CENTRAL COAST COUNCIL

Captain Phillip Reserve, Green Point
Foreshore Stabilisation

REVIEW OF ENVIRONMETAL FACTORS

Job No: 180515

Date: 25 February 2020

COAST ECOLOGY
ENVIRONMENTAL ASSESSMENTS

PO Box 3005 Wamberal NSW 2260

T 0404 858573 ▫ E kristy@coastecology.com.au ▫ W www.coastecology.com.au

Kristy McQueen operates as a Sole Trader under registered business name Coast Ecology ABN: 249 246 74371

This report was prepared by Dr Kristy McQueen, Scientific License: SL100391, BAM Assessor No. BAAS18068, Practicing Member of the Ecological Consultants Association of NSW

Review of Environmental Factors, Captain Phillip Reserve, Green Point Foreshore Stabilisation

Issue	Date	Description	Author
A	25/07/2018	DRAFT	KM
B	16/08/2018	FINAL	KM
C	12/09/2018	FINAL	KM
D	29/11/2019	UPDATE TO BC ACT	KM

PO Box 3005 Wamberal NSW 2260

T 0404 858573 ▫ E kristy@coastecology.com.au ▫ W www.coastecology.com.au

Kristy McQueen operates as a Sole Trader under registered business name Coast Ecology ABN: 249 246 74371

Executive Summary

Central Coast Council (CCC) engaged Coast Ecology to prepare a Review of Environmental Factors (REF) for proposed foreshore stabilization works at Captain Phillip Reserve at Green Point.

The design plans for the proposed foreshore stabilization include 'soft' engineering designs that reinstate a natural, sloping foreshore with the aim of improving reserve amenity, providing access to the water and inter-tidal habitat, increasing recreational amenity and safety and improving habitat value through the use of environmentally friendly seawall design.

Four general concept designs include rock treatment, beach treatment, saltmarsh berm treatment and saltmarsh walkthrough treatment

Investigations identified that areas of potential environmental impact are predominately related to potential indirect impacts of the works on water quality during the construction. Mitigation Measures have been summarised in Section 6 and will require monitoring for the duration of the works.

This Review of Environmental Factors concludes that:

1. The impact of the proposed works will not be significant;
2. An Environmental Impact Statement is not required; and
3. Review of Environmental Factors is an adequate level of assessment for the proposed activity.

Contents

1.0 INTRODUCTION

Central Coast Council engaged Coast Ecology to prepare a Review of Environmental Factors (REF) for proposed restoration works along the foreshore at Captain Phillip Reserve, Green Point (hereafter referred to as the Subject Site Figure 1).

1.1 DESCRIPTION OF THE PROPOSAL

Historically, foreshore protection works in estuaries have utilized seawalls to armor the foreshore against erosion. More recently, the limitations of using traditional seawalls have been recognized, including their reduction of intertidal habitat compared to natural intertidal habitats (OEH, 2012). The NSW Office of Environment and Heritage (2012) provided a number of techniques to improve the environmental value of seawalls including the incorporation of:

- estuarine and riparian vegetation,
    - Step seawalls with mangrove/saltmarsh benches
    - Native riparian buffer landward of seawall
- maximizing habitat diversity and complexity
    - Using boulders of various size and shape
    - adding cavities and pools that retain water at low tide
    - Not cementing between blocks to create crevices
    - Incorporating rubble toes for vertical seawalls
    - utilising natural building materials
    - utilising irregularly shaped and or weathered blocks
    - incorporating protruding/indented blocks
    - concrete panels with indentations and exposed aggregate
- Low-sloping seawalls
    - Gentle slopes
    - Change of slope e.g. benches and steps

Central Coast Council engaged Royal Haskoning DHV (2014) to prepare a design report for the stabilisation works with consideration of the OEH (2012) guide to improving the environmental value of seawalls.

The design aimed to accommodate the following:

- be of a soft treatment design;
- reinstate a natural, sloping foreshore with the aim of improving reserve amenity;
- provide access to the water and inter-tidal habitat;
- increase recreational amenity and safety;
- improve habitat value through the use of environmentally friendly seawall design; and
- be applied elsewhere in the estuary where prevailing estuarine processes and bathymetry allow.

Four general concept designs for foreshore stabilisation have been developed and relate to sketches provided in Appendix 1:

- Rock Treatment (refer Sketch SK4);
- Beach Treatment (refer Sketch SK5);
- Saltmarsh Berm Treatment (refer Sketch SK7); and
- Saltmarsh Walkthrough Treatment (refer Sketch SK6).

Concept designs for remediation of the gabion wall at the southern extent of the site adjacent to the public boat ramp (refer Sketch SK3), and the dinghy skid at the northern extent of the site adjacent to the dinghy storage racks (refer Sketch SK8) have also been developed.

The design has incorporated treatments consistent with the OEH (2012) guide to improving the environmental value of seawalls by providing inter-tidal habitat for aquatic flora and fauna.

Further detail is provided in the Design Report (Royal Haskoning DHV (2014) provided in Appendix 1).

1.2 DESCRIPTION OF THE ZONING APPLYING TO THE PROPOSAL

The Subject Site is zoned RE1 Public Recreation under Gosford Local Environmental Plan (LEP) 2014 (Figure 2).

Zone RE1 Public Recreation

1. Objectives of zone
    - To enable land to be used for public open space or recreational purposes.
    - To provide a range of recreational settings and activities and compatible land uses.
    - To protect and enhance the natural environment for recreational purposes.
    - To identify areas suitable for development for recreation, leisure and cultural purposes.
    - To ensure that development is compatible with the desired future character of the zone.
2. Permitted without consent

    Environmental facilities; Environmental protection works

3. Permitted with consent

    Camping grounds; Car parks; Caravan parks; Centre-based child care facilities; Community facilities; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Water recreation structures

4. Prohibited

    Any development not specified in item 2 or 3

The proposed works are defined as *Environmental Protection Works* and are permitted without consent.

The proposal is consistent with the objectives of this zoning as the works will provide improved accessibility to the public open space for recreational purposes. The works will also protect the natural environment through stabilization of the foreshore.

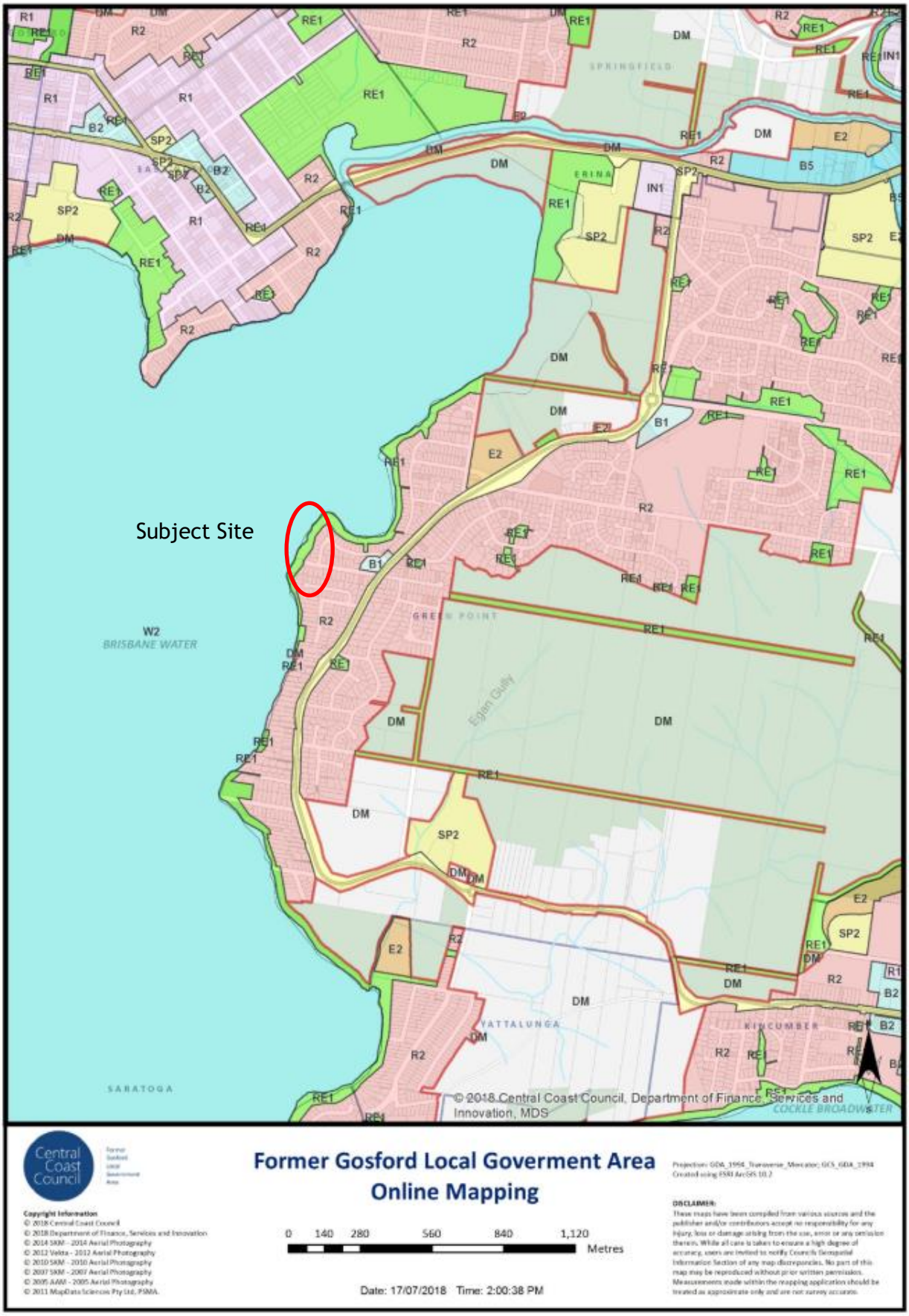


Figure 2. Former Gosford Local Government Area Online Mapping

1.3 JUSTIFICATION OF THE PROPOSAL

The Coastal Zone Management Plan for Brisbane Water Estuary (Cardno, 2012) was prepared under the NSW Coastal Management Process and in accordance with the NSW Rivers and Estuaries Policy.

