive city with vibrant street life. Parklands in the City South have the potential to bring the locals, the landscape and the water together.
- 2. Public Domain improvements in the public domain create an attractive city, which is a platform for investment with short term returns and long-term growth.
- 3. Built Form with the public domain and green infrastructure creating a desirable place to live and work, private and public investment in the built environment can provide the final ingredient for change.

The City South phase of the revitalization focuses on the activation of the Leagues Club field and surrounding street frontages, with Baker Street proposed as a shared zone to assist in pedestrian linkages between the City centre and waterfront. The Leagues Club field is to become an important public space in the life of the city and is a key step in achieving the revitalization of the Gosford City Centre. Long term aims for the park highlighted by the UDF report included reimagining the creek, accommodating a range of users and activities, improving pedestrian amenity and connections, and maintaining solar access to public space. These aims have set the scope and direction for the current proposal.

1.3 Project Stakeholders

Due to the technical nature of the design, there are a number of technical specialists and design consultants involved in the ongoing development of this project. A summary of each consultant's engagement is provided in the table below.

Stakeholder	Capacity	
Turf Design Studio	The lead project consultant responsible for the overall park design,	
	from concept to practical completion.	
Roberts Day	Stakeholder workshop and input into place making of park design.	
TCS	Input, investigate and develop options and strategies of public art to	
	be incorporated into park.	
GML	Analysis of site heritage and provide inputs and opportunities for	
	incorporation of the site's European and Aboriginal heritage into the	
	design.	
Electrolight	Develop and design public realm and feature lighting for the park.	
Wordplay	Develop a wayfinding and signage strategy through the site. Also	
	develop sizing, fonts kerning related to the use of indigenous	
	language.	



³NSW Government (2018.) Government Architect. Urban Design Implementation Framework.

Level Six	Due to the fast paced design and documentation program level six internally managed the larger design and technical specialist consultants.
Barr Property and Planning	Provide planning advice and prepare the REF for approval by HCCDC.
ADW Johnson	Survey the site and provide civil engineer services for the project from concept phase through to practical completion.
SESL	Soil science, management and the reuse of site soil to create the planting soil profiles maximising plant establishment and growth. Also provide geotechnical detailed site investigation, and investigation into the soil condition in the tidal terrace through design development and documentation.
Douglas Partners	Investigation into the ground and soil conditions, as well as conduct site bore testing at concept/ analysis phase.
ТТРР	Traffic and parking study for the project site and surroundingarea. TTPP additionally provided three street typology scenarios for the Baker street extension.
Australis Tree Management	Investigate the existing trees on site and independent assessment of their value.
Alluvium	Provide specialist advice and technical expertise on the tidal terrace system and design.
CCEP	Review the park design for the BCA, access and playgroundstandards.
SDC Engineering	Develop and document irrigation for the park and hydraulically design the misting system for the community node.
WT Partnership	Independently cost the design through the concept, design development and documentation phases of the project to ensure that the design meets the project budget.
Darkinjung Local Aboriginal Land Council	Provide collaboration and consultation for local Aboriginal stories and cultural content for incorporation into the design.



2 Site Description and Regional Context

2.1 Gosford City Context

The site is located within the 'City South' precinct of Gosford, adjacent to the Central Coast Highway and Brisbane Waters. The Gosford region contains a variety of amenities, including community and social facilities, education facilities, recreation spaces, retail and transport hubs. Key transport hubs include Gosford Station and CBD – suburban bus routes. While there are numerous opportunities for recreation, the city lacks a dedicated regional playground and intimate open spaces, which would facilitate a wider variety of social activities (refer to Figure 1).

Figure 1: Location of the subject site within the broader context of Gosford.⁴



⁴ Ibid 1, page 9.



Page.

2.2 Site Details and Characteristics

The Gosford Leagues Club Field is located in the heart of the Central Coast Region and the northern end of Brisbane Water, a branch of the Hawkesbury River, which makes its way towards the ocean. The plot itself is adjacent to the Central Coast Stadium, the Central Coast Highway and Brisbane Water to the south-west and Gosford Town Centre to its north and east (refer to Figure 2).

Figure 2: Aerial image of the subject site, with characteristics of the immediate locality⁵



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⁵ lbid 1, pg. 10.

The Leagues Club Field (referred throughout this REF as 'the site') is approximately 24,000 square metres in area and is bounded by Georgiana Terrace in the north, Dane Drive in the west, the Central Coast Highway to the south-west, Vaughan Avenue to the south-east and the extension to Baker Street along with the Australian Tax Office ('ATO') and the vacant site at 26-32 Mann Street in the east. The site consists of three lots, being Lot 7035 & 7036 in Deposited Plan 1020068 and Lot 5, Section 81 in Deposited Plan 758466. In addition, the site comprises the southern extension of Baker Street which was not included in the Crown reserve and is an unregistered parcel of land. Works on these components are further discussed in Part 5.1.

Certificates of Title were ordered using Direct Info for all three allotments that constitute the subject site (mentioned above). The titles confirm that all three allotments are classified as Crown Lands. Consequently, the proposed activity will need to consider the Crown Land Management Act 2016 (refer to section 5.4.3).

2.2.1 Existing Stormwater Infrastructure

The subject site generally grades down from the east to west at approximately 1% slope, with localised steeper sections on the southern and northern boundaries. Runoff generated by the northern portion of the site is captured by stormwater inlets in Georgiana Terrace and a concrete dish drain along the western Dane Drive boundary and is ultimately conveyed to a series of stormwater pits.

Two sets of large concrete box culverts currently traverse the site. Both sets of culverts drain the upstream Gosford CBD catchment and enter the site from Georgiana Terrace draining into Brisbane Water. The smaller set traverse the north-west site corner, while the large set bisects the site. The larger culvert is proposed to be integrated into the park design.

2.2.2 Soil Characteristics

Preliminary boreholes were logged as part of a geotechnical investigation, which indicated that the water table was encountered at depths of approximately 1.5m below natural ground level. The following soil characteristics have been adopted based upon these borehole logs:

- 60% silt and very fine sand,
- 20% sand (0.1-2.0mm),
- 3% organic matter,
- Fine granular soil structure, and
- Slow to moderate permeability.

The proposed development site has been identified to have low erosion hazard, based on the rainfall erosivity, and the typical upper slope gradient. In accordance with the 'Blue Book'⁶, as the site is considered to have a low erosion hazard, it is considered that standard erosion and sediment control measures will apply and no special measures will need to be implemented (refer to section 6.10.3).

2.2.3 Geology

Reference to the provisional 1:100 000 scale Geological Series Sheet for Gosford-Lake Macquarie indicates that the site is underlain by Quaternary Alluvium. Alluvium generally comprises sand, silt and clay soils deposited by watercourses. Given the marine environment,



⁶Landcom (2004). *Managing Urban Stormwater: Soils and Construction*. 4th Edition. ISBN 097520303-7.

the alluvial soils are more appropriately described as estuarine deposits, and these often include abundant shells and highly organic muds.

In addition to the mapping, available historical information indicates that the shoreline 100 years ago ran approximately mid-way through the site, and that a creek ran through the north-western corner. Several decades ago, low lying tidal margins in this area were 'reclaimed', and this resulted in filling out to the current waterfront. the Central Coast Highway was also subsequently constructed on the fill material. Extensive fill material is likely to be present at the site.

2.2.4 Topography and Hydrology

At the time of investigation⁷, ground surface levels are generally in the range of approximately 1.4m AHD along the western side of the field to approximately 2.4m AHD on the eastern side, adjacent to Baker Street. Generally, rainfall would be expected to infiltrate the site; however, any surface water runoff is expected to discharge to the stormwater drainage system within the adjacent public roads. The stormwater runoff is then expected to discharge to Brisbane Water, located to the west of the site.

2.2.5 Acid Sulfate Soils

Review of the Soil Conservation Department of NSW 1:25 000 scale Acid Sulfate Soil risk map for Gosford indicates that the site is located in an area mapped as 'disturbed terrain'. The acid sulfate soil risk mapping is consistent with the site elevation and the mapped geological conditions. As such, the soils underlying the fill are likely to also have a 'high probability' of being acid sulfate soils, with a possible risk that the fill materials may also be acid sulfate soils.

2.2.6 Groundwater

Based on the topography and geological conditions, groundwater is expected to be encountered between approximately 1 and 2m below ground level (bgl). Groundwater levels throughout the site are anticipated to vary and may be affected by tidal influences. A search was conducted for registered groundwater bores in the Water NSW website groundwater bore database in January 2019 by Douglas Partners. The results indicated that there were two registered bores within 500 m of the site.

2.2.7 Local Road Network

The subject site is bounded by Georgiana Terrace to the north, Dane Drive to the west, Baker Street to the east and Vaughan Avenue to the south. Each road is described in further detail below.

2.2.7.1 Georgiana Terrace

Georgiana Terrace is a two-way local road with one lane in both directions that extends in an east-west direction along the northern boundary of the site. On its western end, the road intersects Dane Drive as a priority intersection. At the eastern end, the road forms a cul-de-sac with unrestricted 90-degree angled parking on both sides. Two-hour time limited restricted, kerb-side parallel parking is provided between 8.30am and 6.00pm, Monday to Friday; and 8.30am to 12.30pm on Saturday. The speed limit is posted as 40 km/h.

⁷ Douglas Partners (2019). *Preliminary Site Investigation*. Project No. 83503.01. Issued 4 February 2019.





2.2.7.2 Dane Drive

Dane Drive is a local road, which extends the western boundary of the site. The road is configured as one lane in each direction. No kerbside parking is permitted between the Central Coast Highway and Georgiana Terrace. North of Georgiana Terrace, four-hour time restricted kerbside parking is provided between 8.30am and 6.00pm, Monday to Friday and between 8.30am and 12.30pm Saturday on the western side of the road and ticketed parking and taxi zones are located on the eastern side of the road.

2.2.7.3 Vaughan Avenue

Vaughan Avenue is a two-way local road that extends from Mann Street to Central Coast Highway along the southern boundary of the site. Turning movements are restricted to left-in and left-out only, at its intersection with Central Coast Highway. A combination of unrestricted and four-hour time restricted, kerbside parallel and 90-degree parking is provided along Vaughan Avenue. A 'No Parking Buses Excepted' zone is provided on the north side of the road, adjacent to the eastern side of the site. The speed limit is posted as 40km/h.

2.2.7.4 Baker Street

East of the site, Baker Street is a two-way, local road with kerbside time restricted parking (twohour) and one traffic lane in each direction. Along the site's eastern boundary, Baker Street is a cul-de-sac with 90-degree kerbside parking and provides access to the construction site at 265 Mann Street.

2.3 Site Analysis

A thorough investigation into the current and historical site conditions was conducted to formulate a better understanding of design opportunities and limitations, as shown in Figure 3.

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Figure 3: Analysis of site, opportunities and constraints⁸.



Three existing features on site are highlighted as important design informants, including:

- 1. The pre-1921 shoreline of Brisbane Water is an opportunity to express the history of the place in an abstract way, and in doing so create a unique, meaningful space through this expression. This also has major implications for soil conditions and excavation opportunities.
- 2. The presence of large stormwater culverts channeling runoff below the surface into the bay. This poses both opportunities in bringing water onto the site and limitations as to where excavations can take place.
- 3. The row of date palms along the western perimeter of the site defines the interface between park and highway.





⁸ Ibid 1, pg.13.

2.3.1 Culture

The analysis of Indigenous culture was undertaken in consultation with the Darkinjung Local Aboriginal Land Council (discussed in section 4.3). Their extensive knowledge of culture and history of the land's traditional custodians has filtered well into the design resolution.

The Darkinjung people have strong connections to the waterways of the Gosford region, using the bays and inlets as spaces for gathering, hunting, exploring and living. The shell midden deposits found across the bay provide evidence of the occupation of the Darkinjung people. The significance of ceremony as an everyday ritual should not be underestimated. Smoking ceremonies, ceremonies of initiation, and celebration perpetuated the spiritual and physical connection to place.

2.3.2 Heritage

The heritage analysis of the site was undertaken in consultation with GML, with their assessment contained in section 6.2. The study area included the immediate site, but also a brief investigation into the history of Gosford City. The investigation carried out by GML was collated under six key themes, which are summarised in the table below.

Theme	Description
Aboriginal	Recognising and understanding the role and occupation of the
Cultural Heritage	Darkinjung language group on site, including their use of area for
and History	hunting gathering, shelter, ceremony and story.
Exploration and	The experience of navigating the shoals in the waterways of Brisbane
Isolation	Water. The settlement patterns, occupations and emergence of
	infrastructure in the region.
Harvesting the	Land and water harvesting was a great source of income for early
Water and the	settlers, with early industries revolving around these elements. Timber
Land	mills, ship building, quarries and citrus farming prevailed.
Fishing, Bathing	The importance of water as a food source for indigenous peoples, and
and Boating	as a recreational source for settlers is significant in understandinghow
	Gosford has continued to lure travellers as a key waterside destination.
Culture in the	Since establishment in 1954, the Leagues Club continues to serve as a
Club	community cultural hub, following the patterns and trends of clubs
	State-wide. The club has hosted a diverse range of entertainers and
	has supported young local talent since its inception.
Site Specific	In 1901 the land was gazetted as a Reserve for Public Recreation.
History	Reclamation along the foreshore by the mid-twentieth century
	resulted in the creation of the park as it exists today.

2.3.3 Placemaking

The Gosford Leagues Club Field is located in the 'City South' precinct, adjacent to the Central Coast Highway and Brisbane Waters. The 2.4 hectare site is within walking distance of major amenities and attractions within the Gosford CBD, including less than 600 metres to local public transport (refer to Figure 4). The region is currently lacking high quality playground facilities and spaces with more intimate open space opportunities.



Figure 4: Locating Gosford in the wider regional context9



The placemaking report published by Roberts Day¹⁰ identifies a number of key challenges and opportunities for the site, including:

- 1. Identity At present, the site sits as an open and empty space, with no overarching identity. In turn, this provides the opportunity for the design to shape a space which is distinctly Gosford.
- 2. Vibrancy Currently, there is a lack of vibrancy which is limiting the potential activation of the park with possible events being held elsewhere. This creates an opportunity for the emergent design to cultivate an inviting space for recreation and celebration.
- 3. Connectivity The lifestyle value of the surrounding region is not being maximised, with the needs and desire of some community members not yet being met by the

⁹ Ibid 1, pg. 15.
¹⁰ Roberts Day, 2018, Gosford Leagues Club



available public space. There is an opportunity for the entire park to be a supportive influence on the everyday life of all community members.

2.4 Analysis to Inform Design

The design analysis was undertaken collaboratively between Turf, the Darkinjung LALC, Gosford City Council and HCCDC. Design analysis included developing an understanding of existing site conditions (section 2.2) and context (section 2.3). Design analysis undertaken by Turf included iterative drawings to reconcile the design and arrangement of the shared street, organisation of the park's internal layout and pathway systems, as well as the relationships between the park, the water and the built environment.

Detailed analysis is a continued conversation, orchestrated by Turf throughout the ongoing development of design.



3 The Proposed Activity

Gosford City Centre is undergoing a renewal of its urban design framework, aimed at strengthening its role as the regional capital city of the Central Coast. As a city shaped by rich cultural and social history, Gosford holds great potential as a leader in the public domain and place making sphere, with the possibility to emerge as a modern and strong regional city¹¹.

At present, the regional attractions that the City hosts are not sufficient to sustain the growing population, including an increased ageing population and widening variety of families from a diverse range of backgrounds. The built framework of the CBD is a relatively underutilized, with derelict buildings and vacant shop fronts being commonplace amongst the streetscape. The phased, place-based revitalisation of the CBD as proposed under the UDF will address urban design within the City South precinct, in conjunction with the Civic heart and City North. The parkland will be flexible in function and character, facilitating sport, play, gathering and environmental stewardship within its 2.4 hectare area. The park's design draws inspiration from the cultural and heritage values of Gosford, in particular the narrative of the Darkinjung people, being the traditional custodians of the land.

The key park elements include a regional playground, community node, and sporting field. The waters of the adjacent bay are to be reintroduced to the landscape through a tidal terrace play space, offering a unique element of play that reconnects the space to the landscape's most iconic element, Brisbane Water.

3.1 The Brief

The brief for this project is to deliver a key civic area within Gosford, which has the capacity to complement and support the revitalization of the Gosford CBD. The relationship of place to the Darkinjung people and Brisbane Water is to be at the forefront of design. The park is to strengthen the connections between the City and waterfront, and form an iconic entry to the Gosford City Centre. The key elements of the park are described as follows:

- Regional playground,
- Sporting and playing fields,
- Community node, and
- Pedestrian Boulevard.

The brief has been addressed through careful design, which was informed by consultation with relevant stakeholders. The proposed activity is discussed below.

3.2 Description of the activity

The proposal consists of the redevelopment of the existing Leagues Club Field, the delivery of a regional playground and public open space.

The civil scope of works includes the design of:

- bulk earthworks, involving excavation of an area of the south of the 1919 shoreline down to the original bay level
- re-use of excavated cut around the site, creating mounds in key locations including the eastern and western side of the Baker Street Extension at maximum RL 4.70 and 4.91,

¹¹ Turf Landscape Design Architecture (2019). *Masterplan Report*. Issue A. Issued May 2019. Page 4.



generating visual interest and delivering unique topography. The cleaner excavated topsoil will be stockpiled for reuse to create site specific soil profiles, maximising plant establishment and growth

- stormwater design and management including tidal terrace drainage system, a long grated drain below a cantilevered concrete platform
- services design
- tidal tunnel, including installation of a 375mm gravity stormwater main under Dane Drive (Central Coast Highway), an inlet-outlet pipeline under the Central Coast Highway, and a control pit
- public art including sculptures
- sediment & erosion controls
- regrading of the site
- creation of transit network across the site to draw pedestrian traffic from Gosford city centre to the waterfront, including pedestrian and vehicle linkages, and the extension of a pedestrian shared zone and parking area in Baker Street.
- landscaping works including tree relocation, and removal of trees along the Central Coast Highway and Vaughan Avenue frontages,
- installation of park furniture, and play and fitness equipment.

These works are further detailed in the Civil Plans. Detailed consideration of the elements of the proposal is provided in chapter 6 of this report. These works will result in the creation of a series of recreational spaces, the function and features of which are described below.

Design Element	Description
Community	Situated in the park and within the 'Tidal Terrace', the Community
Node	Node, is a seating area with cascading bleacher steps along the 1919
	snoreline, creating an informal seating and performance space.
Tidal Terrace	The Norimbah Tidal Terrace reinterprets the 1919 shoreline that runs
	through the site. This comprises an excavation to create a water play
	area that will fill with tidal sea water every high tide. The tidal terrace
	was designed in collaboration with the Darkinjung Aboriginal Land
	Council and depicts stories of local aquatic life, pre-European history,
	and early contact.
	Constally the tidal terrace will contain water during high tide and will
	be empty during low tides. A new nine will be installed below the
	Central Coast Highway to connect the tidal terrace to the Brishane
	Water and allow the water to flow into and out of the tidal terrace
	passively without the use of pumps. Given that the higher tides
	experienced in Brisbane Water would result in water depths within the
	tidal terrace that may not be considered safe. a motorised mechanical
	gate system will be installed that automatically isolates the tidal
	terrace from Brisbane Water when the water depth reaches a pre-
	determined level. The programming of the gate system controller will
	allow for adaptive management if required over the life of the asset.
Pedestrian	The design proposes the extension of Baker Street as a shared street
Priority	with pedestrian priority, which will create a dynamic edge and
Boulevard	integration of Baker Street into the overall park design. The shared
	street will accommodate 18 parallel car parking spaces on the eastern
	side of the street.



Design Element	Description
The Common	The 'Common Green' will be multi-purpose, informal sports for all to
Green	enjoy. It is a flexible, undefined area, for accommodating picnics,
	grassroots sporting events and larger New Year's Eve celebrations. The
	'Common Green' also helps to create an easy transition from city to
	park.

Each key element is discussed in further detail in the following sections. A visual representation of each design element is provided in the Turf Master Plan Report. The location of each element and other design features is shown on Figure 5, below.





Figure 5: Proposed redevelopment of the Leagues Club Field, Gosford







3.2.1 Pedestrian movement networks

3.2.1.1 Signage and Wayfinding

The signage and wayfinding strategy focuses on providing clear, legible and succinct information about wayfinding and the cultural heritage of the park. Signage is to be located at key entry/ exit points, as well as alongside significant cultural park elements. Material for signage construction is durable and damage resistant. Importantly, the inclusion of interpretive signage will provide information about the important historical, cultural and environmental features of the site, particularly in relation to Indigenous culture and the historical shoreline.

3.2.1.2 Baker Shared Street

The Baker Shared Street along the eastern fringe of the car park allows for safe pedestrian movement while also providing ample car parking to service the park. The street is a pedestrian buffer between the neighbouring development and retail zone and the park.

3.2.1.3 Pedestrian Priority Boulevard: Old Shoreline Walk

The 'Old Shoreline Walk' follows the indicative 1919 shoreline. It has formed the primary corridor for movement between Poppy Park in the south and the Central Coast Stadium (Figure 5). The Old Shoreline Walk is the axis on which the design structures itself, with the Norimbah Tidal Terrace and Ray Maher Field anchored and connected by its threading through the site. A continuous gravel and sandstone edge details the shoreline path.

3.2.2 Norimbah Tidal Terrace

The Norimbah Tidal Terrace will bring the bay to the park. Excavated along the 1919 shoreline, the Tidal Terrace is home to the creatures of the Darkinjung, schooling in from the bay beneath the Hood. The creatures are formed in sandstone and are exposed with tidal changes. Play canoes accompany the static canoes, washed up along the shoreline.

The central meeting place of the Tidal Terrace serves as the site's community node, anchored by the sandstone creatures around the perimeter. Fourteen sculptural poles are arranged around the node's centrepoint. These poles are reflective of the seven Indigenous Nations in the greater Gosford region and the eight Clans of the Darkinjung Nation.

3.2.2.1 Norimbah Tidal Terrace Community Node

The Community Node forms the centerpiece of the park and the Tidal Terrace. At the centre of the park, it acts a stage for community events, supported by ample seating. The creatures of the Tidal Terrace ground the node in space and offer additional seating opportunities for users.

Most significantly, the node is an opportunity to showcase the Darkinjung culture, and the culture of neighbouring nations. Following consultation with Darkinjung elders, the sculptural poles that surround the node have been arranged to respond to the locations of local clans and neighbouring nations. The Nation poles sit at a height of 11 metres, whilst the clans at 9 metres. These sculptural elements will excite place and destination during day and night, with accent lighting and unique storytelling art embellishing their surfaces.



3.2.2.2 The Hood

The Hood serves as a significant component of the Tidal Terrace design. The 41 metre long concrete plinth cantilevers over the tidal zone, hiding the water inlets beneath the Hood. The sandstone creatures that have inherited the bay emerge from beneath the Hood, as if brought in with the tides of Brisbane Waters. Additionally, the Hood offers another space for seating and lounging, supporting the seating edges that surround the Terrace.

3.2.2.3 The Culvert Sun Deck

The Culvert Sun Deck lies on the northern boundary of the Tidal Terrace. The platform is wheelchair accessible, increasing inclusive access points to the Tidal Terrace zone. The Culvert offers an additional seating zone overlooking the Terrace and is shaded by the large flags on the boundary edges.

3.2.3 Playgrounds

There are three major playgrounds (excluding the Norimbah Tidal Terrace) within the park. These playgrounds have been designed to foster adventure and curiosity, while maintaining a high level of safety for children and carers. The playground has been designed with the theme of ever-changing 'wild-play'. These play areas are co-located with key picnic, seating and shade amenity for convenience and surveillance on site. It is important to recognise that the redevelopment of the Gosford Leagues Club Field has been conducted to ensure stringent compliance with the 'Everyone Can Play' framework. Each design principle has been discussed in further detail within section 6.6.1 of this REF.

3.2.3.1 Play Hill

The Play Hill is located opposite the Tidal Terrace and will provide a typically 'dry' wild play experience for visitors. Play structures are designed to test balance and co-ordination and are scattered across the hill.

3.2.3.2 Fishtrap Playground

The Fishtrap Playground is located on the southern edge of the Tidal Terrace. Elements of wild play, including logs, rocks and ropes provide play passage between the Tidal Terrace and sculptural play at the top of the site. A 'fishtrap' sculptural play element, presented as a climbing net, is suspended over sand at the top of the playground. Ample bench seating is provided.