The overarching aims for the management of the Brisbane Water estuary are to:

- Protect, rehabilitate and improve the natural estuarine environment;
- Manage the estuarine environment in the public interest to ensure its health and vitality;
- Improve the recreational amenity of estuarine waters and foreshores;
- Recognise and accommodate natural processes and climate change; and
- Ensure ecologically sustainable development and use of resources (Coastal Zone Management Plan for Brisbane Water Estuary).

The proposed works were in accordance with the aims of the Coastal Zone Management Plan for Brisbane Water, in particular the following management actions are relevant to the proposal:

> *W34 - Identify locations of bank erosion along creekline corridors and the Estuary foreshore. Design and implement remediation measures to address these issues, with re-establishment of native vegetation being the preferred option where feasible*
>
> *W104 - Improve public access along the foreshore reserve between Ironbark Point and Rocky Point. Assess the feasibility of installing a boardwalk, undertaking foreshore stabilisation works and/or creating a public path in front of houses between 36-40 Asca Drive, Green Point.*

Currently at the Subject Site, the existing gabion structures are deteriorated, the rock seawalls are in poor condition and failing, the concrete ramps are of poor construction and require replacing and the existing jetty is in a very poor, unsafe condition. The concept designs have been developed in accordance with the Basis of Design, Coastal Zone Management Plan for Brisbane Water Estuary (Cardno, 2012), a guide to improving the environmental value of seawalls (OEH, 2012) and informed by the walkover assessment in collaboration with Council and the site investigations (Royal Haskoning DHV, 2014).

2.0 COMMONWEALTH LEGISLATION

The proposed activity is subject to the provisions of the Environment Protection and Biodiversity Conservation Act (1999). An assessment of the proposed activity in relation to the EP&BC Act (1999) for matters of national environmental significance is provided in Section 5.2 and Appendix 2 of this report.

3.0 STATE LEGISLATION

A number of legislative changes came into effect on 25th August 2017. The Native Vegetation Act 2003, Threatened Species Conservation Act 1995, Nature Conservation Trust Act 2001 and Parts 7 to 9 of the National Parks and Wildlife Act 1974 were repealed. In their place, the Biodiversity Conservation Act 2016, Local Land Services Act 2013 and State Environmental Planning Policy (vegetation in non-rural Areas) 2017 were established.

In addition, the NSW Coastal Reforms have resulted in the repeal of the Coastal Protection Act, 1979 and the commencement of the Coastal Management Act, 2016. This includes the commencement of the State Environmental Planning Policy (Coastal Management) 2018 which updates and consolidates into one integrated policy SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection), including clause 5.5. of the Standard Instrument – Principal Local Environmental Plan. These policies are now repealed.

3.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT

The requirement to prepare this REF is identified in Part 5 of the Environmental Planning & Assessment Act 1979 (EP&A Act) where Council, as the determining authority, must, in its consideration of an activity, "*examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity*".

The requirement to examine the environmental impact of an "*activity*" (including the *"protecting, improving or utilising, to the best advantage, the environment, (section 26)"* for the proposed foreshore stabilization at Captain Phillip Reserve, obliges Council to identify, examine and consider the scale and significance of potential environmental effects of the "*activity*", with a view to determining whether "*the activity should proceed, be modified, reviewed or not undertaken at all*".

The *Environmental Planning and Assessment Acts* principal function is to consider 'environmental impacts' in land use and decision making.

3.2 ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION

Clause 228 of the Environmental Planning & Assessment Regulation 2000 (EP&A Regulation) outlines the factors which "must be taken into account when consideration is being given to the likely impact of an activity on the environment".

The requirements of Clause 228(2) are addressed in Section 5.1 of this report.

3.3 SEPP INFRASTRUCTURE

The proposed works fall under *Division 25 Waterway or foreshore management activities*

In this Division:

waterway or foreshore management activities means:

> *(a) riparian corridor and bank management, including erosion control, bank stabilisation, resnagging, weed management, revegetation and the creation of foreshore access ways, and*
>
> *(b) instream management or dredging to rehabilitate aquatic habitat or to maintain or restore environmental flows or tidal flows for ecological purposes, and*
>
> *(c) coastal management and beach nourishment, including erosion control, dune or foreshore stabilisation works, headland management, weed management, revegetation activities and foreshore access ways, and*
>
> *(d) (Repealed)*
>
> *(e) salt interception schemes to improve water quality in surface freshwater systems, and*
>
> *(f) installation or upgrade of waterway gauging stations for water accounting purposes.*

129 Development permitted without consent

(1) Despite clause 129A, development for the purpose of waterway or foreshore management activities may be carried out by or on behalf of a public authority without consent ***on any land****.*

(1A) To avoid doubt, subclause (1) does not permit the subdivision of any land.

(2) In this clause, a reference to development for the purpose of waterway or foreshore management activities includes a reference to development for any of the following purposes if the development is in connection with waterway or foreshore management activities:

> *(a) construction works,*

(b) routine maintenance works,

(c) emergency works, including works required as a result of flooding, storms or erosion,

(d) environmental management works.

(2A), (2B) (Repealed)

The proposed works fall under the definition of waterway management activities and as such do not require consent and SEPP Infrastructure applies to the works.

3.4 COASTAL MANAGEMENT ACT

The Coastal Management Act 2016 replaces the Coastal Protection Act 1979 and establishes a new strategic framework and objectives for managing coastal issues in NSW.

The new Act promotes strategic and integrated management, use and development of the coast for the social, cultural and economic wellbeing of the people of NSW.

Its focus is on ecologically sustainable development that:

- protects and enhances sensitive coastal environments, habitats and natural processes
- strategically manages risks from coastal hazards
- maintains and enhances public access to scenic areas, beaches and foreshores
- supports the objectives for our marine environments under the Marine Estate Management Act 2014
- protects and enhances the unique character, cultural and built heritage of our coastal areas, including Aboriginal cultural heritage.

The Act defines the coastal zone as comprising four coastal management areas. Each area has different characteristics and may at times overlap.

The four coastal management areas are:

1. Coastal wetlands and littoral rainforests area; areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
2. Coastal vulnerability area; areas subject to coastal hazards such as coastal erosion and tidal inundation.
3. Coastal environment area; areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included (Map 2).
4. Coastal use area; land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The management objectives for the coastal environment area are as follows:

a) to protect and enhance the coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes and coastal lagoons, and enhance natural character, scenic value, biological diversity and ecosystem integrity,

b) to reduce threats to and improve the resilience of coastal waters, estuaries, coastal lakes and coastal lagoons, including in response to climate change,

c) to maintain and improve water quality and estuary health,

d) to support the social and cultural values of coastal waters, estuaries, coastal lakes and coastal lagoons,

e) to maintain the presence of beaches, dunes and the natural features of foreshores, taking into account the beach system operating at the relevant place,

f) to maintain and, where practicable, improve public access, amenity and use of beaches, foreshores, headlands and rock platforms.

The proposed foreshore rehabilitation works are consistent with the objectives of the Coastal Management Act.

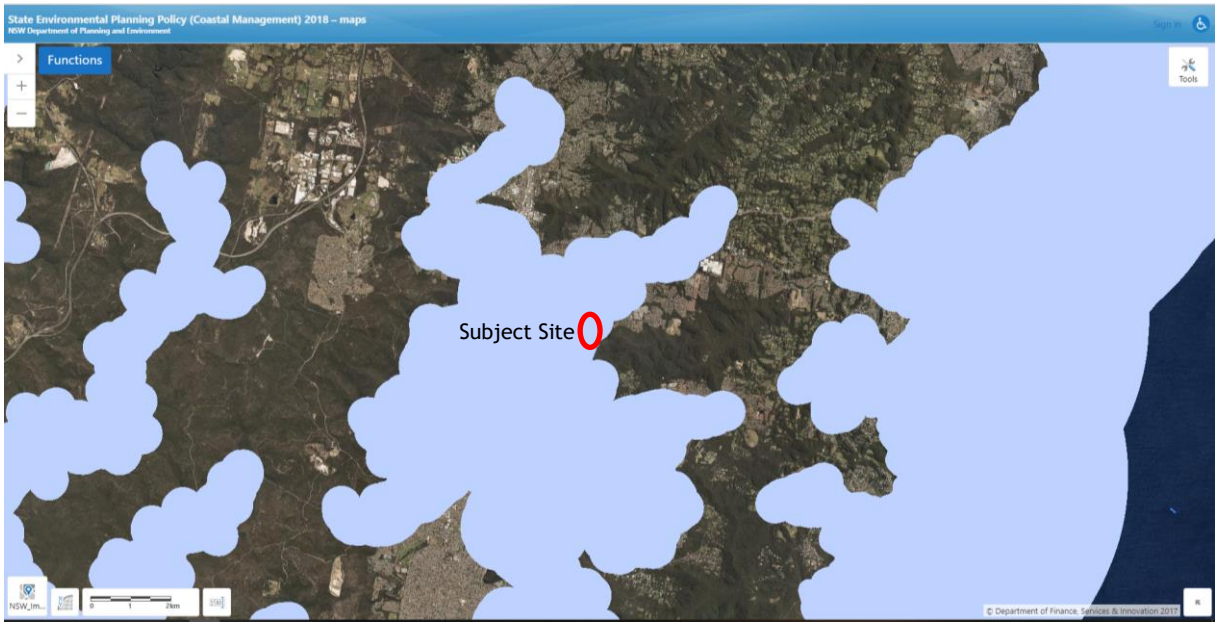
3.5 COASTAL MANAGEMENT SEPP

The Coastal Management SEPP gives effect to the objectives of the Coastal Management Act 2016 from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone.

Detailed interactive maps accompany the SEPP (REFER Map 1 accessed 17/07/2018).

The Subject Site falls within the Coastal Environment Area (Map 1) which is part of the Coastal Management zone. As such, Coastal Management SEPP is triggered. Consideration of development on land within the coastal environment area is provided in Section 4.10 of this report.

Map 1. Coastal Environment Area Map



http://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement

Approval to undertake the proposed foreshore works fall under Section 19 coastal protection works:

(2) **Coastal protection works by public authority** Development for the purpose of coastal protection works may be carried out on land to which this Policy applies by or on behalf of a public authority—

(a) without development consent—if the coastal protection works are—

(i) identified in the relevant certified coastal management program, or

(ii) beach nourishment, or

(iii) the placing of sandbags for a period of not more than 90 days, or

(iv) routine maintenance works or repairs to any existing coastal protection works, or

(b) with development consent—in any other case.

In accordance with (2ai) The proposed works fall under the Plan of Management (PoM) Foreshore Parks which is certified under the Local Government Act. Under the above PoM, *"Council may undertake erosion control works on foreshore parks if required, to ensure the future upkeep of the asset. Recent developments at foreshores parks include the erection of sea walls and increased tree planting for the purposes of foreshore protection."*

In addition, the proposed works include repairs to the existing coastal protection works at Captain Phillip Reserve in accordance with (2aiv).

3.6 NSW COASTAL MANAGEMENT PROCESS

The Coastal Zone Management Plan for Brisbane Water Estuary was prepared under the NSW Coastal Management Process and in accordance with the NSW Rivers and Estuaries Policy.

The overarching aims for the management of the Brisbane Water estuary are to:

- Protect, rehabilitate and improve the natural estuarine environment;
- Manage the estuarine environment in the public interest to ensure its health and vitality;
- Improve the recreational amenity of estuarine waters and foreshores;
- Recognise and accommodate natural processes and climate change; and
- Ensure ecologically sustainable development and use of resources (Coastal Zone Management Plan for Brisbane Water Estuary).

The proposed foreshore rehabilitation was commissioned by CCC in line with the Coastal Zone Management Plan for Brisbane Water.

3.7 BIODIVERSITY CONSERVATION ACT

The purpose of the Biodiversity Conservation Act 2016 (BC Act) is to:

- Conserve biodiversity on a bioregional and state scale
- Maintain the quality of ecosystems
- Enhance the ability of ecosystems to adapt to climate change
- Improve and support knowledge, data and resource sharing in the community
- Assess the extinction risk of species and ecological communities
- Identify key threatening processes
- Regulate human-wildlife interactions, based on risk
- Slow the rate of biodiversity loss, and conserve threatened species

The key elements of the BC Act are:

- It introduces Biodiversity Offset Scheme (BOS) which expands offsets beyond major projects to include other types of developments
- Provides a consistent Biodiversity Assessment Method (BAM)
- It introduces flexible offset delivery options
- Assessors are required to be an Accredited Person
- It consolidates Private Land Conservation Agreement types
- It introduces Areas of Outstanding Biodiversity Value (AOBV)

Activities that fall under Part 5 of the EP&A Act can choose to opt in to the BOS if an Assessment of Significance (5-part test) is significant. Alternatively, assessment can continue down the Species Impact Statement (SIS) pathway.

While CCC are not obligated to enter into the BOS, key elements, including entry requirements, are considered in this assessment.

3.8 BIODIVERSITY CONSERVATION REGULATION

The Biodiversity Conservation Regulation 2017 (BC Regulation) provides details on:

- Clearing thresholds and Biodiversity Values Map for application of the BOS
- Principles for consideration of serious and irreversible impacts (SII)
- Rules for meeting biodiversity offset obligation
- Biodiversity Certification criteria
- Compliance provisions.

The BOS development thresholds are used to determine when the BOS applies to local developments and are based on:

- Area Criteria or
- Biodiversity Values Map

For proposals that do not trigger the threshold, a 'test of significance' is required. If this indicates a likely significant impact, the Biodiversity Assessment Methodology Order 2017 (BAM) applies.

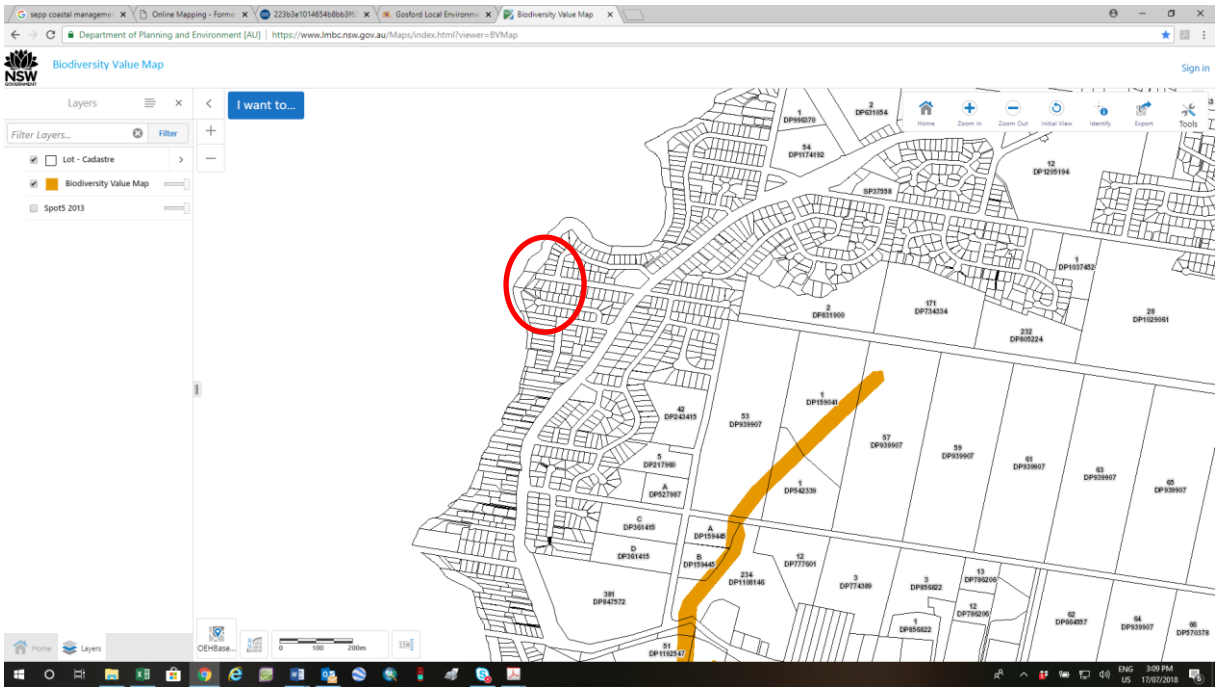
The proposed works require minor clearing only and as such fall under the Area Criteria thresholds and the Subject Site is not mapped as "high biodiversity value" on the Biodiversity Values Map (marked as orange on the BVM) (Map 2: viewed 17/07/2018).

Central Coast Council have opted not to enter into the BOS however it is noted that the entry into the BOS is not triggered by the proposal. A part 5 assessment under the BC Act is summarized in Section 4.5 of this report and provided in full in Appendix 2.

3.9 LOCAL LAND SERVICES ACT

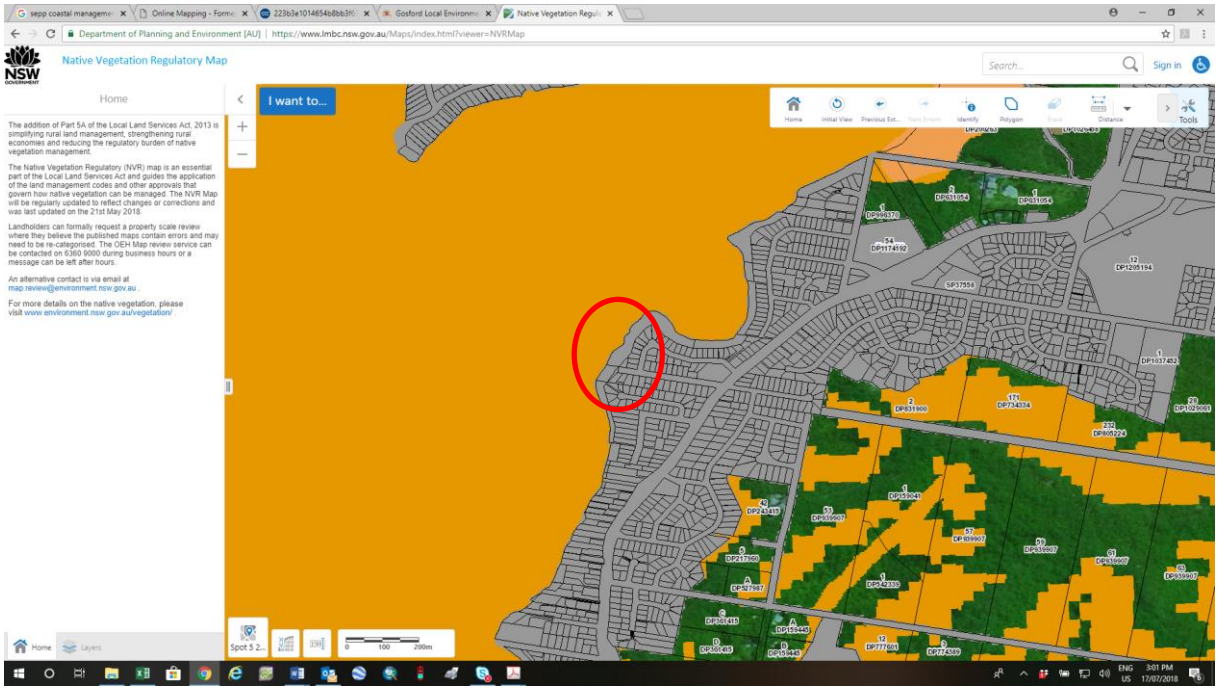
The Local Land Service Act 2013 applies to rural land. The *Subject Site* has been mapped on the Native Vegetation Regulatory Map as Land Excluded from the LLS Act (Map 3: viewed 17/07/2018).

Map 2. Biodiversity Values Map



https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap

Map 3. Native Vegetation Regulatory Map



https://www.lmbc.nsw.gov.au/maps/index.html?viewer=NVRMap

3.10 NATIONAL PARKS AND WILDLIFE ACT

The *National Parks and Wildlife Act* (1974) (*NP&W Act*) addresses a range of matters relating to biodiversity, threatened species, aboriginal cultural heritage and conservation reserves. The *NP&W Act* is the primary legislation for the protection of Aboriginal cultural heritage in New South Wales. One of the objectives of the *NP&W Act* is: "*the conservation of objects or features (including biological diversity) of cultural value within the landscape, including but not limited to…(i) places, objects and features of significance to Aboriginal people*" (Section 2A(1)(b)).