3.2.3.3 Play Mound

The southernmost play element sits elevated on a mound, overlooking Fishtrap playground and the Tidal Terrace beyond. Climbing nets, ropes, sandstone and other natural obstacles provide passage between the base and top of the earthern mound. A slide and tunnel offer alternative passage down the mound. Timber play pods sit at the top of the mound, overlooking play areas below.

3.2.3.4 Ray Maher Field

The Ray Maher field provides a sports/ playing field for the community at the northern end of the park. A sloped lawn to the west and fitness zone to the east bound the central field. The Walk of Fame traces the perimeter of the field, with a circumference of 200 metres, and doubles as a running loop. Transplanted palms define the field's northern edge and provide shade and structure to the northern entry zones.



3.2.3.5 Sloped Lawn Section

A sloped lawn and planting buffers the park from the Central Coast Highway. The sloped lawn provides a passive seating space, overlooking both the Ray Maher Field and the Tidal Terrace. A band of planting completes the lawn's eastern edge.

3.2.4 Amenities and Attractions

3.2.4.1 Fitness Zone

The northern end contains an array of fixed fitness elements, as well as the Ray Maher Field, running track and amenities building. To ensure inclusivity, elements of fixed fitness equipment have been selected to support disabled and impaired users (section 3.2.3). The amenities building is located at the southern end of this area, central to the Tidal Terrace, making it convenient for users in all areas of the park.

3.2.4.2 Picnic areas

The main picnic facility is located in the south eastern corner, near major play zones. The picnic amenities are well shaded by existing and proposed tree planting. Ample picnic space and BBQs will accommodate the park's many guests. Clear pathways and entries make passage between the shared street and park legible and accessible to all.

3.2.4.3 Walk of Fame

The Walk of Fame highlights members of the Gosford community who have made important contributions to the city. The Walk of Fame will be located on an offset from the Ray Maher Field. There is a provision for 60 brass plagues, at an assumed 400 millimeter diameter and at a spacing of 3.5 metres. The plaques will be cast brass, for durability and aesthetics.

3.2.4.4 Public Toilets

An amenities block is proposed, central to the fitness zone, tidal terrace and the shared street. The amenities block will feature a minimum of one Unisex Wash Closet (WC), an Ambulant WC and a People(s) with Disability WC.

3.2.4.5 Shade Amenity

Initial shade amenity will be provided by four mature fig trees transplanted onto the site, on the eastern edge of the Tidal Terrace. Additional shading will develop as the surrounding park trees begin to mature.

3.2.5 Infrastructure and Services

The key power and water locations have been located near to amenities and within accessible range of potential maintenance and emergency vehicles. The lighting strategy is suited to high levels of activity, both night and day. The strategy outlines 'peak' and 'off-peak' lighting categories, with final timing to be determined by usage patterns and day of week.

3.2.6 Universal Access

Universal access is provided along the major circulation routes throughout the park, and includes direct access to key places and facilities (amenities block, seating areas, BBQ area, the Community Node, and playing field). Universal access will be provided in the Fishtrap Playground, immediately south of the tidal terrace.



3.2.7 Planting

The indicative planting palate has been developed as a series of 'eco-types' with each type intended to respond to different environmental conditions. The species list also includes a range of plants from the Darkinjung narrative, feeding into the journey of moving from the forest to the sea. The bush tucker planting along the Tidal Terrace edge weaves into this narrative, supported by pocket forests of *Casuarina glauca*. Salt Marsh planting holds the edges of the Terrace zones and curated palettes for the play and mounded areas ensure the impact of foot traffic does not compromise the planting presence. Freshwater and interpretive swales bound the Ray Maher Field and Baker Shared Street, respectively. The planning zones and subsequent palettes have been developed in response to condition of aspect, water, wind, visual connection, activity and colour.

3.2.7.1 Tree Removal and Retention

The existing site has over 40 palms, species *Phoenix canariensis*, many of which are located along the edge bordering the Central Coast Highway. These existing palms are considered to be high value retention trees, defining the existing park boundary and offering some relief between the highway and the park. Some palms located on the park's northern and southern edge will be retained in their current positions, forming an important entry and exit statement for the park. Most palms along the western edge are to be transplanted across the park.

3.2.8 Urban Elements

The urban elements selected by Turf for this park reflect the need for safety, integrity and accessibility in public space. The amenities block is located centrally, providing ease of access to and from the Norimbah Tidal Terrace and the Fitness Zone. Bins are co-located with picnic facilities, whilst drinking fountains have been located near key spaces to be most accessible to users. The sandstone and fixed bollards along the shared street provide safety for pedestrians, and double as seating elements.

3.2.8.1 Seating

Park seating is diverse in form and function to accommodate the variety of needs and performance of key spaces. Along the Tidal Terrace, seating is communal and orientated inward toward the Community Node. The Ray Maher Field and adjacent sloped lawn provide passive shaded seating for rest and respite. Tables and bench seating are located near amenities and around key playground elements to allow passive surveillance of child play areas. A variety of bench designs will be provided including those with back and arm support to ensure inclusivity and accessibility.

3.2.8.2 Bollards

Bollards have been introduced along the length of the Shared Street to ensure pedestrian safety and define the vehicle and park zones. Fixed and removable bollards are located along the park edge for safety and for the ease of potential emergency vehicle access.

3.2.8.3 Fencing Strategy

The fencing strategy for the park aims to provide safety and security from the adjacent Central Coast Highway. The fence runs along the western edge and is visible from most locations within the park. Elements of sandstone feature fencing are incorporated within standard child-proof palisade fencing.

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3.3 Consideration of alternatives

The conceptual component of the project commenced with development of four distinct concept options, as shown in the figure below.



These options involved experimenting with the location and relationships between the key elements given in the brief. The concept options and their evolution into the final design were informed by the outcomes and findings of numerous workshops (refer to section 4.2). The preferred option was selected based on considerations made by key stakeholders, as described

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in Section 4.2. A detailed consideration of the alternatives and reasoning for the preferred alternative is provided in the Turf Landscape Masterplan, and in Section 4.2, below.

3.4 Justification

Justification of the proposed design is made on four levels, as outlined below.

- 1. Consistency with strategic planning framework: The Leagues Club Field (also known as Gosford City Park) has been identified as future playground and public open space in the *Gosford Urban Design Framework* (UDF), *Place Report 3 –City South*. The new public open space is to form a key recreation space for Gosford. The current proposal is consistent with the UDF report and Central Coast Regional Plan. It will build on other regional attractors such as the Stadium, Gosford Olympic Swimming Pool, Central Coast Leagues Club, Conservatorium of Music, and the Gosford Sailing Club. The existing Leagues Club Field and the park offer an opportunity to accommodate a range of uses from active sport, children's play, walking and outdoor exercise, as well as passive recreation.
- 2. Provision for recreational needs or existing and future population: The recent commercial development adjacent to the Leagues Club Field, of the Australian Tax Office and the new Finance Building have brought a large daytime population to the area. This diverse population will require the support of new and upgraded public domain, allowing the Gosford CBD to function in both event mode, as well as day to day.
- 3. Respect for Aboriginal cultural history: The Darkinjung are the original indigenous inhabitants of the site. They have a deep connection to this place, which must be respected, engaged with as a living culture and brought to the surface in any future development and design of the regional open space. Brisbane Water has always been a place of boat building activity, and this rich history is proposed to be incorporated as part of the place making design elements, referencing the original creek through the site and as part of a low-key wayfinding and place approach.
- 4. Pedestrian and cycle linkages throughout Gosford CBD: Active transport links are key between Gosford, and the region's communities surrounding Brisbane Water. Active links should encourage alternative activation such as direct cycle and walking trails as a priority. Quality public domain should draw people to the destinations in City South, as well as through to the Civic heart. The extension and activation of Baker Street will assist the reinvention of the south of Gosford city. An active park and pedestrian boulevard connecting the town with the water will become a focus of City South and create a civic space as the arrival place in the town.

The proposed development is consistent with the strategic planning framework, provides for existing and future recreational needs of residents, respects Aboriginal cultural links to place, and provides enhances pedestrian and cycle linkages between Gosford CBD and the waterfront.



¹² Turf (2019). *Landscape Reference Report*. February 2018. Issue A.



3.5 Operation and Management

The park has been designed with the aim to keep operations and maintenance tasks to a minimum. The park materials palette consists of commonly available low maintenance materials. The urban elements throughout the park are a combination of bespoke and off the shelf products, with the bespoke elements designed with low maintenance materials. The plant and tree species have been selected based on low maintenance native species. The Table below has been prepared to summarise the proposed operation and maintenance schedule. Please note this schedule should be used as a guide and may change over time. It is anticipated that operation and maintenance will be the responsibility of Council to undertake or delegate, as the managers of the site under the Crown Land ManagementAct.

Maintenance Schedule				
Item	Frequency	Inspection	Maintenance	
Hardscape				
Paving Concrete 100mm	Weekly	Check for damage of pathways	Make good/ repair any damaged pathways	
Pump System	Refer to Tidal Ter	race Schedule		
Stormwater Outlet	Weekly	Check for leaks and cracks	Make good/ repair any damage	
Compacted Soil bond Gravel	Weekly	Check for erosion of gravel around, check for trip hazards between gravel and hard paved surfaces.	Top up soil bond gravel, compact to make good/ repair any damaged areas	
Tidal Terrace Sand	Refer to Tidal Terrace Schedule	Refer to Tidal Terrace Schedule	Refer to Tidal Terrace Schedule	
Community Node Sand	Weekly	Check to ensure sand level is higher than high tide level	Addition of sand. Refer to bond sand specification for sand type.	
The Slot	Weekly	Check for sand build ups under slot.	Rack sand from under slot.	
Sandstone – Tidal Terrace	Refer to Tidal Terrace Schedule	Refer to Tidal Terrace Schedule	Refer to Tidal Terrace Schedule	
Soft Fall Mulch	Weekly	Check to ensure no erosion of mulch and that the minimum fall zone thickness is maintained. Refer to 'ANL Specification M8- Playground- Certified' for required thickness.	Top up of softfall mulch to comply with standards.	
Urban Elements	, Furniture and Fix	ings		
Playground Equipment	As per Australian standards	As per Australian standards	As per Australian Standards.	

Table 1: Operation and MaintenanceSchedule¹³





Maintenance Schedule			
ltem	Frequency	Inspection	Maintenance
Fitness Equipment	Daily	Check the cleanliness of the equipment. Inspect the equipment for loose, broken or missing parts.	Remove all dirt, leaves and litter from the structures.
General Urban Elements Fixing	3 months	Check for any loose fixing. Screwed on battens and other fixed parts should be manually and visually checked for integrity.	Tighten bolts, replace screws and battens if necessary.
General Urban Elements Cleaning	3 months	Check how clean the element, if there is scratches and damage	Clean if required.
Softscape	2 months	Chack mulch lough	Topping up of mulch
Lawn	As per CCC maintenance guidelines	N/A	Moving lawns & trimming edges as required.
Planting & Trees	As required	Check for failed plants.	Replace failed plants and trees.
Trees	As required	Check trees in accordance with Australian Standard 4373 'Pruning of Amenity Trees'.	

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4 Stakeholder and Community Consultation

The upgrade of the Leagues Club Field to create a regional playground and improve overall amenity was announced by the Minister for Planning in May 2018. Consultation was undertaken with the public and stakeholder groups, as outlined below.

4.1 Community Consultation

The Hunter and Central Coast Development Corporation ('HCCDC') conducted a four-week engagement program between 29 August and 3 October 2018. HCCDC invited the community to provide ideas for the regional park and play space including through the *Engagement HQ* online platform, where users could select 'pins' based on concepts taken from the UDF and place them on a virtual map of the Leagues Club Field. This interactive online tool generated 134 visitors and 49 contributions from nine individual contributors. In addition, nine written submissions were received, which comprised of emails from key stakeholder groups and postcards designed specifically for the engagement.

Overall the responses expressed support for the upgrades that would attract more people into the City Centre and infrastructure installation that would activate the area. These submissions received during the consultation period helped to inform the design of the field.

Upon release of the initial concept plan in February 2019, the community were again invited to provide feedback on the proposed park design. Limited responses where received, with general support for the proposed design outcome.

A summary of submissions is provided within the table under section 4.4 of this REF.

4.2 Stakeholder Consultation

HCCDC worked closely with the Darkinjung Local Aboriginal Land Council throughout the design process to ensure that culturally significant sites will not be disturbed, and to draw on their stories and knowledge within the region. Central Coast Council representatives were also heavily involved in the design evolution process.

Part 2, Division 1 (Consultation) of the Infrastructure SEPP, outlines the requirements for consultation for works undertaken under the provisions of the SEPP. This requirement and the outcomes of this consultation is considered further in section 5.5.1.2.

The engagement process is discussed below.

4.3 **Project Workshops**

The design workshops focused on inviting collaboration and discussion from the major consultant teams, Turf and key stakeholders, being Central Coast Council, Darkinjung Local Aboriginal Land Council and HCCDC. These workshops focused on developing the design from concept to reality and used the specialist information of relevant parties to evolve the design to a technically functioning form.

4.3.1Workshop One

The initial workshop, held on 7 November 2018 presented the four approaches to the site to HCCDC, Darkinjung and Central Coast Council representatives. The presentation focused on exploring and understanding potential relationships between key elements of the park. The key themes that drove these design options were presented and discussed, allowing participants





to understand the reasoning for anchoring the design elements in their respective configurations. The following outcomes were a result of this workshop:

- 1. Findings and initial themes were shared heritage, public art, placemaking and landscape architecture.
- 2. The workshop facilitated a creative and engaged discussion about the potential of the park.
- 3. It was agreed that the park needs to be locally-focused, accessible, amenable, and a real draw card for Gosford a delightful place.
- 4. Three approaches were explored.
- 5. Approach 3 was preferred. Community node as the 'heart' of the park and a transitional zone, which connects other parts of the program, complexities of spaces ('park rooms') seen as an asset, and opportunity for play and park to be an experiential destination.

4.3.2Workshop Two

At the second workshop, which was held on 22 November 2018, four design options were presented to key stakeholders: Darkinjung, HCCDC and Central Coast Council. These options were available for discussion and deliberation.

- Option 1: On the Green a focus on open space for activities with field as central focus.
- Option 2: State of Play An emphasis on immersive play (rain gardens and nature play) down the western side.
- Option 3: Our Meeting Place A spectrum of common places including civic plaza and social lawns.
- Option 4: A Living Landscape A reflection of the natural surroundings with elements and forms such as mounds, sand and shoreline.

At the conclusion of the workshop, Option 4: A Living Landscape, emerged as the favoured option for development.

4.3.3Workshop Three

The preferred option ('A Living Landscape'), was further refined in preparation for Workshop 3. This workshop invited discussions from key technical consultants, including public art, lighting, costing, soils, traffic, heritage, mechanics and arrangement of the tidal terrace area.

4.3.4Workshop Four

In preparation for workshop 4, further development was made on the preferred concept. The developed concept held the strengths of the preferred option, while exploring adjustments to orientation of the amenities building and other park elements. Also presented were conceptual developments focused on the tidal terrace, purpose and layout for the shared street and an indicative planting and material palette. Key stakeholders from HCCDC, Darkinjung and Central Coast Council were involved in these discussions, contributing greatly to the design's further refinement.

4.4 Darkinjung Workshops

Throughout the design process, workshops were held with the design team, notably Darkinjung, Turf, HCCDC and Central Coast Council. These workshops focused on developing a greater understanding of the rich cultural heritage of the Darkinjung, a key component of the brief. In addition to the above stakeholder workshops, four workshops were held with the Darkinjung. A description of the content of each workshop is provided in the tablebelow.



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Workshop	Discussion		
Site visit to	The team were introduced to the sacred rock carving site within the		
Bulgandry	Brisbane Waters National Park. The narrative and significance of the		
Aboriginal Art	creator rock carvings were explained and documented. These rock		
Site, Brisbane	carvings and their narratives were to influence how the tidal terrace		
Waters	would emerge as a design element.		
'My Home, My	The Darkinjung presented the history of their peoples. This history		
Country'	included a brief overview of the importance of water to their		
	livelihood, the role of animal totems and spiritual figures in storylines,		
	the planting seasonal journey from the mountains to the sea and		
	finally the role of the waterhole in culture past and present.		
Nations and Clans	This workshop drew out the six nations neighbouring the Darkinjung		
	and the seven clans within the Darkinjung. Darkinjung representatives		
	engaged in drawing out their respective locations, using the		
	centrepoint of the Community Node as a datum. The resultant		
	composition was to be translated into the design as the location of		
	the 14 sculptural poles around the Community Node.		
Bush Tucker and	By the fourth workshop, the Community Node design was presented,		
Community	discussed and revised. Further discussion emerged around the		
Node	planting and the significance of including bush tucker in the final		


4.5 Consultation Summary

The table below provides a summary of the consultation events that were conducted during the preparation and conception of the Leagues Club Field redevelopment. More detailed coverage is provided in Appendix Q.

Consultation Schedule						
Date	Meeting/ Correspondence	Discussion	Stakeholder Group	Actions by Design Team		
23/11/2018	Workshop 1	Outcomes from the meeting:Separation between park and highway	 Central Coast Council (CCC) Hunter and Central Coast Development Corporation (HCCDC) 	Meeting outcomes were developed into the fourpreferred concepts.		
26/11/2018	Workshop 2	 Overall outcomes: Option 4 was agreed to develop as the preferred concept Consider access point to the park from the Stadium corner along Dane Drive Corner entry along Baker Street to be identified more clearly. 	CCCHCCDCDarkinjung	Option 4 was developed into the preferred conceptplan, entry to along Baker Street was reviewed andmodified.		
4/12/2018	Darkinjung Workshop	General endorsement of preferred concept	Darkinjung	Turf to further develop Indigenous overlay.		
	Workshop 3 –	Overall endorsement of preferred concept, further investigations:Sight lines and views to the bay.	CCCHCCDCDarkinjung	Site lines and views to the bay were investigated, trees were positioned accordingly.		
30/1/2019	Design	 Berm Strategy Berm mounding to be removed from in front of tidal terrace. Amenities Building 	CCC HCCD C	 TDEP removed the mounds along the tidal terrace to create a better connection with the bay. Shared street layout was adopted Agreement to add in fitness equipment location TB 		



	Consultation Schedule					
Date	Meeting/ Correspondence	Discussion	Stakeholder Group	Actions by Design Team		
		 Option 2 Amenities building location agreed (next to the Green) Shared Street Single side parking bays agreed Tidal Terrace Water quality been assessed Can oyster grow? Will sludge get in? General Comments Potential to incorporate Walk of Fame Incorporation of fitness equipment 		 Agreement to locate the Walk of Champions within the park Preliminary Water Quality was assessed. 		
18/02/2019	Gosford Park Darkinjung Meeting	 General endorsement of the design further development of the following: Addition of Indigenous animal shapes the tidal terrace design Integration of Indigenous plants. 	Darkinjun g HCCDC			
25/02/2019	Email feedback from Councils	Queries: • How does it work? • Car parking • Pump system/ cleaning • Kibble park • Amenities building • Water quality • Can we have a system that monitors water quality? • Water and electricity for events	CCC HCCD C	Points have been considered in the design and development process.		

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	Consultation Schedule						
Date	Meeting/ Correspondence	Discussion	Stakeholder Group	Actions by Design Team			
		 Fencing Visual sight lines Cost of project (\$7M) Native vegetation. 					
25/02/2019	Submission received during HCCDC consultation period	 Lack of free parking, limits ability to cater to visitors . Distance from train station. Likely use by low socio-economic residents, homeless and drug addicts -safety and maintenance concerns. 	Community Member	Assisted in informing the final design in accordance with CPTED design principles and safety by design assessment.			
25/02/2019	Submission received during HCCDC consultation period	Support for park and safe enclosed play area for toddlers —such as the playground at Umina beach.	Community Member	The park design has been informed through the 'Everyone Can Play' framework.			
26/02/2019	Submission received during HCCDC consultation period	Support, concerns about parking and maintenance. Play equipment for winter.	Community Member	All park equipment is suitable for use in Winter. All equipment will be managed and maintained by a maintenance program. An example of such has been provided in section 3.5 of this REF.			
26/02/2019	Submission received during HCCDC consultation period	Support; potential to be a wonderful hub for locals and tourists. Some suggestions: 1) Support for water play area for children – consider Vera's Water Garden at The Entrance and the water gates at the Darling Quarter	Community Member	All suggestions have been addressed where possible through design elements, which are discussed in Chapter 3.			



	Consultation Schedule					
Date	Meeting/ Correspondence	Discussion	Stakeholder Group	Actions by Design Team		
		 Shade trees grown slowly. In the meantime use shade cloth over part of the water area. Support covered picnic tables and toilets. Request cafe on the ground level of the tax building that opens directly to the park 				
28/02/2019	Submission received during HCCDC consultation period	Request a City Beach strip from the boat ramp to Central Coast Bar/Restaurant instead of rocks/oysters. Essential to connect this Waterfront concept to Palm Beach with a modern ferry service that can then be connected to the new B Line bus service.	Community Member	The park is separated from Brisbane Water by Dane Drive, which restricts direct waterfront access. In addition, augmentation to public service framework is outside the scope of this redevelopment. It has been established that the site is accessible by the existing public transport network.		
28/02/2019	Submission received during HCCDC consultation period	Not enough parking.	Community Member	Parking has been provided in the extension to Baker Street. A traffic impact and parking assessment has been prepared to support the proposal, which indicates a compliant number of parking spaces for the purposed use.		
6/03/2019	Email feedback from Councils	Queries: • Traffic management • Pedestrian access • Drainage	ССС	Civil Engineer to review and incorporate comments where appropriate.		
9/04/2019	Gosford Park Darkinjung Meeting	 General endorsement of the design: Change of the name for the community node to Norimbah 	HCCDC Darkinjung	Darkinjung to provide information on stories to be told in the park. Provide information on plant species.		



	Consultation Schedule					
Date	Meeting/ Correspondence	Discussion	Stakeholder Group	Actions by Design Team		
		 Art poles to be the totem poles of the seven nations Potential light artwork in the Community Node. 				
10/04/2019	St Hilliers – Coordination Workshop	General endorsement of the design. Baker Street to accommodate through site link form development.	St Hilliers DKO (St Hilliers Development Architect)	Design team to coordinate through site link.		
16/04/2019	Council update meeting: •	 General endorsement of the shared street layout Team to review floor analysis Fencing option 2 was preferred (low visibility from the park). 	CCC HCCD C	Design team to proceed on the general endorsements.		
30/04/2019	Email feedback from Councils	Parking bay minimum width of 2.5 metres. Shared street width, minimum 3 metres, and preferred 3.5 metres.	ССС	Design team updated layout to 2.5 metre parking bays and 3.5 metre wide shared street.		
2/05/2019	 Gosford Parking Darkinjung Meeting Community Node lighting concept was endorsed. Community Node poles are to represent the seven nations as large poles and seven local clans as smaller poles around the 		CCC HCCD C	Turf to develop Community Node design based on nations and local clans concept.		
7/05/2019	Email feedback from Councils	Headwall and tidal terrace queries	ССС	Design team provided response to queries raised by Council.		
16/05/2019	Meeting with CCC Waterways	Further water quality testing is required	CCC HCCD	Design team to put together a water quality testingregime for Councils sign off.		
16/05/2019	Gosford Park Darkinjung Meeting	General endorsement of the design:	CCC HCCD	Design team to further develop planting palate.		



	Consultation Schedu	le		
Date	Meeting/	Discussion	Stakeholder Group	Actions by Design Team
	Correspondence			
		Community Node poles	Darkinjung	
		design generally endorsed		
		• Tidal terrace animal shapes		
		endorsed.		



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5 Statutory Framework

This chapter of the REF outlines the relevant NSW government policies and strategies, regulatory requirements and explains the environmental planning process and approvals process for the proposal's construction and operation. The environmental planning instruments relevant to the construction and maintenance of the proposal are also outlined.

5.1 Approval Pathway & Permissibility

The proposal, as detailed in Chapter 3, constitutes the redevelopment of the existing Leagues Club Field for recreation purposes. The proposed development is classified under planning legislation in accordance with its primary purpose, being to provide a public recreation space for residents and visitors to Gosford. It can be defined as *'recreation area'*:

recreation area means a place used for outdoor recreation that is normally open to the public, and includes:

- (a) a children's playground, or
- (b) an area used for community sporting activities, or
- (c) a public park, reserve or garden or the like,

and any ancillary buildings, but does not include a recreation facility (indoor), recreation facility (major) or recreation facility (outdoor).