The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010) was utilised for this project. The purpose of due diligence is to identify whether Aboriginal Cultural Heritage sites are present in an area, and to determine whether a proposed activity will have impacts on Aboriginal objects. This is summarised in Section 4.8 of this report.

3.11 HERITAGE ACT

The objectives of the *Heritage Act* (1977) are:

a) To promote an understanding of the State's heritage;

b) To encourage the conservation of the State's heritage;

c) To provide for the identification and registration of items of State heritage significance;

d) To provide for the interim protection of items of State heritage significance;

e) To encourage the adaptive reuse of items of State heritage significance;

f) To constitute the Heritage Council of New South Wales and confer on it functions relating to the State's heritage; and

g) To assist owners with the conservation of items of State heritage significance.

Under Section 139 of the *Heritage Act* (1977) an excavation permit must be obtained to disturb or excavate any land which is likely to result in a relic being discovered, exposed, moved, damaged or destroyed.

Refer Section 4.8 for discussion on the State Heritage Register Database search.

3.12 FISHERIES MANAGEMENT ACT

NSW Department of Primary Industries (NSW DPI) has responsibility for the conservation of all 'fish', which by definition also includes freshwater, estuarine and marine aquatic invertebrates (such as crustaceans, molluscs and polychaetes), as well as marine vegetation, including saltmarshes, mangroves, seagrasses and macroalgae, under the Fisheries Management Act 1994 (FM Act).

Any development or activity that requires dredging/reclamation, causes harm to marine vegetation and/or blocks fish passage must be referred to NSW DPI with a permit application under Part 7 of the Fisheries Management Act. A permit application is provided in Appendix 3 and is to be submitted with the REF to New South Wales Department of Primary Industries (NSW DPI) (email: ahp.central@dpi.nsw.gov.au).

Part 7A of the FM Act provides for the protection of threatened aquatic species and their habitat. It is an offence to harm a threatened species, population or ecological community under Section 220ZA of the Act. This is addressed in Section 4.5 of this report. For the purpose of the proposed foreshore stabilization works, a licence under Section 220ZW is not required if a Part 5 approval is obtained.

3.13 FISH HABITAT CONSERVATION AND MANAGEMENT

One of the key objectives of the FM Act is to conserve 'key fish habitats' (KFH). 'Key fish habitats' are not defined in the FM Act but has since been defined to include all marine and estuarine habitats up to highest astronomical tide level (that reached by 'king' tides) and most permanent and semi-permanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments up to the top of the bank. Small headwater creeks and gullies (known as first and second order streams), that only flow for a short period after rain are generally excluded, as are farm dams constructed on such systems. Wholly artificial waterbodies such as irrigation channels, urban drains and ponds, salt and evaporation ponds are also excluded except where they are known to support populations of threatened fish or invertebrates.

'Key Fish Habitat' maps have been compiled by NSW DPI on the basis of local government areas at https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/634305/Gosford.pdf (Figure 3). The Subject Site (up to highest astronomical tide level) is defined as Key Fish Habitat.

As a general principle, NSW DPI requires that proponents should aim to avoid impacts upon key fish habitats. Where avoidance is impossible or impractical, proponents should then aim to minimise impacts.

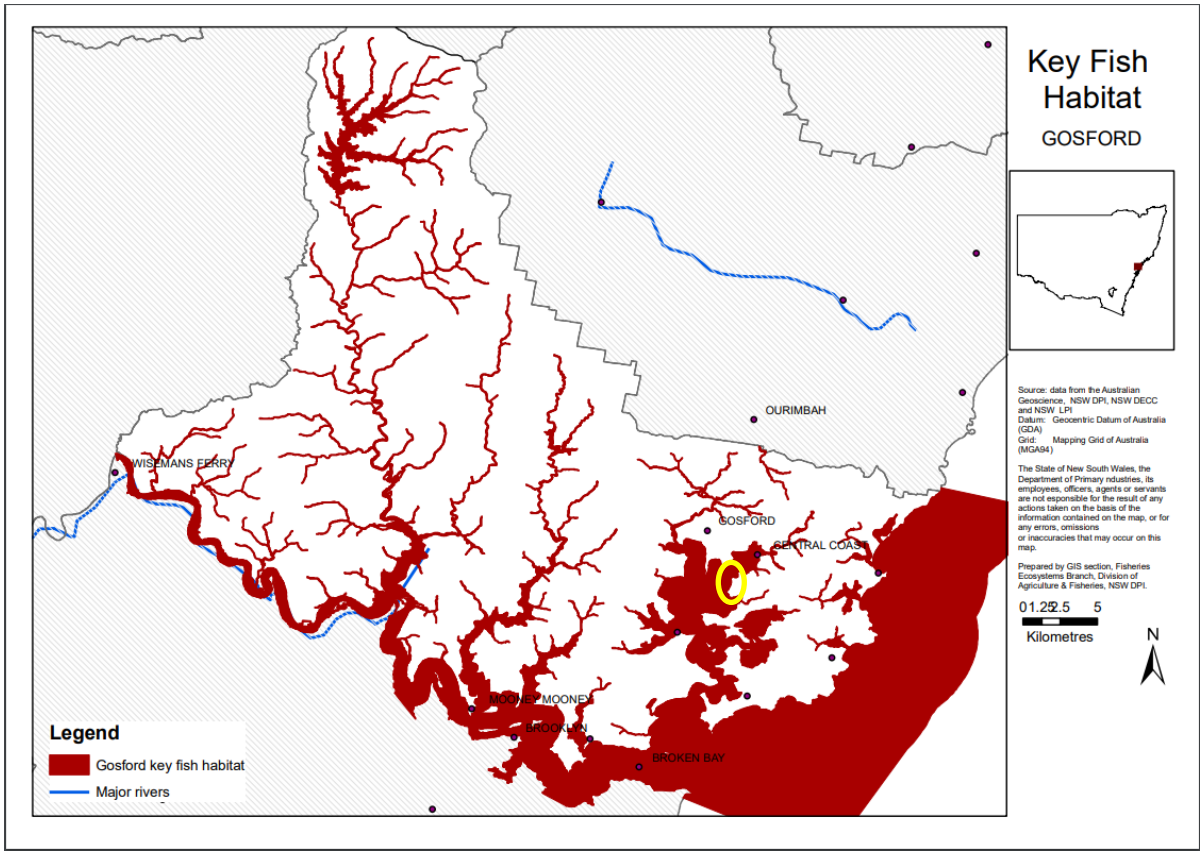


Figure 3. Key Fish Habitat Maps (NSW DPI, accessed 17/07/2018)

In addition, *Policies and guidelines for foreshore stabilisation works* applies to the works.

The following **policies** apply to foreshore stabilisation works:

1) NSW DPI will generally not support or approve reclamation of TYPE 1 and 2 or CLASS 1-3 fish habitat (including freshwater, estuarine and marine) for private development such as roads, walkways, housing or commercial development, foreshore or beach improvement.

2) NSW DPI will generally not support or approve other reclamation activities impacting on TYPE 1 or 2 habitat unless the impacts can be mitigated or compensated.

3) NSW DPI will generally not support or approve the use of contaminated sediment as fill. The use of clean fill free of finer material is required.

The *Posidonia australis* and *Zostera capricorni* seagrass beds are defined as Type 1 - Highly sensitive key fish habitat. The Mangroves are defined as Type 2 – Moderately sensitive key fish habitat.

1) NSW DPI will generally not approve the construction of new breakwalls, groynes, seawalls or retaining walls except where there are no feasible alternatives for erosion control and valuable assets are at risk. Modifications or repairs to existing walls or groynes should incorporate designs that reduce wave energy reflection and include restoration of the original shoreline.

2) NSW DPI will generally not approve bank and bed stabilisation works that create a barrier to fish passage (see section 4.5).

3) NSW DPI will generally only approve foreshore stabilisation works (with the exception of groynes) that follow the natural contour of the shoreline. Unnecessary foreshore or stream realignment will not be approved.

4) NSW DPI will generally not approve the use of materials such as tyres, building rubble and other waste materials for foreshore reclamation works.

5) NSW DPI will generally not support the use of vertical retaining walls, gabion baskets or concrete lining for foreshore works. Steep retaining walls comprised of gabions baskets and concrete-lined channels have little fish habitat value. Gabion baskets may also fail over time, infilling downstream habitats.

NSW DPI will approve mangrove trimming and removal adjacent to public and private facilities such as jetties, boat ramps and waterway crossings to allow for safe access, and for maintenance works in connection with electricity supply, stormwater or agricultural drains. Where mangrove removal is required, adequate mitigation and compensation measures will generally be required as a condition of consent.

Guidelines for implementing the above policies include:

a) 'Soft-engineering' options (e.g. revegetation) for stabilising foreshores should be implemented along riverbanks and foreshores wherever feasible.

b) Where harder engineering options are required, an integrated approach using planting in combination with natural materials (logs, live stakes, live brush bundles etc.) is preferred.

c) Seawalls should be constructed in accordance with OEH's "*Environmentally Friendly Seawalls: A Guide to Improving the Environmental Value of Seawalls and Seawall-Lined Foreshores in Estuaries*" (see www.sydney.cma.nsw.gov.au/component/option,com_remository/Itemid,116/func,select/id,51/

d) When using rock (revetment or rip-rap) to stabilise shorelines:

- rubble should be placed at a gradual angle to minimise bank steepness. This should maximise the life of the slope.

- rock needs to be sized appropriately so wave or current action will not move it and filter cloth should be placed under the rip-rap to prevent underlying sediments from being washed away. Contact local NSW Office of Water staff for advice on the appropriate materials and design specifications.
- planting of vegetation, especially deep-rooted species, above, within and immediately behind rip-rap will greatly increase the life of the stabilisation works and provide spaces in which fish can find food and hide from predators.

e) *Casuarina* spp., *Banksia* spp. and *Eucalyptus* spp. are some common plants that have roots that extend deep into the soil. Species such as *Lomandra longifolia* and native grasses can be planted as understorey, with rushes and reeds planted at or in the waters edge to protect the bank toe from erosion.