5.1.1Permissibility of proposed works

The proposed development is considered to be development permissible without consent, or exempt development, under the provisions of the Infrastructure SEPP, and as such is considered under the provisions of Part 5 of the EPA Act.

The works are being undertaken by HCCDC, defined as a public authority, on behalf of the Central Coast Council. The EPA Act provides that where the approval of one or more determining authority is required in relation to an activity, then the authorities can rely on the environmental assessment of either authority. Therefore, CCC are able to rely on the environmental assessment undertaken by HCCDC prior to the carrying out of works. This applies only to the works that are permissible without consent, with exempt development requiring no formal assessment or approval. However, the exempt development is included within this REF for completeness.

Permissible without	Exempt development	Provision
CONSEIL		
\checkmark		cl.65(3)(a)(i) development for the
		purposes of pedestrian pathways
ace		
\checkmark		cl.125(1) – water reticulation system
		This provides for a system for
		circulating water in and out of the
		artificial waterbody including the
	Permissible without consent √ ace	Permissible Exempt without development ✓ ✓



Key aspect of design	Permissible without	Exempt development	Provision
-	consent	·	
Tidal terrace	\checkmark		cl.65(3)(a)(v) development for the
excavation and			purposes of landscaping
creatures			
Community node	\checkmark		cl.65(3)(a)(v) development for the
area and poles			purposes of landscaping features
			(including art work)
The Hood	\checkmark		cl.65(3)(a)(v) development for the
			purposes of landscaping structures
Culvert sun deck	\checkmark		cl.65(3)(a)(v) development for the
			purposes of landscaping structures and
			features
Playgrounds			
Play Hill	\checkmark		cl.65(3)(a)(v) development for the
			purposes of landscaping
Fishtrap		\checkmark	cl.66(1)(a)(vii) construction and
Playground		1	maintenance of play equipment
Play Mound		\checkmark	cl.66(1)(a)(vii) construction and
			maintenance of play equipment
Ray Maher Playing	\checkmark		cl.65(3)(a)(ii) development for the
	/		purposes of recreation areas
Sloped lawn	V		cl.65(3)(a)(v) development for the
Section Bakar Streat			ol 04/1) development for the purposes
Baker Street	V		of a read
Amonities and attrac	tions		of a foau
Fitness zono			cl 66(1)(2)(vii) construction and
		v	maintenance of play equipment
Picnic facilities			cl 66(1)(a)(viii) construction and
		•	maintenance of seats nichic tables
			hins etc
Walk of Fame	\checkmark		cl.65(3)(a)(v) development for the
			purposes of landscaping features
			(including art work)
Public toilets	\checkmark		cl.65(3)(a)(vi) development for the
			purposes of amenities
Signage and	\checkmark	\checkmark	Schedule 1 Exempt Development –
wayfinding			general – Signs and cl.65(3)(a)(iii)
, 0			development for the purposes of
			information boards
Seating		\checkmark	cl.66(1)(a)(viii) construction and
			maintenance of seats, picnic tables,
			bins etc
Bollards		\checkmark	cl.66(1)(a)(iii) construction and
			maintenance of vehicle barriers



Key aspect of design	Permissible without	Exempt development	Provision
	consent		
Fencing		\checkmark	Schedule 1 Exempt Development –
			general - fences
80sqm non-public		\checkmark	cl. 97(1)(c)(iv) – footpath across the
reserve area			area developed in connection with a
			road, and landscaping works carried
			out in conjunction with exempt
			development under Schedule 1



5.1.2Crown Land



The site is identified as Lot 7035 and 7036 In Deposited Plan 1020068, Lot 5 in Deposited Plan 758466, in addition to Baker Street which is designated as a public road but which has been encompassed in the park. The three lots of the park are Crown Land under management of Central Coast Council. The lots were gazetted for public recreation in 1911 with the exception of an 80sqm portion of Lot 7036, which was excluded from this designation (possibly due to a lease at that time associated with a boatshed and jetty in this location).

The lack of designation of this portion of the site as a public reserve has no implications on the permissibility of the proposed development under the provisions of the ISEPP. The works to this 80sqm section are exempt development associated with the adjacent roadway and not associated with a public reserve designation.

Crown Lands have reviewed the documentation associated with the proposed works and have provided confirmation that they have no comment to make. As the works do not require development consent, owners consent from Crown Lands is not required.





Figure 6: NSW Crown Reserve R1031 – Leagues Club Field



5.1.30ther required consents

5.1.3.1 Roads Act 1993

Under the provisions of the Roads Act 1993, a person must not undertake certain works in connection with a public road without consent of the appropriate roads authority. The development proposes works to underbore the Central Coast highway for the purposes of providing a connection for the water reticulation to the Brisbane Waters. Consent for these works has been provided.

Baker St is shown as a public road on DP 1210298 and was dedicated as public road by Government Gazette on December 16, 1927. Therefore, approval for works to Baker St are required from the relevant roads authority under the *Roads Act 1993* for the carrying out work in, on or over a public road, and dig up or disturb the surface of a publicroad.

The development of Baker Street as a shared street provides connection to Georgiana Terrace in the north and Vaughan Avenue in the south. As neither of these roads are classified roads, consent under s138 of the Roads Act is not required for this connection.



5.1.3.2 Crown Certification

Section 6.28 of the EPA Act provides for the certification of Crown building works to comply with the *Building Code of Australia*. The proposed embellishment of the park does not comprise the development of a building that could be considered under the provisions of the BCA, with the exception of the proposed amenities block. A Crown certificate will be required for these works

The application of relevant legislation and environmental planning instruments is discussed below.

5.2 Environmental Planning and Assessment Act 1979

The proposal comprises an 'activity' for the purpose of Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EPA Act) by application of cl.65(3) of the *State Environmental Planning Policy (Infrastructure) 2007* (section 5.5.1.2). Specifically, cl.65(3) outlines that the proposal is permissible without the need for development consent when carried out by a public authority. As the determining authority for the purposes of Part 5, Division 5.1 of the EPA Act HCCDC must:

- (a) Examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity, in accordance with section 5.5 of the EPA Act, and
- (b) Determine whether or not the activity is likely to significantly affect the environment or is likely to significantly affect threatened species, populations and ecological communities in accordance with section 5.7 of the EPA Act.

Chapter 6 of this REF assesses the likely effect of the proposal on the environment and threatened species, populations and ecological communities. In considering the provisions of sections 5.5 and 5.7 of the EPA Act, no significant impact on the environment or threatened species is deemed to be likely, and therefore neither an EIS nor an SIS is required. Clause 228(2) of the *Environmental Planning and Assessment Regulation* 2000 (EPA Regulation) defines the factors which must be considered when determining if an activity assessed under Part 5, Division 5.1 of the EPA Act has a significant impact on the environment. Chapter 6 of this REF responds directly to the factors for consideration under clause 228.

5.3 Environment Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is Australian Commonwealth legislation that is applied to protect and manage nationally and internationally important flora and fauna, ecological communities and heritage places. Under the EPBC Act, any action that has, would have, or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) on Commonwealth land, triggers the EPBC Act and may require approval from the Commonwealth Minister for Environment. An action may include a project, development, undertaking, activity, or series of activities. If the Commonwealth Minister for Environment determines that an approval is required under the EPBC Act, the proposed action is deemed to be a 'controlled action'. It must then undergo assessment and approval under the EPBC Act before the action is carried out.

A protected matters search was performed by Kingfisher as part of their Ecological Assessment (section 6.8), which indicated the likely presence of *Posidonia australis* seagrass meadows that could have habitat in the area. This is an Endangered Ecological Community, as outlined within the Kingfisher report. Kingfisher concluded that *Posidonia australis* is not present in the area, and that



the proposed works will have no adverse ecological impact on this ecological community or the terrestrial part of the site, which cannot be adequately managed or mitigated. ¹⁴.

5.4 Other NSW State Legislation

In addition to the EPA Act, the proposal has been assessed against the following legislation:

- Biodiversity Conservation Act 2016,
- Contaminated Land Management Act 1997,
- Crown Land Management Act 2016,
- Fisheries Management Act 1994,
- Heritage Act 1977,
- National Parks and Wildlife Act 1974,
- Protection of the Environment Operations Act 1997,
- Roads Act 1993,
- Waste Avoidance and Resource Recovery Act 2011, and
- Water Management Act 2000.

The relevant matters of consideration contained under each presiding Act are discussed in further detail in the following sections of this REF.

5.4.1Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) is applied in relation to animals and plants and not (unless otherwise provided) in relation to fish and marine vegetation. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest wellbeing of the community that is consistent with the principles of ecologically sustainable development.

Section 7.8 of the BC Act applies to an environmental assessment under Part 5 of the EPA Act. For the purposes of Part 5 of the EPA Act, an activity is to be regarded as an activity likely to significantly affect the environment if it is likely to significantly affect threatened species. Although the site is not mapped to contain any land of high biodiversity value or native vegetation, a Biodiversity Assessment Report (Kingfisher, 2019) has been prepared to demonstrate and assess the impact of the proposed activity against the existing locality (refer to section 6.7). This report has been provided in Appendix C. It concludes that the site has low ecological value, no identified threatened species, and will not have a detrimental impact on threatened species or habitats, with reference to the requirements of the Biodiversity Conservation Act.

5.4.2Contaminated Land Management Act 1997

Section 60 of the *Contaminated Land Management Act 1997* (CLM Act) imposes a duty on landowners and other responsible persons to notify the NSW Office of Environment and Heritage (OEH) of known contamination. This includes investigation and remediation if contamination is above EPA standards. Land that would be affected by the proposal has not been declared under the Act as being significantly contaminated, and referral to OEH is not required. Contamination is assessed in section 6.4 of this REF. The site is not expected to contain contaminants at any levels that would preclude the development.

¹⁴ Kingfisher (2019). *Ecological Assessment*. Page 4.



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The *Crown Land Management Act 2016* (CLM Act) commenced on 1 July 2018 and implements reforms identified through the comprehensive review of Crown land management. Crown land is property owned by the State Government for the people of NSW under the care and control of the Minister for Lands. The primary objective of the CLM Act relates to the ownership, use and management of Crown land, to provide clarity concerning applicable law, and to ensure environmental, social, cultural heritage and economic considerations are taken into account in decision-making about Crown land.

The site is currently a Crown Land Reserve (reserve number 46508), known as R1031 – Leagues Club Field. The reserve was gazetted on 19 April 1911 and is managed as a reserve trust, by Gosford Recreation Reserve Trust for the purpose of public recreation.

This site is under the control and management of the Central Coast Council, and therefore may be managed by Council in accordance with s.3.21 of the CLM Act, as if it were public land within the meaning of the Local Government Act 1993 (LG Act). Council is the Crown Land Manager of the Leagues Club Field. Under recent amendments to the CLM Act, it is understood that the land will be classified as community land under the LG Act, and Council will be required to have a Plan of Management (POM) in place for the site.

Council prepared a Plan of Management (POM) applicable to the Leagues Club Field in 1995, whilst noting that the Local Government Act did not [then] require a POM for the site as it is Crown Landⁱ. It is noted that the POM is now over 20 years old, and has uncertain status under the Crown Land Management Act. In conjunction with the review of Crown land under Council management required by the CLM Act, it is expected that the POM for the site will be reviewed. Councils have been granted a three year transition period from the commencement of the CLM Act, to prepare POMs for such land.

The proposed development is consistent with the classification of the land for public recreation and will enhance the ability of the site to provide a recreation venue. It is anticipated that a new POM for the site, prepared in accordance with the CLM Act, will provide enhanced management in line with the present development proposal.

Crown Lands have reviewed the documentation associated with the proposed works and have provided confirmation that they have no comment to make. As the works do not require development consent, owners consent from Crown Lands is not required.

5.4.4 Fisheries Management Act 1994

The Fisheries Management Act (FM Act) aims to conserve, develop and share the fishery resources of NSW, for the benefit of present and future generations. Its objects include the sustainability of commercial fishing, conservation of fish stocks, and the continuation of Aboriginal cultural fishing.

The FM Act applies to Brisbane Waters, adjacent to the park. The proposed development does not alter the application of the Fisheries Management Act to Brisbane Waters, nor its implementation within the Brisbane Waters. There are no known Fishery Management Plans applying to the site or its immediate surrounds.



Part 7A, Division 12 of the FM Act applies to environmental assessment undertaken under Part 5 of the Planning Act. The likely impact of the proposal on threatened species, populations or ecological communities has been assessed within the Biodiversity Assessment Report in Appendix B. It has been determined that the proposal is unlikely to significantly affect threatened species, and an EIS is not required.

5.4.5 Heritage Act 1977

Sections 57 to 59 of the *Heritage Act 1977* (Heritage Act) addresses the requirements for items and places listed on the State Heritage Register (SHR), or which are affected by an interim heritage order. Unless an exemption is granted, the demolition, damage or alteration of a heritage item or place requires the approval of the NSW Office of Environment and Heritage (OEH) under section 60 of the Heritage Act. An example of where an exemption may be granted is if the impact to a heritage item is considered to be minor in nature. As outlined in section 6.2 of this REF, there are no items within the proposed site listed on the SHR.

Under section 139 of the Heritage Act, approval from OEH is required prior to the disturbance or excavation of land if a project will, or is likely to result in, a relic being discovered, exposed, moved, damaged or destroyed. Section 170 of the Heritage Act requires Government agencies to maintain a heritage and conservation register (section 170 register). These registers provide a list of Government assets which may have State or local heritage significance. Section 6.2.2 of this REF provides additional details regarding heritage items that may be impacted as a result of the proposal. The Heritage Impact Statement that has been prepared has concluded that no additional approvals are required as part of the assessment.

5.4.6 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is administered by the Director-General of the National Parks and Wildlife Services, who is responsible for the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others). The main aim of the NPW Act is to conserve the natural and cultural heritage of NSW. Where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required.

Sections 86, 87 and 90 requires consent from OEH for the destruction or damage of indigenous objects. That said, the proposal is unlikely to disturb any artifacts, with further discussion provided under section 6.2.1 of this REF. It is not anticipated that an AHIP will be required for the project. However, if unexpected archaeological items or items of indigenous heritage significance are discovered during the construction of the proposal, all works would cease, and appropriate advice sought.

5.4.7 Protection of the Environment Operations Act 1997

The *Protection of the Environmental Operations Act 1997* (POEO Act) administers environment protection licenses (EPLs) for specific activities relating to air, water and noise pollution, and waste management. The Environment Protection Authority (EPA) and local government, where relevant, administer the POEO Act. Development activities require an EPL under the POEO Act if those activities meet the assessment criteria outlined in Schedule 1 of the Act. Confirmation of the need to obtain a license for the proposal would be determined before the commencement of construction, in consultation with the EPA. Although, at this stage, it is considered unlikely that a license is required.



5.4.8 Roads Act 1993

Under section 138 of the *Roads Act 1993* (Roads Act), consent from the NSW Roads and Maritime Services would be required for the carrying out of work in, on or over a public road. The proposed development involves carrying out of an activity on a public road or connection to a classified road and therefore requires approval under s.138 of the Roads Act 1993. Ongoing consultation would be carried out with the Central Coast Council and/ or RMS as to the potential impacts that may occur to all of the roads along the proposed alignment and to identify any potential consent that may be required.

An approval has been issued by Roads and Maritime Services on 2 May 2019 regarding the installation of a gravity stormwater main; under Dane Drive as part of the Tidal Terrace infrastructure. This approval has been issued under s.138 of the Roads Act 1993 (subject to conditions of consent) to under bore Central Coast Highway and install a 375mm diameter HDPE; pursuant to consent numberfA6891786.

RMS were also consulted in accordance with the provisions of the Infrastructure SEPP, see section 5.5.1.2.

5.4.9 Waste Avoidance and Resource Recovery Act 2011

The purpose of the *Waste Avoidance and Resource Recovery Act 2011* (WARR Act) is to develop and support the implementation of regional and local programs to meet the outcomes of a State-wide strategy for waste avoidance and resource recovery. It also aims to 'minimise the consumption of natural resources and final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste'.

Waste generation and disposal reporting would be carried out during the construction and operation of the proposal. Procedures would be implemented during development in an attempt to promote the objectives of the Act.

A Waste Management Plan for the project has been provided and is within AppendixO.

5.4.10 Water Management Act 2000

The *Water Management Act 2000* (WM Act) has a primary objective to manage NSW water in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. The WM Act is administered by NSW Natural Resource Access Regulator (NRAR) (previously Department of Primary Industries: Office of Water) and establishes an approval regime for activities within waterfront land.

Controlled activity approval is typically required for work within 40 meters of the highestbank of a river, lake or estuary. Section 91E of the WM Act creates an offence for carrying out a controlled activity within waterfront land without approval. Under s.41 of the Water Management (General) Regulations 2011, public authorities are exempt from obtaining a controlled activity approval; therefore, no approvals are required under this Act. That said, the objectives of protecting water sources are still relevant.

5.5 Environmental Planning Instruments

The *Environmental Planning and Assessment Act 1979* (EPA Act) provides the legislative framework for the assessment and approval of development throughout NSW. An assessment of the proposal has been undertaken and the following Environmental Planning Instruments



(EPIs) must be considered:

- Environmental Planning and Assessment Regulation 2000,
- State Environmental Planning Policy No. 55 Remediation of Land,
- State Environmental Planning Policy (Gosford City Centre) 2018,
- State Environmental Planning Policy (Coastal Management) 2018,
- State Environmental Planning Policy (State and Regional Development) 2011,
- State Environmental Planning Policy (Infrastructure) 2007, and
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.

5.5.1 State Environmental Planning Policies

5.5.1.1 Gosford City Centre SEPP

The *State Environmental Planning Policy (Gosford City Centre) 2018* was enacted by the Department of Planning and Environment to establish statutory controls that recognise the state-significant importance of Gosford as a regional capital.

Clause 1.9(1) of the Gosford SEPP states that *in the event of an inconsistency between this Policy and another environmental planning instrument, whether made before or after this Policy, this Policy prevails to the extent of the inconsistency; with the exception of the SEPP (State and Regional Development) 2011. It is noted that the development has been classified under the Infrastructure SEPP above, as being permissible without consent due to being carried out on behalf of a public authority. The Infrastructure SEPP also states that it prevails over any other environmental planning instrument, to the extent of any inconsistency (refer to clause 8(1), with the exceptions noted in clauses 8(2) which are not relevant to this proposal). Where two environmental planning instruments of the same type are inconsistent, the EPA Act states at s.3.28(1)(c) that "the general presumptions of the law as to when an Act prevails over another Act apply to when one kind of environmental planning instrument planning instrumental plann*

Both the Infrastructure SEPP and the Gosford SEPP provide assessment frameworks for development on the site. The Infrastructure SEPP provides a planning assessment framework which is applicable to development by or on behalf of a public authority, as per its specific role in the State planning framework. The Gosford SEPP, whilst applying directly to the site and its surrounds, provides a general planning assessment framework applicable to proponents other than public authorities. As such there is strictly no inconsistency between the SEPPs. The planning assessment framework applicable to the proposal is that construed under the Infrastructure SEPP, applicable to development by public authorities. The Gosford SEPP has been considered below as a guide to appropriate development frameworks. It assists and informs, but does not replace, the environmental impact assessment contained within Part 6 of this REF.

The Gosford City Centre SEPP is constructed similarly to a Local Environmental Plan (LEP), which includes, but is not limited to:

- Land Use Table,
- Principle development standards (Part 4),
- Miscellaneous provisions (Part 5),
- Additional local provisions (Part 7), and
- City Centre specific controls (Part 8).



The site is zoned under the Gosford City Centre SEPP as both RE1 Public Recreation (north portion) and B4 Mixed Use (southern part, being the southern extension of Baker Street and land to the east of that extension). The Central Coast Highway is zoned as SP2 Infrastructure (Road), and the adjacent Brisbane Waters zoned W2 Waterways, under the SEPP. These zones are shown on the plan, in Figure 7. Whilst the development would be permissible with consent within the relevant zones, it has been classified under the Infrastructure SEPP as permissible without consent, as discussed above.



Figure 7 Zoning (Gosford City Centre SEPP, SEPP_GCC_LZN_001_012_20180612)

Clauses contained in the Gosford City Centre SEPP that should be considered as part of any future development on site include:

- Clause 4.1 Minimum lot size,
- Clause 4.3 Height of buildings,
- Clause 4.4 Floor space ratio,
- Clause 5.12 Infrastructure development and use of existing buildings of the Crown,
- Clause 7.1 Acid sulfate soils,
- Clause 7.2 Flood planning,
- Clause 8.3 Design excellence
- Clause 8.4 Exceptions to height and floor space in Zones B3, B4 and B6,
- Clause 8.5 Car parking in Zones B3 and B4, and
- Clause 8.10 Solar access to key public open spaces.

Each clause is discussed in further detail within the table below.



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Table 2Gosford City Centre SEPP

Clause	Control	Application
Clause 4.1 Minimum lot size	The site does not have a mapped minimum lot size under the Gosford City Centre SEPP.	Clause 4.1 does not apply to the future development of the site.
Claus 4.3 Height of Buildings	The site is not mapped to have a maximum building height under the Gosford City Centre SEPP.	Clause 4.3 does not apply to the future development of the site.
Clause 4.4 Floor Space Ratio	The portion of the site zoned B4 Mixed Use, is mapped to have a floor space ratio of 3.5:1.0 under the Gosford City Centre SEPP.	The floor space ratio does not exceed the ratio calculated in accordance with '2+ (X x 0.02): 1.0. Where X is the percentage of the gross floor area of the building that is used for a purpose other than residential.
Clause 5.7 Development below mean high water mark	The objective of cl.5.7 of the Gosford City Centre SEPP is to ensure appropriate environment assessment for development carried out on land covered by tidal waters.	This clause requires development carried out on land below the mean high water mark to require development consent Although the Gosford City Centre SEPP identifies that consent is required by land below the mean high water mark, the proposal is permissible without consent; with the application of cl.125(1) under the Infrastructure SEPP. This is made possible because the application is made on behalf of a public authority.
Clause 5.12 Infrastructure Development	This Policy does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under State Environmental Planning Policy (Infrastructure) 2007.	Refer to section 5.5.1.2.
Clause 7.1 Acid Sulfate Soils	The site is mapped under the Gosford City Centre SEPP to contain Class 2 Acid Sulfate Soils (ASS).	Works below the natural ground surface or works by which the water table is likely to be lowered will need to be accompanied by an acid sulfate soils management plan. An Acid Sulfate Soil Management Plan has been prepared for the



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Clause	Control	Application
		site with specific details provided in section 6.10.4.
Clause 7.2 Flood Planning	The site is mapped to be partially affected by Storm Surge Flooding and Catchment Flooding, according to the Gosford Flood Mapping tool.	Development consent must not be granted on land to which this clause applies unless the consent authority is satisfied that the development addressed cl.7.2(3) of the Gosford City Centre SEPP. A Flood Impact Assessment has been prepared for the site (see section 6.14.4).
Clause 8.3 Design Excellence	In considering whether the new development exhibits design excellence, the consent authority must have regard to the cl.8.3(4) under the Gosford City Centre SEPP.	This clause applies to development involving the erection of a new building or external alterations to an existing building.
Clause 8.4 Exceptions to Height and Floor Space	The portion of the site zoned B4 mixed use is less than 2,800m ² . Consequently, cl.8.4(2) applies to this portion of the site.	The floor space ratio does not exceed the ratio calculated in accordance with '2+ (X x 0.02): 1.0. Where X is the percentage of the gross floor area of the building that is used for a purpose other than residential.
Clause 8.5 Car Parking in Zones B3 and B4	Development consent must not be granted for development on land zoned B4 Mixed use that involves the erection of a new building or alteration or addition to an existing building that increases the gross floor area of the building, unless the development is consistent with cl8.5(1)	At least one car parking space is provided for every 75m ² of the gross floor area of the building that is to be used for commercial activities, and At least one car parking space is provided for every 40m ² of the gross floor area of the building that is to be used for retail premises. A Traffic and Parking Assessment has been prepared in support of the proposal, with all particulars included in section 6.10.4.
Clause 8.10 Solar Access to Key Public Open Space	Cl.8.10 applies to land identified as 'Leagues Club Field', which is the site related to this application.	A development consent may be granted to development, if the development will not result in any more than 30% of the field receiving less than 4 hours of sunlight between 9 am and 3 pm at the winter solstice (21 June).

In addition to the applicable clauses contained in the table above, the site is subject to an additional permitted use included in Schedule 1 of the Gosford City Centre SEPP. Item (2) of Schedule 1 applies to the certain land identified as the Leagues Club Field. Development for





recreation facilities (major) and recreation facilities (outdoor) are permitted with development consent, pursuant to Schedule 1.

5.5.1.2 Infrastructure SEPP

As identified in section 5.5.1.1 above, the works to redevelop the park are variously development permissible without consent or exempt development under the provisions of the Infrastructure SEPP. Consequently, development consent is not required for the proposal, however, the environmental impacts of the proposal are required to be assessed under the provisions of Part 5, Division 5.1 of the EPA Act.

Consultation Requirements

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with local Councils and other agencies before the commencement of certain types of development. This identifies that HCCDC is required to consult with Central Coast Council and Roads and Maritime Services. In addition, the public authority is required to take into consideration any response that is received within 21 days of the issued notice.

Consultation with Councils

Clause 13 of the Infrastructure SEPP applies to development carried out by or on behalf of a public authority that the Infrastructure SEPP provides, may be carried out without consent if, in the opinion of the public authority, the development:

- (a) will have a substantial impact on stormwater management services provided by a council, or
- (b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or
- (c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council, or
- (d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council, or
- (e) involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential, or
- (f) involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the Roads Act 1993 (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath).

The proposal is likely to involve the temporary enclosure of a public place that is under Central Coast Council's management and control. This will inevitably disrupt usual pedestrian and vehicular traffic that is not minor or inconsequential. As a result, the public authority is required to give written notice of the intention to carry out the development to Central Coast Council.

Clause 15 of the Infrastructure SEPP stipulates a requirement for a public authority to consult with the local Council (being Central Coast Council), in the event the proposed activity will change flood patterns other than to a minor extent. The inclusion of the tidal terrace may change the local flood patterns (as suggested in the Marine ecology assessment – refer to section 6.7) that currently impact the subject site.



As a result, HCCDC is required to give written notice to Central Coast Council of the intention to carry out the development, and take into consideration any response that is received within 21 days after the notice is given.

This notice of the intention to undertake the works to develop the Leagues Club Field was issued to Central Coast Council on 11 June 2019. This notice was accompanied by the draft REF, supporting studies, and draft plans. The comments received in response to this notice have been summarised within Appendix Q, with responses provided.

Consultation with State Emergency Services

Clause 15AA under the Infrastructure SEPP requires a public authority to consult with the State Emergency Services, in the event development is carried out on flood liable land without consent. Although, the cl.15AA further states that this consultation provision is only required in the event of development sought under a relevant provision of the Infrastructure SEPP.

The relevant provisions applicable to this proposed includes Division 12 (Parks and Other Public Reserves) and Division 24 (Water Supply Systems). Neither Division is identified as a relevant provision for the purpose of cl.15AA. As a result, even though the development is on flood liable land, consultation is not required with the State Emergency Services.

Consultation with Public Authorities

Consultation requirements for development made by or on behalf of a public authority must be carried out in accordance with the provisions contained under cl.16 of the Infrastructure SEPP. Whereby a public authority, or a person acting on behalf of a public authority, must not carry out specified development that the Infrastructure SEPP provides unless they have:

- (a) Given written notice of the intention to carry out the development (together with the scope of works) to the specified authority in relation to the development, and
- (b) Taken into consideration any response to the notice that is received from that authority within 21 days after the notice is given.

For additional clarity, the following development is specified development under cl.16(2) and the following authorities are specified authorities in relation to that development:

(e) development comprising a fixed or floating structure in or over navigable waters -Roads and Maritime Services,

As a result, because the proposal seeks to construct a pipe into Brisbane Water, which is defined as a navigable water body under the Navigation Act 1901, consultation was required with the Roads and Maritime Services.

A notice of intent to undertake the works was sent to RMS on 11 June 2019, along with draft plans, REF and supporting reports. A response was received on 16 July 2019 which raised no objection to the proposal and provided advice in relation to the construction of the project which has been incorporated into this REF as relevant.

In addition to RMS, notice was also given to Crown Lands as owners of the site who advised that there was no objection to the proposal. NSW Health were also consulted as a matter or courtesy with no response received.



5.5.1.3 Remediation of Land SEPP

The objective of *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55) is to provide a State-wide planning approach to the remediation of contaminated land. In particular, this Policy aims to promote the remediation of land to reduce the risk of harm to human health or any other aspect of the environment, by means stated in cl.2(2) of the SEPP.

Pursuant to cl.7 of the SEPP, the consent authority must consider whether the land is contaminated. There is no information to suggest that the site is contaminated, or that it is not suitable for its 'intended purpose'. Data was collected concerning the historical use of the site from Crown Lands and Central Coast Council to confirm if any potential contamination may exist. This information formed part of the detailed site investigation, which was undertakento ensure the site is suitable for its intended purpose. This investigation confirmed that some contamination exists on site; however it concluded that this could be suitably remediated to ensure the site was suitable for its intended purpose. A detailed review of the DSI is included in section 6.4.

5.5.1.4 Coastal Management SEPP

The aims of *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects contained under the *Coastal Management Act 2016*.

The site is mapped in the Coastal Environment and Coastal Use area pursuant to the Coastal Management SEPP. The proposal will need to address the matters of consideration contain under cl.13 & 14. The purpose of clauses 13 and 14 are for the consent authority to be certain that the proposed development will not pose an adverse impact on the following:

- *(i) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,*
- (ii) coastal environmental values and natural coastal processes,
- (iii) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- *(iv)* overshadowing, wind funneling and the loss of views from public places to foreshores,
- (v) The visual amenity and scenic qualities of the coast, including coastal headlands,
- (vi) Aboriginal cultural heritage, practices and places, and
- (vii) Cultural and built environment heritage.

It is not anticipated that the proposed development will cause a significant adverse impact on the integrity of the biophysical, hydrological and ecological environment. As discussed in section 6.7.2, 6.10 & 6.14 the potential impacts of water displacement have been mitigated on site. It is therefore considered that the development proposal does not pose any adverse impact on points (i) and (ii) stated above.

The site does not provide direct access to the foreshore, beach, headland or rock platform, addressing the requirement of point (iii). Although, the pipe that is proposed as part of the tidal terrace will involve works along the waterfront. This impact has been discussed in section 6.7.2,



which includes management and mitigation measures. In addition, a disability access assessment has been conducted to ensure that the redevelopment is suitable for all people with a disability; in accordance with the 'everyone can play' guideline, refer to section 6.11.

It is considered that the proposal does not generate a loss of view. Instead, the redevelopment will create a more vibrant public space, as discussed in section 3.2.6; the development does not require further consideration in relation to point (iv). Point (v) relates to impacts on the existing visual amenity. The new urban civic park will closely link the history of the Gosford waterfront and interpret the significance of the original creek with the indigenous local community and culture. The design has incorporated a hierarchy of open spaces to cater for all ages with a modern iconic design for active and sporting recreational activities. Also, the recreated space has considered the provision for the future connection of the open space to the waterfront, to the west via the Central Coast Stadium and to the east via Poppy Park. The Gosford Leagues Club Field will provide a state-of-the-art place for visitors to stop, stay and explore. The park is envisioned to create an iconic gateway to the Gosford City Centre, while reconnecting the park to the waterfront and bay beyond. It is believed that the redevelopment creates a positive impact on the visual amenity and scenic qualities of the area and should be considered compliant with regard to point (v).

Points (vi) and (vii) require the consent authority to consider the impact of the proposal on Aboriginal cultural heritage, practices and places, as well as the cultural and built environment heritage. Throughout the design process, workshops were held with the design team, notably the Darkinjung, Turf, HCCDC and Central Coast Council. These workshops focused on developing a greater understanding of the rich cultural heritage of the Darkinjung, a key component of the brief. It is important to note that four workshops were held with the Darkinjung (refer to section 4.3).

GML Heritage (GML) was engaged on behalf of the Proponent to prepare a Heritage Impact Statement (HIS) to support the redevelopment of the Gosford Leagues Club. The HIS included an assessment of the impact of the proposal on the locally listed heritage items in the vicinity of the site, a Due Diligence Report for Aboriginal Archaeology (section 6.2.1) and a Historical Archaeology Assessment (section 6.2.2). A search of the OEH Aboriginal Heritage Information Management System (AHIMS) database was performed by GMS for a 1 km radius surrounding the study area on 16 January 2019. The results of the search are provided in section 6.2.1. Based on the information provided and taking into account the proposed mitigation measures contained within the HIS it is not considered that the proposal is likely to have an impact on the aspects of Aboriginal Heritage. Consequently, the proposal is considered consistent with point (vi) & (vii) of the Coastal Management SEPP.

5.5.1.5 State and Regional Development SEPP

The *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional SEPP) aims to identify development that is State or regionally significant development.

5.5.1.5.1 State Significant Infrastructure

Clause 14(1) of the State and Regional SEPP states:

Development is declared, pursuant to section 5.12(2) of the Act, to be State Significant infrastructure for the purposes of the Act if:

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- (a) The development of the land concerned is, by the operation of a State environmental planning policy, permissible without consent under Part 4 of the Act, and
- (b) The development is specified in Schedule 3.

Item 1 of Schedule 3 of the State and Regional SEPP relates to 'General public authority activities', where subcl. (1) states:

Infrastructure or other development that (but for Division 5.2 of the Act and within the meaning of Part 5 of the Act) would be an activity for which the proponent is also the determining authority and would, in the opinion of the proponent, require an environmental impact statement to be obtained under Part 5 of the Act.

For completeness, subcl.(2) indicates that this scheduled item does not apply to development if the proponent is a Council or County Council.

To determine whether the proposal would be defined as State Significant Infrastructure, both conditions of cl.14(1) need to be true. Therefore, If the proposal seeks consent through the application of cl.65(3) of the Infrastructure SEPP (refer to section 5.5.1.2) then the proposal satisfies cl.14(1)(a).

The requisites for a proposal to be consistent with Item 1 under Schedule 3 of the State and Regional SEPP are:

- 1) Be infrastructure or development that is activity consistent with Part 5 of the Act,
- 2) The proponent must also be the determining authority, and
- 3) The proposal must require an environmental impact statement to be obtained under Part 5 of the EPA Act.

Criteria (1) is satisfied if the proposal is prepared pursuant to cl.65(3) of the Infrastructure SEPP. In respect to Criteria (2), HCCDC is a public authority and also the proponent for the project. Criteria (3) states that the proposal must require an EIS under Part 5. In this regard Part 5 (cl.5.7(1) states

A determining authority shall not carry out an activity, or grant an approval in relation to an activity, being an activity that is a prescribed activity, an activity of a prescribed kind or an activity that is likely to significantly affect the environment

At this stage, it is not considered that the activity is prescribed (or prescribed kind of activity) and is not likely to have a significant effect on the environment. In conclusion, the proposal is not identified as State Significant Infrastructure in accordance with the requirements contained under Part 3 of the State and Regional SEPP.

Regionally Significant Development

Part 4 of the State and Regional SEPP identifies requirements for developments to be categorised as 'regionally significant'. As such, development that is specified in Schedule 7 is declared to be a regionally significant development for the purposes of the Act.



That said, if the proposal is considered permissible without consent by application of cl.65(3) of the Infrastructure SEPP, the proposal is not declared to be regionally significant; pursuant to cl.20(2)(b) of the State and Regional SEPP.

Vegetation in Non-Rural Areas SEPP

The *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* (Vegetation SEPP) aims to protect the biodiversity values of trees and other vegetation in non-rural areas, as well as, to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

Pursuant to cl.7 of the Vegetation SEPP, a person must not clear native vegetation in any nonrural area of the State to which Part 3 applies without the authority conferred by a permit granted by Council under that Part. That said, the site is not mapped to have any outstanding biodiversity value, and approval is sought under cl.65(3) of the Infrastructure SEPP which overrides any other environmental planning instrument in the event of any inconsistency. The potential environmental impact of the proposal has been assessed under the provisions of Part 5 of the EPA Act, below. Biodiversity impacts have been specifically assessed within the Biodiversity Assessment Report in Part C. Further approvals are not required under this SEPP.

5.5.2 Local Environmental Plan

The subject site is located in the Gosford Central Business District, within the Central Coast Local Government Area (formerly the Gosford LGA). As a result, the Gosford Local Environmental Plan 2013 is the relevant plan. The Gosford LEP has been superseded by the enactment of the Gosford City Centre SEPP. This is conferred through the application of cl.1.8 of the Gosford City Centre SEPP, which states:

(1) All local environmental plans and deemed environmental planning instruments applying only to the land to which this Policy applies are repealed.

As a result, any future development within the application area of the Gosford City Centre SEPP is exempt from the application of the Gosford LEP 2013.



6 Environmental Assessment & Mitigation Measures

This Chapter provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. For each potential impact, the existing environment is characterised and then an assessment is undertaken as to how the proposal would impact on the existing environment.

6.1 Arborist Assessment

Australis Tree Management (ATM) were engaged by Turf Studio on behalf of HCCDC to complete an Arboricultural Impact Assessment (AIA). The AIA aimed to identify the health and condition of the trees, potential impacts from the proposed works, as well as provide recommendations regarding tree retention, protection and removal.

6.1.1 Methodology

The AIA was completed pursuant to the following standards and guidelines:

- AS 4970-2009 Protection of trees on development sites.
- AS 4373-2007 Pruning of amenity trees
- Tree Survey Form¹⁵
- Visual Tree Assessment¹⁶

A site visit was undertaken by ATM on 5 November 2018, which took approximately three hours. All observations were from ground level without a detailed investigation. It was noted that all trees in question are located around the boundaries of the site.

6.1.2 Discussion

The assessment reviewed 78 trees throughout the project area. The following discussion identifies the trees that are proposed for retention, as well as the trees proposed for removal; to accommodate the proposal.

Proposal	Identification	Tree Number
Retention	<i>Pheonix canariensis</i> (Canary Island Date Palm)	1, 2, 3, 4 and 5.
	<i>Pheonix canariensis</i> (Canary Island Date Palm)	47, 48, 49 and 50
Removal	<i>Phoenix canariensis</i> (Canary Island Date Palm)	6-13, 15-17, 22-29, 27-33, 35-40, 42- 46 and 51-53
	<i>Phoenix canariensis</i> (Canary Island Date Palm)	14, 18, 23-26, 34 and 41.
	Eucalyptus microcorys (Tallowwood)	54
	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	55
	Syzgium sp (Lilly Pilly)	56

¹⁶ Mattheck & Breloer (1994).



¹⁵ Matheny & Clark (1994).

Proposal	Identification	Tree Number
	Syzygium luehmannii (Lilly Pilly)	57 & 58.
	<i>Lophostemon confertus</i> (Queensland Brush Box)	59, 60, 63, 65, 67, 69 and 71-78
	<i>Syncarpia glomulifera</i> (turpentine)	61
	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	62
	<i>Chamaecyparis obtuse</i> (Hinoki Cypress)	64, 66 and 68
	<i>Corymbia citridora</i> (Lemon-scented Gum)	70

6.1.3 Tree Protection Mitigation Measures

ATM provided these tree protection measures for the trees identified and selected for retention, including any tree located on adjoining property.

6.1.3.1 Tree Protection

The following mitigation recommendations are proposed by ATM for any works conducted within the TPZ, in attempt to ensure tree protection:

- All tree parts must be protected, including roots, trunks and branches.
- If working within TPZ, trunk protection shall consist of hessian or padding wrapped around the trunk, two metre lengths of timber (100 x 500mm) spaced at 100-150mm centres secured together with 2mm galvanised wire. These shall be strapped around the trunk and not fixed to the tree in any way to avoid mechanical injury or damage.
- Fencing A 1.8m chain wire fence with concrete footings placed in accordance to tree protection zones and AS 4687. The TPZ distances are located within the tree schedule.
- Signage '*Tree Protection Zone. No Entry*'. With project arborist contact details to be attached to the protective fencing.
- When machinery movements are required within the TPZ, then a geotextile permeable membrane to be laid under mulch or crushed rock must be installed.
- Activities generally excluded from the TPZ include, but not limited to:
 - o Machine excavation including trenching,
 - o Excavation for silt fencing,
 - o Cultivation,
 - o Storage.
 - o Preparation of chemicals, including preparation of cement products,
 - Parking of vehicle and equipment,
 - o Refueling,
 - o Dumping of waste,
 - o Wash down and cleaning of equipment,
 - o Placement of fill,
 - Lighting of fire,
 - o Soil level changes,
 - o Temporary or permanent installation of utilities and signs, and
 - o Physical damage to the tree.



- All construction scaffolding must be erected around all branches not approved for pruning/ removal.
- Any pruning required must be in accordance with AS 4373-2007.
- Mulch Within the TPZ fencing 75mm of composted organic mulch must be applied to help retain moisture levels, suppress weed growth and reduce tree stress.
- Irrigation All trees must be thoroughly watered regularly throughout the development process.
- Tree damage If any tree is damaged the project arborist should be notified, engaged to inspect and provide advice, as well as written documentation to be supplied to the certifying authority.
- Tree monitoring schedule:
 - During site occupation, all TPZs and trees must be monitored, assessed and recorded by the project arborist.
 - Any work that must occur within a TPZ must be witnessed and directed by the project arborist.
 - In the event that any tree is declining in health the project arborist shall be engaged to supply written remedial applications that must be applied immediately.

6.1.3.2 Excavation Within Tree Protection Zones

Specific mitigation measures have been proposed by ATM, for excavation works conducted within the TPZ, including:

- Monitoring:
 - Roots measuring over 40mm in diameter must not be pruned within the Structural Root Zone unless directed by the project Arborist only.
 - Roots measuring over 40mm in diameter within the Tree Protection Zone and outside the Structural Root Zone may be pruned at the discretion of the project Arborist.
 - Root exposure must be applied with hand tools or air spade to prevent damage to the root system.
 - Root pruning can be performed by a level 3 Arborist or higher.
 - All pruning equipment must be sharp and clean. Secateurs, loppers or pruning saws should be used and can be cleaned with methylated spirits to prevent disease and pathogen spread.
 - \circ \quad Bolt or wire cutters must not be used for root pruning.
- Root Care:
 - Any roots exposed must be wrapped or covered with hessian or cloth and kept moist to prevent drying out and sunburn until backfilling occurs.
 - Backfill must be watered in and mulched with composted leaf mulch.

6.1.4 Conclusion and Recommendations

Phoenix canariensis (Canary Island Date Palm) no 1, 2, 3, 4 & 5 are located in the northern area of the park and are identified to be retained. They are mature in age, as well as good in health. ATM recommend no excavation within 1.5 metres of each trunk and apply tree protection measures; previously discussed in section 6.1.3. Further discussion is contained within the Arborist Report in Appendix A.





6.2 Aboriginal and European Heritage

GML Heritage (GML) was engaged on behalf of the Proponent to prepare a Heritage Impact Statement (HIS) to support the redevelopment of the Gosford Leagues Club. The HIS included an assessment of the impact of the proposal on the locally listed heritage items in the vicinity of the site, a Due Diligence Report for Aboriginal archaeology (section 6.2.1) and a Historical Archaeology Assessment (section 6.2.2). The HIS has been included within Appendix J.

6.2.1 Aboriginal Due Diligence Assessment

The Aboriginal Due Diligence Assessment included an assessment of the potential impact on Aboriginal Archaeology¹⁷. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The study area consists of the original shoreline of Brisbane Water, composed of quaternary sands and gravels, which would create a favourable environment for the growth of bioregions. The diverse environment, coupled with the fertile estuarine environment of the Brisbane Water would have been favorable for Aboriginal communities.

Aboriginal cultural heritage in New South Wales is principally managed under the *National Parks and Wildlife Act 1974* (NPW Act). Under this Act, the Director-General of the Office of Environment and Heritage (OEH) is responsible for the care and protection of all Aboriginal Objects and places in NSW.

6.2.1.1 Aboriginal Heritage Information Management System (AHIMS)

A search of the OEH Aboriginal Heritage Information Management System (AHIMS) database was performed by GMS for a 1 km radius surrounding the study area on 16 January 2019. The results of the search are provided in Table 3 and Figure 8.

Site Feature	Frequency	Percentage
Midden	15	23
PAD	3	5
Artefact Site	2	3
Art Site	30	46
Art Site with Other	1	1
Art Site with Grinding Groove	6	9
Art Site with Midden	1	1
Grinding Groove	4	6
Grinding Groove with Other	4	5
Total	66	100

Table 3: Aboriginal Heritage Information Management SystemResults

¹⁷ GML (2019). *Heritage Impact Statement and Aboriginal Due Diligence Assessment*.. Job No. 18-05119. Issued 25 January 2019. Page 21



The search identified that there are artefact sites and potential deposits near the study area. Additionally, the study area encompasses the original Brisbane Water shoreline, which has the potential to be intact due to the infill for the current shoreline.

Figure 8: (Top) Wider context of Aboriginal sites surrounding Brisbane Water. (Bottom) Study area showing the original shoreline and nearby registered AHIMs sites¹⁸.



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6.2.1.2 Potential Impacts

This section outlines the potential impacts to Aboriginal archaeology by the proposed works and what may be done to mitigate any impacts. The following impacts have been identified by GML as part of the HIS¹⁹:

- Excavation of the former creek line and any other area of the park has the potential to reach the original shoreline of Brisbane Waters. While the creek itself was piped in the 1950s, the foreshore along the eastern side of Brisbane Waters was reclaimed and covered with fill.
- Proposed works in the park have the potential to impact or destroy midden material around the original creek mouth and along the shoreline. A southern extension of Baker Street to the existing wharf may impact the shell material.
- The cultural, aesthetic and social values of the study area, in association with the regional landscape, may be affected by the proposed works.

6.2.1.3 Mitigation Measures

- Midden shell is afforded statutory protection under the *National Parks and Wildlife Act* 1974 (NPW Act) as shell midden '*provides the greatest insight we have into the past* Aboriginal food economy'²⁰ and as such must not be harmed.
- All works in the area of fill can proceed subject to caution. If any shell is observed below the reclamation level (into natural ground), work must cease, the shell must be assessed and, if a midden, an Aboriginal Heritage Impact Permit (AHIP) under the NPW Act must be obtained.
- Any works that impact areas of the original shoreline or former creek line and the construction cut and fill for the historic pipeline are likely to encounter the shell, which should be treated as a midden. Ideally, this work should not proceed without an AHIP.
- If any work to open up the former creek line along the shoreline does proceed, then it will need to be archeologically supervised by the Local Aboriginal Land Council and an archeologist.
- Mitigation measures for the social, cultural and aesthetic values of the area will include consultation with the local Aboriginal community regarding park design and excavation adjacent to the original creek and shoreline²¹.

6.2.1.4 Conclusion

Based on the information provided and taking into account the proposed mitigation measures it is not considered that the proposal is likely to have an impact on the aspects of Aboriginal Heritage that cannot be suitably managed or mitigated.

6.2.2 European Heritage Assessment

After the official survey and naming of Gosford in 1839 as a government town, two villages developed in parallel, with East Gosford run as a private town. Three years before the survey of Gosford, Brisbane Water was gazette as a place to hold Courts of Petty Sessions in 1836²². The 1839 plan of Gosford shows a Polices Constable's House on the northeastern third of the

 ²⁰NSW Government (2010). Environment, Climate Change and Water. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. Part 6 National Parks and Wildlife Act 1974.
 ²¹NSW Architect (2018). *Urban Design Implementation Framework Place Report 3 – City South*.
 ²²Ibid 17, Page 14.



¹⁹ Ibid 17. Page 45.

study area. Police were stationed in the area from the 1840s with the Gosford Police Station located on the corner of Mann Street and Georgiana Terrace²³.

The 1870 Crown plan shows the land was officially reserved as a 'Police Paddock and Pound', without any buildings on the site. In 1901, the land was gazetted as a *Reserve for Public Recreation*²⁴. Historical images included in the HIS show that in the early twentieth century the land had been fenced but was otherwise unimproved. In 1911, correspondence to Gosford City Council discussed the resumption of the police paddock for a park. Land excised on the western end was set up as a park and fencing likely removed. Reclamation along the foreshore by the mid-twentieth century had resulted in the creation of the park as it exists today.