The proposed works have incorporated soft engineering solutions and are in accordance with NSW DPI Policy and guidelines for fish habitat conservation and management (2013).

3.14 SUMMARY

An activity is to be assessed under Part 5 of the EP&A Act if development consent is not required and it is not a major project under Part 3A. This proposal is not a major project and development consent is not required under the Coastal SEPP, Section 19 Coastal Protection Works, where development consent is not required by or on behalf of a public authority if the coastal protection works are identified under a certified coastal management program or are repairs to existing coastal protection works.

This Review of Environmental Factors (REF) is an environmental assessment under Part 5 of the EP&A Act 1979 that is required as part of the assessment of activities needing approval under NSW legislation. It considers the likely impacts of the activity on the environment and addresses appropriate state and federal legislation in consideration of the assessment.

4.0 ENVIRONMENTAL ASPECTS, IMPACTS AND SAFEGUARDS

4.1 AIR QUALITY

The existing air quality of the study area is considered good, with only minor emissions from local road traffic.

The proposed works are unlikely to result in any negative long-term impacts on the local air quality. Nonetheless, in the short term, the use of light vehicles and machinery such as excavators and trucks, will result in a short-term increase in emissions. No vehicles or other fuel-driven heavy machinery including excavators would be left unattended or left in an idling state that would otherwise increase emissions to air near the Subject Site.

Following works, any exposed soils will be stabilized as soon as possible with mulch and revegetation to minimize dust.

4.2 WATER QUALITY.

- Appropriate erosion and sediment control measures will be installed prior to the commencement of works in accordance with Policy and guidelines for fish habitat conservation and management (NSW DPI, 2013). This includes deployment of environmental safeguards (silt curtains, booms, etc) before, during and as long as necessary after construction of works to ensure there is no escape of turbid water into the aquatic environment. NSW DPI strongly recommends the use of *The Blue Book – Managing Urban Stormwater: Soils and Construction* (Landcom 2004) (see www.landcom.nsw.gov.au/news/publications-and-programs/the-blue-book.aspx) when planning sediment and erosion controls in or adjacent to aquatic environments. Environmental safeguards should include:

- Programming of work to ensure that it takes place during low flow periods (neap tides).
- Directions on the use of sediment and erosion controls for in-stream works to avoid impacts on water quality and fish passage. Sediment or silt screens should be inspected daily and maintained to prevent the escape of suspended sediments. Sediment control devices should not be removed until the risk of sedimentation and erosion is negligible and the site has been stabilised or revegetated following construction. Screens or other guards should be carefully removed after the work is completed. Silt screens should generally only be used in still water conditions. When placed in higher flows, water either spills over the top or lifts the curtains.
- Providing direction on the stockpiling of fill or excavated materials on flood prone lands to avoid sedimentation. Particular care should be made in siting stockpiles. Preferred sites should be situated either above the highest astronomical tide, or be secure from a 1 in 10 year flood and have effective sediment control measures in place to contain any runoff.
- Ensuring that only natural material is used as fill during reclamation works. Contaminated material, tyres, building and demolition rubble or acid sulfate soils (ASS) should not be used as fill in any aquatic environment.
- Ensuring that the area is rehabilitated after completion of works.
- Ensuring that foreshore works in estuaries are restricted to calm weather conditions. This helps prevent the suspension of fine sediment particles into the water column and ensures the silt screen is not disturbed by wave action.

4.3 SOILS

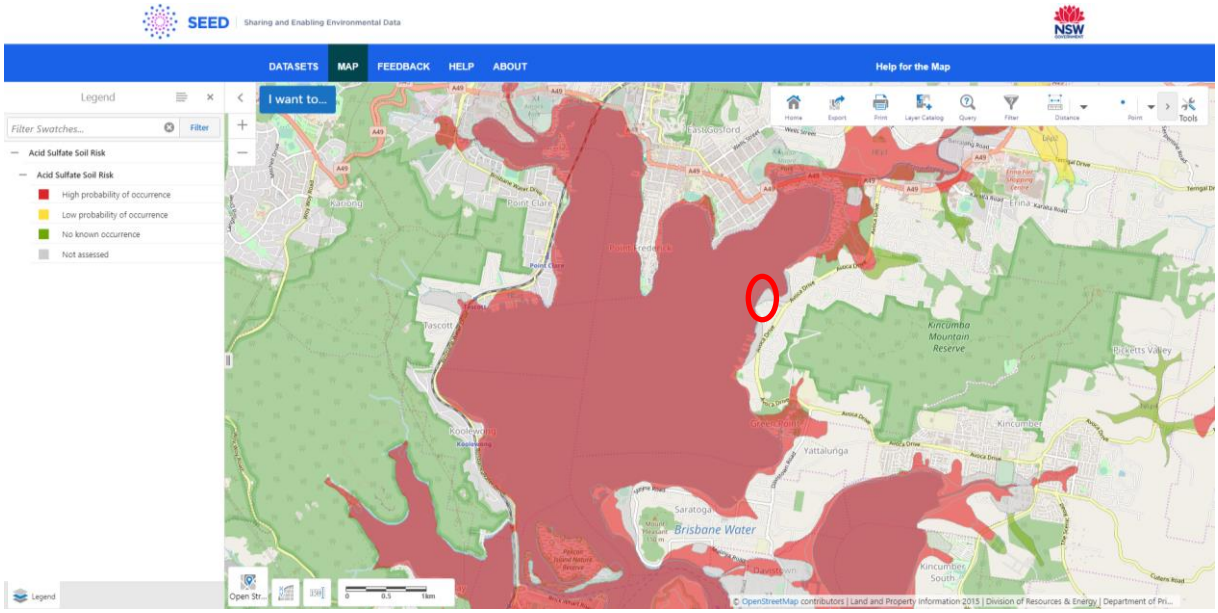
The *Subject Site* is in the Erina Soil landscape which is characterized by undulating to rolling rises and low hills on the Terrigal Formation. Soils are moderately deep to deep Yellow podzolic Soils on fine-grained bedrock with Yellow Podzolic Soils in poorly drained areas. Limitations include mass movement, high soil erosion hazard, foundation hazard, localized high run-on, seasonal waterlogging of footslopes, strongly acid soils of low fertility. (Murphy, 1992).

The site is underlain by Quaternary aged gravel, sand, silt and clay formed by alluvium, swamp, estuarine and tidal flats.

4.4 ACID SULFATE SOILS

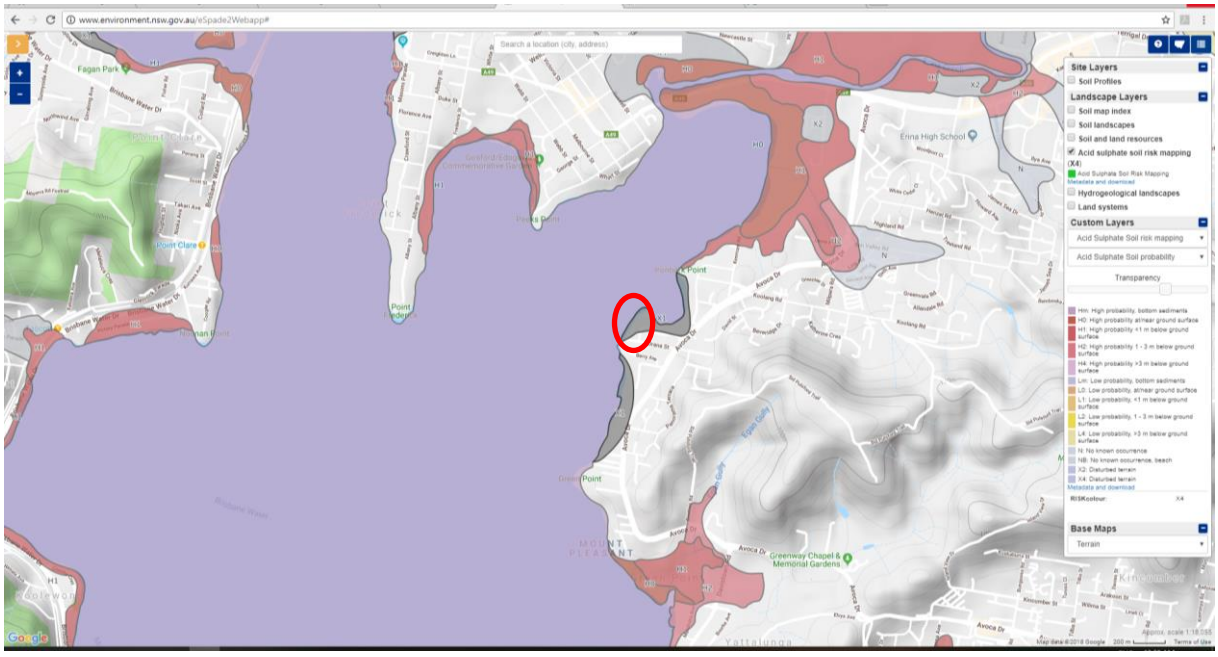
Based on the Acid Sulphate Soil Risk on the NSW OEH Sharing and Enabling Environmental Data portal (Map 4, sources from SEED; NSW OEH, 19/07/2018), the Subject Site (intertidal zone) is classified as High Probability of occurrence (red). On the eSPADE Acid Sulphate Soil Risk Mapping, the Subject Site (foreshore land) is mapped as X1 which is disturbed terrain (Map 5).

Map 4. Acid Sulphate Soil Maps (SEED)



https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.106

Map 5. Acid Sulphate Soil Maps (eSPADE)



http://www.environment.nsw.gov.au/eSpade2Webapp#

Douglas Partners (July 2018) prepared a *Preliminary Acid Sulfate Soil Assessment (PASSA) and Preliminary in Situ Waste Classification* report for the proposed foreshore stabilization works (Appendix 4).

The assessment included four boreholes and laboratory testing of samples obtained during the field work. Details of the field and laboratory work are presented in their report together with comments relating to the presence / absence of acid sulfate soils and waste classification.

PASSA

The purpose of this PASSA was to confirm the presence / absence of acid sulfate soils at proposed excavation areas. The assessment was carried out with reference to the NSW Acid Sulfate Soil Management Advisory Committee: Acid Sulfate Soil Manual 1998, the Soil Management Guidelines 2014 and the Laboratory Methods Guidelines 2004.

Based on the results of the screening and laboratory testing, the following comments were made:

- The filling and residual soils do not require management for acid sulfate soils:
- The alluvial soils do require management for acid sulfate soils. Thus, the grey, yellow brown and dark brown clayey sand to depths of between 0.8 m and 1.5 m require management.

Therefore, the excavation works associated with the proposed foreshore stabilisation works will need to be carried out with reference to an acid sulfate soil management plan (ASSMP).

Waste Classification

The purpose of the waste classification was to classify the material for off-site disposal in accordance with the NSW EPA Waste Classification Guidelines (2014), Protection of the Environment Operations Act 1997 (POEO Act) and advice provided on the NSW EPA web site.

The following Table 2 presents the results of the assessment of natural soils at the site with reference to the VENM definition and EPA advice:

Table 2: VENM Classification Procedure

Item	Comments	Rationale
1. Is the material natural?	Yes	Natural materials logged in the boreholes as alluvium - grey, yellow brown and dark brown clayey sand and residual - red brown and grey gravelly clay, red brown and grey clay and dark brown sand. These materials underlie the filling at the site.
2. Is the material impacted by manufactured chemicals or process residues?	No	There were no visual indicators of chemical contamination of the materials in the boreholes. Contaminant concentrations were within typical background levels.
3. Are the materials acid sulfate soils?	Yes, some	A preliminary acid sulfate soil assessment was completed as part of this investigation. Results indicated that the alluvial soils comprising grey, yellow brown and dark brown clayey sand to depths of between 0.8 m and 1.5 m require management for acid sulfate

		soils. Refer to Section 7.1 of this report.
4. Are there current or previous land uses that have (or may have) contaminated the materials?	No	Placement of imported filling may have impacted on surface soils overlying the materials. Low chemical concentrations indicate no likely impact on the natural materials.

The classification for the filling and natural soils at the site are subject to appropriate segregation.

Given the preliminary nature of the assigned waste classification, which was based on limited sampling, it is recommended that the waste classification be confirmed by a qualified environmental consultant *ex situ* prior to and during bulk excavation.

The receiving site should be licenced to accept the waste under their Environmental Protection licence. Local waste management facilities are not licenced to accept untreated ASS, as such, all ASS is to be treated on site prior to its disposal or reuse on site. Note that appropriate prior arrangement with the receiving site / relevant authorities should be obtained prior to the disposal of any material off site. The receiving site should check to ensure that the material received matches the description provided in this report and contains no cross contamination. The handling, transport and disposal of the materials should be conducted in accordance with regulatory and statutory requirements.

4.5 BIODIVERSITY

A site inspection was conducted on 20 July 2018. The Subject Site was defined as open space/parkland dominated by lawn and isolated trees. The main tree species were Prickly-leaved Tea Tree *Melaleuca styphelioides*, Swamp Oak *Casuarina glauca* and Grey Mangrove *Avicennia marina subsp. australasica* the latter occurring below the high-water mark. The middle stratum was largely absent, and the lower stratum was dominated by Buffalo Grass *Stenotaphrum secundatum**.

No threatened flora or fauna species were recorded on the Subject Site during the site inspection. The vegetation on the Subject Site is defined as disturbed and is not considered to fall under the definition of an Endangered Ecological Community or a Threatened Community under state or federal legislation.

4.5.1 BIODIVERSITY CONSERVATION ACT

A BioNet search for records of threatened species and endangered ecological communities listed under the Biodiversity Conservation Act 2016 (BC Act) and the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) which have been recorded within the locality was conducted on 5 July 2018. It returned a total of 1,186 fauna records of 66 fauna species and 188 flora records of 14 flora species. Of these species, the Subject Site contains habitat for seven threatened birds (including wading species) and seven threatened mammals (flying-fox and bats). No endangered ecological communities occur on the Subject Site however Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions occurred just outside of the northern extent of works and was assessed (5-part test) as a precaution.

The 5-part test concluded that the proposed works are considered unlikely to have a significant impact on any of these threatened species or endangered ecological communities with potential habitat on or near the Subject Site as the works are minor in nature and require minimal vegetation clearing. The Subject Site provides potential foraging habitat for 14 threatened species however it does not provide nesting or roosting opportunities for these

species. As such, it does not provide important habitat for threatened species and short-term impacts on the Subject Site during construction works are unlikely to have an adverse impact on any threatened species present on the Subject Site or in the broader Study Area.

4.5.2 FISHERIES MANAGEMENT ACT

Following a search of the NSW Department of Primary Industries (DPI) threatened species list and associated fact sheets, it was determined that the Subject Site does not provide habitat for any aquatic threatened flora or fauna species listed under the Fisheries Management Act.

The NSW Department of Primary Industries Mapping of the estuarine habitats of NSW indicated that Eelgrass *Zostera carpricorni* and Mangroves *Avicennia marina* subsp. *australasica* are likely at the Subject Site. Following a site inspection, both of these aquatic species were present along with Strapweed *Posidonia australis* and their distribution was mapped. All three of these aquatic species are protected under the FM Act however *Posidonia australis* is listed as an endangered population in Port Hacking, Botany Bay, Sydney Harbour, Pittwater, **Brisbane Water** and Lake Macquarie (NSW Fisheries Scientific Committee, 2010).

Approximately 8,197 m^2 of the threatened population *Posidonia australis* occurs near the Subject Site. The proposed foreshore stabilisation works will not result in any direct impact on this population however indirect effects of shading from excess turbidity can occur as can poor water quality from the disturbance of potential acid sulphate soils (PASS). Mitigation measures summarized in this report include appropriate erosion and sediment control and the preparation of an ASS plan of management prior to the commencement of works to minimize the potential impacts of works on the *P. australis* population. As such, works are considered unlikely to have an adverse effect on the life cycle of this species such that a viable local population of the species is likely to be placed at risk of extinction. The proposed works do not form part of a key threatening process under the Fisheries Management Act.

4.6 CHEMICAL AND HAZARDOUS SUBSTANCE MANAGEMENT

The type of works to be undertaken may require the storage of dangerous chemicals such as herbicides and fuels contained within machinery.

Mitigation Measures include the installation of environmental management controls prior to the commencement of works. Specific mitigation measures to address potential impacts from chemicals and hazardous substances should incorporate the following:

- The material safety data sheets (MSDS) for each chemical is to be kept on site at all times.
- Fuel and chemicals are to be secured within the site compound or vehicles.
- A suitable chemical spill kit is to be available on site at all times during working hours. Spill kits should be stored within the works compound and its location and instructions on usage are to be made clear to all workers.
- If the spill kit is to remain within a vehicle then that vehicle is not to leave the works area whilst machines or hazardous chemicals are on site.

4.7 TRAFFIC GENERATION AND MANAGEMENT

The Subject Site is located in a suburban area where traffic is relatively low. The proposed works are away from the road and will generate a negligible increase in traffic and no specific management is considered necessary.

4.8 EUROPEAN AND INDIGENOUS HERITAGE

Searches of the State Heritage Inventory for items listed in Gosford LGA (http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx) resulted in:

- 1 item under Section 1. Aboriginal Places listed under the National Parks and Wildlife Act.
    - Bulgandry Art Site in the Darkinjung Local Aboriginal Land Council
    - Kariong Sacred Land in the Darkinjung Local Aboriginal Land Council
- 13 records under Section 2. Items listed under the NSW Heritage Act.
    - Foreshore land and structures, 9 Pixie Ave, Green Point
    - The Grange Renwick St Wyoming
    - Great North Rd between Mt Manning and Wollombi
    - Hawkesbury River Rail Bridge and Long Island Group
    - Hely's Grave
    - HMAS Parramatta shipwreck and memorials
    - Lower Hawkesbury Wesleyan Chapel and site
    - Mt Penang Parklands
    - Mulholland's Farm
    - Old Great North Rd between Devine's Hill and Mt Manning
    - Rosemount
    - Woy Woy Railway Tunnel
    - Wyoming Cottage
- 256 records Section 3. Items listed by Local Government and State Agencies, 4 in Green Point.
    - Green Point Wharf Site, end of Lexington Pde, Green Point
    - House – Kenmare and tree,4 Roslyn Garden, Green Point
    - Mulholland's House, 9 Pixie Ave, Green Point
    - Pixie Ave Bushland – Foreshore land and structures (R0232) – COSS, reserve adjacent to 9 Pixie Rd, Green Point

Local government and state agency records were reviewed on 05/07/2018.

4.8.1 EUROPEAN HERITAGE

Four items either listed under the NSW Heritage Act or listed by Local Government Agencies were located in Green Point, however none were located at the Subject Site. The Green Point wharf site, Mulholland's House and Pixie Ave bushland are located approximately 1km south of the Subject Site and Kenmare House is located 500m to the north-east of the Subject Site. The proposed foreshore stabilisation works are considered unlikely to have negative impact on any heritage items listed under the State heritage inventory for items listed in (former) Gosford City LGA.

4.8.2 ABORIGINAL HERITAGE

Following a review of Aboriginal Heritage and Information Management System (AHIMS), the nearest reference was approximately 1 km south of the Subject Site and the proposed restoration works are considered unlikely to impact this site.

Following a review of the State Heritage Inventory for items, no Aboriginal Places listed under the NP&W Act occur at the Subject Site.

Due Diligence Process

1. Will the activity disturb the ground surface or any culturally modified trees?

Yes, the works involve disturbance of the ground surface

2. area there any:

a) relevant confirmed site records or other associated landscape feature information on AHIMS? and/or

There are no relevant confirmed site records on AHIMS.

b) any other sources of information of which a person is already aware? and/or

No

c) landscape features that are likely to indicate presence of Aboriginal objects?

The Subject Site is within 200m of water and is therefore defined as a landscape feature

3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?

Yes – refer mitigation measures listed below.

4. Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?