6.2.2.1 Heritage Items in the Vicinity

The listed archaeological items in the vicinity of the subject site are set out in the table below. These are further detailed in Appendix J.

ltem No.	Site Name	Address
A8	Gosford Wharf Site	Dane Drive
A9	Rotary Club Fountain and Garden (Original Gosford Wharf Location)	Off Vaughan Avenue, below Memorial Park
A25	Footings of former sergeant's residence/ police station.	38 Mann Street (Lot 1 DP1210298)
A26	Footings of former police stables.	38 Mann Street (Lot 1 DP1210298)

6.2.2.2 Analysis of Site Disturbance

The following summary of impacts that will have affected archaeological survival are:

- Construction of the original sewerage network in Gosford, which extends through the study area into Brisbane Water.
- Fortification of an unnamed creek into a covered canal to reclaim the foreshore.
- Landscaping of an area to create a level playing field and planting of grass.
- Installation of an automated sprinkler system in the playing field.
- Extension of Baker Street and augmentation of the sewer main in 2016, which excavated an approximately 2-metre-wide trench along the entire length of the study area.

6.2.2.3 Archeological Potential

The phases of historical use and occupation of the site as detailed with the HIS suggest that, if present, archaeological features have a moderate to high potential to be extant beneath the current ground surface²⁵. The use of the site as predominantly open space suggests that archaeological deposits relating to the use of the site will be limited. However, the reclamation

 ²⁴ Kass, T (2016). A Thematic History of the City of Gosford, for Gosford City Council. Page 8.
 ²⁵ Ibid 17, page 34.



 ²³ Higginbotham, E (2014). Archaeological Assessment of the Former Police Station & Sergeants Quarters, Mann Street and Georgiana Terrace, Gosford. Report produced Gosford City Council. Page 6.
 ²⁴ Keyer, T. (2016). A Theorem is United as of the City of Council for Council Page 9.

of the foreshore by importing fill will have effectively capped any potential archaeological features along the foreshore and creek beds.

Archaeological evidence relating to the Constable's House and Garden was assessed as having local significance by Edward Higginbotham and Associates in 2016²⁶. However, archaeological testing of the area did not find any evidence of occupation of the site within the alignment of the sewer augmentation for the construction of Baker Street in 2016²⁷. Analysis of the historical use of the study area and the disturbance of the site are combined in the table below to summarise the potential for archaeological remains from each phase of occupation of the site.

Phase	Possible Archaeological Remains	Potential
Phase 1: Constable's House and Gardens, 1825-1845	 Postholes from boundary fences, Masonry foundations of buildings, Postholes from buildings, Rubbish pits and/ or cesspits, Wells, Garden and yard surfaces, Alterations to the creek bank or foreshore – wharves, bridges, crossings. 	Moderate- high
Phase 2: Police Paddock, 1846-1900	 Postholes from boundary fences, Evidence of boatshed, Alterations to the creek bank or foreshore – wharves, bridges, crossings. 	Moderate- high
Phase 3: Public Reserve for Recreation, 1901-2019	Postholes from boundary fences,Evidence of boatshed.	Low- moderate

6.2.2.4 Potential Impacts

- The subject site contains the potential for historical archaeological below road surfaces and modern fill. Excavation for sections of the proposed park has the potential to impact locally significant nineteenth-century occupation deposits, and twentiethcentury reclamation fills located below the modern fill.
- The proposed cutting and removal of fill from the park to contour the new park is likely to disturb the historic shoreline of Brisbane Water.
- Park contouring is likely to disturb the historic shoreline of the original creek, and potentially structures and occupation deposited associated with the creek.
- The proposed park contouring is likely to disturb nineteenth-century deposits related to the Constable's House and Garden.

²⁷Edward Higginbotham and Associates (2016). *Report of Test-Trenching on the Site of the Constables House and Garden, in Gosford City Park.*



²⁶ Ibid 23.

6.2.2.5 Mitigation Measures

- Archaeological testing of the Baker Street sewer augmentation in 2016 found no evidence of the Constable's House and Garden but noted that historic ground surface was at a depth of 1.4-1.7 metres.
- In areas of archaeological potential, excavation works should be monitored by a qualified archaeologist up to a depth of 2.5 metres, or to a point the archaeologist deems the soil to be sterile of potential archaeologist deposits.
- If proposed works are deeper than one metre in an area assessed as having archaeological potential, an s.140 excavation permit should be obtained before the commencement of works.

6.2.3 Conclusions and Recommendations

GML made the following conclusions as part of their HIS:

- The Brisbane Water region, including Gosford, has a rich Aboriginal heritage with a wide range of sites recorded in the region including art sites, grinding grooves, middens and stone artefacts sites. Midden sites may occur within the northeastern third of the study area in association with the former creek alignment and original shoreline.
- Historic plans indicate that the southern two-thirds of the site were reclaimed in the mid-twentieth century.
- The sewer augmentation along Baker Street and the subsequent archaeological testing found no evidence of the Constable's House and Garden within the sewer alignment. However, testing identified historic ground surface at 1.4 to 1.7 metres depth.
- Historical images show that in the early twentieth century the land had been fenced but was otherwise unimproved.
- No built heritage constraints apply to the study area.

GML made the following recommendations as part of their HIS:

- Archaeological monitoring should occur in areas where cutting and removal of full intersects with the former shoreline, creek bed and Constable's House and Garden.
- Under the Heritage Act, application for a section 140 permit to potentially damage locally significant nineteenth and twentieth-century archaeology should be obtained before excavation commences.

Based on the information provided and taking into account the proposed mitigation measures it is not considered that the proposal is likely to have an impact on the aspects of European Heritage that cannot be suitably managed or mitigated.

6.3 Air Quality

The air quality impacts of the proposal have been considered in the context of the proposed works. Construction works can result in the generation of fugitive dust emissions with the potential to result in elevated Total Suspended Particulates (TSP), Particulate Matter (PM) PM_{10} and $PM_{2.5}$ concentrations and dust deposition rates in the vicinity of the works.

Ambient dust can be generated from the movement of vehicles and construction equipment, excavation and rehabilitation, demolition, clearing and grading. Combustion emissions from vehicles and equipment can also create pollutants such as oxides of nitrogen (NOx), carbon monoxide (CO), particulate matter (as TSP and PM₁₀), Sulphur dioxide (SO₂), volatile organic compounds (VOCs) and lead (Pb).



age /

Air quality impacts from construction activities will be assessed using qualitative assessment methodologies prior to the issue of a Construction Certificate, to target key sources of construction emissions for mitigation and control. The park itself will ultimately have a net positive impact through the inclusion of additional grass and tree planting.

6.4 Contamination

A Preliminary Site Investigation ²⁸ (PSI) was prepared by Douglas Partners to provide information on the possible contamination constraints associated with the proposal at the site. This PSI was subsequently reviewed by SESL ²⁹ to discuss the suitability of the existing documentation against the requirements of SEPP 55. The PSI presents the results of a site history review, walkover and preliminary intrusive investigation, including analytical laboratory testing. All works were undertaken with reference to the staged investigation approach outlined in *State Environmental Planning Policy No. 55 – Remediation of Land* and the *National Environment Protection* (*Assessment of Site Contamination*) *Measure*(NEPM).

6.4.1 Investigation and Methodology

To support the proposal, Douglas Partners undertook a preliminary geotechnical investigation, as well as a Preliminary Site Investigation. SELS have reviewed and prepared summaries for both investigations, the findings of which are contained below.

6.4.1.1 Geotechnical Investigation

Douglas Partners undertook a preliminary geotechnical investigation for the proposal, which included four Cone Penetration Tests (CPTs) to a depth ranging from 9.54m to 12.22m. The subsurface conditions encountered in the boreholes are broadly summarised as comprising:

- Upper Filling brown and dark brown, silty sand or sandy silt filling to depths ranging from 0.3m to 0.5m.
- Lower Filling a mix of clay and sandy clay typically to depths of about 1.1m to 1.5m. At bores 2 and 3, the filling was deeper, extending to 2.05m and 2.4m depth, respectively. Sandstone gravel was encountered within the filling in half of the boreholes (bores 1, 4 and 6).
- Sandy silt At Bore 1, 4 and 6, typically soft and comprising an approximately 0.2m thick layer immediately beneath the filling materials.
- Sand Over the remaining depth of the boreholes. The sane was generally loose or medium dense and included varied amounts of silt, clay, shells and organic matter, and
- Clay Owing to poor recovery in the lower sections of the bores, some judgement has been made in relation to the presence of clay layers. In bore 1 for instance, indications of the presence of soft clay were present from 2.7m in depth.

Acid sulfate screening tests were undertaken on 40 samples retried from bores 1 to 6. The screening results suggest that acid sulfate soils could be present at the site, however these tests are only considered to be indicator tests. In addition, Chromium Reducible Sulfur (Scr) testing was carried out on 12 selected samples collected from the boreholes. The results of the Scr testing indicated that nine of the twelve samples had a net acidity value expressed in percentage sulfur that exceeded the ASSMAC action criteria. Consequently, Douglas Partners

 ²⁸ Douglas Partners (2019). *Preliminary Site Investigation*. Project ID 83503.01. Issued 4 February 2019.
 ²⁹ SESL (2019). *Contamination Letter*. Ref J001542. Issued 5 February 2019.



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concluded that the investigation should be considered as a preliminary investigation and further assessment may be required.

6.4.1.2 Preliminary Site Investigation

The PSI undertaken by Douglas Partners was conducted concurrently with the geotechnical assessment. Douglas Partners collected twelve primary soil samples and three QA samples. A single fragment of fibro was also collected, later determined to be asbestos. Further analysis of collected samples included contaminants of concern including heavy metals (HM), total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticide (OCP), and polychlorinated biphenyls (PCB).

The results identified that the majority of samples are acceptable from a human health perspective, with a single carcinogenic PAH identified above the health investigation levels, two samples with Benzo(a)pyrene above ecological investigation levels and two samples with zinc and TRH, respectively. The fibro fragment was confirmed positive for the presence of asbestos.

The results of the PSE indicated that some areas of the site have been subject to activities that have caused contamination and that further investigation is required to assess the need for remediation/ management as part of the redevelopment process. In summary the following areas of contamination were identified:

- Some near surface filling and natural soils are impacted by zinc and PAH as a result of possible historic activities at the site. These impacts may be associated with the original upper sediment layer that has either been buried or reworked as part of past development activities.
- The presences of an ACM fragment identified at the ground surface combined with some anthropogenic inclusions observed in the surface soils, indicates that the possibility of further contamination (particularly asbestos) cannot be ruled out.
- The subsurface conditions encountered, and gas monitoring results reported have identified an elevated potential for the presence of hazardous ground gases.

6.4.1.2.1 Discussion on Investigation

The results of the PSI indicate that most of the samples are acceptable for the current and proposed use, except for a single fill sample showing elevated cPAHs and the presence of a single fragment of asbestos. Although, the presence of asbestos on the surface presents some risk that the fill materials are contaminated, the level of foreign materials in the fill was very low, reducing the likelihood of this being the case.

SESL have concluded that additional investigation will be required to provide additional characterisation of the upper fill layers and ensure they can be adequately managed during the works. Currently, the level of contamination is not considered significant, albeit additional investigation was undertaken as part of a Detailed Site Investigation, which is further discussed in section 6.5. The surface asbestos was addressed through additional soil sampling to confirm the nature of the find, where no additional asbestos contamination was found. An unexpected finds protocol should be included in the construction environmental management plan (CEMP) or RAP to manage isolated finds.

The presence of methane is expected to be from an anaerobic breakdown of organic materials in the upper sediment layers. The NEPM states that sites with methane concentrations <1% v/v are considered very low risk. The Douglas Partners PSI results are above the 1% threshold and therefore subsurface vapor will need to be further addressed in a detail investigation.





6.4.1.3 Conclusion

SESL have concluded, based on the work conducted by Douglas Partners, that the results of the existing investigations do not suggest that contamination is present at levels that would preclude the development from moving forward. The findings are consistent with general imported fill quality and a materials compliance and validation program as part of either a CEMP or RAP will ensure all materials remaining on site at the completion of development are suitable.

SESL have concluded that in accordance with SEPP 55, contamination has been considered and strategies are in place to ensure the suitability of the site for the proposed works prior to the site being used for that purpose. A detailed site investigation has been be prepared to address the data gaps, which are discussed in the PSI, including fill characterisation, asbestos and landfill gas. The outcome and findings of the DSI is contained in the following section of this REF.

6.5 Detailed Site Investigation

SESLs Australia was engaged to conduct a Tier 1 Detailed Site Investigation³⁰ (DSI) to support the proposed redevelopment of the Leagues Club Field. The objective of the DSI was to characterise the site soils, determine the contamination status of the site and comment on the suitability of the site for the proposed development. Specifically, the objectives were to:

- Prepare a DSI in consideration of the National Environment Protection (Assessment of Site Contamination) Measure 1999,
- Review previous environmental investigation/s conducted at the site,
- Identify the likelihood and/ or extent of contamination occurring from current and former activities undertaken at the site, in consideration of the conclusions of the PSI (section 6.4.1.2) prepared for the site,
- Conduct sampling and analysis to assess the contamination status of the site in regard to potential soil and groundwater contamination, and
- Determine suitability of the site for the proposed development, including any additional investigations that may be required.

The scope of works to ensure the DSI objectives are suitably addressed included the following:

- Review of the existing environmental reports for the site,
- Inspection of the site and immediate surrounds by SESL's qualified Environmental Scientist to identify site characteristics that may be suggestive of site contamination,
- Borehole development and soil sampling systemically across the investigation area,
- Laboratory analysis of soil samples for contaminates of potential concern,
- Development of a Conceptual Site Model (CSM) to identify data gaps that require additional environmental information,
- Preparation of the DSI report in accordance with relevant guidelines for contaminated lands assessment, and
- Proposal of additional assessments or suitable remedial and validation strategies for the site, if required.

It is important to note that site works associated with the DSI were undertaken by SESL across two sampling events. The initial sampling event was undertaken by SESL on 4 February 2019. This event included the construction of five (5) boreholes (with soil sampling conducted at

³⁰ SESL Australia (2019). *Detailed Site Investigation*. J001634. Revision 1. Issued 13 May 2019.



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each) and the installation of four groundwater wells. An additional sampling event was conducted on 1 April 2019. This event included the construction of thirteen (13) boreholes across the site, addressing the data gaps left from the previous event.

Based on the historical review, site inspection and intrusive sampling, fill materials are known to exist at the site. Historically, fill materials have been imported on to the site as part of land reclamation practices and general filling. Based on intrusive sampling, fill materials are present across the whole of the investigation area. Fill materials were observed up to a depth of between 1.2 metres and 1.7 metres below ground level.

In summary, the sources of impact (area of environmental concern AEC) identified in the assessment area include:

- AEC 1: Historical development and site uses, and
- AEC 2: Historical landfilling with soils of unknown origin and contamination status (land reclamation).

A total of 41 soil samples were collected from surface soils and subsoils at the site, for the purpose of analysis for contaminants of potential concern. A further seven (7) samples were collected to assess the presence and or severity of acid sulfate soils within the underlying natural materials at the site. Samples were collected by SESL on a systematic basis, to best characterise the fill materials known to exist at the site, and assess the potential contamination associated with the identified AECs.

Based on the analysis of the collected soil samples, the investigation has been able to determine that the historical importation of fill materials has occurred at the site, as part of historical landscaping and land reclamation. Based on the analysis conducted as part of the investigation conducted by SESL, contaminants of concern within the site materials are either absent or in very low concentrations, below the adopted thresholds for the site.

Potential Acid Sulfate Soils (ASS) were identified within natural materials underlying the identified fill materials at the site. These ASS will be managed in accordance with the ASS Management Plan that has been prepared for the site (refer to section 6.10.4).

6.5.1 Discussion

A total of 41 soil samples were collected by SESL from surface soils and subsoils at the site, for the purpose of analysis for contaminants of potential concern. A further seven (7) samples were collected to assess the presence and or severity of ASS within the underlying natural materials at the site. Samples were collected on a systematic basis, to best characterise the fill materials known to exist at the site, and assess the potential contamination associated with the identified AECs. A summary of results is discussed in the following sections.

6.5.1.1 Soil Laboratory Results

Minor elevation of Zinc (above the adopted EIL) was observed by DP in a single sample during the preliminary site investigation (refer to section 6.4.1.2) at the site. No other elevations were observed by DP or SESL in subsequent investigations, and the Zinc elevation is therefore considered insignificant.

No other heavy metal elevations were observed throughout the preliminary or detailed investigations conducted at the site by DP or SESLs.





6.5.1.2 Polycyclic Aromatic Hydrocarbons

PAHs were observed to be slightly elevated in two of the samples collected and analysed during the preliminary site investigation. Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) were found to be elevated above the adopted health investigation level (HIL-C: Recreation/ Open Spaces) threshold (3 mg/kg) in a single (1) sample collected as part of the PSI. Carcinogenic PAHs is calculated as the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor, relative to Benzo(a)pyrene. Additionally, Benzo(a)pyrene was observed to be elevated in two (2) samples during the PSI. No other elevations were observed by DP or SESL in subsequent investigations.

Due to the minor elevations and the absence of elevations of PAHs during the detailed investigation conducted by SESL, the PAH elevations are considered insignificant and pose no risk to current and future site users.

Other Contaminants of Concern

All other contaminants of concern, including (OCP, PCB, BTEX and Asbestos in Soil) were observed to be below the adopted thresholds of the site.

6.5.1.3 Asbestos Containing Material (Bonded Asbestos)

A single fragment of Asbestos Containing Material (ACM) was identified and collected by DP as part of the PSI at the site. AS part of the DSI prepared by DSI, extensive inspection of the site surface and inspection of eighteen (18) sample locations failed to identified any ACM fragments. Based on site observations, SESL recommends that there is a very low risk of ACM fragments existing at the site.

6.5.1.4 Acid Sulfate Soils

Chromium reducible sulfur analysis was conducted to determine the presence of Actual ASS (AASS)) or Potential ASS (PASS) within eight (8) samples at the site. Analysis identified soils with significant potential acidity, indicating an ASS risk at the site. In depth result summary and discussion has been included within the ASSMP discussed in section 6.10.4.

6.5.2 Conclusion

SESL Australia prepared a DSI to accompany this REF, which was informed by a historical review, site walkover and review of previous environmental investigation, the following areas of environmental concern were identified:

- AEC 1: Historical development and site uses, and
- AEC 2: Historical landfilling with soils of unknown origin and contamination status (land reclamation).

Based on the analysis of the collected soil samples, the investigation has been able to determine that the historical importation of fill materials has occurred at the site, as part of historical landscaping and land reclamation. Based on the analysis conducted as part of the investigation conducted by SESL, contaminants of concern within the site materials are either absent or in very low concentrations, below the adopted thresholds for the site. Based on the laboratory analysis, site observations and anecdotal evidence discussed within the report, SESL recommends that the site is suitable for the proposed activity and land use.



6.6 Crime Impact and Accessibility Assessment

A Crime Prevention through Environmental Design³¹ (CPTED) review has been undertaken by CCEP with the intention to mitigate the ability for criminal, anti-social or disruptive activities to take place within the confines of the site. It is important to note that because on-site assessment was not undertaken, the recommendations by CCEP are general and do not consider specific events to be held in this area.

CPTED assessments are very much dependent on the feeling that different users have during different hours of the day or night. For example, some users may feel less comfortable walking through the area at night compared with the afternoon or morning. CCEP note that the use of the area will change with the proposed development. Current perceptions of safety will also be altered. They suggest that ongoing communication with local businesses be undertaken by the site operator, to provide information about use of the park and behavior.

The CCEP report notes that the iterative design process resulted in improvement to sight lines throughout the park, to assist in providing passive surveillance opportunities. This was achieved by the reduction of taller planting. Passive surveillance of the amenities block is achieved by its location proximate to the street and main paths of travel.

The assessment conducted by CCEP concluded that users walking to or from the Leagues Club would likely walk through the area if it were sufficiently lit and users feel comfortable doing so. A complete list of the recommendations provided by CCEP can be found in Appendix F.

6.6.1Everyone Can Play

As the premier new public space for Gosford, the offer to the community is focused on being all-inclusive – inviting people of all ages and demographics to engage with public life. The diversity of spaces and their adaptability for a range of uses will provide for everything from the everyday stroll to the annual major event. Particular consideration is given to environmental comfort through adequate shade and wind protection, gentle grades, comfortable and diverse seating options, and Crime Prevention Through Environmental Design (CPTED) to create a welcoming place.

The 'Everyone can Play' document allows designers to understand how their design can be accessible to all people of all ages, abilities and cultural backgrounds. There are six design principles discussed throughout the document, which have been used to guide the design process. These principles are:

- Find,
- Fit,
- Choose,
- Join In,
- Thrive, and
- Belong.

Compliance with each principle is discussed in further detail below.



³¹ CCEP (2019). *Crime Prevention through Environmental Design*.

6.6.1.1 Find

'Communicate the purpose and location of play elements and facilities'.

Signage and wayfinding has been co-located with major amenities and entry/ exit points. The signage design is clear, legible and accessible for all users. The pathways and circulation passages between the play space and other key spaces are wide, well contrasted and clear for the movement of prams, wheelchairs and pedestrians to use simultaneously with comfort.

6.6.1.2 Fit

'Provide a range of play opportunities for people of all abilities and sizes'.

From the estuarine play within the Norimbah Tidal Terrace, to the terrestrial play of the play mound, the range of play opportunities available is plenty. The Norimbah Tidal Terrace provides amply play space for younger children, with a variety of smaller play elements that focus on texture, form and touch. As you move up the play space, the Fish Trap invites more climbing and technical play, with the Play Mound that includes play pods, which offer a structure for the older park users. Accessible play surfaces and equipment pieces have been included within all play zones, including the accessible pathways to the entry and exists of the berm slide, Norimbah Community Node and the Fish Trap play structure.

6.6.1.3 Choose

'Enable exciting individual experiences and social interaction'.

The Norimbah Tidal Terrace provides a space for social interaction, facilitating community events, specialist performances and social play. Individual experiences are offered across the design, with the unique estuarine play providing new and ever-changing experiences for all individuals.

6.6.1.4 Join In

'Create opportunities for everyone to connect'.

Connection and collaboration has been integrated into both the play spaces, seating spaces and passive spaces. The opportunities for connection are encouraged by the variable and experiential range of play opportunities, wide distribution of seating styles across the park and inclusion of community spaces.

6.6.1.5 Thrive

'Challenge and involve people of all capabilities'.

The play spaces throughout the park have been designed to accommodate and challenge users of all ability and experience levels. The play pods at the top of the largest play mound offer the most challenging experience, with the wild play hills testing co-ordination, creativity and teamwork.

6.6.1.6 Belong

'Create a place that's welcoming and comfortable'.

The entire park has been designed to ensure all visitors feel safe, comfortable and welcomed. The ample park lighting will provide safety and amenity during periods of low light and moving into the evening.





6.7 Coastal, Estuary and Marine Ecology Assessment

Salients and the University of Newcastle ('UON') were engaged to complete a coastal, estuarine and ecological process assessment³² for the proposed Tidal Terrace (section 3.2.2), as part of the redevelopment. In essence, the Tidal Terrace would occupy an area previously reclaimed from mud flats at the northern end of the Brisbane Water. The Tidal Terrace is a unique concept, which involves excavation of the foreshore reserve down to the previous mud flat layer, the placement of sandy fill and construction of rock platforms to create a 'nature play' facility. Tides will be introduced in a controlled manner, with an under bored pipeline constructed to convey the tides below the Central Coast Highway (A49) as they flow in and out of the Tidal Terrace ('TT'). The TT is designed to fully drain during each tidal cycle, and to fill to a maximum depth of 300mm. The depth will be controlled by a gate within a subsurface pit, which will close, as required, once the desired water level isreached.

The report prepared by Salients and UON contains a summary of the background information, as well as a preliminary assessment of key issues to inform detailed design, and subsequent operation. The report is discussed in further detail in the following sections.

³² Salients (2019). *Coastal, estuary and marine ecology assessment for Tidal Terrace at Gosford League Club Field*. Issued 28 May 2019.



Figure 9: Brisbane Water in Near Vicinity of Proposed Tidal Terrace³³



6.7.1Coastal, Hydraulic and Geomorphological Assessment

6.7.1.1 Tidal Environmental

Tides have been recorded at Punt Bridge on Erina Creek since 1994 and at Koolewong, which is south of Gosford. Where available, Manly Hydraulics Laboratory³⁴ analysed data for the period between 1990 and 2010, and determined the relevant tidal characteristics. While both sites are some distance from the foreshore at the site, they represent the north and south Brisbane Water. Water level monitoring data at a 15 minute frequency for Punt Bridge for 1994 to 2018 was obtained from Manly Hydraulics Laboratory. A summary of the data for Punt Bridge is provided in the table below.