Desktop assessment does not list any Aboriginal objects at the Subject Site.

The site inspection did not identify any Aboriginal cultural heritage constraints within the Subject Site. Where surface visibility was high (i.e. areas of erosion along the foreshore – refer Plate 1), no stone artefacts or midden material was identified. After examining the visible soil profiles along the eroded foreshore, shell was relatively absent and it is considered unlikely that a shell midden is present at the Subject Site. No sandstone outcrops are present, meaning that both rock shelters and grinding grooves cannot be present. There are some mature trees within the Subject Site however no evidence of scarring relating to Aboriginal cultural modification was identified.

The Subject Site can be considered unlikely to contain Aboriginal cultural heritage for the following reasons:

- Land clearance has taken place across the Subject Site. The Subject Site is highly modified through past vegetation clearing, filling and subsequent turfing. Shallow test pitting for the Design Report (Royal Haskoning DHV, 2014) confirmed that the material along the foreshore was fill.
- Mechanical levelling, excavation and reclamation would have occurred over the majority of the Subject Site as part of the construction of the foreshore area, including boat ramps, seawalls and development of the foreshore area.
- The area where works are proposed include the edge of the foreshore where erosion has exposed the bank. Soil erosion is relatively high within the Erina soil landscape, and the shale bedrock was visible in exposures along the foreshore, where the work is due to take place.
- No mature trees within the Subject Site contained evidence of Aboriginal cultural modification.

The significant levels of disturbance across the whole of the study area do not preclude Aboriginal archaeological deposits from being situated below the surface or Aboriginal objects existing at the Subject Site. It is, however, considered unlikely that any deposit or object will be harmed during the current proposed works owing to the large degree of disturbance that the Subject Site has already suffered, including along the eroded edge where proposed works will take place.

The fact that the closest recorded Aboriginal object or place is located almost 1 km from the Subject site and that a significant level of disturbance has occurred at the Subject Site means that according to the due diligence process, work can proceed in accordance with the mitigation measures listed below:

Mitigation Measures

1. During soil excavation, earth works, vegetation clearing and leaf litter removal, workers should be observant and keep a look out for surface shell, bone, rocks or any other Aboriginal Cultural Heritage material.
2. If Aboriginal Cultural Heritage sites or material including bones or shell are discovered, work should cease. The area should then be avoided and the Office of Environment and Heritage (OEH) and the local aboriginal land council (LALC) should be notified immediately.

Plate 1. Eroded foreshore showing no sign of Aboriginal artefacts or midden material

4.9 VISUAL MANAGEMENT

Temporary visual impacts will include machinery, barricading, workers, vehicles and equipment necessary to complete the works. These impacts will not affect the long term visual amenity of the locality.

Works will result in improved visual amenity in the long-term through the improvement of existing infrastructure. The proposal includes natural features such as rock, beach and saltmarsh treatments along with gabion wall remediation.

4.10 PUBLIC ACCESS AND SAFETY

Access to the foreshore will be temporarily restricted during works however access along the rear of the grassed area is outside of the area of works and a link between Orana Street and Asca Drive can be maintained.

Mitigation Measures

- Provision of signage notifying the public of the works.
- Council will be responsible for adequate safety precautions during progress of the works, in accordance with the relevant legislation, regulations, standards and codes of practice. This includes but is not limited to the safety of the public, employee and contractor personnel.
- The provision and erection of any signs, lights and barricades necessary for pedestrian and traffic safety in public roads or places are also part of the responsibility for adequate safety precautions.

4.11 COASTAL MANAGEMENT

Division 3 Coastal environment area

13 Development on land within the coastal environment area

1. Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

    a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,

The proposed works are minor and mitigation measures will ensure there is minimal impact on the biophysical, hydrological and ecological environment. The Brisbane Water is tidal and regular flushing of the system has resulted in a relatively robust environment. As such, the proposed works are unlikely to have an adverse impact on the integrity and resilience of this environment.

    b) coastal environmental values and natural coastal processes,

The proposed works have been designed with consideration of the natural coastal processes and have incorporated soft treatments to allow for a dynamic environment.

    c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,

The proposed works have the potential to impact the water quality through increased turbidity, mobilisation of metals/nutrients in the sediments and exposure of acid sulphate soil. Mitigation measures will be put in place prior to the commencement of works to ensure any potential impacts are minimised. Following completion of stabilisation works, erosion and subsequent elevated turbidity will be reduced in the area, resulting in a small cumulative improvement to the estuarine environment.

    d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,

The proposed works have the potential to impact adjoining seagrass beds. The endangered *P. australis* occurs between 40-65 m from the shore and as such is unlikely to be directly impacted by works. The *Z. capricorni* is located approximately 5 to 10 metres from the shore and works may impact this species indirectly through increased turbidity in the water column

and subsequent shading. The proposed works will also require the removal of up to 5 mangrove (*A. marina*) trees. Potential impacts on *Z. capricorni* and *A. marina* are likely to be relatively minor and would not constitute an adverse impact. The Subject Site does not contain headlands or rock platforms.

The design incorporates environmentally friendly features such as salt marsh berms and rock rip rap which will provide improved inter-tidal habitat for crustaceans and other intertidal flora and fauna following completion of works.

e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,

The proposed works will improve access and useability of the foreshore area following completion of works.

f) Aboriginal cultural heritage, practices and places,

A due diligence aboriginal assessment has been undertaken for the proposed works and it concluded that the Subject Site was unlikely to contain aboriginal cultural heritage (refer Section 4.8.2).

g) the use of the surf zone.

There is no surf zone at the Subject Site.

2. Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

   a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or

   b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

   c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Mitigation measures such as appropriate erosion and sediment control measures (refer Section 4.2), stabilisation of the soil with mulch and planting (refer Section 4.5) and the preparation of an ASS plan of management (refer Section 4.4) will minimise the potential impacts of the works on the water quality in the Brisbane Water estuary.

3. This clause does not apply to land within the Foreshores and Waterways Area within the meaning of *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*.

N/A

4.12 SOCIO ECONOMIC IMPACT

The proposed activity may result in short term negative social impacts during works from a minor increase in noise, restricted access to the foreshore, dust and increased local area vehicle/worker activity.

Positive benefits following the completion of works include improved stabilisation of the foreshore which will improve access and useability of the public space. Short term economic benefits may also result for local contractors involved in the supply of material and the undertaking of works.

Mitigation Measures

Specific mitigation measures will incorporate the following:

- Provision of information to nearby residents and property owners regarding the nature of the works and the expected timeframe.
- Working hours are to be restricted in accordance with Civil works Design Guidelines, to between 7am and 6pm Monday to Friday and 8am to 1pm Saturday with no works to be undertaken on Sundays or Saturdays without prior approval from the Principal.
- Local contractors (if required) should be engaged to supply and undertake works.

4.13 FUTURE LANDUSE

No change in future land use is expected to occur.

4.14 ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND SUSTAINABILITY

Australia's *National Strategy for Ecologically Sustainable Development (1992)* defines ecologically sustainable development as: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

The proposed restoration works are environmental management works that aim to reduce erosion of the foreshore, thereby reducing turbidity.

The sustainability outcomes for this project are summarized in Table 3 below.

Table 3. Summary of Project sustainability Outcomes

Sustainability Element	Component	Expected Outcome
Economic	Work Force	Local employment opportunities
Environmental	Foreshore stabilization using soft treatment and infrastructure.	Improved access and usability of the foreshore area. Improved environmental outcomes through a reduction in turbidity in receiving waters Improved intertidal habitat.
Social	Protection of the environment.	Greater community appreciation of our natural environment.

5.0 ENVIRONMENTAL FACTORS CONSIDERED

5.1 CLAUSE 228(2) FACTORS (NSW LEGISLATION)

The Environmental Planning and Assessment Regulation (2000) include factors to be taken into account when consideration is being given to the likely impact of an activity on the environment. Consideration of each of the Clause 228 factors is included in Table 4.

The impacts are qualified as:

- Positive: The overall effect on the environment is beneficial;
- Non-Significant Impact: There is likely to be some detrimental impact on the environment;
- Significant Impact: The impacts are significant and cannot be adequately mitigated;
- Neutral: The overall effect on the environment is neither beneficial nor detrimental;

- Not Applicable: The factor cannot be applied in any way in any aspect of the activity.

Table 4 Environmental Factors for Consideration

a. Any environmental impact on the community?
Comments: The proposed works may require the removal of some mangrove trees however they are unlikely to have any long-term negative environmental impacts on the community as restoration works will reduce turbidity in receiving waters and stabilise the foreshore. Short-term impacts will be managed through the implementation of appropriate safeguards and mitigation measures.
Positive.
b. Any transformation of a locality?
Comments: The proposed works have the potential to cause some short-term transformation of the locality through the removal of some trees however replacement planting will mitigate this over the long-term. Localised and short-term impacts are likely during construction, with the presence of machinery and an increase in noise and vibration, however areas of disturbance would be limited to that necessary for construction. Following works, the area would have had a positive transformation through stabilisation of the foreshore using mostly soft (natural) treatments.
Positive.
c. Any environmental impact on the ecosystems of the locality?
Comments: An ecosystem consists of a biological community together with its abiotic environment, interacting as a system. The proposed works will improve the water quality for aquatic flora and fauna, and as such, are unlikely to negatively affect a particular component of the biological community to the point where the network of interactions among organisms are affected over the long term. In terms of impacts to terrestrial fauna, no habitat trees will be removed by the proposed works.
Positive.
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?
Comments: The proposed works will result in an improvement to the aesthetic and environmental quality of the locality through the restoration of dilapidated infrastructure and stabilisation of the foreshore, which will reduce erosion and sedimentation. The Subject Site will be more accessible for recreational or scientific purposes following completion of works. As such, environmental quality will improve.
Positive.
e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?
Comments: Archaeological assessment indicated that there is low likelihood of impact on Aboriginal cultural material. Cultural impacts are considered unlikely as no Aboriginal objects have previously been identified on the Subject Site and the Subject Site has been

previously disturbed and filled. The Subject Sites do not contain any historical buildings that could be impacted by works.
Positive
f. Any impact on the habitat of any protected fauna (within the meaning of the National Parks and Wildlife Act, 1974)?
Comments: The proposed works are unlikely to significantly impact on the habitat of any protected fauna as discussed in Appendix 2. The Subject Sites provide only marginal foraging habitat for threatened species with potential to occur and the scale of works is minor.
Non-significant
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?
Comments: The impact of the proposed works on threatened species, populations or communities have been assessed under the relevant state and federal legislation (refer Appendix 2) and were found to be not significant. This is based on the minor scale of works, with only minimal clearing and no removal of habitat trees.
Non-significant
h. Any long-term effects on the environment?
Comments: The proposed restoration works may have some temporary, short term negative effects on the environment during works, however the proposal aims to improve the quality of the water by reducing erosion potential and stabilizing the banks.
Positive.
i. Any degradation of the quality of the environment?
Comments: There will be short term negative impacts such as vegetation clearing and soil exposure however mitigation measures have been included in the recommendations to minimize any impacts from the works during construction. The proposed restoration works and the stabilization of the foreshore will result in an improvement to the quality of the environment.
Positive.
j. Any risk to the safety of the environment?
Comments: Construction activities are away from public areas and as such are unlikely to result in safety risk to the public. Risk to works relate to the operation of construction equipment. Appropriate safeguards would be put in place in accordance with Councils Civil Works Design Guidelines.
Neutral.
k. Any reduction in the range of beneficial uses of the environment?
Comments: The works provide improved access to the foreshore area.
Positive
l. Any pollution of the environment?

Comments: The Proposal is unlikely to result in any long-term pollution of the environment. Following a preliminary acid sulphate soil assessment (PASSA), a recommendation of this report is the preparation of an ASS Management Plan prior to the commencement of works. Appropriate erosion and sediment control measures will be put in place prior to the commencement of any clearing works. Council staff and clearing contractors are to be equipped with spill kits in the event of a pollution event.
Non-significant
m. Any environmental problems associated with the disposal of waste?
Comments: The PASSA and waste classification report recommended that waste classification be confirmed by a qualified environmental consultant *ex situ* prior to and during bulk excavation (Refer Appendix 4). All demolition materials shall be lawfully disposed of or reused.
Non-significant- assuming recommendations of PASSA & Waste Classification are adhered to.
n. Any increased demands on resources, natural or otherwise, which are, or are likely to become in short supply?
Comments: Where possible, the new timber retaining wall (logs and waling) behind the beach treatment areas shall be constructed from timber recycled from existing timer walls at the site. Sandstone blocks will be reused from site and the existing bottom gabion is to be retained. Excavated fill material is to be reused on site if appropriate. Medium to coarse grain sand material will be required and will be imported from a licensed supplier. The Proposed works are relatively minor and are unlikely to increase demand on resources.
Nil
o. Any cumulative environmental effect with other existing or likely future activities?
Comments: No long-term environmental impacts have been identified as a result of the proposal. As such, it is unlikely to contribute to any cumulative environmental effects with other activities.
Non-significant
p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions
Comments: The Subject Site is within the Coastal Environment Area (i.e. Coastal Zone, Map 1) and the proposed works are consistent with the objectives of the Coastal Management SEPP.
Positive

5.2 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

A Protected Matters search was undertaken 05/07/2018 within a 10x10 km area centred on the Subject Site to determine the likely occurrence of Matters of National Environmental Significance in accordance with the EPBC Act.

The broader Study Area contains three World Heritage Properties, three National Heritage Places, no Great Barrier Reef Marine Park or Commonwealth Marine Areas, one Wetland of International Importance (Hunter Estuary Wetlands), six listed threatened ecological communities (Central Hunter Valley eucalypt forest and woodland, Coastal Swamp oak Forest, Coastal Upland Swamps in the Sydney Basin Bioregion, Littoral Rainforest and Coastal vine thickets, *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion, Subtropical and Temperate Coastal Saltmarsh), 106 listed threatened species and 76 listed migratory species.

Following a site inspection/desktop assessment and habitat assessment:

- The Subject Site does not contain any World heritage Properties, National Heritage Places or wetlands of international importance
- The Subject Site has one nearby threatened ecological community: *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion
- The Subject Site provides habitat for 11 threatened species and 17 migratory species.

Eleven threatened species and 17 migratory species have potential habitat on the Subject Site and in the broader Study Area. The proposed foreshore stabilisation works are considered unlikely to substantially impact upon these species as the works are minor in nature and do not require clearing of large areas of native vegetation or dredging of protected or endangered aquatic vegetation. In addition, the Subject Site is likely to provide only sub-optimal habitat for these species as it has been previously disturbed and is relatively public.

The endangered ecological community *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion occurs near the Subject Site. The proposed works will not directly impact or clear the *P. australis*. Potential impacts include shading from turbidity and poor water quality from disturbance of potential acid sulphate soils (PASS). An Acid Sulphate Soil plan of management is required prior to the commencement of works along with appropriate erosion and sediment control in accordance with NSW Fisheries Policy and Guidelines (NSW DPI, 2013).

Based on the above assessment it is considered that a referral to SEWPaC is not required.

6.0 SUMMARY OF MITIGATION MEASURES/RECOMMENDATIONS

Environmental Factor	Mitigation Measures/Recommendations
Air Quality	• No vehicles or other fuel-driven heavy machinery including excavators will be left unattended or left in an idling state that would otherwise increase emissions to air in the vicinity of the study area. • Following clearing of vegetation and/or excavation, any exposed soils will be stabilized as soon as possible with mulch.
Water Quality	• Appropriate erosion and sediment control measures are to be implemented prior to construction (Refer Section 4.2 for details). • Rapid revegetation and stabilisation of exposed soil to prevent excess runoff • Provision of suitable "Chemical Spill Kits" for the work site.
Soils	• The preliminary acid sulphate soils assessment and Waste Classification recommended the preparation of an ASS management plan along with the recommendation that waste classification be confirmed by a qualified environmental consultant *ex situ* prior to and during bulk excavation.
Noise and Vibration	• Machinery must comply with noise and / or vibration standards; • Working hours are restricted to Monday to Friday between 7.00am and 6.00pm and Saturday 8.00am to 1.00pm with no work undertaken on Sundays or public holidays.
Biodiversity (Flora and Fauna)	• No dredging or mooring of construction equipment over *Posidonia australis* seagrass beds • Works should avoid dredging within seagrass beds (Z. *carpricorni*) where possible. • Works should avoid clearing of mangroves (A. marina) where possible. • Works should avoid damage to pneumatophores (mangrove roots) where possible. • No stockpiling is to be placed within the dripline of retained native vegetation • Exposed soils above high water mark are to be stabilised with mulch and planted as appropriate as soon as possible. • Planting of saltmarsh (Seablite *Suaeda australis* and Samphire *Sarcocornia quinqueflora*) at approximately 0.7m AHD to form saltmarsh berms. Other native vegetation may also be required to stabilize the soil. Additional species suitable for planting include Sand Couch *Sporobolus virginicus*, Prickly Couch *Zoysia macrantha* and Saltmarsh Rush *Juncus kraussii subsp. australiensis*. • Saltmarsh treatment/planting is to include the placement of seagrass wrack as mulch around plants. Wrack is to be collected from the Subject Site.
Chemical & Hazardous Substance	• The material safety data sheets (MSDS) for each chemical is to be kept on site at all times.

Management	• Fuel and chemicals are to be secured within the designated compound. • A suitable chemical spill kit is to be available on site at all times during working hours. Spill kits should be stored within the works compound and its location and instructions on usage are to be made clear to all workers.
Traffic Generation & Management	• Nil
Aboriginal & Non-Indigenous Heritage	• Workers should be observant and keep a look out for surface shell, bone, rocks or any other Aboriginal Cultural Heritage material. • If Aboriginal Cultural Heritage sites or material including bones are discovered, work should cease. The area should then be avoided and the Office of Environment and Heritage (OEH) and the local aboriginal land council (LALC) should be notified immediately.
Visual Impacts	• Nil
Public Access & Safety	• Council will be responsible for adequate safety precautions during progress of the works, in accordance with the relevant legislation, regulations, standards and codes of practice. This includes but is not limited to the safety of the public, an employee or contractor personnel.
Socio-Economic Impact	• Provision of information to nearby residents and property owners regarding the nature of the works and the expected timeframe. • Working hours are to be restricted in accordance with Civil works Design Guidelines, to between 7am and 6pm Monday to Friday and 8am to 1pm Saturday with no works to be undertaken on Sundays or Saturdays without prior approval from the Principal. • Local contractors (if required) should be engaged to supply and undertake works.
Ecologically Sustainable Development	• It is considered that the proposed activity is in keeping with the principles of ESD.

7.0 CONCLUSIONS

This Review of Environmental Factors has been prepared to review the potential environmental impacts of the proposed foreshore stabilisation works at Captain Phillip Reserve, Orana Street, Green Point. Investigations identified areas of potential environmental impact are predominately related to potential indirect impacts of the works on water quality during the construction. Mitigation Measures have been summarised in Section 6 and will require monitoring for the duration of the works.

This Review of Environmental Factors concludes that:

1. The impact of the proposed works will not be significant;
2. An Environmental Impact Statement is not required; and
3. Review of Environmental Factors is an adequate level of assessment for the proposed activity.

8.0 REFERENCES

Cardno (2012). Coastal Zone Management Plan for Brisbane Water Estuary, prepared for Gosford City Council, July 2012, LJ2717/R2683/V7.

OEH, 2012. Environmentally Friendly Seawalls: A guide to improving the environmental value of seawalls and seawall-lined foreshores in estuaries. NSW Office of Environment and Heritage and NSW Catchment Management Authority, Sydney Metropolitan. ISBN 978 1 74232 254 4. https://www.environment.nsw.gov.au/publications/coasts/090328-env-friendly-seawalls-guide.htm

9.0 APPENDIX 1. DESIGN REPORT (ROYAL HASKONING DHV)

10.0 APPENDIX 2. BIODIVERSITY ASSESSMENT

11.0 APPENDIX 3: PART 7 PERMIT

12.0 APPENDIX 4. PASSA & PRELIMINARY IN SITU WASTE CLASSIFICATION