³⁴ Manly Hydraulics (2012). OEH NSW Tidal Planes Analysis. Harmonic Analysis (No. MHL2053).



³³ lbid 32, pg. 8.

Tidal Plane	Annual Average (AHD)
High water solstices springs (HHWS)	0.65
Mean high water springs (MHWS)	0.40
Mean high water (MHW)	0.35
Mean high water neaps (MHWN)	0.30
Mean sea level (MSL)	0.09
Mean low water neaps (MLWN)	-0.12
Mean low water (MLW)	-0.17
Mean low water springs (MLWS)	-0.22
Indian spring low water (ISLW)	-0.40

Salients note that the pipeline and inlet infrastructure for the Tidal Terrace is to be designed to minimise losses and to ensure that water levels in the Terrace match those in the adjacent estuary. Accordingly, there is expected to be minimal lag between the tide levels in Brisbane Water and the Tidal Terrace.

6.7.1.2 Flood Hydraulics and Mixing Processes

During floods, the site is strongly affected by flows from the stormwater outlets and Narara Creek. Cardno³⁵ executed computer model simulations of a 5% AEP flood event and reported the behaviour of the Gosford Broadwater following the event. Starting with salt concentrations of 32 parts per thousand ('ppt') across the water column, Gosford Broadwater becomes stratified during flood events, with warmer, fresh water flowing over the surface of the denser salty water. However, within a few days, the simulations indicated that this stratification would break down, and salinity would again become consistent throughout the water column. The water remains substantially 'fresher' than before the flood. From here, the salinity in Gosford Broadwater inside the estuary with oceanic water under the influence of tides.

Cardno³⁶ further reported that the northern end of the Gosford Broadwater had a 'flushing time' of around 40 days, which is defined as the time it would take for initially 'fresh' conditions (o ppt) across the entire estuary to reach a salinity of some 70% of that in the ocean.

The dynamics of flooding and recovery are important for serval reasons, including:

- During floods, both the adjacent stormwater outlets and Narara Creek are significant sources of sediment, pollutants and bacteria to the Gosford Broadwater.
- Salinities in the Gosford Broadwater will impact on the rates at which settlement occurs. Saline and brackish water enhance flocculation and speed the settling of suspended solids from the water column, when compared to freshwater conditions.
- Turbid water adjacent to the Leagues Club Field could potentially be carried into the Tidal Terrace during an incoming tide.

^{age}

It is desirable for the Tidal Terrace to be operated to prevent water from the Estuary entering after significant rainfall/ flood events.

 ³⁵ Cardno (2008). Brisbane Water Estuary Processes Study. No. LJ2255/R2262. Prepared for Gosford City Council.
³⁶ Ibid



6.7.1.3 Wind Wave Environment

The Gosford foreshore is one of the most exposed to wind waves within Brisbane Water. Although, the most exposed lengths of this foreshore are to the wester of the existing stormwater outlets. Cardno³⁷ reported that wind wave heights ranging between 0.48 to 0.68 (Hs(m)) at different ARI; ranging from 1 to 100 years. These wave heights should be used to design the pipeline outlet to ensure it remains stable during an appropriate design condition. The wave height chosen will depend on the required design life for the pipe and should include some allowance for sea level rise to account for the size of wave that is able to approach and break against the pipeline.

6.7.1.4 Geomorphology

Cardno provided some broad context relating to the foreshores and main basin of Brisbane Water. The estuary is shallow, with the bed typically above -6.0 metres AHD, and apparently stable, based on the comparison of historical hydrographic surveys. It was further notes that organic rich and sandy muds tended to be found in lower energy environments within the estuary, but that the shallow margins of the central basin often had coarse materials, due to the action of wind waves and tides.

6.7.1.5 Nearshore Sediment Environment

The northern end of the Gosford Broadwater is considered to have water quality compared to the rest of Brisbane Water for the following reasons:

- This part of the estuary is relatively poorly flushed.
- Narara Creek, a relatively heavily urbanized and industrial catchment, flows into the Gosford Broadwater on its western side, opposite the proposed pipeline location.

Pollutant inputs from the catchment also leave an imprint on the sediment, which are deposited on the bed of the estuary. When considering previous work³⁸ conducted at the site the sediment texture in the nearshore zone is indicative of the level of energy present within the environment. At the immediate location where the pipeline is proposed, the foreshore sediments contain a substantial mud fraction. If the environment were energetic enough to regularly disturb and suspend this mud fraction, it is most likely that the suspended fraction would be carried away by currents to deposit in a more quiescent part of the estuary, such as the deeper parts of the Gosford Broadwater to the south.

Considering these points, it is assessed that the immediate foreshore environment near the proposed pipeline location is not regularly affected by large wind waves, and the area behind the Gosford Breakwater is protected from direct wave attach and disturbance. However, it is believed that fine sediments would be carried in and deposited on the bed of the nearshore zone intermittently due to the following:

- Wind waves settling up the foreshore to the west while stirring up sediments and driving a circulation current toward the east, although this circulation would be somewhat interrupted by the fluvial delta, which exists offshore of the major stormwater outlets.
- The discharge of turbid water from the mouth of Narara Creek, through Fagans Bay and beneath the railway line into Gosford Broadwater.

³⁸EGGUS (2007). Heavy metal distribution and sediment quality in the Brisbane Water Estuary.



³⁷ Ibid

• The discharge of turbid and polluted water from the adjacent stormwater outlets, followed by dispersion and carriage of that water into the tidal terrace on a subsequent rising tide.

Concerns were raised by Central Coast Council during the consultation period in relation to sediment quality, and possibly that poor quality sediment could be carried into the Tidal Terrace. Ultimately, presenting a health risk to the public used the facility.

The primary concern relating to sediments is that pollutants absorbed to fine grained particles could be carried into the tidal terrace. Previous sampling and testing of sediments adjacent in the estuary does not indicate that there is a significant health risk associated with heavy metals in the sediments. Notwithstanding, there are additional design features of the water inlet system, which lead Salients to believe that scour and/ or accumulation of sediment is not going to be a problem:

- If sediment does accumulate in the inlet pipe, the mechanism of emptying the tidal terrace, which involves delaying gate opening until there is head differential to push higher velocities through the outlet pipe.
- Overall filling and emptying velocities across the tidal terrace will be very gradual. The water flows in and out of the tidal terrace through a long, grated drain which will be subject to much lower flow velocities than the outlet pipe.

Due to these mitigation measure (among others *ie. contributory landscaping*) the risk of pollutants entering the tidal terrace in amounts that are deleterious to public health will have reduced significantly.

6.7.2 Marine Ecological Assessment

Intertidal environments are the boundary between two ecotones: terrestrial and marine. At the shoreline, wave energy, tidal range, water temperature and substrate become critical for survival of organisms. However, the ecologies of sandy beaches and rocky shores are patterned according to location, elevation and climate. Whether it is desiccation, cold temperature or lack of nutrients or food, the shore represents an essentially unidirectional, vertical stress gradient for most marine organisms. The action of tides increases the amount of living space for shore organisms according to their different abilities to cope with physical and biological factors or stressors. Furthermore, the presence of hard (rock) or sedimentary surfaces also dictates what organisms will grow.

It is within this framework that the species, which are likely to colonise the tidal terrace need to be considered. The proposed Tidal Terrace will comprise aspects of hard (rocky) shores and sedimentary (sandy) substrates. At the outset, it is important to note that predicting the precise composition of the ecosystem that will result within the unique and artificial environment proposed within the Tidal Terrace is not possible. However, with some reasoning and consideration of conditions in the surrounding estuary and likely effect of the modified tidal environment, some broad predictions can be made by Salients.

6.7.2.1 Potential Issues and Mitigation

Given the tidal terrace is in the upper reaches of the estuary with a modified tidal regime, smaller grain sizes are likely to be present, which will increase the organic matter content of the sediments. While this environment is a suitable habitat for estuarine infauna, the redox discontinuity layer could be only a few millimetres or centimetres below the surface. Any digging by resident fauna or humans could reveal darkened and anoxic sediments that are





typically have a higher sulfur content and associated smell. Increased emersion time of the sediment has the potential to reduce the water content of the sediments and deepen the redox discontinuity layer. Routine 'drying' of the sediments, by drainage during each tide, as proposed, may be an avenue for controlling anoxic sediments, however, it may be to the detriment of the ecological communities.

Oyster larvae can rapidly colonise a hard substrate in an estuarine environment. The presence of juvenile and adult oysters can then provide a hazard to humans. Since oysters are filter feeding organisms, augmenting the tidal regime to include only a portion of the high tides is likely to retard oyster settlement and subsequent growth. Furthermore, it is possible to schedule maintenance to occur soon after the time of year that oyster larvae tend to attached to a hard substrate to prevent growth.

Dampened surfaces, vertical or horizontal, in estuarine environments typically result in microscopic algae growth. Both physical (emersion) and biological (grazing by snails) factors can control the growth of this algae. Longer emersion times, that is time spent in air and exposed to the sun and heat, can reduce and even prevent algal growth. Furthermore, the presence of crevices provides a refuge for snails to hide during low tide, aiding in their survival and, in turn, provide a biological control for algal growth.

It is recommended that, in the first instance, the surface design of the rock platforms allow for the inclusion of crevices that are suitable for snails to take refuge. Another final option proposed by Salients for controlling algae growth is the use of surface treatments, several of which have been trialed around ocean baths in the Sydney region. However, this option is considered a least preferred if the enhanced emersion represented by the complete drainage of the tidal terrace and introduction of refuge habitat for snails to control algal growth.

6.7.3 Recommended Considerations

Building on the issues that raised by Salients, and other issues raised during development of the design, this section provides a concise assessment of several issues associated with the Tidal Terrace.

6.7.3.1 Pipeline Location

The designed pipeline will sit proud of the seawall. Sometimes, infrastructure such as this can interrupt the alongshore transport of sediment and could interfere with natural coastal processes. However, the environment here is not energetic and the transport and deposition of muds in this area is governed by currents and not the action of wind waves on the foreshore. Deposition processes seem to be very slow and it is highly unlikely that any significant impact on coastal processes will arise from the pipe.

Therefore, siting of the pipeline should aim to balance practicalities of constructing close to the intake infrastructure for the Tidal Terrace, while minimising the extent to which it needs to protrude into the Estuary (primary to reduce cost). The pipeline should be located as far to the south as practicable. Once the location is chosen, the pipeline should extend far enough out into Brisbane Water such that the invert of the pipe is 200mm above the existing bed of the adjacent estuary. This is to allow for some further sedimentation in the area without clogging up the end of the pipe.





6.7.3.2 Navigation

As the pipeline protrudes from the seawall, there is also a possibility that navigation could be impaired. The concept drawings indicate that the pipeline will protrude approximately 7 metres from the face of the seawall, which will be confirmed prior to construction.

There is a possibility that a boat could impact the pipe if is not seen, either because it is submerged, or because it is dark. However, the risk is considered low for the following reasons:

- There are other obstacles in the near vicinity, including the shallow fluvial delta offshore of the existing stormwater outlets and rocks, which are scattered along the seashore. These provide visual cues, which slow down vessels.
- The water in the nearshore area is shallow.
- This part of the Gosford Broadwater is a designated 4 knot zone, meaning that vessels are required to transit the area at low speed.

These factors combine to make impact unlikely, but also to make the consequences less severe. Even so, the following strategies could be considered to mitigate against any residual risk:

- Moving the pipe outlet even further to the south, where the immediate foreshore is even steeper, meaning the pipeline does not need to extend as far into the Estuary.
- Protecting the sides of the pipeline with sandstone logs, laid longitudinally with the potential to provide a cradle within which suitably sized rocks can be piled to raise the level of the overall structure above high tide level, making it readily visible for boat users. This is acceptable due to the low energy environment meaning that alongshore sediment transport rates are low and any 'groyne' like behaviour will therefore be minimised. Furthermore, the provision of a rocked structure introduces some variability to the nearshore environment in this location and is likely to have a beneficial ecological effect.

6.7.3.3 Strategies to Manage Algal Growth

The preferred strategies for managing algal growth are as follows:

- Allowing natural die-off of algae during periods when the tidal terrace remains dry over several tidal cycles and ensuring effective drainage and drying of the rock platforms and bed. This is the primary way in which the tidal terrace is expected to be kept algae free.
- Encouraging colonization of the tidal terrace by targeted species of snail (known to be present along the adjacent Brisbane Water seawall) which are known to graze on microscopic algae.

If these strategies are less effective than expected, specialised 'environmentally friendly' chemical coatings on the sides of the rock platforms may be considered as an option. Research has shown that several options available on the mark can provide some protection against algal growth. However, it is also likely that occasional cleaning of the platforms with high pressure cleaning equipment could be required. In that case, the biomass cleaned from the platforms may need to be raked up and disposed of or repurposed for another application (either composted or used as mulch).

6.7.3.4 Strategies to Manage Oysters

It is preferable that Oysters are prevent from establishing and growing on the rock platforms within the tidal terrace. Based on measurements on the adjacent seawall, it is estimated that





Oysters could establish at elevations between 0 and 25 metres AHD. Given that the bed of the tidal terrace is proposed at 0.15 metres AHD, this means that the lower 100mm of the terrace could be subject to oyster encrustation.

The key managing oyster encrustation will be cleaning of the rock platforms with a highpressure cleaner. However, the life cycle of oysters means that the free-swimming larval stage is seasonal and short lived after which they seek out a firm surface to which they can attach. The optimum time for cleaning will be once the larvae have attached to the hard surface of the rock platform but before the attached oyster 'spat' have increased significant enough in size to present a risk of cutting.

6.8 Ecology

Ecological Consultants Australia Pty Ltd (t/a Kingfisher) was engaged to provide an Assessment of Significance (and associated five part test) to assess potential direct and indirect impacts on any threatened species, populations and communities; pursuant to s.1.7 of the EPA Act. The Assessment of Significance was undertaken by Kingfisher in accordance with the NSW Department of Environment and Climate Change 'Threatened Species Assessment Guidelines', and has been included in Appendix C.

A search was performed by Kingfisher using BioNet records within 10 kilometers of the subject site. Results confirmed 17 species that are currently listed as vulnerable or endangered under State and/ or Commonwealth legislation, out of a total of 950 species. The vulnerable and endangered species were not identified on the site, nor was habitat present.

Family	Scientific Name	Common Name	NSW Status	Comm. Status	Records
Dilleniaceae	Hibbertia procumbens	Spreading Guinea Flower	E1		201
Lamiaceae	Prostanthera askania	Tranquillity Mintbush	E1	E	43
Lamiaceae	Prostanthera juonis	Somersby Mintbush	E1	E	119
Myrtaceae	Syzgium paniculatum	Magenta Lilly Pilly	E1	V	12
Myrtaceae	Rhodamnia rubescens	Scrub Turpentine	E4A		25
Myrtaceae	Rhodomyrtus psidioides	Native Guava	E4A		1
Elaeocarpaceae	Tertatheca glandulosa		V		1
Elaeocarpaceae	Tetratheca juncea	Black-eyed Susan	V	V	1

6.8.1 Terrestrial Area

The area subject to investigation by Kingfisher was determined to have low ecological value. It could be used at times by Plovers for nesting and butterflies that utilise grasses for part of their life cycle. The vegetation is exotic grass and isolated exotic palms. It is noted that these palms however, are sometimes habitat for microbats – although none were detected during the survey period. Kingfisher recommended that checks are conducted prior to tree removal to detect microbats.





6.8.2 Intertidal and Submerged Zone

The intertidal zone includes a strip of approximately 15-40 metres wide that is inundated in high-tides and exposed at low-tide. The submerged zone is predominately exposed sand. Seagrass cover is less than 1% and occurs as scattered patches over the sand.

Assessments were conducted to assess the presence, condition of *Posidonia australis* seagrass meadows, an endangered ecological community that could have habitat in the area. Kingfisher conclude that *Posidonia australis* was not present at the site and therefore the works were not likely to have a significant impact on this or any other seagrass.

6.8.2.1 Posidonia australis Meadows – Test of Significance

A five-part test to determine whether the proposed activity is likely to significantly affect threatened species or ecological communities; or their habitats, was carried out in accordance with s.7.3 of the Biodiversity Conservation Act 2016, and is detailed within Appendix C . The table below has provided an assessment of the five-part test.

Test		Compliance
(1) The fo propo ecolog	bllowing is to be taken into account for used development or activity is likely to gical communities or their habitats:	the purposes of determining whether a significant affect threatened species or
(a) In the o wheth activit on the viable likely	case of a threatened species, her the proposed development or ty is likely to have an adverse effect e life cycle of the species such that a local population of the species is to be placed at risk of extinction.	Not a threatened species
(b) In the comm ecolog propo (i)	case of an endangered ecological nunity or critically endangered gical community, whether the sed development or activity: (i) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	The pipe location, with the low-velocity flows expected is not expected to substantially and adversely modify the composition of the seagrasses. Elevated nutrients could alter the composition and hence monitoring and corrective actions will be in place to ensure nutrient levels are same as background or less.
(c) In rela specie	ation to the habitat of a threatened es or ecological community:	Seagrasses are expected to be retained (not removed or modified).
(i)	The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	
(ii)	Whether an area of habitat is likely to become fragmented or	Seagrass habitat is naturally fragmented in these areas. Some areas have large



^{page}8,

Test		Compliance
	isolated from other areas of habitat as a result of the proposed development or activity, and	continuous beds, however that is not expected here. The patch of seagrass is physically separate from other patches however the whole deeper intertidal area is potential habitat and the patches could join or move away further.
(iii)	The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.	No habitat is being removed, modified, fragmented or isolated.
(d) Wheth activit on an biodiv indire	ner the proposed development or ty is likely to have an adverse effect y declared area of outstanding versity value (either directly or ectly).	No declared areas in this region.
(e) Wheth activit proce of a k	ner the proposed development or ty is or is part of a key threatening ess or is likely to increase the impact ey threatening process.	The proposed pipe leading over the seagrasses with tidal water in/out is not expected to impact saltmarsh. The report recommends monitoring to detect any elevated nutrient level.

Recommendations are contained within Appendix C, and include that:

- Work areas be delineated
- Landscaping be undertaken in accordance with the Landscape Plan
- Monitoring take place for elevated sediments and nutrient deposition, and management measures proceed if these are observed.

6.9 Noise and Vibration

The site is located in proximity to the northern heavy rail line, as well as the Area Stadium, which hosts the Central Coast Mariners. Both the rail line and stadium are acute noise and vibration sources, which may impact the proposal and should be considered as part of the REF.

The existing park provides access to the community to this space. The site of the proposed development is presently in use for a similar activity, it is not considered that the impacts affecting users of the space will be increased. The inclusion of bunding along the Central Coast Highway and additional landscaping features will in part mitigate the existing impacts. As such the proposal it is considered that the proposal will not result in a negative impact to the site and its users regarding noise and vibration.

6.10 Soil and Water Management

A Soil and Water Management Plan³⁹ has been prepared by ADW Johnson to accompany this REF. This management plan outlines the minimum standards required to meet the requirements contained under the *Managing Urban Stormwater Guidelines: Soils and*

³⁹ ADW Johnson (2019). *Soil and Water Management Plan*. Reference: 190541E.



*Constructions*⁴⁰ and should be read in parallel with section 6.13, which includes the Water Cycle Management information. This management plan provides information about soil management (section 6.10.1), water management (section 6.10.2) and erosion and sediment control measures (section 6.10.3).

6.10.1 Soil Management & Mitigation

The contractor is required to limit the area of exposure at any one time and the length of time each area is exposed. This can be achieved through scheduling the works and limiting exposed areas by:

- Limiting disturbance to be no further than 5 metres from the edge of any essential construction activity,
- Restrict access to a maximum of 10 metres,
- Preventing access to undisturbed areas by appropriate fencing of no go areas,
- Limiting slope lengths of flow paths to less than 80 metres by installing berm drains at regular intervals.

All disturbed areas should be stabilised as soon as practicable.

6.10.2 Water Management & Mitigation

Upstream runoff is to be prevented from entering disturbed areas through the use of cut off drains and diversion berms. Clean water from upstream should be conveyed to the downstream receiving waters via stabilised diversion drains. Dirty water shall be captured by a single sediment basin located in the future nature play area of the site. The basin shall be sized to provide 500mm freeboard above the required volume to prevent overtopping. A stabilised spillway shall be constructed that allows controlled discharge in the event that the basin is overtopped in large storm events.

6.10.3 Erosion and Sediment Control Plan

To ensure that the site is adequately protected at all stages of construction, the provision of erosion and sedimentation controls should be staged over the course of the construction. The following staging has been recommended by ADW Johnson, as part of their management plan⁴¹:

6.10.3.1 Pre-Construction Works

- All barrier, no go and sediment fencing to be installed,
- Stabilised site access to be constructed,
- Clean water diversion drains along the northern and eastern boundaries,
- Sediment basin and associated controls to be constructed:
 - Excess material excavated to construct the basin is to be appropriately stockpiled on the proposed playing field area. The stockpile is to be protected with appropriate fencing in accordance with the Blue Book⁴².

6.10.3.2 During Works

It is anticipated that earthworks associated with the nature play areas and the Baker Street extension will be the first activities completed on site. Accordingly, the following controls should be put in place during these works:

⁴¹ Ibid 39, page 7.

⁴² Ibid 40.



⁴⁰Landcom (2004). *Managing Urban Stormwater: Soils and Construction*. 4th Edition. ISBN 097520303-

^{7.}

- Dirty water cut off drains along the western and southern boundaries should remain in place,
- Where required clean water diversion drains should be provided upstream of the proposed berms,
- Sediment fences should be constructed around the perimeter of all berms and kept in place until they have been stabilised,
- Mulch mounds should be placed halfway up berms to capture any sediment runoff,
- All berms should be stabilised as soon as possible,
- All stormwater pit and pipes to be constructed. Inlet filter traps to be provided around all inlet pits,
- All works associated with the stormwater connection to the existing culverts to be completed except for the actual connection to the culverts.

6.10.3.3 Post Construction Works

Once all other works have been completed and stabilised the remainder of the nature play area will need to be completed. It is anticipated the following works will be required to achieve this:

- Flocculate and decommission basin,
- Excavate the remainder of the nature play area,
 - Excess fill is to be used to finish off the internal edge of the nature play berm,
- Stabiles any remaining areas of the site,
- Complete the connection to the existing culverts, and
- Decommission and remove all remaining controls.

Please note, the erosion and sedimentation control plan construction by ADW Johnson (as above) is indicative only and will need to be confirmed by the contractor prior to construction. In addition, the contractor will be required to provide a detailed Soil and Water Management plan, prior to the commencement of works.

6.10.4 Acid Sulfate Soil Management

SESL was engaged to review the results of the geotechnical investigation⁴³ (section 6.4.1.1) and prepare an Acid Sulfate Soil Management Plan⁴⁴ (ASSMP) for the proposed development. The ASSMP details the methodologies for the disturbance and treatment of the actual and potential acid sulfate souls at the site throughout the course of the proposed development. All methodologies have been developed in accordance with the relevant guidelines.

Whilst ASS have been identified, they have not been adequately characterised for effective treatment and management during construction. Notwithstanding, the ASSMP has been prepared to provide general guidance for the management of excavated soils to ensure that ASS generated by the development works does not impact the environment.

Following additional investigation and associated updates to the ASSMP, SESL have concluded that the management plan will be sufficient to manage the risks associated with actual and potential ASS at the site.

6.10.4.1 Management Strategies

The preferential sequence of management strategies (least to highest risk) to prevent environment impacts are outlined below:

⁴³ Ibid 28

⁴⁴ SESL (2019). *Acid Sulfate Soil Management Plan*. Project J001540. Issued 5 February 2019.

- i. Avoidance where possible, disturbance of ASS should be avoided.
- ii. Minimisation should disturbance of ASS be required; the amount of disturbance and potential exposure time should be minimised or restricted.
- iii. Neutralisation where disturbance and/ or exposure is required, neautralisation of the actual and potential acidity should be undertaken through the addition of neautralising agents, such as lime.
- iv. Strategic placement of spoil disposal of the excavated spoil within a void excavated to below the permanent standing groundwater level.

Infrastructure improvements as part of this redevelopment are considered unavoidable. Additionally, the poorly-managed actual ASS that exist at the site will be better-managed following disturbance and neutralisation than they are at the current time. Therefore, the minimisation of disturbance, neutralisation or strategic placement of disturbed soul will be necessary to ensure that the soils are managed to adequately and effectively minimiserisk.

6.10.4.2 Management of Site Works

It is expected that disturbance of actual and potential ASS will be required as part of the development of all new infrastructure at the site, given that ASS are present at very shallow depths. Consequently, all soil disturbance must be managed in accordance with the methodologies outlined within the ASSMP.

Potential acid generation is typically managed by the addition of lime to neutralise acid that may be generated during and after the excavation works. For this project, a low solubility product such as agricultural lime should be used if neutralisation is undertaken. Further detail is provided in section 5.5 of the ASSMP.

6.10.4.3 Conclusion

The ASSMP prepared by SESL has been developed to manage the occurrence of the potential and actual ASS as previously identified by the geotechnical investigation⁴⁵. Whilst ASS have been identified, they have not been adequately characterised for effective treatment and management during construction. However, the ASSMP provides general guidance for the management of excavated soils to ensure that acid generated by the development does not impact the environment or the newly-installed infrastructure.

6.11 Social and Economic Assessment

The new public open space is to form a key open space area within the Civic area of Gosford. It will build on other regional attractors to encourage the community and visitors to visit and stay in the Gosford area. As a significant piece of regional infrastructure, it also represents a significant monetary investment in the region.

A qualitative review sought to identify what potential impacts (positive/negative) this would have. Based on this the proposal is considered to have a range of positive impacts as nominated below:

The proposal represents a significant investment in the construction of parkland as part of a broader \$10 million investment in public domain upgrades to the Gosford CBD. This will result in both short term and long term benefits:



⁴⁵ Ibid 28



Short term (construction phase):

- spending on local resources and construction materials;
- increased availability of construction work;
- influx of construction workers to the site, resulting in flow-on effects for local businesses.

Long term (use phase)

- Improved access to play and recreation spaces within the region;
- Provided for both formal and informal space which will encourage higher levels of participation in recreation and positive health outcomes;
- Create new interaction places and spaces to build on the sense of community;
- Allow for the interpretation and understanding of the cultural history of the site, providing socio-cultural enrichment;
- generate new ongoing employment opportunities for maintenance, suited to a range of ages and skills;
- encourage new visitation and tourism opportunities, to create positive economic flow-on effects to the broader economy

It is noted that in undertaking the development, the area provided for formal sports (Leagues Club Fields) will be reduced. During construction, there will also be inconveniences whether through such things as restricted access and/or traffic management. These would be considered negative impacts. It is considered that on balance the proposal presents positive impacts on both the social and economic wellbeing of the local area.

6.12 Traffic Impact Assessment

The site has frontage to a classified road and access from adjoining streets that potentially impact the operation of the detailed road. In addition, parking requirements must be considered to ensure adequate access arrangements are provided for the open space. A Traffic Impact Statement and Transport Management Plan has been prepared to accompany the REF.

6.12.1 Existing Traffic Conditions

TTPP performed traffic surveys at the following intersections to inform their Traffic and Parking Impact Assessment:

- Georgiana Terrace-Baker Street, and
- Central Coast Highway-Vaughan Avenue Intersection.

Figure 10 illustrates the existing traffic movement volumes for a weekday evening peak period and a Saturday peak period.



Figure 10: Existing Traffic Volumes for local intersections⁴⁶



6.12.2 Traffic Generation on Baker Street

The proposal includes the extension of Baker Street, which will support additional on-street parking within proximity to the Leagues Club Field. TTPP have identified three options that are to be considered for the future extension of Baker Street, which is asfollows:

Option 1	Pedestrian-only link,
Option 2	Shared zone treatment, and
Option 3	Conventional road link.

Each option is a discussion in further detail in the Traffic and Parking impact Assessment⁴⁷. The following assessment scenarios were included by TTPP as part of the assessment to provide an analysis of the potential traffic impact of the Baker Street extension on the surrounding road network:

Scenario 1.	2018 Existing Conditions
Scenario 2.	2028 Future Base Case (without Baker Street extension) assuming background traffic growth rate of 2% per annum on local population growth.
Scenario 3.	2028 Future Base Case + Shared Zone assuming a maximum of 100 vehicle trips per hour, and
Scenario 4. vehicle trips per	2028 Future Base Case + Conventional Road Link is assuming 300 hour.

For completeness, all future case scenarios include the estimated development traffic from the adjoining site at 26 Mann Street, located along the eastern side of the proposed Baker Street extension.

⁴⁷ Ibid 46, page 12 – 14.



Page **J**.

⁴⁶ TTPP (2019). *Traffic and Parking Impact Assessment.*

The traffic generation data has been obtained from the traffic report prepared for the St Hillers site, 26 Mann Street *Staged Development Transport Impact Assessment* ⁴⁸, which was developed by GTA Consultants. The traffic volumes for Scenarios 2, 3 and four are presented in Figure 11, Figure 12 and Figure 13, respectively.

Figure 11 &12: (Top) Scenario 2 (Future Base) Traffic Volumes⁴⁹ (bottom) Scenario 3 (Future Base + Shared Zone) Traffic Volumes⁵⁰





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⁴⁸ GTA Consultants (2018). Staged Development Transport Impact Assessment.
⁴⁹ Ibid 46, page 16.
⁵⁰ Ibid 46, page 16.



Figure 13: Scenario 4 (Future Base + Conventional Road) Traffic Volumes⁵¹



6.12.3 Intersection Capacity Assessment

The traffic impacts of the proposed Baker Street extension on the surrounding intersections were assessed by TTPP using SIDRA. SIDRA calculates intersection performance measures such as 'average delay' that vehicles encounter and the level of service (LoS).

Intersection	Thursday PM Peak		Saturday Peak	
Intersection	Avg. Delay (s)	LoS	Avg. Delay (s)	LoS
Scenario 1 - Existing				
Georgiana Terrace – Baker Street	6	А	5	А
Central Coast Highway- Vaughan Avenue	12	А	13	А
Scenario 2 – Future Base Case				
Georgiana Terrace – Baker Street	7	А	5	А
Central Coast Highway- Vaughan Avenue	18	В	20	В
Scenario 3 – 2028 Future Base + Shared Zone				
Georgiana Terrace – Baker Street	9	А	6	А
Central Coast Highway- Vaughan Avenue	22	В	20	В
Vaughan Avenue – Baker Street Extension	4	А	3	А
Scenario 4 – 2028 Future Base + Conventional Road Link				
Georgiana Terrace – Baker Street	10	А	7	A

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⁵² Ibid 46, page 19.



⁵¹ Ibid 46, page 17.

Interpretion	Thursday PM Peak		Saturday Peak	
	Avg. Delay (s)	LoS	Avg. Delay (s)	LoS
Central Coast Highway- Vaughan Avenue	25	В	29	С
Vaughan Avenue – Baker Street Extension	2	А	5	А

Based on the data provided in Table 2 it is evident that both intersections at Georgiana Terrace-Baker Street and Central Coast Highway are currently operating with minimal delays, which equates to a LoS A.

In Scenario 2, the growth of the background traffic would result in slightly longer delays at all assessed intersections in both peak periods. Although, the intersections would continue to operate at a LoS B or greater. Scenarios 3 indicates there would be a negligible increase to average delays at the assessed existing intersections, with a LoS of better. The proposed intersection at Vaughan Avenue – Baker Street extension is expected to operate at a LoS A during both periods assessed. Finally, Scenario 4 would have minor increases to the average delays of up to nine seconds at the assessed intersections. It is further noted that the existing assessed intersections would continue to operate at LoS C or greater in eitherperiod.

6.12.1 Construction Traffic - Mitigation

In order to manage any traffic impacts during the construction phase of the development, a traffic control plan will be developed and implemented. This will ensure that appropriate traffic measures are in place to control traffic.

6.12.2 Conclusion

The Traffic and Parking impact Assessment prepared by TTPP details the traffic impact of the proposed extension of Baker Street between Georgiana Terrace and Vaughan Avenue as part of the redevelopment. The key findings identified by TTPP include:

- The proposal intends to construct a new public domain space including a new sporting and playing field, a regional playground, a community event space and the extension of Baker Street to form a pedestrian and potentially vehicular link.
- The traffic and parking implications of the Baker Street extension has been assessed with consideration for the following options for the future operation of Baker Street:
 - o Pedestrian-only link,
 - o Shared zone, and
 - Conventional road link.
- SIDRA intersection modelling of the options indicated that the Baker Street extension and the various options for its configuration would have minor impacts on the surrounding road network.
- The assessed intersections would continue to operate satisfactorily.

Based on this assessment, as well taking into account the proposed measures to be implemented it is considered that the impact of the proposal is minimal and therefore acceptable.



6.13 Tidal Terrace Water Management Plan

The proposal includes a lowered 'tidal terrace' in the central zone of the park that is proposed to be connected to Brisbane Water to allow regular tidal inundation and emptying. The tidal terrace will form a feature that is an interpretation of the former shoreline and local environment before the site was reclaimed by filling. The tidal terrace is intended to be a 'nature play' area that includes rock islands, stepping stones and sandy channels that will fill during a high tide up to 270mm deep and empty completely during every low tide. Alluvium were engaged to prepare a Tidal Terrace Water Management Plan⁵³, which aimed to develop a detailed hydraulic design to inform a system that will meet their objectives.

The design objectives for the tidal terrace are as follows:

- A naturalistic system that will fill and empty with each tide. The system should empty each tide, providing a 'new' volume of water to the tidal terrace with each high tide,
- Provide a robust system that will limit water depth,
- Suitable water quality,
- Minimal energy use, and
- Flexible operational control that caters for maintenance requirements.

Alluvium concluded that the most efficient and effective strategy to achieve short and long-term project objectives should be based on the following overarching principles (listed in priority order)⁵⁴:

- Maximise ability to control flows and cater for maintenance or future unknown scenarios,
- Set the base level of the tidal terrace such that it will drain out in every low tide,
- Minimise losses in the hydraulic system so that the water level in the tidal terrace closely follows the water level in Brisbane Water without significant lag time.

It is important to note that management actions have been designed and tailored to suit the site based on these principles (section 6.7.2.1).

6.13.1 Water Management Controls

The water management components that will provide the required tidal terracefunctionality are described in the following sections.

6.13.1.1 Inlet/ Outlet Pipeline

A pipe connection is required to convey the water into and out of the tidal terrace. Whilst a connection directly to the existing stormwater box culverts was considered during the concept design, a new pipeline under the Central Coast Highway was preferred due to the potential negative perception of cleanliness of water in the culvert by the public, and given that the proposed inlet/ outlet is 50 metres from the large stormwater culverts, some mixing and dilution would be expected.

6.13.1.2 Control Pit

The control pit is a critical component in the water management system as it is designed to prevent the water level in the tidal terrace rising higher than what is considered a safe depth. A visualization of the control pit is provided in Figure 14, which illustrates the gate penstocks mounted to the internal wall that separates the two chambers within the control pit.

 ⁵³ Alluvium (2019). *Tidal Terrace Water Management Plan.* Revision 1. Issued 22 May 2019.
⁵⁴ Ibid, pg. 14



bage

Figure 14: Visualisations of control pit,



Essentially, with the penstock gate open, as the water level rises in Brisbane Water, water will flow through the pipeline, causing the water level to rise in the tidal terrace. When the water level in the tidal terrace reaches the maximum water depth the gate will close, preventing more water from entering the tidal terrace and keeping the depth at a maximum water level. When the water level in the 'estuary chamber' subsequently reduces to 100mm below the maximum water level in the tidal terrace the gate will open, allowing all of the water to drain out throughout the lowtide.

6.13.2 Preliminary Water Quality Investigation

The tidal terrace is intended to be an area that includes 'island' planting areas, stepping stones and sandy channels that will fill during high tide up to 300mm deep and empty completely during every low tide event. The tidal terrace will be connected to Brisbane Water via a new pipe below the Central Coast Highway, allowing it to fill and empty, twice a day in accordance with tidal fluctuation. With this intended operation, every tidal cycle will introduce a 'new' volume of water into the tidal terrace from Brisbane Water. A Preliminary Water Quality Investigation⁵⁶ was prepared by Alluvium to investigate the water quality in the vicinity of the project site, and that would be introduced to the tidal terrace. The investigation focused on microbiological water quality due to the primary concerns relating to the potential human health impacts arising from the tidal terrace.

The report included background information and data for a preliminary assessment of the anticipated water quality within the proposed tidal terrace. The available data indicates that the water quality should be acceptable for the intended use of the tidal terrace. There are many precedents of sites where people can access water that is subject to variable water quality,

⁵⁶ Alluvium (2019). *Preliminary Water Quality Investigation*. Revision 2. Issued 27 February 2019.



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⁵⁵ Ibid 53, pg. 9.

such as the beach, rivers and creeks. It is important to recognise that an area of Brisbane Water is already used for swimming, personal watercraft and other recreational activities.

The proposed tidal terrace feature within the Leagues Club Field should be considered as a 'natural swimming pool' and should not be subject to the water quality requirements of formal public swimming pools. Notwithstanding, the tidal terrace should be designed and managed such that it will not lead to any public health issues.

The recommendations provided by Alluvium include:

- The Tidal Terrace should remain closed for swimming for three days following rainfall. However, this may be reduced to 48 or 36 hours with further monitoring.
- Further water quality monitoring should be carried out to understand the variation in water quality, and verify the conditions under which the tidal terrace should be closed off from the estuary.
- Comprehensive risk management should be carried out for the site, with required measures to be incorporated into the ongoing operational and management systems.
- Central Coast Council should give consideration to including the tidal terrace as a beach watch monitoring site.

6.13.3 Tidal Terrace Drainage System

Water will be delivered to the tidal terrace via a long grated drain situated below a cantilevered concrete platform at the western side of the tidal terrace, intended to provide the appearance that the tide is creeping up the tidal terrace slope. The base of the tidal terrace is intended to be a relatively firm surface. Subsoil drainage is proposed to be installed across the tidal terrace to allow the sandy base profile to drain (below the level of the grated outlet drain) during low tides. The subsoil drain will be connected via a collection pipe to the grated drain.

6.13.4 Operation and Maintenance

Establishing a monitoring and maintenance program is an important component of implementing the proposed works. Monitoring the condition of the works will be import for identifying when maintenance is required.

A monitoring program should be developed to regularly inspect/monitor the tidal terrace. The program should be developed in sufficient detail to ensure that information on target metrics can be routinely assessed and progress towards the project objectives can be tracked.

Success of the system will require regular maintenance to ensure the integrity of the components is retained and longevity maximised. A specific maintenance program is required that clearly defines routine maintenance schedules and addresses specific inspections and responses.

6.14 Water Cycle Management

A Water Cycle Management Plan⁵⁷ has been prepared by ADW Johnson to accompany this REF, to provide evidence that the proposed on-site stormwater management controls are in accordance with Central Coast Council specifications, including Stormwater Quantity (section 6.14.1) and Stormwater Quality (section 6.14.2). Furthermore, significant attention has been

⁵⁷ ADW Johnson (2019). *Water Cycle Management Plan*. Reference: 190541E.



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given to the Nature Play Tidal Connection (section 6.14.3), which will connect the Leagues Club Field to Brisbane Water; via the provision of a new HDPE pipe underneath the Central Coast Highway.

6.14.1 Stormwater Quantity

A stormwater drainage concept plan has been prepared to demonstrate how the stormwater runoff generated by the proposal is captured and conveyed to the receiving waters. The majority of flow generated by the proposal will sheet flow across a combination of pervious and impervious areas before being captured by grass-lined swales and directed to grated surface inlet pits. The flows will be conveyed by an underground pipe network to the existing stormwater infrastructure within the surrounding road network and ultimately discharged into Brisbane Water. Detailed sizing of all swales, pits and pipes will be provided at the Construction Certificate stage of the project. Further information in relation to stormwater quantity behaviour is provided in the table below.

Catchment	Stormwater Quantity Behaviour
Catchment 1 (Northern)	Flows generated in this catchment will sheet flow across the pedestrian paths and playing field before being captured and conveyed by a grass- lined swale at the base of the western berm. The swale will convey the flows to a series of grated surface inlet pits where an underground pipe network will further convey them to the existing stormwater infrastructure.
Catchment 2 (Southern)	Flows generated in this catchment will sheet flow into the nature play areas, where, in a low tide scenario, the nature play zone will act as a detention basin. Flows will eventually be discharged to the Brisbane Water via the proposed stormwater connection into the existing culverts.
Catchment 3 (Baker Street)	Baker Street is proposed to have a flush kerb, and the longitudinal grades are in the order of 0.5% the road cross fall will be graded one way towards the playground area. Flows generated within the road catchment will sheet flow from the road and footpath into a series of swales located on the western side of the footpath. Flows will be conveyed within the swales to a series of grated surface inlet pits where it will be captured and conveyed via a pipe system to the existing stormwater infrastructure in both Georgiana Terrace and Vaughan Avenue.

6.14.2 Stormwater Quality

The majority of the development is proposed to consist of primarily pervious surfaces, which will limit the discharge leaving the site and hence limit the runoff of sediments and nutrients. Additionally, a number of the elements proposed as part of the works (*i.e.* Tidal Nature Play Area) are considered to be Water Sensitive Urban Design (WSUD) elements, further improving the water quality of any flows leaving the site. As the proposed development is largely pervious and consists of a large number of WSUD elements, it is considered that water quality modelling is not required for the development. The following table will outline how runoff within each of the catchments is treated prior to entering the receiving waters.





Catchment	Description of Treatment
Catchment 1 (Northern)	Flows generated on the eastern side of the catchment will sheet flow across the playing field, which will act as a buffer strip removing sediments and nutrients. Once flows have passed over the playing field they are captured by a series of grassed lined swales, which will further remove any excess sediments and nutrients prior to being captured by the grated surface inlet pits.
Catchment 2 (Southern)	The majority of this catchment is taken up by the nature play areas, which largely consist of pervious surfaces. These pervious areas will limit the amount of runoff leaving the catchment and hence limit the quantity of sediments and nutrients entering the receiving waters. Litter baskets are proposed to be provided within all grated surface inlet pits to provide further treatment to any runoff generated and to capture gross pollutants.
Catchment 3 (Baker Street)	The grass-lined swales will provide treatment to flows generated within the catchment, removing sediments and nutrients prior to flows entering the underground drainage network. All grated surface inlet pits will have litter baskets to further remove coarse sediments and gross pollutants.

6.14.3 Nature Play Tidal Connection

It is proposed to connect the nature play zone to Brisbane Water via the provision of a new stormwater pipe connected to the existing box culverts. The provision of this connection will allow the nature play zone to fill with water during a high tide scenario and empty during a low tide scenario.

During a high tide event, water from the Brisbane Water will enter the nature play area through the connecting pipe and valve pit. A float valve will be provided within the valve pit to ensure that as the tide rises, water depths in the nature play zones do not exceed 300mm in depth. As the tide starts to lower, the nature play area will drain back to Brisbane Water by a series of inlet pits connected to the proposed stormwater pipe and valve pit.

It is considered likely that, throughout the life of the playground, a high tide event would coincide with a rain event, which would ultimately lead to the nature play area filling to depths greater than 300mm. As the overfilling of this area will create a potential risk to the public, through both deeper water and escaping overland flow, further investigations were undertaken and discussed as part of the water cycle management plan⁵⁸.

6.14.4 Regional Flooding

A review of Central Coast Councils flood mapping was performed by ADW Johnson as part of the Water Cycle Management Plan⁵⁹. The flood mapping indicated that during the 100-year storm event, normal catchment flooding has very minimal impact on the proposed site, with only minor encroachment on the western boundary. It is anticipated that the flooding on the site can be addressed via normal planning controls and will not impact on the development.

⁵⁹ Ibid 57, page 10.



⁵⁸ Ibid 57. page 8 & 9.

6.14.5 Conclusion

Analysis of peak water levels within the nature play area during the event that high tide and significant rain event occur at the same time found that during the ten year ARI storm event, the risk to the public was manageable⁶⁰. While, during the 1 in 100-year event excess runoff would be discharged through an emergency overland flow path towards Dane Drive. ADW Johnson found the development site to be, for the most part, unaffected by regional flooding during normal catchment conditions during the 1 in 100-year flood event and only partially affected by storm surge.

The majority of the elements proposed within the playground/ open space precinct consist of pervious areas, which during minor storm events will minimise the runoff being generated and hence limit the quantity of sediments and nutrients leaving the site. The majority of the elements are considered to be WSUD elements, providing further treatment to any runoff generated. It is further proposed to provide litter baskets within all grated surface inlet pits to ensure any gross pollutants do not enter the stormwater infrastructure. ADW Johnson have demonstrated that the management of stormwater, from both a quantity and quality perspective, does not pose a constraint to the development.

Based on the information/assessment undertaken and taking into account the proposed measures to be developed/implemented it is considered that the development will not have a negative impact on the water quality/quantity of the site or surrounding waters.

6.15 Waste generation

SESL have prepared a Waste Management Plan⁶¹ for the proposed development. The plan addresses the regulatory requirements to manage wastes generated as part of the proposed works and provides strategies in the event of any unexpected finds. Guidance is based on the previously-undertaken geotechnical and soil investigation⁶², as well as the proposed design for the development.

6.15.1 Spoil Management

All excavated soils should be assessed and stockpiled with like material excavated from the same general area. The separation and strict control of the excavated materials will ensure the prevention of cross-contamination with soils from other areas or depths. The prevention of cross-contamination is crucial for the successful reuse of excavated spoil at the site. If intended for reuse, topsoil's should be stockpiled separately to subsoils to ensure that the soils are suitable for plant growth or fill at later stages. SESL have recommended that a stockpile register be developed and maintained throughout the construction works.

Following excavation, all stockpiles should be covered using plastic or geotextile if intended for storage for greater than a day. Covering stockpiles prevents excessive erosion and run-off of soil material. All soil must be analysed for contamination prior to reuse on-site or offsite disposal.

⁶⁰ Ibid 57, pages 10 & 14.

 ⁶¹ SESL (2019). Waste Management Plan and Unexpected Finds Procedure. Project J001540. Issued 5 February 2019.
⁶² Ibid 28.

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6.15.1.1 Onsite Reuse Criteria

Reuse of spoil generated from excavation works requires safeguards to ensure the suitability of the soil for its intended future use. Future reuse of the excavated material on-site could reasonably include:

- Use of the excavated topsoil as topdressing or growing media for plants, and
- Use of excavated subsoil for fill or structural subsoils in planted areas.

For both of these potential reuses, the suitability of the material should be assessed prior to reinstatement. Given the presence of extensive fill material at the site, chemical characterisation is strongly recommended to ensure that the contamination status of the soil is suitable for the intended use. The presence of potential and actual ASS at the site requires soils to be treated and managed in accordance with an ASSMP (refer to section 6.10.4) prior to reuse.

6.15.1.2 Classification of Spoil for Offsite Disposal

Excess soil excavated from the site must be assessed and classified in accordance with the *NSW* Waste Classification Guidelines – Part 1: Classifying Waste. The soil may be assessed either *insitu* or in stockpile. No material should leave the site prior to the completion of a waste classification assessment, including a certificate of classification.

Soil material identified as actual or potential ASS must be treated in accordance with the ASSMP (section 6.10.4) prior to offsite disposal. This will include, as a minimum, lime treatment for neautralisation of the affected material. All assessment must be undertaken by a suitably qualified and experienced consultant.

6.15.2 Management of Other Wastes

6.15.2.1 Vegetation and Green Waste

It is anticipated that some vegetation clearing will take place over the course of the development works. Vegetation may be removed and disposed of by a bulk tree removal contractor or processed on site via mulching. Stockpiles of mulch material require bunding to minimise the runoff of leachate associated with the stockpiles. When not in use, stockpiles must be covered to prevent the infiltration of rainwater and minimise the generation of windblown dust. Mulch may be reused on site; however, attention should be paid to the drawdown of nitrogen within the soils to which the mulch is applied.

In the event that the vegetation undergoes mulching, the material may only leave the site in accordance with the NSW *Waste Classification Guidelines – Part 1: Classifying Waste.* The mulch may only be accepted by facilities or sites that meet the requirements to do so in accordance with their EPL or mulch exemption.

6.15.2.2 Construction and Demolition Waste

All construction and demolition waste that is considered suitable for recycling should be disposed offsite to an appropriately-licensed recycling facility. Tipping dockets must be retained to demonstrate that the waste has been received by appropriatefacilities.

In the event that the material is contaminated or not suitable for recycling, all construction and demolition wastes must be disposed of in accordance with the waste guidelines.



6.15.3 Contingency Planning and Unexpected Finds

There is the potential for unexpected materials to be uncovered during excavation. In the event that unexpected contamination is encountered during the excavation works, a contingency plan should be in place to ensure the encounter is managed appropriately to protect human health and the environment. The procedures outlined in Section 6 of the management plan are to be followed in the event of an unexpected find.



7 Justification and Conclusion

This Chapter provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposed is also considered in the context of the objectives of the NSW EPA Act, including the principles of Environmental Sensitive Design (ESD), as defined in Schedule 2 of the EPA Regulation. This REF seeks to assess the environmental impacts of the construction, operation and maintenance for the Redevelopment of the Leagues Club Field proposal.

7.1 Ecologically Sustainable Development

The proponent is committed to ensuring that the proposal is implemented in a manner that is consistent with the principles of ecologically sustainable development. These principles are imbedded in the concept design and will be incorporated into the management systems for the proposed development.

7.1.1 The Precautionary Principle

The Precautionary Principal states 'if there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'.

Evaluation and assessment of alternative development options (section 3.2.2.3) has aimed to reduce the risk of serious and irreversible impacts on the environment. Stakeholder consultation (Chapter 4) considered issues raised and a range of specialist studies were undertaken for key issues to provide accurate and impartial information to assist in the environmental assessment process. Through the detailed assessment of potential environmental impacts (Chapter 6), the proponent has sought to properly understand the potential environmental impacts of the proposal and minimise the impacts, while maintaining feasibility and safety.

The assessment of the potential impacts of the proposal is considered to be consistent with the precautionary principal. It is considered that the assessments that have been undertaken are consistent with accepted scientific and assessment methodologies and have taken into account relevant statutory requirements.

7.1.2 Intergenerational Equity

The Intergenerational equity principle states 'the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generation'.

It is recognised that the proposal has the potential to lead to some short-term environmental impacts. This includes some temporary disturbance during earthworks, with the resultant potential for erosion, sedimentation of Brisbane Water, and disturbance of large areas of soil. However, the potential for environmental disturbance as a result of earthworks is considered to be out-weighed by the long-term benefits of the proposal. Further, the potential short-term environmental impacts can be appropriately mitigated through the implementation and management of appropriate erosion and sediment controls.

The health, diversity and productivity of the environment would be enhanced for the benefit of future generations by the proposal via the redevelopment of the Leagues Club Field. Should

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the proposal not proceed, the principle of intergenerational equity may be compromised as future generations would inherit a diminished asset, which is likely to reduce potential ecological, visual amenity and socio-economic values.

7.1.3 Conservation of biological diversity and ecological activity

This principle states that the 'diversity of genes, species, populations and communities, as well as the ecosystem and habitats to which they belong, must be maintained and improved to ensure their survival'.

A thorough assessment of the existing local environment has been undertaken (Chapter 6) in order to identify and manage any potential impacts of the proposal on local biodiversity. The proposal is considered to have a positive impact on biological activity and ecological integrity through the reduction in onsite contamination exposure pathways to ecological receivers. The assessment of the potential impacts of the proposal is considered to be consistent with this principal

7.1.4 Improved valuation, pricing and incentive mechanisms

This principle requires that 'costs to the environment should be factored into the economic costs of a project'.

This REF has examined the likely environmental consequences of the proposal and identified management and mitigation measures to manage the potentially adverse impacts of the proposal on the community and environment (Chapter 6). The preferred works have been designed and developed with an environmental objective in mind. Environmental costs of the proposal have been considered, weighed, and appropriately valued as part of the overall costs of the proposal; throughout the environmental assessment of the proposal within this REF.

7.2 Conclusion

Environmental investigations were undertaken during the preparation of the REF to assess the potential environmental impacts. With the conclusion of ongoing investigations and the implementation of the proposed mitigation measures, there are considered to be no significant environmental impacts associated with the proposal that cannot be adequately managed or mitigated.

Potential impacts resulting from the proposal are considered manageable through the implementation of the proposed mitigation measures. The detailed design for the proposal is being carefully developed with the objective of minimising potential impacts on the local environment, particularly impacts to traffic, heritage, biodiversity, and other infrastructure in the vicinity, adjoining residents and businesses. The design and construction methodology would continue to be developed with this overriding objective in mind, taking into account the input of stakeholders.

In conclusion, the proposal enables the urban renewal of Gosford's City Centre and connection to Brisbane Waters, with substantial social and economic benefits for the Gosford CBD. With the implementation of the proposed mitigation and management measures the potential environmental impacts of the proposal would be adequately managed. Having regard to the provisions of section 5.5 of the EPA Act, the likely impacts of the proposal (after mitigation) are not likely to be significant and an environment impact statement is not required.





Appendix A Arborist Report

SESL Australia (2019).

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Appendix B Acid Sulfate Soil Management Plan

SESL Australia (2019).


Appendix C Biodiversity Assessment Report



Appendix D Civil Plans

ADW Johnson (2019).



Appendix E Contamination Assessment

Douglas Partners (2019).

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Appendix F Crime and Safety Report



Appendix G Demolition Plan



Appendix H Disability Access Report



Appendix I Geotechnical Assessment

Douglas Partners (2019).



Appendix J Heritage Impact Statement

GML (2018).

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Appendix K Landscape Plans

Turf Landscape Architects (2019).



Appendix L Soil and Water Management Plan

ADW Johnson (2019).



Appendix M Traffic Impact Assessment

The Transport Planning Partnership (2019).



Appendix N Visual Impact Assessment

Turf Landscape Architect (2019).

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Appendix O Waste Management Plan

SELS Australia (2019).

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Appendix P Water Cycle Management Plan

ADW Johnson (2019).



Appendix Q Consultation Record

- Part A Summary of Workshops
- Part B Council comments and responses



PART A SUMMARY OF WORKSHOPS

Consultation Schedule					
Date	Meeting/ Correspondenc	Queries/ Meeting Outcomes/ Feedback/ Agreements	Stakeholder Group	Key Personnel	Actions by Design Team
23/11/2018	Workshop 1 – 3 approaches to the park design were presented	Outcomes from the meeting: • Separation between park and highway	 Central Coast Council (CCC) Hunter and Central Coast Development Corporation (HCCDC) 	 Karen Tucker – Section Manager (CCC) Recreational Project Delivery and Design Pavla Board – Development Manager (HCCDC) Nicola Robinson – Senior Development Manager (HCCDC) 	Meeting outcomes were developed into the four preferred concepts.
26/11/2018	 Workshop 2 – 4 Concept options were presented: Option 1 (On the Green) Option 2 (State of Play) Option 3 (Our Meeting Place) Option 4 (A Living Landscape) 	 Overall outcomes: Option 4 was agreed to develop as the preferred concept Consider access point to the park from the Stadium corner along Dane Drive Corner entry along Baker Street to be identified more clearly. 	 CCC HCCDC Darkinjun g 	 Karen Tucker – Section Manager (CCC) Recreational Project Delivery and Design Christine Hammond – Land and People, Culture and Heritage Manager 	Option 4 was developed into the preferred concept plan, entry to along Baker Street was reviewed and modified.

Consultation Schedule					
Date	Meeting/	Queries/ Meeting Outcomes/ Feedback/	Stakeholder Group	Key Personnel	Actions by Design Team
	Correspondenc	Agreements			
				 Pavla Board – Development Manager (HCCDC) Nicola Robinson – Senior Development Manager (HCCDC) 	
4/12/2018	Darkinjung Workshop	General endorsement of preferred concept	Darkinjung	 Christine Hammond – Land and People, Culture and Heritage Manager Kevin (Gavi) – Culture Heritage Tourism Education Project Officer 	Turf to further develop Indigenous overlay.
	Workshop 3 – Preferred concept	 Overall endorsement of preferred concept, further investigations: Sight lines and views to the bay. 	 CCC HCCDC Darkinjung 	 Karen Tucker – Section Manager (CCC) Recreational Project Delivery and Design Christine Hammond – Pavla Board – Development Manager (HCCDC) Nicola Robinson – Senior 	Site lines and views to the bay were investigated, trees were positioned accordingly.

Consultation	Consultation Schedule				
Date	Meeting/ Correspondenc	Queries/ Meeting Outcomes/ Feedback/ Agreements	Stakeholder Group	Key Personnel	Actions by Design Team
				Development Manager (HCCDC)	
30/1/2019	Design update to Cleint and Council. Design studios presented: 2. The berm strategy/ visual presence study 3. Amenities studies 4. The pedestrian boulevard character 5. Tidal terrace character	 Berm Strategy Berm mounding to be removed from in front of tidal terrace. Amenities Building Option 2 Amenities building location agreed (next to the Green) Shared Street Single side parking bays agreed Tidal Terrace Water quality been assessed Can oyster grow? Will sludge get in? General Comments Potential to incorporate Walk of Fame Incorporation of fitness equipment 	CCC HCCD C	Karen Tucker – Section Manager Recreational Project Delivery and Design Pavla Board – Development Manager (HCCDC)	 TDEP removed the mounds along the tidal terrace to create a better connection with the bay. Shared street layout was adopted Agreement to add in fitness equipment location TB Agreement to locate the Walk of Champions within the park Preliminary Water Quality was assessed.
18/02/2019	Gosford Park Darkinjung Meeting	 General endorsement of the design further development of the following: Addition of Indigenous animal shapes the tidal terrace design Integration of Indigenous plants. 	Darkinjun g HCCDC	 Recreational project Delivery and Design Christine Hammond – Land and People, Culture and Heritage Manager Pavla Board – Development Manager (HCCDC) 	

Concultation	Cabadula					
Consultation						
Date	Meeting/	Queries/ Meeting Outcomes/ Feedback/	Stakeholder Group	Key Personnel	Actions by Design Team	
	Correspondenc	Agreements				
				 Nicola Robinson – 		
				Senior		
				Development		
25/22/2212				Manager (HCCDC)		
25/02/2019	Email feedback	Queries:	CCC	Karen Tucker –	Points have been	
	from Councils	How does it work?	HCCD	Section Manager	considered in the design	
		Car parking	C	(CCC)	and development process.	
		Pump system/ cleaning		Recreational		
		Kibble park		Project Delivery		
		Amenities building		and Design Pavla		
		Water quality		Board –		
		Can we have a system that monitors water		Development		
		quality?		Manager		
		Water and electricity for events				
		Fencing				
		Visual site lines				
		Cost of project (\$7M)				
		Native vegetation.				
25/02/2019	Submission received	3. There is serious lack of free parking around the	Communit	S	Assisted in informing the	
	during HCCDC	waterfront which means this park area might	y Member		final design in accordance	
	consultation period	predominantly only be visited by locals who live			with CPTED design	
		in walking distance which seems an awful large			principles and safety by	
		amount of money to spend with minimal benefit			design assessment.	
		if we do not attract people from outside the				
		area to boost Gosford tourism and economy. It				
		is too far from the train station to walk with				
		small children.				
		4. Gosford has a well-known reputation for low				
		socio-economic residents and it is common to				

Consultation	Schedule					
Date	Meeting/	Queries/ Meeting Outcomes/ Feedback/	Stakeholder Group	Key Personnel	Actions by Design Team	
	Correspondenc	Agreements				
		find homeless and also drug addicts in the streets. The park being so dense with bushland makes it difficult for a parent to see potential				
		dangers such as used needles etc. and hard for council to maintain the grounds to keep safe for children				
25/02/2019	Submission received during HCCDC consultation period	Very excited to hear the transformation that will take place! I think a safe enclosed play area for toddlers would be a great idea too. Sometimes a traditional park is good fun for the littlies - the playground at Umina beach is a great safe space for toddlers and older kids!	Communit y Member		The park design has been informed through the 'Everyone Can Play' framework.	
26/02/2019	Submission received during HCCDC consultation period	I love the plan for Leagues club park but have concerns about parking and whether it will be well maintained. Also suggest some play equipment for winter.	Communit y Member		All park equipment is suitable for use in Winter. All equipment will be managed and maintained by a maintenance program. An example of such has been provided in section 3.5 of this REF.	
26/02/2019	Submission received during HCCDC consultation period	Gosford Waterfront is a special space that has so much potential to be a wonderful hub for locals and tourists. It's great to see something finally taking shape that will encourage visitation to the area. I am crossing my fingers that this project does come off. Some suggestions:	Communit y Member		All suggestions have been addressed where possible through design elements, which are discussed in Chapter 3.	

Consultation	Consultation Schedule				
Date	Meeting/	Queries/ Meeting Outcomes/ Feedback/	Stakeholder Group	Key Personnel	Actions by Design Team
	Correspondenc	Agreements			
		 The water play area for children is a fantastic idea. Vera's Water Garden at The Entrance attracts so many families - we were there just yesterday because of the fountain - and it'll be great to have this in Gosford. Have you seen the water gates at the Darling Quarter water park? Kids absolutely love being able to control the water flow with those - simple fun that would make a great addition to the water area: https://darlingquarter.com/play/the- playground/ It's wonderful that trees will be planted for shade, but I know they'll take many years to grow. In the meantime could part of the water area be shaded by shade cloth please, so that kids and their carers don't fry in summer? This is a wish that our readers express every single time we post a new park review. Covered picnic tables and toilets: Absolutely, YES Please. And can we please, please, please get a really great cafe installed on the ground level of the tax building? One that opens directly to the 			
		park? All the best and most frequented parks			
		have food options close to hand.			
28/02/2019	Submission received	I would love to see this complemented with a City	Communit		The park is separated from
	during HCCDC	Beach strip from the boat ramp to Central Coast	y Member		Brisbane Water by Dane
	consultation period	Bar/Restaurant instead of rocks/oysters.			Drive, which restricts direct
					waterfront access. In
					addition, augmentation to

Consultation	Consultation Schedule					
Date	Meeting/	Queries/ Meeting Outcomes/ Feedback/	Stakeholder Group	Key Personnel	Actions by Design Team	
	Correspondenc	Agreements				
		I think it is essential to connect this Waterfront			public service framework is	
		concept to Palm Beach with a modern ferry service			outside the scope of this	
		that can then be connected to the new B Line bus			redevelopment. It has been	
		service.			established that the site is	
					accessible by the existing	
					public transport network.	
28/02/2019	Submission received	Where is the parking, because as it stands there's	Communit		Parking has been provide in	
	during HCCDC	not enough as it is?	y Member		the extension to Baker	
	consultation period				Street. A traffic impact and	
					parking assessment has	
					been prepared to support	
					the proposal, which	
					indicates a compliant	
					number of parking spaces	
					for the purposed use.	
6/03/2019	Email feedback	Queries:	CCC	Jay Spare – Unit	Civil Engineer to review	
	from Councils	Traffic management		Manager Road Assets	and incorporate comments	
		Pedestrian access		Planning & Design (CCC)	where appropriate.	
		Drainage				
9/04/2019	Gosford Park	General endorsement of the design:	HCCDC	Christine Hammond –	Darkinjung to provide	
	Darkinjung Meeting	Change of the name of the	Darkinjung	Land People, Culture	information on stories to	
		Community Node to Norimbah		and Heritage Manager	be told in the park. Provide	
		• Art poles to be the totem poles of the seven		Pavla Board –	information on plant	
		nations		Development Manager	species.	
		• Potential light artwork in the Community Node .		(HCCDC)		
10/04/2019	St Hilliers –	General endorsement of the design. Baker Streetto	St Hilliers	• Justyn Ng –	Design team to coordinate	
	Coordination	accommodate through site link form development.	DKO (St Hilliers	Development	through site link.	
	Workshop		Development	Manager (St		
			Architect)	Hilliers)		

Consultation	Schedule				
Date	Meeting/ Correspondenc	Queries/ Meeting Outcomes/ Feedback/ Agreements	Stakeholder Group	Key Personnel	Actions by Design Team
				Nick Byrne – Director DKO	
16/04/2019	Council update meeting: Fencing options presented Shared street layout General arrangement s update	 General endorsement of the shared street layout Team to review floor analysis Fencing option 2 was preferred (low visibility from the park). 	CCC HCCD C	 Karen Tucker (CCC) David Metcalf (CCC) Robert Baker (CCC) Pavla Board (HCCDC) 	Design team to proceed on the general endorsements.
30/04/2019	Email feedback from Councils	Parking bay minimum width of 2.5 metres. Shared street width, minimum 3 metres, and preferred 3.5 metres.	CCC	 David Metcalf – Section Manager Major Design and Transport Roads Assets Planning and Design Pavla Board – Development Manager (HCCDC) 	Design team updated layout to 2.5 metre parking bays and 3.5 metre wide shared street.
2/05/2019	Gosford Parking Darkinjung Meeting	 General endorsement of the design: Community Node lighting concept was endorsed. Community Node poles are to represent the seven nations as large poles and seven local clans as smaller poles around the Norimbah 	CCC HCCD C	 Karen Tucker – Section Manager Recreational Project Delivery and Design Christine Hammond – Land and People, 	Turf to develop Community Node design based on nations and local clans concept.

Consultation	Consultation Schedule					
Date	Meeting/ Correspondenc	Queries/ Meeting Outcomes/ Feedback/ Agreements	Stakeholder Group	Key Personnel	Actions by Design Team	
				Culture and Heritage Manager • Pavla Board – Development Manager (HCCDC)		
7/05/2019	Email feedback from Councils	Headwall and tidal terrace queries	ССС	 Peter Sheath – Section Manager Waterways (CCC0 	Design team provided response to queries raised by Council.	
16/05/2019	Meeting with CCC Waterways	Further water quality testing is required	CCC HCCD C	 Peter Sheath – Section Manager (CCC) Waterways Karen Tucker – Section Manager (CCC) Recreational Project Pavla Board – Development manager (HCCDC) Nicola Robinson – Senior Development Manager (HCCDC) 	Design team to put together a water quality testing regime for Councils sign off.	
16/05/2019	Gosford Park Darkinjung Meeting	 General endorsement of the design: Community Node poles design generally endorsed 	CCC HCCD C	Karen Tucker – Section Manager (CCC)	Design team to further develop planting palate.	

Consultatio	Consultation Schedule					
Date	Meeting/ Correspondenc	Queries/ Meeting Outcomes/ Feedback/ Agreements	Stakeholder Group	Key Personnel	Actions by Design Team	
				Recreational Project Delivery and Design Christine Hammond – Culture and Heritage Manager Pavla Board – Development Manager (HCCDC)		

ⁱ Gosford City Council, Plan of Management Leagues Club Field, 1995, p.2

PART B SUMMARY OF COUNCIL COMMENTS AND RESPONSE

Item	Comment	Response
Reports	 REF considered to be sufficient to address aspects of potential concern but should be amended to: 1. consider the Fisheries Management Act 1994 2. include consideration of whether a Part 7 permit is required 3. address the extinguishment of the previous Aboriginal Land Claim 4. the presence, or not, and potential impact on the black glossy cockatoo 	 The report notes the proposed development is compliant with the objective of the Fisheries Management Act as there will be full retention of Mangrove and no blocks to fish passage. Stormwater from on-site will be managed such that there is to be a positive or neutral impact on the receiving water. Refer to Page 9-10 Not required. The ecological assessment advises that the proposed development is compliant with the objective of the Fisheries Management Act Refer to Page 9-10 It is noted that an Aboriginal Land Rights Claim was lodged for the site by the Darkinjung Local Aboriginal Land Council (LALC) under the NSW Aboriginal Land Rights Act, 1983, on 1 October 2017 and 3 July 2017. Correspondence from the Minister for Lands and Forestry of 25 February 2019 indicates that the claims have been refused, as the land was not claimable crown land. Claimable Crown land is defined under s.36 of the Aboriginal Land Rights Act. A further claim was lodged over the site (ALC 47364), registered on 20 February 2019. The applicant has been informed that Darkinjung will seek to remove the claim over the site. It is noted that the black glossy cockatoo does not appear on the Biopet record for our site. Befer to page 18

Item	Comment	Response
	Ecological Assessment conducted by Kingfisher Ecology considered to be flawed and does not thoroughly	1. The Ecological assessment contains Details of flora and fauna survey including methodology and results refer page 10-11 and 12-25
	assess the terrestrial and aquatic ecology, and potential significant impact of the site. Specifically, it should be reviewed to include: 1. Details of flora and fauna survey	2. It is noted that the black glossy cockatoo does not appear on the Bionet record for our site. Refer to page 18. The Kingfisher report notes that the site does not present suitable habitat for the black glossy cockatoo.
	 including methodology and results 2. Confirmation of presence of black glossy cockatoo on site and if so undertake a 5-part test to identify potential significant impact 3. Confirmation as to whether a Part 7 permit is required for the work (including ongoing maintenance of the pipe in Brisbane Water). 	3. Not required. The report notes the proposed development is compliant with the objective of the Fisheries Management Act as there will be full retention of Mangrove and no blocks to fish passage. Stormwater from on-site will be managed such that there is to be a positive or neutral impact on the receiving water. Refer to Page 9-10
Noise Management	Consideration of the noise impact of traffic from the Central Coast Highway on the play precincts and park.	Berm mounding has been positioned along the central coast highway where appropriate for noise mitigation. Where mounting is not appropriate due to CPTED reasons a 6-8 metre planting buffer is provided with shrub planting up to 1m tall for noise mitigation.
Crime Prevention though Environmental	The location of the toilets needs to be assessed in terms of the CPTED principles	The amenities building has been assessed for CPTED by CCEP. The placement of the amenities building provides access to all areas of the site, the proximity to the street and main paths of travel provides passive surveillance.
Design	Consideration of how the design of the park addresses the requirements to withstand motorised vehicle attack.	The design has been updated with bollards located at all entry.
Accessibility and Inclusion	A lift (hoist) and change facilities should be provided in the toilet to	The subject of a lift and change facilities in the toilets will be considered through the design and construct tender for the amenities

Item	Comment	Response
	ensure that the park is a model of inclusion in line with DIAP	block and in line with Council requirements including considerations for ongoing maintenance and budget constraints
	Accessible parking should be provided in close proximity to the toilets	The designation of parking as accessible and its location will be subject to Council designation and signage
	Has the design been passed by an accessible public domain consultant?	The design has been reviewed for compliance with the <i>Everyone Can</i> <i>Play</i> guidelines to ensure it maximises opportunities in relation to inclusive and accessible usage.
	Will the stainless steel slide in the playground be internally lit as some people will not go well in a dark confined space like this	It is not considered appropriate to artificially light the slide although provision of natural light will be maximised through the use of appropriate materials.
	The rope fish trap in the play space is too high and would exclude use by a young person in wheel chair	The play element has been amended to address this
	Are there any bus bays for group access to the site?	Bus access to the site is not changing as a result of this proposal
	The images of seating and picnic tables do not show any provision for accessible tables and there are no backrests on any of the seating contrary to accessible and inclusive use	The seating has been amended to provide for seats with backrests and arms in accordance with the <i>Everyone Can Play</i> guidelines
	Will there be SMART panels in the park to tell users what else is on in Gosford, to offer interactive gaming and art/soundscape opportunities or night time micro file festivals	It is not intended to include SMART panels in the park. Should Council wish to provide these at a later date, power will be available within the park that may accommodate this.
Planting regime	Many of the proposed species of plants listed grow in micro-climates that are wildly different to the Gosford foreshore	The proposed plant species continue to be refined in accordance with Council requirements

Item	Comment	Response
Place Activation	For special event bump in/out have the internal pavements been designed to carry heavy vehicles (width and axle loads)	The north east and north west entries pavement have been designed for heavy vehicle loading concrete (32mpa) and are appropriate widths (3.6m min.) to allow special events vehicle.
	Are there weatherproof power bollards	Yes. All power bollards will be waterproof
	There's no mention of potential photo voltaic energy harvesting and the community awareness value of same	The specifications for light poles and other infrastructure within the park is in accordance with Council requirements which did not specify photo voltaic energy harvesting. This could be retrofitted by Council at a later date if required.
Maintenance	Toilets and bbqs not mentioned in the regime	Upon completion, a maintenance plan for the park will be provided to Central Coast Council
Water	The water inlet pipe is possibly too	The location of the pipe and water quality has been subject to
inlet/outlet	close to the CBD drainage outlets potentially increasing the risk of contaminants	extensive investigations and review and is determined to be appropriate
	Install fresh water showers to reduce impact of possible contaminants	Showers are included in the park design
	Undertake a review of the water quality through monitoring and reference to Beachwatch sampling	The water quality has been subject to extensive investigations and review and is determined to be appropriate

Appendix R Tidal Terrace Water Management Design Report



Appendix S - Play Safety Report



Appendix T Darkinjung Statement



Appendix U Lighting Concept Report



Appendix V Coastal, Estuary and Marine Ecology Assessment



Appendix W Soil Science



Appendix X Signage Strategy Report


Appendix Y Soil Executive Summary

